Poster Session Proceedings

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Poster Chair:

Wendy Warner, NC State University

Poster Submission & Review Manager:

Gaea Hock, Kansas State University (exiting)

Ryan Anderson, Texas State University (entering)

Reviewers:

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Name	Institution
Alademerin, Edwards	University of Eswatini
Altman, Carly	Middle Tennessee State University
Baker, Carrie	University of Florida
Benge, Matthew	University of Florida
Best, Ryan	Oklahoma State University
Bird, Taylor	University of Georgia
Buttles, Tim	University of Wisconsin - Platteville
Byrd, Alex	Abraham Baldwin Agricultural College
Cherry, Audie	Clemson University
Chumbley, Boot	Texas A&M University Kingsville
Claflin, Kellie	Ohio State
Colclasure, Blake	University of Tennessee
Epps, Rebekah	The University of Kentucky

Ewing, John	Pennsylvania State University
Figland, Whitney	Louisiana State University
Ford, Jillian	North Carolina State University
Fuller, Emily	Texas A&M
Gorter, Erin	Cal Poly State University, San Luis Obispo
Hall, Justin	Mississippi State University
Hancock, Garrett	Auburn
Harbstreit, Steven	Kansas State University
Hatch, Chelsea	Texas Tech University
Headrick, Jason	Texas Tech University
Hurdle, Clay	University of Missouri
Ikendi, Samuel	University of California Agriculture and Natural Resources
Ingles, Dusti	Iowa State University
Joshi, Arati	University of Florida
Kalauni, Dharmendra	University of Florida
Lawson, Cara	The Ohio State University
Leggette, Holli	Texas A&M University
Marsh, Kayla	Oklahoma State University
McBride, Rosemary	University of Wyoming
McCubbins, OP	Mississippi State University
McHugh, Sallie	Abraham Baldwin Agricultural College
Meyers, Courtney	Texas Tech University
Miller, Amelia	Utah State University
Miller, Kimberley	California State Polytechnic University, Pomona
Milliken, Brett	Virginia Tech
Morgan, Joy	North Carolina State University
Mosley, Chaney	Middle Tennessee State University
Norris-Parish, Shannon	New Mexico State University
Parrella, Jean	Virginia Tech
Paulsen, Thomas H.	Morningside University
Perry, Dustin	Montana State University
Price, Tyler J.	Oklahoma State University
Pulley, Justin	Tarleton State University
Rada, Lavyne	University of Minnesota
Radhakrishna, Rama	Purdue University
Rampold, Shelli	University of Tennessee

Rankin, Kristopher	Oklahoma State University
Ray, Nicole	Cal Poly SLO
Rinehart, Kameron	Texas Tech University
Roberts, Richie	Louisiana State University
Rosson, Haley	West Virginia University
Salem, Maggie	Texas A&M University-Commerce
Solomonson, Jay	Illinois State University
Spiess, Michael	California State University, Chico
Starzec, Katherine	Kansas State Univ
Stewart, Josh	Oregon State University
Strong, Robert	Texas A&M University
Swan, Benjamin	California Polytechnic State University - San Luis Obispo
Teixeira, Kathryn	UC Davis
Terry, Rob	Oklahoma State University
Thompson, Ashley	Tarleton State University
Thoron, Andrew	Abraham Baldwin Agricultural College
Toombs, Jessica	California State University, Chico
Traini, Haley	Oregon State University
Warner, Anna	Washington State University
Wells, Trent	Murray State University
West, Molly	University of Tennessee
Wu, Yu-Lun	Ohio State University

2024 National AAAE Poster Sessions

Top 10 Innovative Idea Posters

Changing Narratives: Leadership Journeys for Personal Growth and Career Development
Erin Gorter
Cal Poly State University, San Luis Obispo

Checking out the Competition: Exploring Sprout Social's Listening Features
Rylie Lux, Courtney Meyers, Ph.D., Laura Fischer, Ph.D.
Texas Tech University

Grade Expectations: A Paradigm Shift for Student Success
Jennifer Bennett, Julie Lamarra
Colorado State University, Utah State University

Incorporating Play-Based Learning Using LEGO® SERIOUS PLAY®
Haley Q. Traini, Ehi Ogwiji
Oregon State University

Matchmaker, Matchmaker: A Student Teaching Fair to Establish Teacher Candidate and Cooperating Teacher Relationships
Donavan Phoenix, Becky Haddad, Matt Kreifels, Nathan Conner, Mark Balschweid
University of Nebraska-Lincoln

Next-Gen Marketers: Exploring the Use of ChatGPT to Create Online Marketing Content
Dr. Courtney Meyers
Texas Tech University

Podcasting as an Approach for Preparing Preservice Agriculture Teachers to Teach Controversial Topics
Chaney Mosley
Middle Tennessee State University

Principal Professional Development at Florida FFA Convention and Expo
Cassandra Goff, R. G. (Tre) Easterly III, Brian E. Myers
University of Florida

The $100 Solution: A Service-Learning Project for Students Enrolled in an Undergraduate Agricultural Leadership Course

Lucas D. Maxwell, Jay K. Solomonson
Illinois State University

WoW Ambassadors- Promoting Welding Education and Careers

Kenedy Kornegay, Ryan Anderson, & Bradley Borges
Texas State University

Innovative Idea Posters

"Students Learn How to Learn Outside the Classroom": Using PhotoVoice to Evaluate Leadership Program Learning Outcomes

Kate Suchodolski, Amy Leman, Jenn Smist

University of Illinois at Urbana-Champaign

A Review of the Current Landscape of Agricultural Education, Communications, and Leadership

Kameron Rinehart, M.S. Hoyt Nebgen, Jason Headrick, Ph.D., & Alexa Salinas

Texas Tech University

Addressing the perpetual critique, "You need to refine your research agenda."

Emily R. Fuller, Dr. Shumaila Bhatti, Dr. Dara M. Wald, Miguel Diaz, Dr. Patrick Jamar, Karissa Palmer, Dr. Seunguk Shin

Texas A&M University

AET Mini Assignment

Kaitlynn Davis, Anna Warner

Washington State University

An interdisciplinary project-based learning approach in food label design

Katherine Starzec, Kelly Getty, Kassie Pechanec

Kansas State University

Are we hitting our target? An Instrument of Evaluation for Agriscience Phenomenon

Kaitlynn M. Linderholm, Nicole Ray, Cameron Standridge, Stacy VanScoy, Jonathon Moules, Avery Culbertson

Cal Poly, SLO, Fresno State

Assessment and Investment in Agricultural Internship Opportunities

Kevin Williams

West Texas A&M University

Badgrs Up! Digital Credentialing at Virginia Governor's School for Agriculture

D. Brett Milliken and Maggie Morris

Virginia Tech

Collaborating on an Accessible Cover Crop Curriculum

Matthew Hagaman & Natalie Shaheen

Illinois State University

Constructing the Path: Utilizing Journey Mapping to Understand Local Food Systems and Beyond

Raquel Taylor, Rulon Taylor, Mary Emery, Benjamin Jewell

University of Nebraska-Lincoln

Cultivating Change: Extension Educators' Innovative Community Gardening Practices for Food Access in Urban Low-Income Areas and Rural Food Deserts

Jenna Dyckman, Emma Parkhurst, Eva Timothy, & Kelsey Hall

Utah State University

Delivering a Community-Based Agricultural Mechanics Service-Learning Experience

Sarah Parks, Bradley D. Borges, Ryan G. Anderson

Texas State University

Digital Detox: Elevating Learning through Focus Fridays

Luisa Honeywell, Jason Ellis, Katherine Starzec

Kansas State University

Engaging One-Health Role-Models to Increase STEM Competency and Motivation in Middle School Students

Julie Harlin, Theresa Murphrey, Torri Whitaker, Christine Budke, Nicola Ritter, and Duncan Walker

Texas A&M University

Establishing a new foundation for the Auburn University Spring Judging Clinics

Garrett T. Hancock, Andrew C. Bailey, Jason D. McKibben

Auburn University

Expanding the Reach of AEE Club: Rebranding the Departmental Student Organization as FFA Alumni and Supporters

Mary Kate Morgan Lanier, Jillian C. Ford, Joy Morgan

North Carolina State University

Experiential and Transformational Learning as a Professional Development Framework

Dusti Ingles & Mike Retallick

Iowa State University

Exploring Student Perceptions of Mentorship: A Photovoice Evaluation Project

Rebecca Mott, Jon Simonsen, Hannah-Rose Foote

University of Missouri

Fostering Connected Communities through Agricultural Celebrations

Kensie Todd & Erica Irlbeck

Texas Tech University

Gear Down! Using the Tractor Pull Challenge to Support STEM-focused Agriculture Teacher Professional Development

Jay K. Solomonson; Trent Wells

Illinois State University; Murray State University

Growing Interest in the Workforce: Using Grant-Based High School Internship Opportunities to Recruit for the Agriculture Industry

Kaitlynn Davis, Nicole Michol, Anna Warner

Washington State University

Incorporating an Electronic Scoring System into an Agricultural Mechanics Show

Brad Borges

Texas State University

Intern if U-DAIRE: Adding Value to Dairy Through an Inclusive Undergraduate Experience

Jordan Richardson, Shelli Rampold, Alexis Hall, Sharon Jean-Philippe, Emily Paskewitz, Elizabeth Eckelkamp, Carrie Stephens, & Victoria Jessie

University of Tennessee - Knoxville

Interview an Upperclassman: The Value of Peer Mentorship to First-Year Students in an Orientation Course

Mary Kate Morgan Lanier

North Carolina State University

Jigsaw-Based Cooperative Learning to Enhance Reading Comprehension in Agricultural-based Social Science General Education Courses

Victoria Beasley, Molly West, Makenzie Smith, Bailey Watson

University of Tennessee

Learning to Do: SAE Management through Hands-On Laboratory Experiences

Alexus Eudy, Dr. John Rayfield, Chelsea Hatch

Texas Tech University

Lessons learned from multiple-campus mentoring programs

Olivier Ntaganzwa, Alejandra Prado Jaramillo, Rama Radhakrishna, Neil Knobloch

Purdue University

Mindfulness as a Tool for Stress Management in Formal and Non-Formal Education

Mariah Awan, Rama Radhakrishna

Purdue University

Mirror, Mirror: Reflecting for Progress

Christopher J. Eck

Oklahoma State University

Partnering with Junior Achievement to Provide Field Experience for Preservice Teachers

Caryn Filson

The Ohio State University

Promoting Agritourism Through Online Agricultural Education Programs

Brenda Asasira Kakungulu, Reagan Mulungi Mwenyi, Samuel Ikendi, Morris Natwijuka, Apollo Arinda, Muhe Leninmarx, Florence Namirembe, and Criton Ahabwe

Makerere University, Bris Agro-Safaris, Missouri State University, University of California Agricultural and Natural Resources, UC Merced

Reconceptualizing Youth Leadership Board Curricula: An Instructional Design Approach to 4-H State Officer Leadership Development Programming

Clay Hurdle

University of Missouri

Research Journal Engagement in Agricultural Education: An AI-Driven Approach

Jason Peake, Jessica Boone

University of Georgia

Risky Business: Applying Risk and Crisis Communication Principles in a Field Trip Setting

Dr. Cara Lawson, Nicole Volk

The Ohio State University

SBAE READY: Equipping developing countries with a usable guide to implement School-Based Agricultural Education

Haley Q. Traini, Ehi Ogwiji

Oregon State University

Sharing is Caring: Zotero for Agricultural Literacy Research

Amelia J. Miller, PhD and Debra M. Spielmaker, PhD

Utah State University

Starting With a Blank Canvas: Introducing LMS Management to Preservice Teachers

D. Brett Milliken, Kendrick L. Spencer, & Hannah H. Scherer

Virginia Tech

The 4-H Youth Development Mentoring Guidebook: A Resource for New Employees

Kelly Gill, Amy Leman

University of Illinois at Urbana-Champaign

The AgBadging Field Guide Program

Saydee C. Longhurst, Michelle S. Burrows, Tyson J. Sorensen

Utah State University

The Other AI: Pre-Service Teacher Utilization of AI Technology to Create Lesson Plans

KaCee James, Gaea Hock

Kansas State University

Thinking Inside the Box: Partnering with Veterinary Medicine Faculty to Develop Low-cost Cattle Palpation Simulator Models

Trent Wells; Brittany L. Kirby

Murray State University

Urban Neighbors and Neighborhoods: Professional Development for School-Based Agricultural Educators

Robert Williams, Courtney Leftrick, Carolina Garcia, Jennifer Gonzalez, and Priscilla Pina

Texas A&M University - Commerce

Using a Virtual Reality Trainer to Improve School-Based Agricultural Education Teachers Welding Performance

Ashley Thompson, Justin Pulley

Tarleton State University

Using Agricultural Education to Build a Regional Farm Safety Database

Ruth D. Toole, Stacy K. Vincent, A. Preston Byrd, Kang Namkoong, Yongwook Song

University of Kentucky, Abraham Baldwin Agricultural College, University of Maryland

Using Laerd Statistics as a Data Analysis, Interpretation, and Reporting Tool in Agricultural Education Research

Trent Wells; Jay K. Solomonson

Murray State University; Illinois State University

Using Mock Interviews with School Administrators to Prepare Pre-service Teachers to Successfully Navigate the Teaching Position Interview Process

Trent Wells; Jay K. Solomonson

Murray State University; Illinois State University

Using Simulated Activities in Teacher Preparation Program

Grace Dooley, Elle Carter, Farish Mulkey, Sallie McHugh

Abraham Baldwin Agricultural College

Using Student Check-in Meetings for Feedback, Assessment, and Coaching

Laura Hasselquist, Tony Durr, and Patrick Hales

South Dakota State University

Using the Global Competence Aptitude Assessment for Measuring Student Development during Education Abroad Experiences

Kameron Rinehart M.S., Javonne Mullins, M.S., & Jason Headrick, Ph.D.

Texas Tech University, Wilmington College, Texas Tech University

Using the Study Cycle to Study for FFA Career Development Events

Kaylee Shouse, Hayden Kinkade, Amy Leman

University of Illinois at Urbana-Champaign

Visualizing Student Teaching

Jillian C. Ford, Misty D. Lambert, Travis D. Park, Mary Kate Morgan Lanier
North Carolina State University

Work Smarter, Not Harder: How Educators Can Use Generative AI Tools to Increase Efficiency in their Work

Kylie Harlan, Courtney Meyers, Laura Fischer
Texas Tech University

2024 National AAAE Poster Sessions

Top 10 Research Posters

Beefing Up Influencer Credibility: The Effect of Source and Message Type on Perceptions of Source Expertise and Trust

Jessica Hemphill, Laura Fischer, Ph.D., Courtney Meyers, Ph.D., Brooke Vyvlecka, & Courtney Gibson, Ph.D.

Texas Tech University

Exploring College Students' Perceptions of Using Generative AI to Produce Agricultural-Related Vector Images

Kyler Hardegree, Dr. Courtney Gibson

Texas Tech University

Exploring Context as an Amplifier or Filter in Implementing Blended Teaching in SBAE

D. Brett Milliken, Josh Stewart, Haley Q. Traini

Virginia Tech and Oregon State University

Identifying the Taxonomy of Questions Used by Experienced School-Based Agriculture Teachers

Cassandra Goff & R. G. (Tre) Easterly III

University of Florida

Inservice Needs of Selected State Agriculture Teachers Related to Precision Agriculture

Henry Akwah, Donald M. Johnson, George Wardlow, Cengiz Koparan & Aurelie Poncet

Investigating Identity and the Integration of Alternatively Certified Teachers in the School-Based Agricultural Education Profession

Matthew J. Wood, Tyson J. Sorensen

Utah State University

Preparing Internationally Engaged Graduate Students in Agricultural and Extension Education

Colby Silvert; Rafael Landaverde; Melissa Leiden Welsh; John Diaz; Mary Rodriguez; Dharmendra Kalauni

University of Maryland at College Park

School-based Agricultural Education Teachers Support Needs

Kayla Marsh, Dr. Christopher J. Eck, and Dr. Wiliam Doss
Oklahoma State University

Seeds of Communication: A Communications Audit of Instagram Posts Promoting the AgriStress Helpline For [State]

Kyler Hardegree, Dr. Courtney Gibson
Texas Tech University

Unearthing Agricultural Legacies: The Jesup Wagons Impact on Black Heritage and Extension Services

Mikayla Daniels, Joy Morgan, Wendy Warner
North Carolina State University

Research Posters

"Where have all the young men gone?" Exploring the AAAE National Supply and Demand Dataset

Michael Spiess, Daniel Foster, Amy Smith, Becki Lawver

California State University, Chico, The Pennsylvania State University, University of Minnesota, Utah State

Addressing Professional Development Needs of Middle School-Based Agricultural Education Teachers Through CASE AgXplore Training

Chaney Mosley, Kevin Ragland, and Ying Jin

Middle Tennessee State University (Mosley and Ragland); James Madison University (Jin)

An Analysis of Professional Development Impact on Teacher Confidence in Turfgrass Science

Clarissa Darby, Joey Young, Ericka Irlbeck, Rudy Ritz

Texas Tech University

An Analysis of the Time Allocation of Student Teachers in Each Circle of the Three-Circle Model of Agricultural Education

Krysti Kelley; John Rayfield

Texas Tech University

An Analysis of Time Spent in Student Teaching Activities Before and During the COVID-19 Pandemic

Krysti Kelley

Texas Tech University

An Exploration of Perceptions Related to Farmers' Roles in Climate Change Issues

Sheriden Schuerman, Dr. Cara Lawson, Dr. Laura Fischer, Dr. Joy Rumble, Dr. Scott Scheer

The Ohio State University

An Interpretive Thematic Synthesis of Literature on the Implementation of Experiential Learning in Agricultural Education

Mathew Smith, Neil Knobloch

Purdue University

Artificial Intelligence and the Professional Development Needs of SBAE Teachers

Sidney Pehrson, Tyson J. Sorensen

Utah State University

Assessing Agricultural Study Abroad Impacts on Student's Global Competence

Kameron Rinehart M.S., Javonne Mullins, M.S., & Jason Headrick, Ph.D.

Texas Tech University, Wilmington College, Texas Tech University

Assessing the influence of welding sequence training on student performance

Rhett Sykora, Ryan Anderson, Marshall Swafford, & Bradley Borges

Texas State University

Assessing Visitors' Perceptions of an Interactive Learning Space About Ranching

Cambry Cline & Dr. Courtney Meyers

Texas Tech University

Attitudes of Government Agricultural Extension Workers Towards Social Media Use in Nepalese Agricultural Extension

Sudarshan Adhikari, Emily Buck, Narayan Raj Joshi

The Ohio State University, Agriculture and Forestry University (AFU)

Attitudes of SBAE Teachers Regarding AI utilization

Sidney Pehrson, Tyson J. Sorensen

Utah State University

Beneath the Surface: Self-Perceived Professionalism in Agriculture Education

Erin Gorter, Nicole Ray, Lauren Giannone, Ann De Lay, Isaac Lopez, Daniela Rodriguez-Ruiz, Ashley Crabtree

Cal Poly State University, San Luis Obispo

Capacity Building of Leadership Competencies for Extension Personnel: A Case Study of the University of Georgia Extend Advanced Leadership Development Program

Joel Burnsed and Dr. James C. Anderson, III

University of Georgia

Career and Technical Education Teachers' Opinions on Virtual Reality

Jackson Horton, OP McCubbins

Mississippi State University

Comparing the Classroom Needs of School-Based Agricultural Education Teachers in [state] by Years of Teaching Experience

Lavyne Rada & Scott Smalley

University of Minnesota

Cross-Cultural Collaboration and Transformative Learning: A Photovoice Exploring the Impact of Educational Partnerships on Personal Growth and Global Understanding

Jessica R. Spence, Daniel Foster, Melanie Miller-Foster, OP McCubbins, Olivia Murphy-Sweet

Virginia Tech, Penn State, Mississippi State, Field of Hope

Determining Early-career [STATE] Agriculture Teachers' Agricultural Mechanics Professional Development Needs

Christopher C. Crump; Trent Wells

Banks County High School; Murray State University

Developing Cultural Competence Among Students: A Short-Term Study Abroad in Morocco

Joshua Toran III, Emmanuel J. Kanchewa, James C. Anderson, II

University of Georgia

Digital Agriculture Summer Camp: A Comparative Analysis of the First and Second-Year Camp Participants' Knowledge and Postsecondary STEM Interests

Carly Altman, Dr. Chaney Mosley & Dr. Song Cui

Middle Tennessee State University

Do You Belong? Stories from Minority FFA Members and Their Feelings Towards the Florida FFA Association

Sophia Jaramillo-Vasconez, Dr. Carla Jagger, Dr. Katrina Alford, Dr. Stacy Vincent

University of Kentucky, University of Florida

EFFECTS OF IMMERSIVE AND IN-CLASS EXPERIENCES ON KNOWLEDGE AND PERCEPTIONS OF AGRICULTURAL CAREERS

Kevin Williams

West Texas A&M University

Elementary Agricultural Education Teacher Extended Day and Extended Year

Jason Peake, Jessica Boone, Jade Davidson, Madison Race

University of Georgia

Enhancing Self-efficacy through Problem-Based Learning Intervention across Agricultural Disciplines

Shuai Ma, Zhihong Xu, Zilong Pan, Wenting Weng, Theresa Pesl Murphrey

Texas A&M University

Examining the Teacher Pipeline

Dr. Sam Rodriguez, Dr. Michael Spiess, Mr. Kenny Saephan

CSU Fresno, CSU Chico, Escalon HS

Examining the Use and Frequency of Competition-Based Instruction in SBAE Classrooms

Joseph E. Ramstad, R. G. (Tre) Easterly III, Jamie Loizzo, J.C. Bunch

Rockford Area Schools & University of Florida

Exploring Consumers' Intent to Purchase Sustainable Cotton Products Using the Theory of Planned Behavior

Kylie Kitten, Laura M. Fischer, Ph.D., Donna McCallister, Ph.D., Qi Kang, Ph.D., & Gao Long, Ph.D.

Texas Tech University

Exploring Preservice Teacher Food Practices in the Context of Teaching Food Science Topics

Lisa Shepherd and Chaney Mosley

Middle Tennessee State University

Exploring the Impact of Podcast Pedagogy on Agricultural Leadership Education through Quantitative Analysis

Hoyt Nebgen, Clarissa Darby, Dr. Jason Headrick

Texas Tech University

Farm to Early Care and Education in [state]: Connecting Young Children to Agricultural Education, Gardening, and Local Food

Kyle Whitley & Kelsey Hall

Utah State University

Fine Points of Classroom Professionalism: [STATE] Ag Teachers Perceptions

Isaac Lopez, Nicole Ray, Erin Gorter, Lauren Giannone, Ann De Lay, Ashley Crabtree, Daniela Rodriguez-Ruiz

Cal Poly State University, San Luis Obispo

Framing Rural Realities: Exploring Youth Perspectives of Rural Communities Through Photovoice

Jaelyn Sewell; Audrey E.H. King; Linnea Harvey; Shane Robinson

Oklahoma State University

Grand Challenges [State]: Considering Agriculture Issues Within the Larger Narrative

Shelli D. Rampold, Jordan Richardson, Christopher Stripling

University of Tennessee

How to Advertise Grass-fed Beef to Consumers: Comparing Use of Communication Channels Across Regions

Beth Crandall, Kelsey Hall

Utah State University

Identifying HEARING-related shortcomings in Alabama School-Based Agricultural Education

Garrett T. Hancock

Auburn University

Innovative Pedagogy for Employability: Design Thinking and the Development of Problem Solving and Teamwork Skills in an Agricultural Course

Summer Odom and Makayla Waiser

Texas A&M University

Inspired to Teach: Perspectives from School-based Agricultural Education Teachers

Kalynn Baldock, Jessiann Dusenbery, Matthew Vetterly

Eastern New Mexico University

Intent to implement CASE curriculum: Participant perspectives

Kayla Marsh, Dr. Christopher J. Eck

Oklahoma State University

Investigating Flint Hills Fire Culture: A Qualitative Analysis

Adrian Sulivant, Katherine Starzec, Claire Geiger

Kansas State University

Is Journaling Write for You? A Qualitative Analysis of Undergraduate Perceptions of Journaling in an Introductory Agricultural Communications Course

Kennedy Johnson and Dr. Jacqueline Aenlle

Kansas State University

Manifestation of the Three-Circle Model in Rural [State] High School Agriculture Programs: An Instrumental Case Study

Cord Jenkins, Rebecca Mott

University of Missouri

Market Segmentation and Performance of Ginger Retail Traders in Kampala, Uganda

Miriam Namata, Samuel Ikendi, Stella Ahimbisibwe, Reagan Mulungi, David Banige, Andrew Waaswa, and Alex Tatwangire

Uganda Christian University, University of California Agricultural and Natural Resources, UC Merced, Missouri State University, Kampala University, North Carolina State University, Makerere University

Middle School Teachers' Concerns about Facilitating Student Learning in Supervised Agricultural Experiences

Jacob Englin, Richie Roberts, Kristin S. Stair

Louisiana State University

Mindfulness as Perceived by Extension Educators in Ohio, Pennsylvania and Indiana

Mariah Awan, Rama Radhakrishna

Purdue University

Navigating Responsibility and Acceptance: Students' Engagement with GenAI Writing Tools

Haylee Henry, Casandra K. Cox, & Grace Vehige

University of Arkansas

Novice High School Agricultural Science Teachers' Viewpoint on Being Equipped for Teaching Laboratory Settings.

Bryce Hamlin; Krysti Kelley

Texas Tech University

Pathways to Climate Smart Agriculture in the San Diego Region of California

Samuel Ikendi, Vikram Koundinya, Esther Mosase, Erin Spaniel, Hope Zabronsky, Leslie Roche, Natalia Pinzon, Namah Chiamo Taku-Forchu, Lauren Parker, Mark Cooper, Daniele Zaccaria, Steven Ostoja, Prakash Kumar Jha, and Tapan Pathak

University of California Agriculture and Natural Resources, UC Merced, UC Davis, USDA California Climate Hub

Perceptions and Experiences are Important: Career Choice in Agriculture

Katrina Swinehart Held

Central State University

Perceptions of the Usability of a Virtual Field Trip within a Feed Mill Facility

Allison Chambers, Gaea Hock, Brandie Disberger, Jonathan Ulmer

Kansas State University

Personal human capital needs of school-based agricultural education teachers in [state]

Kayla Marsh, Dr. Christopher J. Eck

Oklahoma State University

Preparing to Podcast: How Undergraduate Students Meet Outcomes Through Project-Based Learning Opportunities

Jacqueline Aenlle

Kansas State University

Reaching All People: An Examination of Felt Community Representation in [State] Extension Programming

Victoria Jessie, Shelli D. Rampold, Makenzie Smith

University of Tennessee

Representation Matters: The 1890 Land Grant Institutions Role in School-Based Agricultural Education Supply and Demand

Mia Sullivan, Daniel Foster, Amy Smith, Becki Lawver, Michael Spiess, and Ashley Rogers

The Pennsylvania State University, University of Minnesota, Utah State University, California State University Chico, National Association of Agricultural Educators

Retrospective reflection on school-based agricultural education early field experience: Perceptions of teacher aspirants

Kayla Marsh

Oklahoma State University

Safety! What is it good for?

Garrett T. Hancock, Jason D. McKibben

Auburn University

Scholarly Metrics by Rank in the Agricultural Education Discipline

Marcus Martin, Christopher M. Estepp, Donald M. Johnson, Will Doss

University of Arkansas

Seeding the Future: Cultivating a Research Agenda in Elementary Agricultural Education

Jessica Boone, Jason Peake

University of Georgia

Seeds of Professionalism: Unearthing Leadership Perspectives in Agricultural Education

Daniela Rodriguez-Ruiz, Ann De Lay, Erin Gorter, Nicole Ray, Lauren Giannone, Isaac Lopez, Ashley Crabtree

Cal Poly State University, San Luis Obispo

Student Perceptions of Agricultural Needs and Challenges across Leadership

Bailey Sipes, Jason Headrick, Lindsay Kennedy

Texas Tech University

Student-animal interactions in AFNR education: An exploration of students' affective and cognitive responses

Faith Oster, Dr. Kimberly Cole, Dr. Joy Rumble

The Ohio State University

Teacher Perceptions and Planned Behavior Related to Agriscience Externship Experiences

Jonathan Moules, Nicole Ray, Stacy VanScoy, Robert Strong, Cameron Standridge, Kaitlyn Linderholm, Avery Culbertson

Cal Poly, SLO; Fresno State, Texas A&M

Teacher-Parent Relationships and Their Role in Agricultural Science Teachers Retention

Clarissa Darby, Rudy Ritz

Texas Tech University

The Evolution of Gender Roles in FFA: An Analysis of the Covers of the FFA New Horizons Magazine

Hayley F. Milliron, Kellie Claflin

The Ohio State University

The Importance of Social Capital for Youth Leadership Development in Agriculture: Perspectives from State FFA Officers

Saralyn Smith, Richie Roberts, Kristin S. Stair

Louisiana State University

The Livestock Collective: A Case Study of Efforts to Enhance Transparency of the Live Export Industry in Australia

Dr. Courtney Meyers

Texas Tech University

Tracing the Turnover Intentions of SBAE Teachers by Certification Path and Career Stage

Matthew J. Wood, Tyson J. Sorensen

Utah State University

Training AGvocates in Secondary Classrooms: [State] Agricultural Science Teachers' Needs for Integrating Agricultural Communications Curriculum into Current Instruction

Tatum Pugh, Maureen Victoria, Jean Parrella, Mark Hainline

Sam Houston State University, Virginia Tech

Understanding Entry and Retention Using FIT Choice: Motivational Factors Among New Agriculture Teachers in [State]

Keziah Crespo, Jason Dossett, Brian E. Myers, J.C. Bunch, R.G. Tre Easterly, III

University of Florida

Understanding Graduate Student Perceptions of Generative AI Using an Expectancy-Value Theory Approach

Nellie Hill-Sullins, Jason Headrick

Kansas State University, Texas Tech University

Understanding the impact of self-determination: A narrative examination of small-scale Black regenerative farmers

Sherifat T. Alabi & Joy N. Rumble

Ohio State University

Using a Virtual Reality Trainer to Enhance Preservice SBAE Teachers' Welding Self-Efficacy

Ashley Thompson, Justin Pulley

Tarleton State University

Using Generative AI to Solve Technical Problems: Student Results and Perceptions

Grace Vehige, Will Doss, Christopher M. Estepp, Donald M. Johnson

University of Arkansas

Utilizing Social Capital and Ego Resiliency Theory to Assess the Influence of Social Support and Spirituality on Ego Resilience of Youth in Haitian Farmworker Communities

Beatrice Pierre

University of Florida

What Factors Influence Undergraduate Agricultural Education Students' Perceptions of their Academic Major?

Emma Wiseman; Brian Parr; Trent Wells

Murray State University

What is New on the News: A Content Analysis of a TV News Show in Agriculture

Joshue Lewis

Texas Tech University

What's in a Name? A Case Study of "Section 8" in Illinois FFA

Colby Gregg, Amy Leman, and Josie Brockett

University of Illinois

Who Teaches and Why? Analyzing Why Individuals Choose to Pursue a Career Teaching Secondary Agricultural Education

Josh Odom, John Rayfield, Chelsea Hatch

Texas Tech University

Changing Narratives: Leadership Journeys for Personal Growth and Career Development

Erin Gorter, Assistant Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
ekthomps@calpoly.edu

Changing Narratives: Leadership Journeys for Personal Growth and Career Development

Introduction/Need for Innovation or Idea

The Introduction to Agricultural Leadership-AGC 254 course at Cal Poly-San Luis Obispo (CPSLO) serves as a requirement within the Agricultural Leadership minor (Agricultural Education & Communication, 2024). Students are to become familiar with leadership development in agriculture; principles and techniques for developing leadership; their own characteristics, skills, influence, commitment, goals, and power; and issues agricultural leaders face. A challenge of the course is incorporating industry while also focusing on student development, in two hours per week.

Personal narratives "inquire into an individual's lived experience" (Sztukowski-Crowley & Funk, 2020, p. 80). Narratives are dynamic and revised as new experiences occur and new knowledge is gained (Sztukowski-Crowley & Funk, 2020). This evolving nature of personal narrative aligns with Lattore's (2021) Diamond Model of Leadership Development for agriculturists. Through feedback and reflection, individuals move from their current reality to their future reality within the contexts of the character, organization, spirituality, and community framing their lives (Lattore, 2021). The implementation of personal narrative in the agricultural leadership classroom provides a reflective tool for agriculture students' current realities as well as models aspirational leadership and career development for the future.

How it works/Methodology/Program Phases/Steps

To foster personal narrative development and industry representation in an introductory agriculture leadership course, a "Leadership Journey of the Week" was included. Presented by a person involved in the agriculture industry, individuals were invited via email to sign up for the week they were able to present, either in person or virtually, their personal leadership journey. Presenters were solicited via contacts of the instructor as well as alumni of the College of Agriculture, Food, and Environmental Sciences (CAFES) and the California Agricultural Leadership Foundation (CALF) (2024). A web-based calendar system facilitated scheduling of presenters. Each week was dedicated to a portion of the text *Introduction to Leadership* (Northouse, 2021). Presenters were encouraged to touch on the weekly text topics, although not required to do so. Other instructions included a time limit (10-15 minutes) and that they should focus on telling their personal narrative as it impacts their work in agriculture.

Each leadership journey lasted about 10-15 minutes. Some presenters used visual presentations, while others simply spoke. During, students listened and noted any questions. At the conclusion of each presentation, 10-15 minutes were allocated for questions. Weekly, students were asked to submit a reflection using Driscoll's (2007) "What" model for critical reflection where the three questions what, so what, and now what (Borton, 1970) guided their reflections. These reflections were to address content they read, information learned from personal assessment material, and anything they gleaned from the leadership journeys.

At the conclusion of the term, students were asked to prepare their own leadership journey in oral and written form. Students were instructed that their oral presentations presented in class should be less than 10 minutes and written reflections should range between 2 and 3 pages. Both the oral and written pieces were to include the following:

- Summative overview of all leadership self-assessments and reflections during the term, including how they have helped shape student self-awareness, values, beliefs, and cultural identity.

- A personal definition of leadership.
- Beliefs in the importance of leadership relative to agriculture.
- A leadership development plan outlining future involvement on campus or other avenues.

Results to Date/Implications

Twenty-three undergraduate CAFES students have enrolled in the 2 sections of AGC 254 offered in 2 different terms (Spring 2022 and Spring 2023). Seventeen different industry leadership journey sessions happened with 14 different industry speakers; 9 took place in Spring of 2022 and 8 in Spring of 2023. Speakers chose to reflect on the Northouse (2021) topics each week and did so uniquely. Presenters who were local presented in person, and those more than one hour away, elected to present via Zoom. At the conclusion of each term, enrolled students presented their own personal leadership journeys as an oral presentation in class and a written reflection submitted via the CPSLO learning management system. Students reflected on how the personal narrative portion of the weekly presentations influenced them from a personal development standpoint, but also from the angle of presenting them with different career options they may not have been aware of.

Future Plans/Advice to Others

As AGC 254 is a service course to the university it is important to understand the backgrounds and career interests of the students enrolled to curate narratives appealing to all students. In 2022, the instructor asked for feedback from the enrolled students on who they thought was missing from the weekly sessions. It was noted, due to their being several first- and second-year students in the class, making sure third- and fourth-year students were also represented in the presentations would be helpful to their development. Addressing this, three undergraduate student leadership journey presentations were added during the 2023 section; these student presenters were students who completed the course in Spring of 2022. In the future, the instructor plans to continue to use students who have already taken the course as potential presenters. Additionally, they plan to submit a survey to enrolled students during week one of the term to solicit career pathways of interest, to further diversify leadership journeys presented.

Those who wish to implement this activity should consider their target audience when selecting presenters as well as include recommendations based on student interests. Additionally, while the use of the topics from the Northouse (2021) text was not explicitly required in the presentations, it did provide context for each week and created a space where the students already had background. It is recommended to use a similar text or assign topics to each week to keep content fresh and prime students for the journeys presented each week. An outline of topics for AGC 254, instructions for critical reflection (Driscoll, 2007), and a complete list of the leadership journey industries and businesses represented for both years, will be included with the poster presentation.

Costs/Resources Needed

There are minimal costs associated with this idea and include items specific to thanking the presenter and providing parking for presenters on campus. At CPSLO the practitioner was able to find note cards and branded products within their university's department office, and used a departmental sponsored guest parking permit code, resulting in zero costs. Concerning resources, access to individuals who come from different backgrounds and industry sectors is necessary to provide an experience relevant for all learners.

References

Borton, T. (1970). *Reach, touch and teach.* Hutchinson.

Agricultural Education & Communication. (2024). *Minors*. https://aged.calpoly.edu/minors-agricultural-education-and-communication

Driscoll, J. (ed.) (2007). *Practicing clinical supervision: A reflective approach for healthcare.* Elsevier.

Lattore, P. A. (2021). *How we grow leaders.* (n.p.).

Northouse, P. G. (2021). *Introduction to leadership.* (5th ed.). SAGE Publishing.

California Agricultural Leadership Foundation. (2024). *About the foundation.* https://www.agleaders.org/about/

Sztukowski-Crowley, C. A., & Funk, D. R. (2020). Personal narratives. In B. J. Carducci & C. S. Nave (Eds.), *The Wiley encyclopedia of personality and individual differences* (Vol. II, pp. 79-83). Wiley & Sons LTD.

Checking out the Competition: Exploring Sprout Social's Listening Features

Rylie Lux
Graduate Student
Department of Agricultural Education and Communications
Texas Tech University
Rlux@ttu.edu

Courtney Meyers, Ph.D.
Professor
Department of Agricultural Education and Communications
Texas Tech University
Courtney.meyers@ttu.edu

Laura Fischer, Ph.D.
Assistant Professor
Department of Agricultural Education and Communications
Texas Tech University
Laura.fischer@ttu.edu

Checking out the Competition: Exploring Sprout Social's Listening Features

Introduction & Need for Innovation or Idea

Sprout Social is an online social monitoring software that "listens" to conversations, unique posts, and messaging campaigns across the web and social media channels based on user-chosen keywords and usernames (Kordzadeh & Young, 2022). Communications professionals can then analyze the insights of the message to help develop marketing strategies based on trending topics. Social media analytics (SMA) have become an integral part of building messaging campaigns with many companies utilizing built-in tools such as Meta Business Suite to evaluate how their content is being received and interacted with by audience members (Young et al., 2020). Companies also use SMA to monitor and understand the online conversation surrounding keywords, issues, and competitors of their brand to help develop and improve communication strategies (Stieglitz et al., 2014).

Social media listening tools such as Hootsuite, Meltwater, Sprinklr, and Sprout Social allow organizations to monitor conversations. These tools serve important roles in improving the organization's brand and key messages (Wagler & Cannon, 2015). One tool, Sprout Social, compares message metrics such as engagement or reach for an organization's content along with the volume and focus of broader online conversations. Its "listening" feature monitors topics, trends, or crises happening over time by linking those chosen keywords to related ones. Sprout Social also can evaluate the online presence of competitors, which allows companies to find ways to differentiate themselves from competitors and monitor brand health (Help Center, 2024). As communications companies continue to emphasize social media strategy, students should also get hands-on experience with these tools before entering the workforce (Torossian, 2023). Agricultural communications students should be learning about SMA software to prepare and adapt to other technologies in their future careers (Leal et al., 2020). The purpose of this innovative poster is to describe how we integrated one feature of Sprout Social into a senior-level agricultural communications course in early Spring 2024. Throughout the semester, students in this course discuss trends impacting online communication and develop relevant online communication materials for real clients. With Sprout Social's Competitive Analysis feature, students could better understand the role of SMA when developing a strategic communications campaign.

How It Works

Sprout Social has many capabilities; for this activity, we used the 'listening' platform. To demonstrate the functionality, we created an "Industry Insights" board for the student's client, Texas Tech Davis College of Agricultural Sciences and Natural Resources. This involved choosing which social media platforms to target, adding keywords to listen for, and setting a few parameters to avoid spam or sales messages. We used this board to introduce students to Sprout Social's capabilities. To further demonstrate Sprout Social's features, students were then shown a previously created Competitive Analysis board of the top U.S. meat-producing companies. Students were able to see how the platform provides insights related to the search parameters. In addition to displaying each post identified, Sprout Social can aggregate the following data points: engagement, potential impressions, message volume, unique authors, and post sentiment.

We then asked students in the course to identify the parameters for an additional Competitive Analysis board about the Davis College. Working in groups, students completed a worksheet to identify the key components necessary to create a Competitive Analysis Board. The main considerations were to identify the primary competitors (e.g., colleges of agriculture in the region), relevant keywords (e.g., student success, research, agriculture), target social media platforms (e.g., Facebook, Instagram), geographic area of collection (e.g., United States), and any terms that may need assigned sentiment (e.g., positive, negative, neutral). After the groups discussed these topics, we had a class discussion to prioritize what parameters should be used when building the Competitive Analysis board. After the class session, we built the board using the comments from this discussion along with the notes from each group. Some additional refinements were made to the search queries to allow for the most pertinent content to be collected. Sprout Social began collecting data from that point forward and after 24 hours, it provided a 30-day backfill of information as well.

Results to Date & Implications

The Competitive Analysis board displayed content from the six universities students identified. In the following class session, we shared the results with students and discussed the key findings and how those might influence their content strategy. They were then asked to individually reflect on the class activity and answer two questions on an online instrument: What were your major takeaways from exploring the Competitive Analysis results? How might you apply the information from this competitor report in your campaign plans or communication strategies? Overall, students said they found the insights from the Competitive Analysis helpful, and they saw the potential applications for their class project to develop a strategic campaign. They also wanted more time to explore the capabilities of Sprout Social's listening software. Many students mentioned how important tools like this can be to help inform a social media campaign because the metrics help discover what competitors are doing and how they may need to adjust their communication strategy to be competitive.

Future plans/advice to others

Overall, this activity went well and will be implemented in future semesters. We may leverage other features in Sprout Social to help students see the social media metrics such as the Campaigns or Publishing options. Other options for future class examples might include listening case studies of commodity organizations or other example resources to share. We encountered several limitations when reviewing the insights. Students were not able to have direct access to explore the platform's dashboard due to our limited license. Sprout Social does have a shareable interactive report, but due to internet accessibility issues, it did not fully load for all students during class time. We presented the full report on the instructor's computer, which was projected on the large screen.

Costs & Resources Needed

Social media monitoring tools with extended listening capabilities are expensive. We worked with Sprout Social to find the best package to meet our needs and still have an over $10,000/year investment, which was provided via a research enhancement grant from the college dean's office. We can only have two "seats" and four "boards" at a time in the program. This means we have limited access and number of concurrent projects. Additional resources needed are computers, internet access, and strong Wi-Fi connections.

References

Kordzadeh, N., & Young, D. K. (2022). How social media analytics can inform content strategies. *Journal of Computer Information Systems*, *62*(1), 128–140. https://doi.org/10.1080/08874417.2020.1736691

Leal, A., Lawson, K. M., Telg, R. W., Rumble, J. N., Stedman, N. L. P., & Treise, D. (2020). Technically speaking: Technical skills needed for agricultural communication baccalaureate graduates. *Journal of Applied Communications*, *104*(3). https://doi.org/10.4148/1051-0834.2339

Stieglitz, S., Dang-Xuan, L., Bruns, A., & Neuberger, C. (2014). Social media analytics. *Business and Information Systems Engineering*, *6*(2), 89–96. https://doi.org/10.1007/s12599-014-0315-7

Sprout Social. (2024). Help Center: Introduction to listening. https://support.sproutsocial.com/hc/en-us/articles/115005498146-Introduction-to-Listening#:~:text=The%20Listening%20toolset%20has%20two,content%20and%20track%20brand%20health.

Torossian, R. (2023). What do PR firms look for in recent college graduates? *Recruiter*. https://www.recruiter.com/recruiting/what-do-pr-firms-look-for-in-recent-college-graduates/

Wagler, A., & Cannon, K. J. (2015). Exploring ways social media data inform public issues communication: An analysis of twitter conversation during the 2012-2013 drought in Nebraska. *Journal of Applied Communications*, *99*(2). https://doi.org/10.4148/1051-0834.1047

Young, L. E., Soliz, S., Xu, J. J., & Young, S. D. (2020). A review of social media analytic tools and their applications to evaluate activity and engagement in online sexual health interventions. In *Preventive Medicine Reports* (Vol. 19). Elsevier Inc. https://doi.org/10.1016/j.pmedr.2020.101158

Grade Expectations: A Paradigm Shift for Student Success

Jenny E. Bennett, M.Agr.
Colorado State University
Agricultural Education
College of Agricultural Sciences
301 University Avenue
Fort Collins, Colorado 80523-1101
Jennifer.Bennett@colostate.edu

Julie K. Lamarra, Ph.D
Utah State University
Technology, Design & Technical Education
College of Agriculture and Applied Sciences
6000 Old Main Hill
Logan, Utah 84322
Julie.Lamarra@usu.edu

Grade Expectations: A Paradigm Shift for Student Success

Introduction

The ungrading movement reimagines assessment in education, prioritizing holistic learning experiences over traditional grading systems using iterative, evolving, and democratic assessment processes (Blum, 2020). While the education system routinely explores novel instruction and assessment methods to enhance student learning, the global repercussions of the COVID-19 pandemic required educators to forge innovative solutions (Ferns et al., 2021; Pokhrel & Chhetri, 2021). One noteworthy strategy that emerged in educational literature, with potential longevity, is the concept of ungrading (Blum, 2020; Stommel, 2021). When implemented effectively, prior research supports that ungrading can increase student engagement, investment, performance, and learning independence (Spurlock, 2023; Strommel, 2021; Traini et al., 2023; Mansland, 2023). Additionally, ungrading can alleviate stress and anxiety while enhancing relationships between students and teachers (Ferns et al., 2021; Pokhrel & Chhetri, 2021). While a new concept in education, the ungrading strategy exhibits promising potential for widespread application across diverse domains and academic disciplines. This innovative idea explores using ungrading within the context of undergraduate courses.

How it Works

The ungrading movement seeks to revolutionize educational assessment and evaluation processes by prioritizing holistic learning experiences and student autonomy over traditional grading systems. At its core, ungrading encourages deep reflection from the instructor and the student. Students are asked to reflect on their learning processes, engage in self-assessment, and participate in constructive dialogues with educators. While the instructor practices robust feedback loops with the students and a continual examination of their implementation practice of ungrading, adjusting iteratively as needed through examination of data. This paper outlines the methodology of ungrading, comprising four phases: (1) Establishing the Framework, which involves clarifying expectations, fostering a collaborative classroom culture, and developing transparent assessment criteria; (2) Material Engagement, where students undertake reflective practices, receive constructive feedback, and engage in peer assessment; (3) Reflective Assessment, encompassing student self-assessment, dialogic negotiation with instructors, and a culminating reflection; and (4) Iterative Refinement, where educators reflect on the efficacy of ungrading, make adaptive adjustments, and enhance the learning experience for future cohorts.

Each phase contributes to the overarching goal of enhancing student learning and personal growth. Ungrading prioritizes learning over grades, process over product, and intrinsic motivation over extrinsic rewards, fostering a dynamic and responsive learning environment. Involving students in the assessment process through ungrading methods deepens their engagement with course material, cultivates critical thinking skills, and promotes lifelong learning. Together, these phases cultivate a dynamic, student-centered learning environment that prioritizes learning over grades, process over product, and intrinsic motivation over extrinsic rewards, ultimately fostering equitable, reflective, and engaged learning communities.

Results to Date

The authors' decision to implement the ungrading strategy was driven by their aspiration to enrich the classroom experience for students and themselves. After applying this strategy to various undergraduate courses in 2022 and 2023, they observed several positive outcomes. Notably, there was a noticeable increase in student morale and motivation, significantly improving the quality of weekly assignments and final projects. The dynamic between students and instructors underwent positive transformations, resulting in a less stressful and more productive learning environment. Teaching and developing coursework became less burdensome, and the learning process felt more organic. Students appreciated the ungrading approach's flexibility, allowing instructors to be more inclusive of various student circumstances. However, the implementation also presented challenges. Some students struggled with the heightened expectations for autonomy in determining their course grades. The use of extensive feedback and a complete or incomplete entry into the grading system proved anticlimactic for students who had invested considerable effort in weekly assignments. Lastly, the front-loading process of devising how to implement ungrading was time-consuming and varied for each student group. Despite these challenges, the authors recognize the potential benefits of the ungrading strategy in enhancing the overall educational experience and have continued to implement variations of the ungrading strategy based on reflective practice for their individual courses.

Advice to others

While ungrading holds promise in enhancing the educational experience, it's essential to recognize that it isn't a universal remedy for all educational challenges (Ferns et al., 2021). As Mansland (2023) highlighted, its effectiveness may vary across different contexts. Implementing ungrading demands careful planning and organization, emphasizing the need for a customized approach rather than a one-size-fits-all solution. Effective communication is critical, and educators should clearly articulate the grading plan to students, fostering transparency and understanding. It's worth noting that while introducing the concept, labeling it outright as "ungrading" might prove intimidating, particularly for undergraduate students who are often highly concerned about their grades due to factors such as scholarships, sports or club commitments, and the perceived impact on future employers' assessments of their academic performance (Ferns et al., 2021). Overall, with thoughtful planning and positive communication, ungrading has the potential to contribute positively to the educational landscape.

Costs

Implementing this innovative grading approach incurs minimal direct costs, primarily limited to the investment of educators' time. One nominal cost reported by one of the authors involved opting for a Calendly subscription, priced at $10.00 per month, streamlining the process for students to book office hours. It's worth noting that a free version of the Calendly app is also available. The financial implications associated with implementing this innovative approach situates ungrading as a feasible and accessible innovative strategy for educators.

References

Blum, S. (2020). *Ungrading: Why rating students undermines learning (and what to do instead)*. West Virginia University Press.

Ferns, S., Hickey, R., & Williams, H. (2021). Ungrading, supporting our students through a pedagogy of care. *International Journal for Cross-Disciplinary Subjects in Education*, *12*(2), 4500–4504. https://doi.org/DOI: 10.20533/ijcdse.2042.6364.2021.0550

Mansland, L. (2023). Ungrading: The joys of doing everything wrong. *Zeal: A Journal for the Liberal Arts*, *1*(2), 88–93.

Pokhrel, S., & Chhetri, R. (2021). A literature review on the impact of the COVID-19 pandemic on teaching and learning. *Higher Education for the Future*, *8*(1), 133–141. https://doi.org/10.1177/2347631120983481

Spurlock, S. (2023). Improving student motivation by ungrading. *Proceedings of the 54th ACM Technical Symposium on Computer Science Education V. 1*, 631–637. https://doi.org/10.1145/3545945.3569747

Stommel, J. (2021, April 6). Grades are dehumanizing, but 'ungrading' is no simple solution. *Times Higher Education.* https://www.timeshighereducation.com/campus/grades-are-dehumanising-ungrading-no-simple-solution

Traini, H., Joseph, K., & Velez, J. (2023). A Point-less Class: Ungrading in a graduate leadership course. *2023 National AAAE Poster Sessions*. American Association for Agricultural Education National Conference, Raleigh, North Carolina.

Incorporating Play-Based Learning Using LEGO® SERIOUS PLAY®

Haley Q. Traini, Oregon State University
Ehi-Kowochio B. Ogwiji, Oregon State University

108 Strand Agriculture Hall
Oregon State University
Corvallis, OR 97331
Haley.Traini@oregonstate.edu
Ehi.Ogwiji@oregonstate.edu

Incorporating Play-Based Learning Using LEGO® SERIOUS PLAY®

Introduction/Need for Innovation or Idea

As leadership education faculty at Oregon State University, it is important to offer dynamic, engaging, and meaningful learning experiences for our students that bolster student outcomes, spark student motivation, and align with university missions (Konopka et al., 2015). Crafting dynamic learning environments requires educators to utilize multiple and varied teaching strategies that lead to deeper levels of understanding (Bloom, 1956). Play-based learning, a dynamic form of active learning, has the potential to catalyze creativity and innovation (James & Nerantzi, 2019), kindle joy and motivation among students, and create opportunities to bridge theoretical knowledge with practical applications (Barnett, 2007), simultaneously enriching the learning experience (Sicart, 2014) and fostering student well-being (James & Nerantzi, 2019). A distinctive play-based learning approach is LEGO® SERIOUS PLAY® (LSP or the LSP Method), initially crafted for workplace contexts. LSP serves as a method to unveil challenges, overcome barriers, identify opportunities, and comprehend systems using LEGO bricks (Fearne, 2020). The essence lies not solely in the LEGOs themselves but in their role as tools for modeling, fostering creation, reflection, and subsequent discussion. Upon our discovery of the LSP Method in 2023, we actively integrated it into leadership education courses to provide students with an effective means of engaging with complex and sometimes elusive leadership concepts and practices.

How it Works

The LSP Method can be as straightforward or intricate as needed. Before facilitating it, ensure you acquire a variety of LEGOs in sufficient quantity to accommodate different group sizes, allowing for the selection of bricks that best suit various building challenges. Below are the fundamental steps for implementing the LSP Method. **Step 1:** Place a pile of LEGOs in front of individuals or a group. A skilled facilitator presents a question or prompt to initiate a "build challenge." **Step 2:** Participants quietly and independently construct their response to the question or prompt using LEGOs, employing metaphor and storytelling. The crucial aspect is giving tangible form to intangible ideas, concepts, or experiences. The focus is on creating something descriptive of a phenomenon, not building prototypes or models. **Step 3**: Individuals take turns sharing their models that address the initial question or prompt. No one is skipped, as the models are visible to everyone. Share-outs can be serious or lighthearted, involving group discussions, follow-up questions, and further processing. **Step 4:** Groups collectively process and engage in enriched conversations due to model sharing. The LSP Method typically includes multiple rounds of diverse build challenges and verbal sharing. The initial challenge can be an individual, pair, or small group activity, potentially involving iterations, revisions of models, or combining individual models to construct a more complex system.

Results to Date

During the 2023 academic year, we purchased several new and used LEGO sets and proceeded to utilize the LSP Methods in a variety of contexts and courses, each for a different purpose. The table below captures three ways we used the LSP Method in leadership contexts.

Table 1

LSP Applications in Leadership Contexts at Oregon State University

Context	Prompt	Photo
Students in an undergraduate introductory leadership course worked in small groups to explore a leadership theory (e.g., Servant, Adaptive, Situational). After completing a short in-class reading, they were asked to pull out one key idea from the reading to share with the class.	Build a model that captures the key insight you gleaned from the reading. Share with the class under the docucam. Then, pose a question for the class offering a critique or question about the theory by stating, "I wonder…"	
Seniors in a capstone leadership course for the Leadership Minor were asked to describe their leader identity and leadership journey thus far.	Build a model that captures your personal leadership journey and your current leadership identity.	
Professionals in the agriculture, natural resources, and forestry sectors who sit on a leadership academy advisory board convened for a yearly board meeting to discuss the current and future state of the Leadership Academy. This prompt served as the opening activity.	Select one prompt: 1. Create a model that captures why it was important for you to show up today. 2. Create a model that captures why student leadership development matters to you.	

Future Plans/Advice to Others

Whether the goal is to enhance understanding of complex biological structures in undergraduate biochemistry classrooms (Agrawal & Austin, 2023) or nurture the STEM interests of children (Williams, 2015), LEGO® SERIOUS PLAY® fits a wide range of learners. Since discovering this tool for teaching, we have used it in every class, at least once per term. We intend to utilize this in research as well, as a data collection tool as well as facilitating challenging conversation through our Extension activities. We also plan to take the LEGO® SERIOUS PLAY® training to become certified facilitators. However, if certification is not of interest, the LSP book (Fearne, 2020) is a great resource for learning about the method. We recommend the LSP methods for instructors who are hoping to build in engaging moments into their instruction, regardless of the subject or topic.

Costs/Resources Needed

Our current collection, though far from complete, has incurred a cost of approximately $150. One essential kit that we still want amounts to $755. While Legos may be pricey, the investment is worthwhile. You can find sets on the official LEGO website. Additionally, we utilize a few yards of repurposed green felt fabric as a mat to prevent Legos from sliding, aiding in keeping them together.

References

Agrawal, S., & Austin, S. (2023). An idea to explore: Augmented reality and LEGO® brick modeling in the biochemistry and cell biology classroom—two tactile ways to teach biomolecular structure-function. *Biochemistry and Molecular Biology Education, 51*, 439-445.

Barnett, L. A. (2007). The nature of playfulness in young adults. *Personality and Individual Differences, 43*(4), 949-958. http://doi:10.1016/j.paid.2007.02.018

Bloom, B. S. (1956). *Taxonomy of educational objectives. Handbook I: The cognitive domain*. David McKay.

Fearne, M. (2020). *The LSP method: How to engage people and spark insights using the LEGO® SERIOUS PLAY® method*. Lioncrest Publishing.

James, A., & Nerantzi, C. (2019). *The power of play in higher education: Creativity in tertiary learning*. Palgrave Macmillan.

Konopka, C. L., Adaime, M. B., & Mosele, P. H. (2015). Active teaching and learning methodologies: Some considerations. *Creative Education*, *6*(14), 1536-1545. http://doi:10.4236/ce.2015.614154

Sicart, M. (2014). *Play matters.* MIT Press.

Williams, K. (2015). A Smarter Way to Play: Einstein's Workshop is a techie community center [Pipelining: Attractive Programs for Women]. IEEE Women in Engineering Magazine, 9, 23-25. http://doi:10.1109/MWIE.2015.2408712

Matchmaker, Matchmaker: A Student Teaching Fair to Establish Teacher Candidate and Cooperating Teacher Relationships

Donavan Phoenix, Becky Haddad, Matt Kreifels, Nathan Conner, and Mark Balschweid
University of Nebraska-Lincoln

143 Filley Hall
P.O. Box 830947
Lincoln, NE 68583-0947
(507-316-9036)
dphoenix2@unl.edu

Matchmaker, Matchmaker: A Student Teaching Fair to Establish Teacher Candidate and Cooperating Teacher Relationships

Introduction

Teacher preparation programs view the time spent during the student teaching experience as the pinnacle (Miller & Wilson, 2010). To better prepare teacher candidates (TCs) for their next career step and support this vital experience, School-Based Agricultural Education (SBAE) researchers frequently conduct studies on best practices to place TCs with cooperating teachers (CT) in agricultural education (Edgar et al., 2011; Kasperbauer & Roberts, 2007a; Kasperbauer & Roberts, 2007b; Kitchel & Torres, 2007; Sweet Moore et al., 2023). The two primary components of this discussion are the relationship between TCs and CTs and the fit of the student teaching center. Norris et al. (1990, p. 58) found "the student teaching center and the supervising teacher are the most important ingredients in the student teaching experience."

A compatible relationship between TCs and CTs and the balance between the TC's needs and student teaching center amenities continues to challenge and test the matchmaking abilities of teacher educators. To help this process, we created an experience that let TCs at the [university] connect with CTs across [State]. The Student Teaching Fair allowed TCs to establish relationships with 36 different CTs and learn more about their student teaching centers in an informal networking environment.

We designed the Student Teaching Fair to build relationships between TCs and CTs and to help TCs decide on the best CT and student teaching center that fits their goals and personalities. We believe providing an informal opportunity for these two groups to connect was the best approach, as Jones et al. (2014) suggested.

How It Works

We held the inaugural Student Teaching Fair during the [State] Career Education Conference on June 7, 2023. We invited all cooperating teachers representing approved student teaching centers and introduced the Student Teaching Fair six weeks before the event. We informed teachers the concept was to provide preservice teachers the opportunity to interact with as many cooperating teachers as possible so they would have the opportunities available for them to grow as young professionals. We invited teachers to bring visual aids and/or printed material describing their agricultural education program, communities, facilities, and program strengths. We also assured them students were still expected to visit SBAE programs during the fall of their junior year as they determined their priority schools for potential student teaching placement. We asked teachers to RSVP to the Student Teaching Fair to help facilitate the planning and logistics needed during the conference and to indicate their availability and capacity to host a student teacher during the 2024-2025 academic year. During the Student Teaching Fair, [Department] Faculty and a CT who helped organize the event shared brief greetings. We spent the remainder of the time with CTs moving to posters describing their program (e.g., two-teacher program, animal lab, greenhouse, etc.). The Student Teaching Fair lasted 45 minutes and consisted of nine five-minute rotations. TCs visited with two CTs during each rotation before the CTs would move to a different poster, and the process would start again.

Results and Implications

The Student Teaching Fair included 13 preservice teachers, all enrolled in the [University's] [Department] Teacher Preparation Program, Agricultural Education option.

Additionally, 36 potential cooperating teachers and student teaching centers were represented at the event. A record number of preservice teachers attended the [State] Career Education Conference, largely because of the Student Teaching Fair.

We sent a questionnaire to all preservice teachers (N = 13) who attended the event to gauge the Student Teaching Fair's impact on the attendees. A response rate of 54% (n = 7) was achieved. Key findings from this survey suggested the Student Teaching Fair was successful. Participants responded to the statement, "*The Student Teaching Fair helped narrow my choices for student teaching center locations*," using a 6-point Likert scale (1 = *Completely False,* 2 = *Largely False,* 3 = *Somewhat False,* 4 = *Somewhat True,* 5 = *Largely True,* 6 = *Completely True*). The majority (57%, n = 4) indicated this was *Somewhat True,* and 29%, (n = 2) stated this was *Largely True,* while 14% (n = 1) responded *Largely False*. Additionally, all respondents (100%, n = 7) agreed the Student Teaching Fair provided opportunities to develop relationships with potential cooperating teachers. We asked participants to rank nine concerns related to considering a student teaching center; the concerns listed aligned with student concerns voiced in previous classes and conversations with [Department] faculty. The top concerns were potential cooperating teachers' approach to mentoring student teachers and student teaching center class topics. However, the greatest concern was the potential cooperating teacher's personality. We believe this result communicates the importance of providing opportunities for TCs to connect with CTs, showing support for our Student Teaching Fair and other informal networking events.

Future Plans and Advice to Others

We plan to facilitate and host the Student Teaching Fair annually, based on the responses we received and the success our event achieved. Our Student Teaching Fair and replications of the event can be improved based on the following recommendations. First, we recommend requesting participating potential CTs to create and then display visual advertising to share a glimpse of their student teaching center. Survey respondents noted videos or photos of student teaching centers would have given them a better idea of what the student teaching center was like and enabled them to ask more specific questions, gaining more valuable information. Secondly, we advocate for holding events like this in conjunction with a state teacher conference, just as ours did. This collaboration ensured potential CTs could conveniently participate while also providing numerous networking and professional development opportunities for TCs. However, options for funding TCs' attendance must be explored. We believe the high attendance at our Student Teaching Fair resulted from the sponsorship and funding our TCs received.

Costs and Resources Needed

We required preservice teachers to attend the [Organization] conference to participate in the Student Teaching Fair. Before planning this event, we recognized funding the cost of attendance was essential to maximize preservice teacher participation in the event. Therefore, we secured funding by partnering with the [State] Department of Education, which covered conference registration fees ($300/person); the State Teach Ag Results (STAR) Program, which covered the combined hotel and conference banquet costs (approximately $900); and our [University] [Department] department, which covered the remaining $80. The other resources needed for the Student Teaching Fair included hours spent planning and organizing the event and participation from the 36 cooperating teachers. We estimate that [Department] faculty spent five hours planning, organizing, and participating in the Student Teaching Fair.

References

Edgar, D. W., Roberts, T. G., & Murphy, T. H. (2011). Exploring relationships between teaching efficacy and student teacher – cooperating teacher relationships. *Journal of Agricultural Education, 52*(1), 9-18. https://doi.org/10.5032/jae.2011.01009

Jones, C. K., Kelsey, K. D., & Brown, N. R. (2014). Climbing the steps toward a successful cooperating teacher/student teacher mentoring relationship. *Journal of Agricultural Education, 55*(2), 33-47. https://doi.org/10.5032/jae.2014.02033

Kasperbauer, H. J., & Roberts, T. G. (2007a). Influence of the relationship between the student teacher and cooperating teacher on student teacher's decision to enter teaching. *Journal of Agricultural Education, 48*(1), 8-19. https://doi.org/10.5032/jae.2007.01008

Kasperbauer, H. J., & Roberts, T. G. (2007b). Changes in student teacher perceptions of the student teacher-cooperating teacher relationship throughout the student teaching semester. *Journal of Agricultural Education, 48*(1), 31-41. https://doi.org/10.5032/jae.2007.01031

Kitchel, T., & Torres, R. M. (2007). Possible factors in matching student teachers with cooperating teachers. *Journal of Agricultural Education, 48*(3), 13-24. https://doi.org/10.5032/jae.2007.03013

Miller, G., & Wilson, E. B. (2010). Designing field-based and experiential education for preservice teachers in agriculture. In R. M. Torres, T. Kitchell, & A. L. Ball (Eds.), *Preparing and advancing teachers in agricultural education* (pp. 131–141). Curriculum Material Service, The Ohio State University.

Norris, R. J., Larke, A., Jr., & Briers, G. E. (1990). Selection of student teaching centers and cooperating teachers in agriculture and expectations of teacher educators regarding these components of a teacher education program: A national study. *Journal of Agricultural Education, 31*(1), 58-63. https://doi.org/10.5032/jae.1990.01058

Sweet Moore, P., Coleman, B., Young, H., Bunch, J., & Jagger, C. (2023). Preservice teachers' perceptions of important elements of the student teaching experience. *Journal of Agricultural Education, 64*(1), 171-183. https://doi.org/10.5032/jae.v64i1.36

Innovative Idea

Next-Gen Marketers: Exploring the Use of ChatGPT to Create Online Marketing Content

Courtney Meyers, Ph.D.
Professor
Department of Agricultural Education & Communications
Texas Tech University
courtney.meyers@ttu.edu

Next-Gen Marketers: Exploring the Use of ChatGPT to Create Online Marketing Content

Introduction/Need for Innovation

Within the broad context of artificial intelligence (AI), generative AI (GenAI) refers to AI models that can "generate human-like text, graphics, audio and videos" (Anisin, 2023, para. 4). GenAI tools provide communications professionals with the potential to generate more ideas, tailor writing for specific audiences, customize content for different platforms, and much more (Gomez, 2023). Although student use of GenAI raises concerns, the reality is that these types of tools are being widely adopted by industry and students should gain experience using them (Peres et al., 2023). One specific example of GenAI is ChatGPT, which is an online chatbot that generates text in response to a user's prompts (OpenAI, 2023). According to a study from Resume Builder (2023), 90% of companies said ChatGPT experience is a beneficial skill they look for in employees. With the potential applications of GenAI in communications and marketing roles, students who aspire to these positions should gain experience using them. This poster describes an activity in a senior-level agricultural communications course that allowed students to explore the potential of using ChatGPT to create online marketing content.

How it works/steps

During the class session before this activity, I assessed how many students already had a ChatGPT account and all but 3 of the 46 students indicated they did. To help students explore the capabilities of ChatGPT in online marketing efforts, I developed 16 prompts. Groups of three students received the same prompt to enter into the program then compare responses. All the prompts were to create content for online marketing efforts on behalf of the department and/or agricultural communications major. This allowed students to judge the authenticity and accuracy of the created content. Some examples of the prompts were:

- Create an Instagram post that provides advice for students in the agricultural communications program. Include three main points for a carousel and a caption no more than 100 words long.
- Write a LinkedIn post that describes the major skills students learn in the agricultural communications program.
- Outline content for an email marketing campaign geared toward prospective agricultural communications students. This content should also contain suggestions for five email subject lines.

After experimenting with ChatGPT, students completed an activity worksheet in which they provided ChatGPT's content and answered reflection questions about the quality of content; strengths and weaknesses of the platform; and how they might use this tool in the future.

Results to date/implications

Based on the student reflections, this activity helped them recognize the potential of using ChatGPT to complete tasks relevant to online marketing. Several students noted the content provided was well-written and better than they expected. One said the content was so good it could be used as is, which was both "cool and scary all at the same time." They commented that this tool would be helpful in the brainstorming phase when struggling with creativity or needing to spark ideas. ChatGPT could also save time in generating many ideas or summarizing information. From the reflections, it was apparent many students had used the tool for ideation purposes in the past. One student who said she had little experience using ChatGPT before this

activity wrote that she knew students were "using it to help them with school work, but never with a job or creating content so I thought it was helpful it was able to do that."

Despite the potential of the platform, students did note several limitations of using ChatGPT, typically regarding the potential inaccuracy of the provided content and the need to fact check. Others said the content sounded "robotic" and "impersonal;" lacked authenticity; and it may "sound fake, failing to encompass your brand's identity." Many students wrote that the responses given were generic and would require more "tweaking" to be used. One student commented: "I also think there is a lack of humanity and emotion to the content ChatGPT spits out." Interestingly, some students noted they are hesitant to use ChatGPT too much because it does not feel like they did the actual work. Others were critical of using this tool and noted that using ChatGPT "could ruin your reputation" so it should be used with caution because it takes away from the credibility of the work. One student noted that the tool may help people get a job when they really do not have the necessary skills or ability.

Students often acknowledged that ChatGPT can be a "double-edged sword." One student wrote: "I think it is effective in the sense of getting past writer's block and opening up your mind to new creations. On the contrary, I find it really hard to want to implement it in our world and profession. I feel like it takes away from us as communicators when a robot is able to spit things out that we are going to school to learn how to strategically do."

It was evident students have considered the impact ChatGPT and similar GenAI tools might have in their future careers. One student helped convey this: "I learned that it can be a helpful tool when used correctly. Whether we embrace it or not, AI is becoming increasingly integrated into company communications. It's wiser to embrace and master its usage than to overlook its potential. I intend to refine my skills in leveraging its capabilities."

Future plans/advice to others

Communications professionals are embracing GenAI tools such as ChatGPT to help them complete a variety of tasks. It is important agricultural communications students are able to recognize the benefits and risks of these tools so they are prepared to use them effectively and ethically in the future. Within this class, we will continue to use ChatGPT as a resource while emphasizing the need to think critically about its application. This activity was scheduled to take 30 minutes of class time, which was a good length of time for students to experiment with the prompts and evaluate responses with group members. They completed the reflection questions after the class ended. In the future, additional time is recommended so students can review the responses from other groups who had different writing prompts and have a general discussion about using this platform. Others teaching similar courses should discuss leveraging GenAI tools for content creation to help students become career ready.

Costs/resources needed

ChatGPT is free with paid options to upgrade. It can be used on any device with internet access. The platform does occasionally have issues loading during high traffic times. The only additional resource was the list of prompts students used to experiment with the platform. Chat GPT could even be used to write these initial prompts.

References

Anisin, A. (2023, August 17). Generative AI for content creation: How marketers can use it. *Forbes*. https://www.forbes.com/sites/theyec/2023/08/17/generative-ai-for-content-creation-how-marketers-can-use-it/?sh=635f981a619e

Gomez, R. (2023, May 31). How AI is changing communications and PR: Risks and benefits. *Sprout Social.* https://sproutsocial.com/insights/ai-in-communications-pr/

OpenAI. (2023). *Introducing ChatGPT.* https://openai.com/blog/chatgpt

Peres, R., Schreier, M., Schweidel, D., & Sorescu, A. (2023). On ChatGPT and beyond: How generative artificial intelligence may affect research, teaching, and practice. *International Journal of Research in Marketing, 40*(2), 269–275. https://doi.org/10.1016/j.ijresmar.2023.03.001

Resume Builder. (2023, February 20). *1 in 4 companies have already replaced workers with ChatGPT.* https://www.resumebuilder.com/1-in-4-companies-have-already-replaced-workers-with-chatgpt/

Podcasting as an Approach for Preparing Preservice Agriculture Teachers to Teach Controversial Topics

Chaney Mosley, Ph.D.
Chaney.mosley@mtsu.edu
615-904-8037
Middle Tennessee State University
Box 5
Murfreesboro, TN 37132

Podcasting as an Approach for Preparing Preservice Agriculture Teachers to Teach Controversial Topics

Introduction / Need for Innovation

Controversial topics in agriculture encompass a wide range of issues that elicit diverse perspectives and debates. Examples of controversy in agriculture include pricing and allocation of water resources for agricultural use (Fernández et al., 2019) and farming styles, such as conventional versus organic methods, the use of antibiotics, and practices like dehorning cattle (Meijboom & Stafleu, 2015), among others. Teaching secondary agriculture students about controversial issues is important for cultivating critical thinking, fostering a deeper understanding of complex agricultural challenges, and preparing them to navigate diverse perspectives (Yacek, 2018). Further, exposure to controversial issues in agriculture provides students with the opportunity to explore the ethical dimensions of agriculture, understand the societal impact of agricultural policies, and develop a sense of social responsibility within the agriculture industry (Levinson, 2006). While exploring controversial topics in agriculture can enhance students' research and analytical skills (Crawley, 2007), teachers may feel they lack the skills to teach controversial topics effectively, leading to avoidance of such issues in the classroom (Kuş & Öztürk, 2019). Teachers may struggle to find appropriate approaches to address controversial topics (Meral et al., 2022), as the dynamic nature of teaching controversial issues, which involves understanding scientific concepts, social ramifications, and developing skills for evaluating evidence, can pose challenges for educators (Cross & Price, 1996) such as concerns about conflicts that may arise in the classroom (Hung, 2019), particularly topics with predetermined and solid student perceptions (Papadimas et al., 2022), as can be the case in agriculture. While guided group discussion is a viable technique for teaching about controversial agricultural topics (Mosley et al., 2021), podcasting is another approach that can enhance students' motivation and interest in learning, as it offers a dynamic and alternative approach to traditional teaching methods (Salmerón et al., 2020). Creating podcasts can promote active listening and comprehension of diverse viewpoints, contributing to students' ability to critically evaluate and integrate multiple perspectives on controversial topics (Salmerón et al., 2020) while empowering students to take ownership of their learning and contribute to the educational process (Alastuey & Nemeth, 2020). Therefore, preservice agriculture teachers created a podcast series about controversial agriculture issues. This assignment aimed to ensure undergraduate agricultural education students were better prepared to teach controversial topics.

How It Works / Methodology

Students identified a controversial topic in agriculture for the purpose of creating a podcast. dichotomous key, created by the instructor, was used to help students understand characteristics of controversy and determine if their chosen topic was actually controversial. After receiving instructor approval, students created an interview protocol and identified one guest to speak on each side of the controversial topic (2 total guests); students had to establish the credibility of each guest. Each episode was required to have a teaching guide. The teaching guide provided learning objectives, open-ended questions as a formative assessment before listening, prompts (i.e. multiple choice, fill in the blank, or short answer questions) to be completed while listening, and an open ended-question and scoring rubric for each learning objective as a summative assessment. The final podcast incorporated sound effects to help engage the listener. Students maintained a balance of supporting and opposing perspectives, where no side of the controversy

received more than 3 minutes of attention than the other. As the podcast host, students remained neutral on the topic throughout the episode. *Spotify for Podcasters* was the platform chosen for production because it offered an all-in-one approach where individuals can create and distribute their podcast from an app or website at no cost. The goal was to have students consume and produce information on a controversial topic while addressing opposing viewpoints such that listeners could form their own opinions on the topic rather than be coerced.

Results to Date / Implications

This assignment began in the fall of 2020 in an undergraduate course required for agricultural education students and has continued each fall semester since. To date, four seasons of the podcast have been produced with a combined total of 37 podcasts, each addressing a different controversial topic. The total number of all-time plays (the number of times an episode was streamed for at least 60 seconds or downloaded) is 1,550. There are 46 individual followers of the podcast, each episode has been played, on average, 10 times, across eight countries, with 83% of plays occurring in the United States. The podcast streams across six platforms; Apple Podcasts is the most popular (38.8% of plays). Most listeners are female (57.7%) aged 18-22 (34.9%). The most popular podcast topic is Livestock Showing, which has been played 189 times and the least popular topic is Foie Gras, which has been played 8 times; however, it should be noted that earlier podcasts have been on the platform longer and received more exposure.

Future Plans / Advice to Others

Each year, the quality of podcasts produced improves as a result of refining expectations and level of student support provided. Future plans include: (1) explicitly aligning the project with Kolb's experiential learning theory by adding a reflective component to the assignment to reinforce the application of a learning theory; (2) offering professional development to in-service teachers who would like to incorporate the strategy in their classrooms; and (3) conducting a research project to identify aspects of the project valued by students and how, if any, the project enhances learning and facilitates conceptual change. Three pieces of advice for others are: (1) protect instructional time by creating a "need to know" for students by not teaching them how to use the platform but providing resources, such as links to YouTube videos, so they can teach themselves; (2) have students listen to a high quality podcast and a low quality podcast, in terms of content and production, to help them operationalize expectations; and (3) generate a list of topics that are not allowed and a list of topics to choose from in order to discourage selecting a topic that is easy and already well understood (e.g. rodeos or spaying and neutering) and help stretch their understanding of agriculture with topics about which they are not aware.

Costs / Resources Needed

Funding was initially provided through a National FFA Alumni and Supports grant to the Collegiate FFA Chapter. Resources included: (a) a podcast studio ($1,600); (b) a laptop dedicated to storing podcast data files ($1,200), and (c) a subscription to a podcast music/sound effects platform ($796) for a total of $3,596. However, after discovering the *Spotify for Podcasters* platform, there is no longer a need for a podcast studio, computer, and music/sound effects subscription. This makes incorporating this idea into a course more accessible at both the undergraduate and secondary levels as long computer and internet access is available.

References

Alastuey, M. and Nemeth, K. (2020). Quizlet and podcasts: Effects on vocabulary acquisition. *Computer Assisted Language Learning*, *35*(7), 1407-1436. https://doi.org/10.1080/09588221.2020.1802601

Crawley, C. (2007). Localized debates of agricultural biotechnology in community newspapers: A quantitative content analysis of media frames and sources. *Science Communication*, *28*(3), 314-346. https://doi.org/10.1177/1075547006298253

Fernández, M., Barrena-González, J., Alfonso-Torreño, A., Ramírez, R., & Keesstra, S. (2019). The problem of water use in rural areas of southwestern Spain: A local perspective. *Water*, *11*(6), 1311. https://doi.org/10.3390/w11061311

Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT press.

Levinson, R. (2006). Towards a theoretical framework for teaching controversial socio-scientific issues. *International Journal of Science Education*, *28*(10), 1201-1224. https://doi.org/10.1080/09500690600560753

Meijboom, F. and Stafleu, F. (2015). Farming ethics in practice: From freedom to professional moral autonomy for farmers. *Agriculture and Human Values*, *33*(2), 403-414. https://doi.org/10.1007/s10460-015-9641-8

Mosley, C., Broyles, T., & Scott, J. (2021). Teaching agriculture-specific controversial issues through guided group discussion. *Journal of Southern Agricultural Education Research, 70*(1), 1-17.

Salmerón, L., Sampietro, A., & Delgado, P. (2020). Using internet videos to learn about controversies: Evaluation and integration of multiple and multimodal documents by primary school students. *Computers & Education*, *148*. https://doi.org/10.1016/j.compedu.2019.103796

Yacek, D. (2018). Thinking controversially: The psychological condition for teaching controversial issues. *Journal of Philosophy of Education*, *52*(1), 71-86. https://doi.org/10.1111/1467-9752.12282

Principal Professional Development at Florida FFA Convention and Expo

Cassandra Goff
University of Florida
P.O. Box 110540
Gainesville, FL 32611-0540
goffc@ufl.edu

R. G. (Tre) Easterly III
University of Florida
tre.easterly@ufl.edu

Brian E. Myers
University of Florida
bmyers@ufl.edu

Principal Professional Development at Florida FFA Convention and Expo

Introduction

The success of a school-based agricultural education (SBAE) program can be improved with a positive and collaborative relationship with the administrative team at that school. High school principals' attitudes affect factors that influence school climate and school achievement (Rayfield & Wilson, 2009). According to Robinson (2011), leaders require the constant integration of policy connection to practice with achievable goals, so that action informs planning as well as planning informing action. Administrators are the leaders in school settings. As leaders, they are tasked with developing policies. These policies guide the goals for the school. If administrators are not aware of the needs or processes of a SBAE program, integration is much more difficult. Positive relationships help align the goals of the administrator and the agriculture teacher to meet the needs of students.

Principals tend to have a positive attitude toward SBAE and agriculture teachers and the achievements of their students (Smith & Myers, 2012). Student achievement was also linked to funding decisions in these situations. Smith and Myers (2012) also suggested representative agriculture educators from model programs should attend conferences so principals can see the benefits of agricultural education on students. According to Easterly et al. (2023), leadership practices of principals support the culture of exemplary SBAE programs. Professional development and educational opportunities focused on agricultural education programs should be made available for principals to learn more about the value of SBAE (Easterly et al., 2023; Rayfield & Wilson, 2009; Smith & Myers, 2012). Principals found increasing their knowledge of SBAE programs aided in the development of trust-focused relationships with the agriculture teachers.

Constraints on time and resources present barriers to developing relationships between administrators of various levels and SBAE agriculture educators. Providing a professional development event at a state level FFA event for administrators to attend eliminates one of these barriers while providing an opportunity for collaborative efforts. The two objectives of the professional development were to find common alignment with SBAE and their goals for the school and to implement strategies for supporting SBAE programs. If administrators attend professional development about agriculture education programs, they can see where goals align and create supportive policies.

How it Works

Agriculture educators received an email from the Florida list-serve inviting their administrators to attend the professional development during Florida FFA Convention. Administrators usually attend state convention with the agriculture educator to help chaperone students or to allow them to experience a state level FFA event. Providing a professional development designed specifically for principals and administrators at this event will allow these leaders to learn more about FFA and SBAE as well as interact with other leaders to collaborate working models in excellent programs around the state. This professional development was a two-hour, one-time session offered during the convention by Agriculture Education Faculty from the University of Florida. Agenda items for discussion included: major goals of agriculture education, Roberts and Ball (2009) conceptual model for agricultural subject matter as a content and context for teaching by focusing on the goals of SBAE, three circle model of agriculture education, other factors

(hands-on instruction, connection with a meaningful adult, practical application of concepts learned in other courses, leadership and other non-technical skills), group discussions (alignment between school and agricultural education, how agriculture education can help students accomplish goals, what can principals do to support these programs) and industry certification discussions (purpose of industry certifications, part of the agriculture education program without limiting other parts of the program).

Results to Date

To date, 32 administrators have participated in the professional development offered for principals at the Florida FFA Convention and Expo. Following the professional development, participants were asked to reflect on their training and offer feedback. This feedback was generally positive and included the following comments captured, “It gave me an opportunity to share and learn from others in the field” as well as “I loved the panel with the principals and ag teachers sharing what worked for them.” This professional development has been delivered for the past three years, 2021, 2022 and 2023. Over the three years, the administrators’ knowledge of SBAE programs, where to find support resources and how to support agriculture educators has increased. Offering this professional development has allowed administrators of all levels to better understand SBAE programs and the duties of agriculture educators.

Future Plans/Advice to Others

The participants of the previous two years suggested hosting breakout rooms for deeper discussion in smaller groups. This could facilitate the needs of different types of administrators attending this professional development such as high school and middle school principals and assistant principals, CTE directors, and college and career specialists. Another suggestion from the administrators’ feedback was to visit a model school to see parts of programs such as animal housing and welding.

This workshop will continue to be offered in conjunction with the Florida FFA Convention. We hope to provide differentiated professional development to administrators with various experience levels related to agricultural education. We would also like to share resources with other state associations who would benefit from hosting similar workshops. The biggest benefit to other states wanting to offer a professional development similar to this would be to invite a wide range of types of administrators. There are usually several levels of supervisors that oversee SBAE programs but many of them may not have experience or may not completely understand what all the moving parts of a program entails. Giving administrators a space to learn and interact with others would be beneficial for a first year professional development.

Resources Needed

Professional development opportunities can be created and delivered at little to no monetary cost. If a program has funding for hard materials like handouts, poster paper, writing utensils, and refreshments for participants, these are some examples of support resources that can be included in this professional development.

The major input for this activity is time and energy to develop the agenda and discussion topics. Organizing a panel of agriculture educators and their administrators is another input for the resources that can be used. Previously there have been 2-3 facilitators required for this professional development.

References

Easterly, R. T., Ferand, N., Myers, B., & Galindo, S. (2023). Examining how principals support school-based agricultural education programs. *Journal of Agricultural Education*, *64*(2), 162-175. https://doi.org/10.5032/jae.v64i2.113

Rayfield, J., & Wilson, E. (2009). Exploring principals perceptions of supervised agricultural experience. *Journal of Agricultural Education, 50*(1), 70-80. https://doi.org/10.5032/jae.2009.01070

Roberts, T. G., & Ball, A. L. (2009). Secondary agricultural science as content and context for teaching. *Journal of Agricultural Education*, *50*(1), 81–91. https://doi.org/10.5032/jae.2009.01081

Robinson, V. (2011). *Student-centered leadership.* Jossey-Bass.

Smith, A. G., & Myers, B. E. (2012). Perceptions of Florida secondary school principals toward agricultural education. *Journal of Agricultural Education*, *53*(3), 154-165. https://doi.org/10.5032/jae.2012.03154

The $100 Solution: A Service-Learning Project for Students Enrolled in an Undergraduate Agricultural Leadership Course

Lucas D. Maxwell, Ph.D.
Illinois State University
Department of Agriculture
147 Ropp Agriculture Building
Normal, IL 61790
ldmaxwe@ilstu.edu

Jay K. Solomonson, Ph.D.
Illinois State University
Department of Agriculture
140 Ropp Agriculture Building
Normal, IL 61790
jksolom@ilstu.edu

The $100 Solution: A Service-Learning Project for Students Enrolled in an Undergraduate Agricultural Leadership Course

Introduction

Due to the nature and diversity of the discipline, secondary and post-secondary instructors of agriculture often use a variety of teaching methods and instructional strategies within their courses (Talbert et al., 2022). Some of the most commonly applied methods in agricultural education include lectures, demonstrations, guest speakers, field trips, discussions, case studies, inquiry-based instruction, and experiential learning activities (Blackburn & Stair, 2022). One form of experiential learning frequently used, known as service-learning, was developed as a means to intertwine the principles of civic engagement and the educational process (Binard & Leavitt, 2000). While not necessarily a new idea, service-learning as a teaching method continues to evolve and is increasingly being implemented in our agricultural education programs (Roberts & Edwards, 2015).

Roberts et al. (2019) defined the service-learning method as a "form of reciprocity in which students extend classroom learning into society to resolve communal problems while also accruing distinct benefits for all members" (p. 37). Further, researchers have reported many benefits to using this method of instruction such as the development of teamwork, leadership, and communication skills in their students (Lemons & Strong, 2016, Meyers et al., 2014; Robinson & Torres, 2007). While there are many advantages of using this method of instruction, one disadvantage has been the lack of a clear instructional framework for educators to use in planning, implementing, and evaluating their service-learning projects. This was the case until we learned about the $100 Solution service-learning project model.

How it Works

The $100 Solution project utilizes course learning objectives combined with the five principles of service-learning to answer a central question for students: with a $100 bill, what can you do to enhance the quality of life for others? The $100 Solution teaches students to ask what they can do rather than self-determining the needs of others. Further, it demonstrates that many social problems exist that can be solved with small amounts of money, or rather, by even thinking beyond monetary solutions to make a difference in their communities.

The $100 Solution model incorporates the following five principles of service-learning: partnership, reciprocity, capacity building, sustainability, and reflection (English, 2014). English (2014) denoted both the students and community partner should work closely together to determine the needs and assets of the organization, plan and implement solutions, and evaluate efforts. Further, the students involved, and community partner should both benefit from the chosen service-learning activity. While this will look different for each project, the ultimate goal is for each party to learn and grow personally and professionally (Jacoby, 2003). Regarding capacity building, English (2014) emphasized helping the community partner learn and become self-sufficient so the project can continue beyond the time the students are involved. Related to self-sufficiency, the project should also be sustainable with a lasting impact (English, 2014). Finally, unlike basic volunteerism, a continued oral and/or written reflection component should be used as a tool for awareness, deeper understanding, analysis, and interpretation in order to transform the experiences into meaningful learning for the students (English, 2014).

At our institution, the $100 Solution project is incorporated into our AGR 391 Team & Organizational Leadership, Communication, and Change course taught each spring semester. This is a required course for all students majoring in Agricultural Teacher Education and Agricultural Communication and Leadership and is offered as an elective for all other agriculture majors. At the beginning of the semester, the students in the course are divided into groups of 4-6 students, depending on class enrollment. Each group then identifies a community partner in which to volunteer their time and work with. During the time volunteering, the group identifies a specific need of the organization or agency and works with them to find a sustainable solution for their problem. The students will then develop a proposal that incorporates the five principles of service-learning and make a presentation to the class. If their proposal is approved, their group is awarded $100 which is used to fund supplies and materials for their project. The students then implement their project throughout the semester. Finally at the end of the semester, each student completes a written reflection assignment, and the group collectively creates a poster presentation, which is then presented during an open house during one of the final class sessions.

Results and Implications

This course has been offered for six semesters at Illinois State University and during that time, nearly 100 students have partnered with 14 different community organizations. Community partners have included local municipalities, assisted living centers, museums, and a food insecure family, just to name a few. One semester, a student team partnered with the Town of Normal, the Little Library company, and several local libraries to provide the community easier access to books, especially for younger children. Throughout the project the team had to overcome numerous issues including obtaining permission to place the little library along a popular local recreation trail, building the actual little library, and finding libraires and individuals to donate books to stock the library. Throughout this process the students were guided by the five principles of service-learning discussed above and applied leadership, communication, and change theories discussed in the course. In reflecting on the experience, one student stated, “I learned not only about working with others, but also about myself. I learned how to be a better teammate, as well as how to keep a level head. I see this project as something to be proud of, as when we first started it seemed an impossible, gargantuan task, but slowly piece by piece we were able to overcome.”

Future Plans and Advice to Others

We plan to continue to utilize this service-learning framework during future offerings of our AGR 391 course. When implementing this project, it is critical to provide the student teams with adequate guidance and resources to help them identify potential community partners and to plan and implement their projects without being overly prescriptive. We recommend pushing students to first identify a partner that aligns with their interests and then, collaboratively, identify a problem or issue they face and work to find a solution.

Costs and Resources Needed

Beyond the $100 budget for each team, the only other direct costs associated with this project have been the printing of posters for the final presentation. We have been lucky that our department alumni association has been willing to support this course project each year. Campus offices that support service learning, civic engagement, and sustainability could all be a useful resource to fund project ideas.

References

Binard, K., & Leavitt, L. H. (2000). *Discovering leadership through service: A workbook on integrating service learning into leadership curriculum*. Rocky Mountain Press.

Blackburn, J., & Stair, K. (2022). Developing instructional methods. In Thoron A. C., & Barrick R. K. (Eds.), *Preparing agriculture and agriscience educators for the classroom,* IGI-Global. doi:10.4018/978-6684-3420-8

English, A. (2014). *Service-learning through the $100 solution*. THDS Press.

Jacoby, B. (2003). *Building partnerships for service-learning.* Jossey-Bass.

Lemons, L., & Strong, J. (2016). Developing teamwork and team leadership skills through service learning. *The Agricultural Education Magazine, 89*(1), 18–19. https://www.naae.org/profdevelopment/magazine/archive_issues/Volume89/2016%2007%20--%20July%20Aug.pdf

Meyers, C., Lemons, L., & Hock, G. (2014). Implementing service-learning best practices from agricultural leadership education. *Journal of Higher Education Outreach and Engagement, 18*(3). 159–161.

Roberts, R., & Edwards, M. C. (2015). Service-learning's ongoing journey as a method of instruction: Implications for school-based agricultural education. *Journal of Agricultural Education, 56*(2), 217–233. https://doi.org.10.5032/jae.2015.02217

Roberts, R., Edwards, M. C., & Ivey, T. A. (2019). Planned behavior typologies of agricultural education teacher educators regarding service learning as method of instruction: A national mixed methods study. *Journal of Research in Technical Careers, 3*(2), 36–58. https://doi.org.10.9741/2578-2118.1062

Robinson, J. S., & Torres, R. M. (2007). A case study for service-learning: What students learn when given the opportunity. *NACTA Journal, 51*(4) 2–8. https://www.nactateachers.org/attachments/article/225/Robinson_and_Torres_Dec07Journal.pdf

Talbert, B. A., Croom, B., LaRose, S. E., Vaughn, R., & Lee, J. S. (2022). *Foundations of agricultural education* (4th ed.). Purdue University Press.

WoW Ambassadors- Promoting Welding Education and Careers

Kenedy Kornegay
Texas State University
601 University Dr.
San Marcos, TX. 78666
512-245-2130
klk212@txstate.edu

Ryan G. Anderson
Texas State University
601 University Dr.
San Marcos, TX. 78666
512-245-3325
r_a461@txstate.edu

Bradley Borges
Texas State University
601 University Dr.
San Marcos, TX. 78666
512-245-2130
b_b518@txstate.edu

WoW Ambassadors- Promoting Welding Education and Careers

Introduction

Mentoring programs for youth have become increasingly popular and widespread. Researchers often reported positive relationships and outcomes resulting from mentoring programs (Scogin & Stuessy, 2015; Garcia-Melgar & Meyers, 2020). Some of these positive relationships and outcomes with mentors encourage students to enroll in Science, Technology, Engineering and Mathematics (STEM) courses and programs; consider career choices in these disciplines; and improve students' engagement, retention, content knowledge, and attitudes toward STEM subjects and courses (Bowling et al., 2015; Scogin & Stuessy, 2015; Cutucache et al., 2016). Therefore, it is critical to increase the number of female-driven mentorships in the welding industry. This innovative idea describes the creation and implementation of the Women of Welding (WoW) ambassadors. The purpose of the WoW ambassadors is to encourage women to pursue educational and career opportunities in the welding industry.

How It Works

The WoW Series is a grant funded project that has two major components, the first component of the project is the creation of a WoW camp for high school girls interested in the welding industry. The five-day camp is designed to provide a safe environment, where campers can extend their knowledge and perfect their welding skills under the guidance of women from the welding industry. Campers learn a new welding process each day through a lecture and laboratory practice in the morning, career spotlight speakers at lunch, application activities in the afternoon, and keynote speakers at night. The second component of the project and the focus of this innovative idea is the creation of WoW ambassadors. A call for WoW ambassadors was put out by the project directors (PD) in the agricultural mechanics classes and related clubs. The WoW ambassadors must be female, pursuing an agricultural-related degree. Individuals submitted applications and were selected based on prior welding knowledge and communication skills. Through this project, WoW ambassadors worked with the PD on the planning and development of the WoW camp. Leading up to the camp, WoW Ambassadors assisted with recruitment through social media, flyers, national listservs, and recruiting at major agricultural mechanics event throughout Texas. After the application deadline, WOW ambassadors selected 28 girls to attend the camp. During this process, the ambassadors focused on the campers' welding experience and future plans. In addition to the recruitment and selection process, ambassadors helped create and plan the camp schedule. This involved finding and contacting female guest speakers in the welding industry to build a sense of belonging.

During the week of the WoW camp, the ambassadors managed the registration table and greeted the campers while the project directors met with parents/chaperones to ensure all paperwork was complete. The ambassadors assisted with the daily logistics including confirming all participants were on the bus to and from campus, setting up supplies and machines as welding processes changed. The ambassadors also led some of teaching demonstrations and assisted

participants who needed individualized assistance. The ambassadors worked diligently to coordinate meals and snacks on campus and at the hotel by setting up, clearing, and cleaning. The ambassadors serve as a point of contact for personal and private needs of the campers, and overall time management of the camp. Furthermore, ambassadors lead a college panel discussion for the participants to learn about college life as a possible education path. Ambassadors then stayed every night during the campers' free time at the hotel in case of emergency. Ambassadors conducted bed checks nightly to confirm the campers were in their assigned hotel rooms.

Results to Date

Four undergraduate agriculture majors were selected to serve as 2022 WoW ambassadors. One graduate and two undergraduate students were selected in 2023, with two returning from 2022. The ambassadors assisted with the application development, distribution, recruitment, manage social media, and camp operations. The ambassadors reviewed applications and personally contacted applicants to inform them of their status. The ambassadors interacted with every secondary female that participated in the major agricultural mechanics events held in the spring of 2022 and 2023. The number of participant applications has increased over the past two years and the number of students interested in pursuing a degree at Texas State University has increased.

Future Plans/Advice to Others

The funding for the WoW camp and WoW ambassadors expired at the end of 2023. Pursuit of external funding is ongoing and if unsuccessful, funding for future WoW camps will be shifted to a $2,000 camp registration fee per camp participant. We recommend that future camp participants pursue an industry supported scholarship to attend the camp. We have had multiple industry partners who have indicated that they are interested in providing scholarships for participants. We have accounted for an increase in the number and amount of WoW ambassador scholarships and travel stipends in the camp fee to ensure the ambassadors continue to receive financial support for the considerable time and impact that they provide to the camp’s success. We recommend others create a daily and long-term responsibilities checklist for the ambassadors. We also recommend the incorporation of Junior WoW Ambassadors comprised of former WoW camp participants that can assist by serving as team leaders, near-peer mentors, and teaching assistants.

Cost/Resources Needed

The WoW camp project was funded by a USDA-NIFA-WAMS grant program for two years at $99,999. All expenses from faculty salaries, travel, indirect cost, hotel expenses, food expenses, and materials and supplies costs equaled around $25,000 per year. The overall WOW ambassador stipends equaled $6,000, resulting in each of the four WOW ambassadors receiving an overall total of $1,500. The department and student organization provided funding for the

ambassadors to attend the major agricultural mechanics/welding related events to recruit for the department and the WoW camp.

References

Bowling, B., Doyle, M., Taylor, J., & Antes, A. (2015). Professionalizing the role of peer leaders in STEM. Journal of STEM Education, 16, 30–39.

Cutucache, C. E., Luhr, J. L., Nelson, K. L., Grandgenett, N. F., & Tapprich,W. E. (2016). NE STEM 4U: An out-of-school time academic program to improve achievement of socioeconomically disadvantaged youth in STEM areas. *International Journal of STEM Education*, *3*(1), 1–7. https://doi.org/10.1186/s40594-016-0037-0.

Garcia-Melgar, A., & Meyers, N. (2020). Stem near peer mentoring for secondary school students: A case study of university mentors' experiences with online mentoring. *Journal for STEM Education Research*, *3*(1), 19–42. https://doi.org/10.1007/s41979-019-00024-9

Scogin, S. C., & Stuessy, C. L. (2015). Encouraging greater student inquiry engagement in science through motivational support by online scientist-mentors. *Science Education*, *99*(2), 312–349. https://doi.org/10.1002/sce.21145.

"Students Learn How to Learn Outside the Classroom": Using PhotoVoice to Evaluate Leadership Program Learning Outcomes

Kate Suchodolski
katels3@illinois.edu

Amy M. Leman
bunselme@illinois.edu

Jennifer Smist
jsmist@illinois.edu

University of Illinois at Urbana-Champaign
905 S. Goodwin Ave.
Urbana, IL 61801

Introduction

The proliferation of smartphones with quality cameras has turned everyone into a photographer and changed communication and sharing of information. According to the Pew Research Center (2024), 97% of Americans ages 18-29 own a smartphone, meaning these individuals have easy access to cameras, photo-related apps, and photo storage. For higher education, students' access to cameras creates an opportunity to innovate how we structure our course assignments, including visual and written assignments and reflections. This also provides opportunities to assess learning outcomes more robustly without asking students to complete yet another survey.

PhotoVoice is a research strategy commonly associated with participatory action research practices in which research participants use photos to represent and describe their experiences and surroundings (Horowitz, 2012). PhotoVoice is defined as photos "*v*oicing *o*ur *i*ndividual and *c*ollective *e*xperience (Wang & Burris, 1997, p. 381). While traditional research and educational practices involve collecting words from participants and students, PhotoVoice connects the words to pictures. It fosters critical and reflective thinking and may appeal to diverse learners (Horowitz, 2012; Procter, 2020). The process has been used in higher education to impart critical reflection practices for pre-service teachers (Horowitz, 2012; Kim & Kim, 2017); introductory courses for first-year university students (Procter, 2020); and to determine challenges with admissions and decision-making related to higher education (Martinez-Vargas et al., 2019).

How it Works

At the University of Illinois at Urbana-Champaign, the evaluation of learning outcomes for the Agricultural Leadership, Education, and Communications (ALEC) program is embedded within a capstone course. The capstone course includes various reflection assignments that attempt to gather information from the participants on the degree to which they understand and apply the five learning outcomes of the ALEC major. In the fall semester of 2023, the capstone course used PhotoVoice as part of an assignment to collect evaluation data to measure the program learning outcomes. Of the 34 total students enrolled in the course, 20 gave permission to use their responses as part of this project.

In the reflection assignment, students were asked to select five photos, each representing one of the five program learning outcomes. For each photo, students were asked to answer a set of five questions, modified from Horowitz (2012) PHOTO reflection questions, designed for use with PhotoVoice, to be more applicable to the leadership course content. The assignment reflection questions included (1) Describe your **P**icture. (2) What is **H**appening in your picture? (3) Why did you take a picture **O**f this? (4) What does this picture **T**ell us about your role as an ALEC student or employee in an ALEC-related career?, and (5) How can this picture provide **O**pportunities to increase the knowledge and understanding of ALEC as a major field of study? The photos and reflections were analyzed deductively for connection to the learning outcomes and inductively for shared themes and experiences described in the reflection assignment.

Results to Date

PhotoVoice assignments for the program learning outcomes described experiences that fit into seven themes. An "other" category was also created to account for the experiences that did not include a specific activity participated in by the student but instead were a different aspect of lived experience. Table 1 presents the themes and their definitions as well as the learning

outcomes the theme was reported within. While the original concept of the reflection was to connect to experiences associated with classes, the reflections included a wide range of answers, and more of how the students applied their knowledge to other aspects of their lives.

Table 1
Experiences Connected to Program Learning Outcomes in PhotoVoice Assignment

Theme	Description	Learning Outcomes Theme is Reported In
Class	Pictures of the classroom, textbook, or other class materials.	1, 2, 3, 4, 5
Internship	Pictures from paid or unpaid internships.	1, 2, 3, 4, 5
Higher Education Organization/Club	Pictures of events or meets associated with an organization or club through a higher education institution.	1, 3, 4, 5
4-H or FFA	Pictures of events or opportunities as members or volunteers with 4-H or FFA. 4-H is a national youth development organization that provides opportunities for youth in the areas of Leadership, Healthy Living and STEM. FFA is a national youth organization that promotes leadership in the context of food and agriculture (formerly known as the Future Farmers of America prior to 1988).	1, 3, 5
Professional Development	Pictures from workshops, conferences, or other professional development opportunities.	1, 2, 3, 4, 5
Job	Pictures from employment, either part-time or full-time.	1, 2, 3, 4, 5
Study Abroad	Pictures from their college studies in a foreign country.	2, 3
Other	Pictures with personal meaning and not necessarily an experience. Pictures fell into categories of Friendship, Hobby, Nature, and Religion.	1, 2, 3, 4, 5

Future Plans/Advice to Others

In using PhotoVoice, we discovered that students, when asked to reflect on classes, consider their lived experience holistically and do not necessarily separate class work from club and work experiences. Knowing that out-of-class experiences are predominant in student thoughts provides an opportunity for instructors. Can real-life examples related to club experiences be used for case studies and classroom discussion instead of simulated examples? Will students be more likely to connect classroom theories to practices if the practices are related to specific, current student activities? These questions remain areas for further exploration in future semesters. We encourage other instructors to reflect on their assignments and consider the various opportunities for reflective photo use. Students live in a multimedia environment. Connecting coursework to visual platforms may help students make connections outside the classroom and provide critical thinking and reflective skills used in other areas of their lives.

Costs/Resources Needed

While PhotoVoice requires the use of a camera, most students already have smartphones with cameras. The ability to download photos is included in most online learning platforms, as well. Therefore, all that is needed is the innovation to design the PhotoVoice assignment appropriately.

References

Horowitz, J. R. (2012). Photovoice as a critical reflection pedagogy. In R. Flessner, G. R. Miller, K. M. Patrizio, J. R. Horowitz, (eds.). *Agency Through Teacher Education: Reflection, Community, and Learning,* (pp. 15-24). Rowan & Littlefield Publishers.

Kim, K., & Kim, J. (2017). Going beyond the gap between theory and practice: Rethinking reflection with poststructural insights. *Journal of Early Childhood Teacher Education, 38*(4), 293-307. https://doi.org/10.1080/10901027.2017.1388307

Martinez-Vargas, C., Walker, M., & Mkwananzi, F. (2019). Access to higher education in South Africa: Expanding capabilities in and through an undergraduate photovoice project. *Educational Action Research, 28*(3), 427-442. https://doi.org/10.1080/09650792.2019.1612767

Pew Research Center. (2024, January 31). *Mobile Fact Sheet*. https://www.pewresearch.org/internet/fact-sheet/mobile/?tabId=tab-3345cffa-94a6-4e74-9272-70dee1e0e213

Procter, L. (2020). Fostering critically reflective thinking with first-year university students: Early thoughts on implementing a reflective assessment task. *Reflective Practice, 21*(4), 444-457. https://doi.org/10.1080/14623943.2020.1773421

Wang, C. & Burris, M. A. (1997). PhotoVoice: Concept, methodology, and use for participatory needs assessment. *Health Education and Behavior, 24*(3), 369-387. https://doi.org/10.1177/109019819702400309

A Review of the Current Landscape of Agricultural Education, Communications, and Leadership

Kameron Rinehart, M.S., Hoyt Nebgen, Jason Headrick, Ph.D., & Alexa Salinas, M.S.

Department of Agricultural Education and Communications

Texas Tech University

2810 15th Street, Lubbock, TX 79409

Author Notes:

Kameron Rinehart, Kameron.Rinehart@ttu.edu, (740) 505-2805

Hoyt Nebgen, Hoyt.Nebgen@ttu.edu, (940) 782-7403

Jason Headrick, Jason.Headrick@ttu.edu, (859) 608-5686

Alexa Salinas, Alexandra.Salinas@ttu.edu, (956) 802-8609

A Review of the Current Landscape of Agricultural Education, Communications, and Leadership

Introduction/Need for Innovation

The disciplines of agricultural education, communications, and leadership (AECL) have been taught in higher education settings for decades (Tucker et al., 2003; Fritz et al., 2003; Pennington & Weeks, 2006; Irani & Doerfert, 2013). Agricultural education (AE) is defined as "education teaches students about agriculture, food and natural resources. Through these subjects, agricultural educators teach students a wide variety of skills, including science, math, communications, leadership, management, and technology" (NAAE, n.d., p. 1). "Academic programs in agricultural journalism have given way to "comprehensive" agricultural communications (AC) programs that cover strategic communications, new and social media, public relations and marketing in addition to writing, editing and production of mass media" (Irani & Doerfert, 2013, p. 3). Agricultural Leadership (AL) is described as a discipline to "prepare future leaders to tackle societal issues related to food and the agricultural sciences," (Weeks & Weeks, 2020, p. 37). These three disciplines build the core of social sciences research across colleges of agriculture. This project seeks to discover the current state of ACEL discipline and provide an overview of the degree programs being offered throughout the U.S. Researchers also hope to show the changes within programs in all three discipline areas, as the last update to a reference list compiled in 2010 (Kleinjan, 2018).

How it Works

This study examines the current state of AECL through a cross-sectional survey that collects information from a predetermined target population within an approximate time (Fraenkel et al., 2023). The target population included 110 colleges and departments of agriculture ($N = 110$) throughout the U.S., with a response rate of $(N = 49)$. The population was surveyed through a subject-completed, written-response questionnaire (Fraenkel et al., 2023). Participants reported representing universities in 27 different U.S. states. Participants were asked short-answer, multiple choice, and checklist-style questions specific to their university to garner a comprehensive list and organize the information.

Results to Date

As shown in Table 1, AE programs hold the most degree offerings within the AECL discipline, with 40 departments offering degrees in AE. Institutions were asked to report the types of degrees they offered, ranging from undergraduate and graduate degrees. AC programs reported 25 departments offering programs in this area, followed by AL, with 23 departments offering degrees. Extension Education (EE) reported 13 departments offering degrees and six departments offering additional degrees (such as International Extension Education). However, it is essential to note that this is an ongoing effort in coordination with the American Association

for Agricultural Education (AAAE) to update their program roster, which was last updated in 2018.

Table 1

Overview of the Current States of AECL Discipline (N = 49)

Variable	Agricultural Education Degree	Agricultural Communications Degree	Agricultural Leadership Degree	Extension Education Degree	Other Degrees Offered
Departments with Offerings	40	25	23	13	6
Bachelor's Degree	42	21	14	7	0
Master's degree	51	15	15	11	0
Ph.D.	16	3	5	5	1
Ed.D.	2	0	0	0	0
Other	27	14	21	7	5

Future Plans

With this being an ongoing study, researchers will provide an overview of current offerings during the AAAE Annual Conference. They will display a QR Code on the poster to encourage those who have not yet participated in our national survey to participate. When this work was done in 2018, 42 states and Puerto Rico were represented by program offerings in AECL. Currently, our data only represents 27 states. However, it is critical for the future use of this document that we continue to obtain responses to the survey so that the resources provided by AAAE can be accurately updated and represent as many programs throughout the U.S. as possible. It is crucial to note that this data cannot be accurately obtained through websites and online searches due to researchers' finding inaccurate information regarding program offerings on multiple college and university websites.

Costs/Resources Needed

There are no associated costs with conducting this project. However, it is critical to its success that all programs throughout the country that offer degree programs (including minors) in agricultural education, communications, leadership, extension education, or other related program areas complete this survey so that the AAAE has an up-to-date resource document for use by faculty, staff, students, stakeholders, and other entities.

References

Axelrod, R. (1973). Schema theory: An information processing model of perception and cognition. *American Political Science Review*, *67*(4), 1248–1266.

Fritz, S., Townsend, C., Hoover, T., Weeks, W., Carter, R., & Nietfeldt, A. (2003). An analysis of leadership offerings in collegiate agricultural education departments. *NACTA Journal*, 18–22.

Irani, T., & Doerfert, D. L. (2013). Preparing for the next 150 years of agricultural communications. *Journal of Applied Communications*, *97*(2), 2.

Kleinjan, M. (2018, May). *Agricultural education institutions*. American Association of Agricultural Education. https://aaea.wildapricot.org/resources/Documents/National/AAAE%20Degree%20Resource%20-%20Revised%20May%202018.pdf

Pennington, P., & Weeks, W. G. (2006). Agricultural leadership: Oklahoma State University's new major for undergraduate students. *NACTA Journal*, 42–46.

Tucker, M., Whaley, S. R., & Cano, J. (2003). Agricultural education and agricultural communications: Striking a proper balance in the academy. *Journal of Agricultural Education*, *44*(1), 22–30.

What is Agricultural Education? (n.d.). National Association of Agricultural Educators. Retrieved February 20, 2024, from https://www.naae.org/whatisaged/index.cfm

Addressing the perpetual critique, "You need to refine your research agenda."

Emily R. Fuller, Dr. Shumaila Bhatti, Miguel Diaz, Dr. Patrick Jamar, Karissa Palmer, Dr. Seunguk Shin, Dr. Holli Leggette, and Dr. Dara M. Wald

Texas A&M University
Department of Agricultural Leadership, Education, and Communications
600 John Kimbrough Blvd.
College Station, TX. 77845
(979)845-2954

emily.fuller@ag.tamu.edu, shumaila.bhatti@ag.tamu.edu, miguel.diazmanrique@ag.tamu.edu, patrick.jamar@ag.tamu.edu, karissa.palmer@ag.tamu.edu, seunguk.shin@ag.tamu.edu, holli.leggette@ag.tamu.edu, dara.wald@ag.tamu.edu

Addressing the perpetual critique, "You need to refine your research agenda."

Introduction and Need for Innovation

Early-career academics frequently set and revise their research agendas to reflect their research interests and identity, while trying to align with the expectations and pressures of the academic "organization" (Santos & Horta, 2018). Within the academic organizational environment, junior scholars are expected to develop research agendas that lead to the contribution and creation of knowledge (Santos & Horta, 2018) and research productivity (Horta & Santos, 2020). Research productivity is the defining metric used to assess academic output (Kyvik & Aksnes, 2015). Thus, it is critical that early-career academics identify and develop an agenda that advances intellectual knowledge in their field and produce deliverables such as peer-reviewed articles and competitive grants. This is particularly important for early-career academics working toward tenure and promotion (Hammarfelt & Rushforth, 2017) in competitive organizational environments (Giroux, 2016). There are numerous challenges involved in developing an individual research agenda, which can lead to anxieties for early-career scholars (Felt et al. 2013; Purvis et al., 2023).

Here, we present a multimodal collaborative research technique as an innovative idea to support early-career researchers in defining their research identities and agendas while finding networks that encourage collaboration and provide support. We tested this framework using a case study of graduate and post-doctoral research fellows in the Department of Agricultural Leadership, Education, and Communication PLACE Laboratory, at Texas A&M University.

How it Works

We tested our technique by generating critical reflections using Tripathi et al's. (2022) 'retrospective collaborative autoethnography.' This method of inquiry requires researchers to collaboratively interrogate their autobiographies. Using the five steps of Kearney's (2015) Conceptual Content Cognitive Map (3CM), we developed a representation of participants' mental models. First, participants were presented with a prompt to generate reflections: "Imagine that you are having a night in with your friend who does not work in academia or research. During casual conversation, the topic of research arises. They are interested in knowing more about the career path you want to take. Your friend asks you, 'Why do you want to be a researcher? What research areas interest you?' What would you say to them? What would be important for them to know?"

Interviewees' responses to the prompt were recorded. A series of follow-up questions asked interviewees to expand on their reflections. Jamboard was used to record and organize the participants' responses on cards. Participants then organized the cards into categories. No guidelines or constraints were given for the organization of the cards to encourage exploration and discovery. Participants labeled each category, indicating why they organized the items as they did. Finally, participants answered a series of reflective questions.

Transcripts and cognitive maps were anonymized and co-coded using AI and manual thematic analysis. Combining AI with qualitative analysis is a novel avenue to enhance thematic analysis and uncover deeper codes (Gamieldien et al., 2023). Each participant received a copy of their cognitive map, the analysis we used, and a set of networking recommendations. These

resources were provided to aid in future revisions of the interviewees' research agendas and to encourage collaboration and support within the research team.

Results to Date

Upon analyzing the 3CMs, 4 main themes and 8 sub-themes emerged. Using the themes, we developed a new framework that captures the structure of the fellows' research identity and interests (Figure 1).

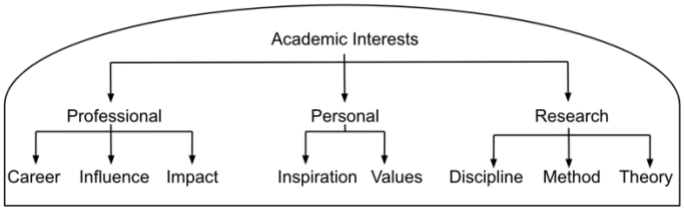


Figure 1*: Autoethnographic Research Agenda Cognitive Map Framework*

Results suggest this is a novel and valuable mentoring mechanism to help early career scholars define their research agendas and build networks. Through this process, the fellows gained clarity regarding their research foci and used multimodal methods to organize their thoughts and ideas. One interviewee reported, "this interview method is great for both visual and non-visual persons because it helps crystallize our abstract ideas and order them into a better structure" (Part. 2). Resulting collaborations allowed new perspectives and provided space for interviewees to exchange views, fears, hopes, frustrations, and progress. Congruent with findings from Lee & Bozeman (2005) and Purvis et al. (2023), interviewees identified and developed a support group and vision of opportunities for expanding their network.

Future Plans and Advice to Others

Moving forward, we plan to expand this opportunity to include a larger purposive sample. Additionally, we plan to build upon our framework to establish a systematic way of organizing the resulting cognitive maps so that participants can refer to them, edit them, and compare them with others' maps. Following this, we intend to create a guide for implementing this multimodal framework and disseminating it to other research-focused universities, institutes, and centers. Innovative concepts, networks, and research identities that result from this work will be shared through the OakTrust digital repository and publicly accessible. Furthermore, we intend to continue to connect this effort with extant theory, such as Santo et al.'s work on dimensions, thinking styles, and influences of research agendas. Lastly, we will edit our interview guide to remove items that address the same ideas to avoid repetitiveness.

Cost and Resources Needed

There are no monetary expenses required to carry out the first stage of the implementation of our innovative idea. However, it is important to note that this activity takes time to organize and facilitate, both because it relies on interviews and because it takes time to analyze the data and evaluate the learning outcomes of this approach. Interviews require a contact list of potential participants, participant recruitment (via email, telephone, and in-person), interview scheduling, and data analysis. Interviews take 45-60 minutes. Additionally, access to a computer, internet, and MaxQDA or equivalent software is recommended.

References

Felt, U., Igelsböck, J., Schikowitz, A., & Völker, T. (2013). Growing into what? The (un-) disciplined socialisation of early stage researchers in transdisciplinary research. *Higher education*, *65*(4), 511-524. https://doi.org/10.1007/s10734-012-9560-1

Gamieldien, Y., Case, J., & Katz, A. (2023). Advancing Qualitative Analysis: An Exploration of the Potential of Generative AI and NLP in Thematic Coding. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4487768

Giroux, H. A. (2016). *University in Chains: Confronting the Military-Industrial-Academic Complex.* New York, NY: Routledge.

Hammarfelt, B., & Rushforth, A. D. (2017). Indicators as judgment devices: An empirical study of citizen bibliometrics in research evaluation. *Research Evaluation*, *26*(3), 169-180. https://doi.org/10.1093/reseval/rvx018

Horta, H., & Santos, J. M. (2020). Organisational factors and academic research agendas: An analysis of academics in the social sciences. *Studies in Higher Education*, *45*(12), 2382–2397. https://doi.org/10.1080/03075079.2019.1612351

Kearney, A. (2015). 3CM: A tool for knowing "where they're at." In Kaplan, R., & Basu, A. (Eds.), *Fostering reasonableness: Supportive environments for bringing out our best*. Michigan Publishing.

Kyvik, S., & Aksnes, D. W. (2015). Explaining the increase in publication productivity among academic staff: A generational perspective. *Studies in Higher Education*, *40*(8), 1438-1453. https://doi.org/10.1080/03075079.2015.1060711

Lee, S., & Bozeman, B. (2005). The impact of research collaboration on scientific productivity. *Social studies of science*, *35*(5), 673-702. https://doi.org/10.1177/0306312705052359

Purvis, B., Keding, H., Lewis, A., & Northall, P. (2023). Critical reflections of postgraduate researchers on a collaborative interdisciplinary research project. *Humanities and Social Sciences Communications*, *10*(1), 10. https://doi.org/10.1057/s41599-022-01494-w

Santos, J. M., Horta, H., & Zhang, L. (2020). The association of thinking styles with research agendas among academics in the social sciences. *Higher Education Quarterly*, *74*(2), 193–210. https://doi.org/10.1111/hequ.12240

Santos, J. M., & Horta, H. (2018). The research agenda setting of higher education researchers. *Higher Education*, *76*(4), 649–668. https://doi.org/10.1007/s10734-018-0230-9

AET Mini Assignments

Kaitlynn R. Davis
Graduate Student
Washington State University
P.O. Box 646420
387 Clark Hall
Pullman, WA 99164-6402
509-335-1172
kaitlynn.r.davis@wsu.edu

Dr. Anna J. Warner
Assistant Professor of Agricultural Education
Washington State University
P.O. Box 646420
387 Clark Hall
Pullman, WA 99164-6402
509-335-1172
anna.warner@wsu.edu

AET Mini Assignments

Introduction

Current coursework in agricultural education preparation programs focuses on a total agriculture program which includes classroom instruction, Supervised Agricultural Experience (SAE) programs, and FFA (Rank & Retallick, 2017). The National Council recognizes SAEs as an "essential component of students learning and should be used with every student in school-based agricultural education" (The National Council, n.d.). Record keeping is an important skill agriculture students use when documenting their Supervised Agricultural Experiences (SAE). Research has found pre-service teachers have a high need in relation to teaching record keeping for student SAE projects (Price et al., 2023; Rank & Retallick, 2017). The most popular program used for data management is theAET (Price et al., 2023) TheAET data management system was released in 2007 to assist agriculture educators in teaching record keeping and SAE management (The Agricultural Experience Tracker, 2023). TheAET also aligns with the FFA awards and allows states to customize their awards to submit at the national and state level (TheAET, n.d.). Recent agriculture education preparation studies have found pre-service teachers have low self-efficacy when using theAET (Price et al., 2023). Teacher preparation programs should focus on integrating the tool into their courses.

How it Works

In response to this need, Washington State University (WSU) created and implemented a series of theAET mini assignments to utilize in an agricultural education teacher preparation course, beginning the fall of 2022. TheAET mini assignments were created to help establish a foundation of the tool for pre-service teachers to utilize in managing their future agricultural programs. These assignments are unique for pre-service agriculture education teachers because they were able to view and practice using theAET in student and teacher mode. The assignments aligned to topics discussed throughout the course, including managing student leaders, SAEs, and applying for student awards. In an earlier preparation course, student accounts were added to the university AET account and practiced record keeping from a student perspective. For this course student accounts were granted teacher access. The assignments listed below describe the components created to develop skills required to use the different tools and activities for pre-service teachers to utilize in their programs.

AET Assignment #1: Setting up Your Profile & Activating/Deactivating Students

- Student mode: set up profile to 100% completion.
- Teacher mode: activated and deactivated assigned students.

AET Assignment #2: SAE Explorer

- Student mode: completed SAE explorer quiz.
- Teacher mode: developed 50-minute lesson for 8th grades to introduce SAE projects.

AET Assignment #3: Managing Student Leaders

- Teacher mode: added themselves as student leaders to access meeting manager, chapter website, and Program of Activities (POA).
- Student mode: created a meeting invite and planned events in the POA manager with a group of four students.

AET Assignment #4: SAE Practice

- Student mode: used scenarios provided by theAET website to enter SAE project data.
- Teacher mode: reviewed SAE projects by summarizing a peer's SAE entry through the teacher tracker.

AET Assignment #5: Awards

- Teacher mode: reviewed video on viewing and submitting student applications on theAET website and used the Washington State FFA Degree Checklist to evaluate a sample State Degree application.

Costs and Resources Needed

TheAET provides free chapter accounts to pre-service preparation programs, so there were no direct costs associated with creating and utilizing theAET mini assignments. Resources utilized in these AET mini assignments were collected from the teacher resources tab on the AET website and from previous agriculture high school students' work as examples for the students to evaluate the methods used in a high school classroom.

Results to Date

TheAET mini assignments were introduced and completed by 16 pre-service students at Washington State University over two years. Student engagement was high during each of the assignments due to their previous knowledge of theAET and their experiences with record keeping in their high school agriculture programs. Their engagement was demonstrated by their participation on the assignments and later feedback provided at the end of the semester. The pre-service students suggested more hands-on experience with the financial aspect of theAET including record keeping as well as applying for awards. To expand on the assignments and create a greater impact on pre-service teachers, theAET assignments were adjusted to address the needs of previous pre-service students.

Future Plans and Advice

In the future, this series of assignments should be repeated in agriculture education teacher preparation courses. A new AET mini assignment will be created around financial management through AET focusing on SAE financial records for student mode and chapter financial budgets from the teacher mode. Literature suggests pre-service teachers and alternative certification teachers need additional training on financial literacy teaching methods and utilization of data management platforms such as the AET (Price et al., 2023). Increasing exposure of the data management platform could increase self-efficacy of managing an agricultural student's SAE project. In the future, instructors should collect pre-service students' knowledge about the data management platform and follow up data to assess the knowledge and skills gained through the assignments. Professional development for theAET should also be implemented by state and national organizations to assist in the lack of knowledge of utilizing the technology by agriculture teachers certified through a teacher preparation or alternative program.

References

AET. (2023). Our story. https://www.theaet.com/story

TheAET. (n.d.). What is AET? https://www.theaet.com/WhatIsAET

Price, T. J., Manuel, E. O., Sewell, E. A., & Robinson, J. S. (2023). Preservice teachers' perceptions of their ability to use The AET as a data management system. Paper accepted for presentation at American Association for Agricultural Education Southern Region Conference, Oklahoma City, OK. http://jsaer.org/wp-content/uploads/2023/11/73-Price-Manuel-Sewell-Robinson.pdf

Rank, B. D. & Retallick. M. S. (2017). Supervised Agricultural Experience instruction in agricultural teacher education programs: A National descriptive study. *Journal of Agricultural Education, 58*(2), 143-165. https://doi.org/10.5032/jae.2017.02143

The National Council. (n.d.). Supervised Agricultural Experience (SAE) philosophy and guiding principles. https://thecouncil.ffa.org/sae/

An Interdisciplinary Project-based Learning Approach in Food Label Design

Katie Starzec
1612 Claflin Rd
301 Umberger Hall
Manhattan, KS 66506
785-532-5804
kstarzec@k-state.edu

Kelly Getty
kgetty@k-state.edu

Kassie Pechanec
kpechanec@k-state.edu

An Interdisciplinary Project-based Learning Approach in Food Label Design

Introduction

Project-based learning (PjBL) provides students with real-world activities where students can view different perspectives, reflect on their learning, and create and take ownership of a final product (Buck Institute for Education, 2016). At the post-secondary level, PjBL can encounter hurdles related to teamwork and time restrictions, but PjBL is often multidisciplinary (BIE, 2016) and can benefit interdisciplinary learning (Ralph, 2015). The combination of PjBL with STEM subjects can be valuable (Ralph, 2015), using PjBL to develop learners also has potential positive implications for the agriculture, food, and natural resources industries, which face complex problems that need multi- and interdisciplinary collaborative approaches (AAAE, 2023). Each fall semester at Kansas State University, agricultural communications design students and food science students collaborate on a food label design project; the professors' intentional are to introduce them to working across disciplines in a real-world scenario. In fall 2023, the two instructors implemented a PjBL approach to this activity by incorporating student reflections, using multiple iterations of student-to-student feedback, and scheduling time for student partners to meet in the food lab. The overall purpose of this innovative teaching approach was to use PjBL to create a multidisciplinary experience for both food science students and agricultural communications design students in the creation of unique food product packaging.

How it works

A food science professor and an agricultural communications professor collaborated to plan the activity, which lasted seven weeks out of a 16-week semester. Students in the agricultural communications design class (n=25) were paired with food science students in a "Research and Development of Food Products" class (n=22). Students in the food science class develop a unique food product in the lab, which needs a unique food label and packaging. First, the food science professor teaches design students basic rules, regulations, and trends in food label design. Design students design a low-stakes practice label to build confidence in their skills and receive feedback. Then, design students are paired with food science students and introduced to the unique food products the food science students are developing. Design students visit the food science students' lab to view and taste the new food product they will be designing a label for. Design students have access to Adobe Creative Cloud, and food science students provide the design students with important information such as the nutrition facts panel, net weight, and ingredients list. Design students provide a draft of their label to the food science students at least twice throughout the project, receive feedback, and make edits. Once finalized, the design students submit their final label for a grade and share the label with their food science partner. The food science students incorporate the food label design into their final project for the Research and Development of Food Products class. To document and summarize student experiences with the project, design students are asked to reflect via journal entries four times throughout the design process. For this study, two authors coded the journal entries to uncover themes. To assess students' experiences working across disciplines with a partner, design, and food science students completed a Likert-scale partner evaluation at the end of the semester.

Results and implications

Journal entry coding revealed themes for pre-project, during the project, and post-project: After design students were made aware of the food label project, but before implementation, their journal entries indicated they were *excited about real-life applications* in building their skills, but

they were primarily *nervous about having to collaborate with another student* (the food science student). Their concerns also revolved around *uncertainty or lack of confidence in their ability to complete the project*. During the project, journal entries from design students indicated a *combination of excitement and nervousness*: excited to learn new design skills and to learn more about food labeling, but the entries also showed concern that the project was "daunting." After the project was completed, journal entries from design students indicated they *enjoyed the real-world experience*, they *more fully recognized the importance of communication in working with others*, and they shared the realization that *food label design is more complicated than they initially believed*. Table 1 shows students' partner evaluation results. Most students in each class indicated an overall positive experience working with their partner, while 2-3 students in each class did not have good experiences with their partner. Though this project did not measure changes in communications and collaboration skills, other studies show that interprofessional experience in post-secondary education broadens learning experiences and improves team communication and collaboration skills (Holmes et al., 2020).

Table 1

Design Students and Food Science Students' Evaluation of Working with Their Partner

	Design students (n=23)		Food sci students (n=14)	
Prompt	M	SD	M	SD
Responded in a professional and timely manner to communication.	4.09	1.31	4.07	1.49
Helpful in providing the content material needed to create the label/guiding the conceptualization and design process.	4.09	1.24	3.86	1.41
Provided timely feedback that assisted with improving the overall label/ Open to receiving and implementing feedback.	3.91	1.37	4.21	1.42
As the client/designer, I would be willing to work with this designer/client again.	4.15	1.36	4.14	1.41

Note: Five-point Likert scale questions: 1 = strongly disagree to 5 = strongly agree.

Advice to others/Resources needed

For educators considering a project like this, it will be helpful to understand from the beginning that students will put forth a range of efforts. Educators can adapt the project to align with the specific academic programs and curricular requirements of their institution. Departments offering courses in design, marketing, animal nutrition, or food science can incorporate elements of label design and product development into their classes, allowing students to apply their creative skills in a hands-on setting. For smooth implementation of PjBL projects, educators should emphasize effective communication, coordination, and resource placement. Establishing clear learning objectives, timelines, and assessment criteria can help keep the project aligned with academic goals and student learning objectives. Resources needed to incorporate this project: design student access to design software (already required for this course), a food product to sample in class, and access to a food science program that incorporates product development.

References

American Association for Agricultural Education (AAAE). (2023). AAAE Research Values. https://aaaeonline.org/resources/Documents/FOR%20ONLINE%20(8.5%20x%2011)%20-%20AAAE%20Research%20Values.pdf

Buck Institute for Education. (2016). What is project-based learning? http://bie.org/about/what_pbl

Holmes, S.D., Smith, E., Resnick, B., Brandt, N.J., Cornman, R., Doran, K., & Mansour, D.Z. (2020). Students' perceptions of interprofessional education in geriatrics: A qualitative analysis. *Gerontology & Geriatrics Education 41*(4), 480-493, DOI: 10.1080/02701960.2018.1500910

Ralph, R. A. (2015). Post secondary project-based learning in science, technology, engineering and mathematics. *Journal of Technology and Science Education 6*(1) 26-35. https://www.redalyc.org/pdf/3311/331144428004.pdf

Are We Hitting Our Target? An Instrument of Evaluation for Agriscience Phenomena

Kaitlynn M. Linderholm
California State University, Fresno

Dr. Nicole Ray
California Polytechnic State University, San Luis Obispo

Cameron Standridge
Next Generation Agricultural Science

Jonathan Moules
Next Generation Agricultural Science

Stacy VanScoy
California State University, Fresno

Dr. Avery Culbertson
California State University, Fresno

Primary Author:
Kaitlynn M. Linderholm
5241 N Maple Ave, Fresno, CA 93740
(559) 760-4010
kaitlynnlinderholm@mail.fresnostate.edu

Are We Hitting Our Target? An Instrument of Evaluation for Agriscience Phenomena

Introduction/need for innovation

With the foregoing establishment of the Next Generation Science Standards (NGSS), there is a demand to create and develop scientific phenomena curriculum that can be implemented in high school agriscience classrooms. Phenomena can be described as “any object or event that can be experienced, and that can be observed and/or measured either directly or by one's senses or by use of technological devices” (National Science Teachers Association, 2017, p. 1). The agricultural education community will need to embrace phenomena, and to do so, it should support teachers by identifying examples and developing resources to support the implementation of phenomena. Ray et al. (2023) found that California Agriculture teachers expressed a need to have access to finding agriscience phenomena. This finding established a need for criteria to assist with phenomena development and an evaluation tool that teachers could use to help to build their skill in identifying high quality phenomena.

While a variety of practitioner tools exist to support teachers' development of phenomena for instruction (Lum & Lucido, 2015; McKenna & UConn Mentoring Collaborative, 2016; NextGen Science Exemplar System, n.d.; NGSS, 2016; National Research Council, 2012; National Research Council, 2013), there are fewer resources for evaluating the fitness of a phenomenon (National Science Teachers Association, 2017), and none could be located in existing literature in the area of agriscience instruction. As a result, the Next Generation Agricultural Science (NGAS) grant program (Vaughn, 2021-2024) developed the agriscience phenomena evaluation tool, which can be used by any agriscience teacher to evaluate and develop their own agriscience phenomena and implement the NGSS standards to their full potential. To initially field test and refine the tool, it is being used by grant staff to evaluate and develop agriscience phenomena that will be integrated into the NGAS database. The tool is not limited to the NGAS grant program but will assist agricultural science teachers nationwide in developing phenomena that meet the established disciplinary core ideas of the AFNR Career Pathways and NGSS Standards (Barrick et al., 2018).

How it works/methodology/program phases/steps

The criteria are formatted using dichotomous judgment (yes/no) responses, allowing evaluators/users to engage in reasoning quickly (Meida, 2021). The five criteria are: (1) the phenomena addresses the entire or part of a NGSS Disciplinary Core Idea. (2) the phenomena is observable to students, (3) the phenomena is comprehensible to students, at grade level or not too complex, (4) the phenomena is thought-provoking and requires an explanation, and (5) the phenomena is interesting and relevant to a sector of the Agriculture Industry. For the NGAS (Vaughn, 2021-2024) database review, each criterion within the tool is individually evaluated; when a criterion is not met, rather than disregarding the phenomena in its entirety, the evaluator/user can reflection on possible revisions, or choose to explore alternative phenomenon.

Results to date/implications

The Agriscience Phenomenon Evaluation tool was field tested in the evaluation of agriscience phenomena that will be integrated into the NGAS grant phenomenon database. Teachers who made submissions for consideration were asked to utilize the checklist before submitting. After submission, the grant staff then utilized the evaluation tool to review each submission and found that many agriculture teachers who believed their phenomena met the

checklist criteria did not meet them. Of the agriscience phenomena evaluated (N =72), 29% of the phenomena (n = 21) did not meet the Agriscience Phenomenon Evaluation tool criteria. A benefit for agriculture teachers whose phenomena did not meet the criteria is that they are able to update their phenomena according to the feedback provided from the checklist.

Implications of field testing of this tool have resulted in refining the tool/process that can be used by secondary agricultural educators/teacher candidates to identify and revise phenomena for use in their classroom.

Future plans/advice to others

Future plans for the Agriscience Phenomenon Evaluation tool involve (A) *Revision* - after an initial review of the phenomena in the database, a takeaway was that the first iteration of the tool examined only one dimension of the three-dimensional NGSS model (disciplinary core ideas), which is the content dimension of the standard, and didn't result in phenomena submissions that allowed for student centered learning. According to the Science Framework, phenomena must incorporate science and engineering practices, which are used to identify how students are supposed to demonstrate their understanding of science concepts within the context of the phenomenon (National Research Council, 2012). Additionally, some criteria were found to be overlapping or too vague. As a result, the tool has been modified to the current criteria of: (A) Standards Aligned: Capacity to support student-centered learning objectives through sensemaking grounded in one or more AFNR/CTE standards and/or NGSS Disciplinary Core Idea. (B) Real World Context: Contextualized within specific observable real-world agricultural applications. (C) Promotes Equity: Relatable, relevant, and thought-provoking for the learner. (D) Allows for Engagement in Practices: Capacity for learners to engage in active sensemaking of the phenomenon through one or more NGSS Science and Engineering Practice (SEP) to explore/explain the phenomenon being studied. Moving forward, the grant staff will use the revised tool to provide feedback on phenomena submissions for the NGAS grant (Vaughn, 2021-2024). (B) Providing *professional learning opportunities* through conference sessions to further develop teachers' skills around identifying and evaluating phenomena for their classrooms using this tool. *Advice* as individuals and teams of teachers utilize the tool, it's important to note that this is an opportunity to engage in collaborative conversations or for individual reflection to work toward identifying and/or revising agriscience phenomena that are aligned with the NGSS and agriculture standards in a way that is meaningful to students in their communities.

Costs/Resources needed

Direct costs associated with utilizing the agriscience phenomenon evaluation tool relate to the duplication of hard copies (if used) for evaluation. Additional costs may be associated with internet packages to access the digital version of the evaluation tool. There is no licensing cost to use the agriscience phenomenon evaluation tool. *Indirect costs* associated with utilizing the agriscience phenomenon evaluation tool can include time to evaluate the phenomenon. With only four criteria to consider, with a minimum of five minutes per criterion, an individual will take a minimum of twenty minutes per evaluation. This work is supported by the USDA National Institute of Food and Agriculture, AFRI Professional Development For Agricultural Literacy Priority Area, award #2022-67038-36256. The findings and conclusions in this preliminary publication have not been formally disseminated by the U. S. Department of Agriculture and Should not be construed to represent any agency determination or policy.

References

Barrick, K. R., Heinert, S. B., Myers, B. E., Thoron, A. C., & Stofer, K. (2018). Integrating disciplinary core ideas, the Agriculture, Food and Natural Resources Career Pathways and the Next Generation Science Standards. Career and Technical Education Research, 43(1), 41-56. https://doi.org/10.5328/cter43.1.41

Criteria for Evaluating Phenomena. (2017, July 11). National Science Teachers Association. https://static.nsta.org/ngss/docs/Criteria%20for%20Evaluating%20a%20Phenomenon.pdf

Lum, N., & Lucido, K. (2015). *How to Come Up with an Engaging Phenomenon to Anchor a Unit* [Document].

McKenna, T. J., & UConn Mentoring Collaborative. (2016). *NGSS Phenomena: A Heuristic for Coming up with Academically Productive Phenomena* [Document].

Mieda, T., Taku, K., & Oshio, A. (2021). Dichotomous thinking and cognitive ability. Personality and Individual Differences, 169, 110008. https://doi.org/10.1016/j.paid.2020.110008

National Research Council. (2012). A framework for K-12 science education: Practices, Crosscutting Concepts, and Core Ideas. National Academies Press. https://doi.org/10.17226/13165

National Research Council. (2013). Next Generation Science Standards: For States, By States. Washington, DC: The National Academies Press. https://doi.org/10.17226/18290.

National Science Teachers Association. (2017). *Criteria for Evaluating Phenomena*, from https://static.nsta.org/ngss/docs/Criteria%20for%20Evaluating%20a%20Phenomenon.pdf

NextGen Science Exemplar System. (n.d.). *Storyline Tool #1: Anchoring Phenomenon Routine* [Document].

NGSS. (2016). *Using Phenomena in NGSS-Designed Lessons and Units*. *NGSS*, from https://www.nextgenscience.org/sites/default/files/Using%20Phenomena%20in%20NGSS.pdf

Ray, N., Moules, J., Standridge, C., Linderholm, K., VanScoy, S., & Pheasant, S. (2023, September 20) *Are we phenomenal at agriscience phenomenon? An instrument for reflection on phenomenon based instruction in agriscience.* [Poster presentation]. Western Region AAAE, [Logan, Utah]. http://dx.doi.org/10.13140/RG.2.2.36252.05760

Vaughn, R. (Principal Investigator). (2021-2024). Next Generation Agricultural Science: Elevating Todays and Tomorrows Teachers (Project No. #2022-67038-36256) [Grant]. USDA National Institute of Food and Agriculture, AFRI Professional Development For Agricultural Literacy Priority Area. https://portal.nifa.usda.gov/web/crisprojectpages/1027745-next-generation-agricultural-science-elevating-todays-and-tomorrows-teachers.html

Investing and Assessing Agricultural Internship Opportunities at a State University

Paighton Gouldy
pgouldy@wtamu.edu

Lance Kieth
lkieth@wtamu.edu

Kevin Williams
kwilliams@wtamu.edu

Tanner Robertson
trobertson@wtamu.edu

Troy Tarpley
ttarpley@wtamu.edu

West Texas A&M University
Department of Agricultural Sciences
WT Box 60998
Canyon, TX 79016
806-651-2505

Investing and Assessing Agricultural Internship Opportunities at a State University

Introduction and Need for Innovation

Professional internships have long been an educational tool utilized in college settings. There is a considerable amount of discussion around the positive impact internships can have on a student including student career goals, commitment, higher levels of job satisfaction, and increased career choice clarity (Callanan & Benzing, 2004; Gault et al., 2000; DeVuyst, 2006). However, proximity, time commitment, and the prevalence of unpaid internships are just a few of the limiting factors students face when considering internship opportunities. The agricultural sciences program at West Texas A&M University focuses heavily on student involvement and experiential learning opportunities. Upperclassmen are highly encouraged to complete an internship within their area of interest. This internship may be counted for academic credit and should aim to utilize skills learned in the classroom. With the world population expected to exceed over nine billion by the year 2050 (Food and Agriculture Organization of the United Nations, 2017), it is ever-important to continue to provide the industry with career ready individuals. Persons who choose a career within the agricultural industry are often hardworking and generally have background knowledge on the expected tasks within their chosen field. Referenced in the National Institute of Food and Agriculture, 2021, roughly 61% of all newly graduated potential employees will have obtained a degree in agriculture, food, and renewable resources. Opportunities within the agricultural sector for college graduates with a bachelor's degree or higher will see a 2.6% increase by the year 2025 (National Institute of Food and Agriculture, 2021). The purpose of this project was to evaluate the agricultural internship program within West Texas A&M University and assess the value of experiential learning opportunities from a student perspective.

How It Works

Internships approved by an agricultural sciences faculty member must be related to the students' academic program and be in line with their career interests. A minimum of 120 contact hours must have been completed within the internship to justify three credit hours, as well as bi-weekly reports throughout the semester and a final interview with faculty coordinators within the department. Junior and Senior level students enrolled in internship credit hours for industry related experiential learning opportunities were asked to reflect upon their experiences at the completion of the course. In order to actively participate in the experiential learning process, students should intentionally reflect on what they have experienced (Kolb, 1984). For the purpose of this study, students were asked to reflect by answering five Likert-type questions related toward their perceptions of their internship experience. Additionally, students were asked to answer two additional yes/no questions related to assistance they may have received both on and off campus from university and internship supervisors alike.

Results to Date/Implications

Data was collected from the 2023 cohort of students enrolled in internship credit hours within the agricultural science program from Spring, Summer, and Fall semesters. Over one hundred students (N = 117) were observed with roughly 104 different internship programs and employers represented. Descriptive statistics were used to analyze the data. Overall students perceived internships and experiential learning opportunities to be beneficial in aiding in their

career decisions. Furthermore, students indicated that by completing an internship, they gained valuable insight into various business operations. Table 1 below outlines the findings:

Table 1

Student perceptions of an agricultural internship experience

Question	*M*	*SD*
Did this internship help you decide on a future career?	4.71	0.60
Did this internship provide insight into your employer's business or operation?	4.73	0.53
Did this internship help you learn new skills or techniques?	4.53	0.77
Did this internship help apply, integrate, or make relevant the knowledge gained from your coursework?	4.18	0.96
Did this internship help clarify your future education goals?	4.42	0.83

Likert scale: 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral*, 4 = *agree*, 5 = *strongly agree*

When asked to report on their overall support from direct supervisors within their internship, 95% of respondents reported to have received enough assistance during their experience. From an open-ended question, one student wrote "It has been a great experience that I have learned a lot from based on a career I plan to enter after college." A second student stated "I had the assistance I needed and was able to communicate any and all questions I had." In addition, students were asked if they received enough assistance from their faculty coordinator and 100% indicated that they did receive enough assistance. A student also stated "Every time I had a question, my coordinator was willing to help and make sure I had the resources needed."

Future Plans and Advice to Others

The agricultural science program at West Texas A&M University plans to continue supporting and promoting undergraduate internship opportunities and industry experience. Student feedback of the internship program within this cohort of students was overall positive and perceived to be a valuable asset to the student's educational career. Although mean scores produced from the Likert-type questions were high, the lowest rated item was the application of coursework toward the internship. Further research toward this question is warranted. University faculty and staff should explore opportunities to grow connections between class content and career skills by attending professional conferences, maintaining direct industry involvement, and reviewing relative literature available. Continual feedback from agricultural employers and industry partners should be solicited. Nonetheless, student interns in this evaluation did believe their internship experience strengthened their knowledge of an agricultural business and that it added clarity toward their choice of a future career. Perceptions such as these should be shared with post-secondary students along with relevant stakeholders.

Cost and Resources Needed

For students claiming an internship experience for academic credit, the total cost for 3 credit hours is $1,271.63 per long semester. Furthermore, students might have costs associated with housing and/or travel relative to the physical location of the internship. To the university, expenses may be incurred to host on-campus events such as career fairs or possible travel to meet and work with industry partners. However, colleges should invest funds and time toward growing internship opportunities for students. Relationships built from this should strengthen academic course work along with internship and employment opportunities for current students and alumni alike. Time should also be invested by university students so that they might find high quality internships which could help them in their professional career.

References

Callanan, G., & Benzing, C. (2004). Assessing the role of internships in the careeroriented employment of graduating college students. Education and Training, 46(2), 82-89. DOI:10.1108/00400910410525261

DeVuyst, C. S. (2006). Designing an agribusiness internship academic experience course. NACTA Journal, 50(1), 33-35.Food and Agriculture Organization of the United Nations (2017). *The future of food and agriculture trends and challenges.*

Gault, J., Redington, J., & Schlager, T. (2000). Undergraduate business internships and career success: Are they related? Journal of Marketing Education, 22(1), 45-53. DOI:10.1177/0273475300221006

Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. Upper Saddle River, NJ: Prentice Hall.

USDA National Institute of Food and Agriculture; employment opportunities for college graduates (2021) retrieved from https://www.purdue.edu/usda/employment/.

Badgrs Up! Digital Credentialing at Virginia Governor's School for Agriculture

D. Brett Milliken
Department of Agricultural, Leadership, and Community Education
Virginia Tech
175 Campus Drive
Blacksburg, VA 24061
540.231.1003
bmilliken@vt.edu

Margaret Morris
Department of Science, Technology, and Society
Virginia Tech
280 Alumni Mall
Blacksburg, VA 24061
maggiem23@vt.edu

Badgrs Up! Digital Credentialing at Virginia Governor's School for Agriculture

Introduction & Need for Innovation

Digital credentials, or badges, are graphic representations of skills or competencies gained through a learning experience that are awarded to learners and shared to a broader audience through web-based technologies (Lesser, 2016; Miller et al., 2020). These are most often used in institutions of higher education and within professional industries to track professional development. In addition to the visual badge, digital credentials carry metadata (Lesser, 2016) that potentially identifies the specific evidence of skills, knowledge, attributes or competencies that a receiver has demonstrated or attained (Miller et al., 2020). This data can be viewed by others, such as potential employers, to understand the detailed and diverse evidence behind the recognition bestowed by an institution (Miller et al., 2020), thereby creating greater transparency (West & Cheng, 2022). Digital credentials help overcome the challenges presented by traditional analog credentialing or certification systems such as grades, diplomas, and certificates – each lacking the depth and detail to provide background to the skills and knowledge that is represented by the paper award (Hinkel & Chartrand, 2018; Miller et al., 2020).

The Virginia Governor's School for Agriculture (VGSA) is a month-long summer residential program for gifted and talented rising high school juniors and seniors. Students selected to attend VGSA are among the most able rising juniors and seniors from the Commonwealth's public, private, and home schools (Virginia Tech, 2024). The on-campus program is focused on the transdisciplinary nature of agriculture and to develop future leaders and scientists for careers in agriculture (Virginia Tech, 2024). As part of VGSA, participants are placed in teams of five to six and are given a complex agriculturally-related global issue to research during their time in the program. Each team is required to write a 20-page literature review, create a research poster, present their research findings, and design an infographic to communicate research to non-academic audiences. Additionally, teams present their research at a public research symposium at the conclusion of the program.

How It Works

Digital credentialing was first implemented at VGSA during the 2023 session. The program director worked with the Office for Technology-Enhanced Teaching and Online Strategies (TLOS) and the Virginia Tech Newman Library to evaluate the Global Seminar research components (i.e., literature review, research poster, infographic, presentation) to establish the earing criteria, learning objectives, and deliverables. VGSA participants were able to earn six prerequisite credentials associated with the requirements of the Global Seminar research component (The Responsible Researcher, The Public Presenter, The Visual Communicator, The Scientific Ambassador, The Scholarly Writer, and The Collaborative Researcher). Participants who successfully completed each of the prerequisite credentials were awarded the Global Seminar Pathway Completer credential.

These credentials focused on developing competencies and skills associated with responsible and ethical research methods, communicating research through written, visual, and spoken mediums, and team collaboration. Five of the six credentials had an individual reflection requirement and collaborative research team deliverables. Program coursework was developed to assist participants in meeting the earning criteria and rubrics were created to evaluate both individual and collaborative deliverables.

The digital credentials were created, managed, and issued through Badgr, a web-based digital credentialing application, and were fully integrated into the associated required components in the VGSA Canvas site. Individual components were evaluated and scored by program staff and the collaborative elements were scored by individuals external to VGSA, with a score of 80% or higher reflecting mastery.

Results to Date & Implications

There were 94 VGSA participants in 2023. Ninety-nine percent of participants earned the *Responsible Researcher* badge. One hundred percent of participants earned the *Public Presenter* badge (there was no individual requirement for this credential). Ninety-eight percent of participants received the *Visual Communicator* badge. Seventy-seven percent of participants earned the *Scientific Ambassador* badge (participants created infographics as a requirement for this badge and it appears that there were some reviewers that did not differentiate between the purposes of a research poster and an infographic). Ninety-six percent of participants were awarded the *Scholarly Writer* badge with 97% of participants earning the *Collaborative Researcher* badge. In total, 76% of participants fulfilled all the requirements to earn the Global Seminar Pathway Completer badge. One purpose of digital credentialing is the ease of sharing the credentials with a broader audience (Miller et al., 2020). VGSA participants shared their credentials across a variety of social media platforms including Facebook (10), Twitter (2), LinkedIn (5), Pinterest Feed (3), Canvas ePortfolios (6), and LinkedIn Profile (153) for a total of 179 shares. Anecdotally, participants found value in working towards and earning digital credentials, and the added level of competitiveness incentivized participants to challenge themselves and their teams.

Future Plans

Digital credentialing will be implemented again for the 2024 VGSA session. The director and others will revisit, review, and revise the digital credentials being used for VGSA and make modifications to the performance objectives and the deliverables based on any programmatic changes. Since the current digital credentials relies on reviewers predominantly external to VGSA to score the group components, greater training may need to be provided to reviewers and each component may need more than a single reviewer to provide a holistic score. Additionally, the program director and stakeholders will explore further ways to incorporate digital credentials into other aspects of VGSA for student participants, perhaps based on curriculum. In addition to student digital credentials, the director will develop ways for VGSA staff to earn digital credentials based on the skills necessary for them to fulfill the expectations of their position (i.e., first aid/CPR training, leading research groups, conflict management and resolution).

Costs & Advice to Others

TLOS, charges $1.17 per external learner to participate in digital credentialing. VGSA was not charged in 2023 due to our relatively small number and trial status. Moving forward we plan to budget $1.17 per student. These charges may vary at different institutions. We advise others to start slow and simple. Find ways to integrate digital credentialing into your current programmatic structure. Also, work with a mentor or other persons with experience with developing digital credentials. Although it is fairly simple for badge recipients to share their credentials with others, be sure to have a clear plan in place to help recipients understand how to use the badges, especially if they are new to digital credentialing.

References

Virginia Tech. (2024). *Governor's School for Agriculture*. https://www.alce.vt.edu/signature-programs/governors-ag-school.html

Hickey, D. T., & Chartrand, G. T. (2020). Recognizing competencies vs. completion vs. participation: Ideal roles for web-enabled digital badges. *Education and Information Technologies*, *25*, 943-956.

Lesser, M. (2016, January 30). *Why we badge: The potential for digital credentials*. Mouse. https://mouse.org/news/why-we-badge-the-potential-for-digital-credentials-eddigest

Miller, K. K., St Jorre, T. J. D., West, J. M., & Johnson, E. D. (2020). The potential of digital credentials to engage students with capabilities of importance to scholars and citizens. *Active Learning in Higher Education*, *21*(1), 11-22.

West, R. E., & Cheng, Z. (2023). Digital credential evolution: How pen microcredentials/badges support learning in micro-, meso-, and macro-levels. In *Handbook of open, distance and digital education* (pp. 1197-1216). Singapore: Springer Nature Singapore.

Innovative Idea

Collaborating on an Accessible Cover Crop Curriculum

Matthew Hagaman
Illinois State University

Natalie L. Shaheen
Illinois State University

Campus Box 5960
Normal, IL 61790
309-438-8627
mthagam@ilstu.edu

Collaborating on an Accessible Cover Crop Curriculum

Introduction

In the US alone, over 600,000 youth under age 18 are blind or have low vision (US Census Bureau, 2022). Unfortunately, these students are often left out of STEM/STEAM courses due to the extensive use of inaccessible content or materials (Bell & Silverman, 2019; Yalçin & Kamali Arslantas, 2020). Key access barriers include inaccessible technologies (e.g., sight-specific measurement tools or web-based tools that are not compliant with the Web Content Accessibility Guidelines), spatial information presented exclusively in visual formats (e.g., figures or maps), and exclusion from critical laboratory learning. Like sighted students, blind/low-vision students benefit from learning in a variety of modalities. Therefore, curricular materials should support learning modalities that are interactive and do not presuppose that students are sighted.

The 4-H Cover Crop Science Project Book was piloted and first adopted in Illinois but was always intended for a national audience. The 9-module curriculum was developed through collaborations between subject matter experts, formal and informal educators, a STEM accessibility expert, and preservice teachers of blind/low-vision students.

Methodology

The 10 modules in the original curriculum used leading-edge cover crop science to introduce national middle school learning standards in STEAM subjects. Modules were written by faculty before being rewritten at a fifth-grade reading level by the first author, a STEAM education specialist. Revised materials were reviewed by the curriculum authors and additional subject matter experts (i.e., researchers specializing in agronomy, economics, genetics, and other fields).

The modules were piloted in informal education settings (including 4-H, library, and summer school programs) in cooperation with three undergraduate students in agriculture or biology teacher education programs before being revised, reviewed again, and re-piloted. The final curriculum saw two modules dropped and one added to better tell a single narrative about the past, present, and future of cover crop science.

The authors then collaborated with the preservice teachers enrolled in an access technology course to make 4 of the 9 modules from the final curriculum fully accessible to blind/low-vision students. Due to the small class size, this team was unable to revise all 9 modules. Consequently, the group prioritized the modules that would present the most barriers, maximizing the impact of the work and facilitating critical learning opportunities for the preservice teachers: creating tactile graphics and transcribing STEAM worksheets into Braille.

The team used the five principles of blind STEM pedagogy (Shaheen, 2023) to evaluate the accessibility of each module and determine what remediation work was required. To make the modules accessible, the group reformatted the digital documents to ensure compatibility with access technology (e.g., screen readers or refreshable Braille displays), prepared files for embossing hard copy Braille, and created tactile graphics (i.e., images intended for reading by

touch). Finally, the class wrote a nonvisual accessibility appendix explaining how to teach the curriculum. This appendix will be integrated into the project book's Facilitator's Guide.

The first author and a small team then worked with the second author's assistance to make the remaining 5 modules accessible.

Results to Date

Curriculum changes were reviewed by members of the blind community, including the second author and a blind youth. Furthers reviews by the blind community are ongoing.

The curriculum is currently available free of charge at Shop4-h.org as an Illinois-approved and national peer-reviewed curriculum.

Advice to Others

This experience showed us the power of collaboration and the value of using real-world projects to engage preservice teachers of blind/low-vision students in the process of making curricula more accessible. This collaborative project enabled preservice teachers to practice the skills they will perform as professionals while also making a lasting impact on a national stage.

We would encourage all curriculum developers to consult with nonvisual accessibility experts and to reimburse these experts for their time when possible. We would likewise encourage curriculum developers to include members of the blind/low-vision community in the development of accessible curricula. Finally, we would encourage faculty who prepare teachers of blind/low-vision students to pursue collaborative projects such as the one described here.

We need to get more blind/low-vision students engaged in STEAM, and the only way to do that is to give them positive STEAM learning experiences throughout their educational journey.

Costs

Costs associated with this work were primarily for time and effort spent on the project. A few consumable materials were used in the design and revision process by the authors of the curriculum and the preservice teachers, but the methods described here could be accomplished by most organizations, even with a small budget.

The one task we could not have completed without professional services was the final Braille transcription (cost: apprimately $250 for setup and 2 hard copies). Although students were able to complete draft transcriptions using the free BrailleBlaster™ software, we hired a certified Braille transcriber to complete the final transcription. This enabled us to offer learning materials of the best possible quality.

References

Bell, E. C., & Silverman, A. M. (2019). Access to math and science content for youth who are blind or visually impaired. *Journal of Blindness Innovation and Research, 9*(1). https://nfb.org/images/nfb/publications/jbir/jbir19/jbir090101.html

Shaheen, N. L. (2023). *Cripping STEM education: 5 principles for disrupting compulsory sightedness.* EdArXiv. https://doi.org/10.35542/osf.io/9gf2z

US Census Bureau. (2022). *Sex by age by vision difficulty*. American Community Survey. https://data.census.gov/table/ACSDT1Y2022.C18103

Yalçin, G., & Arslantas, T. K. (2020). Mentoring inservice teachers to support their inclusive science teaching practices for students with visual impairment. *International Journal of Contemporary Educational Research, 7*(2), 112-131. https://doi.org/10.33200/ijcer.741436

Innovative Poster

Constructing the Path: Utilizing Journey Mapping to Understand Local Food Systems and Beyond

Dr. Raquel Taylor
University of Nebraska- Lincoln
034 Filley Hall, P.O. Box 830947
Lincoln, NE 68583-0947
402-472-2807
rtaylor10@huskers.unl.edu

Rulon Taylor
University of Nebraska- Lincoln
143 Filley Hall, P.O. Box 830947
Lincoln, NE 68583-0947
402-472-2807
rtaylor31@unl.edu

Dr. Mary Emery
University of Nebraska- Lincoln
241 Filley Hall, P.O. Box 830947
Lincoln, NE 68583-0947
402-472-2834
memery2@unl.edu

Benjamin Jewell
University of Nebraska- Lincoln
620 1st Street, P.O. Box 160
Syracuse, NE 68446-0160
402-269-2301
bmcshane-jewell2@unl.edu

Introduction

Journey mapping originated as a market research tool but has since been implemented to understand public services. (Crosier & Handford, 2012). As a methodology, journey mapping visually depicts an individual's encounters with a service, across various aspects of their lives (Ly et al., 2021; Young et al., 2023). Individual journey maps can become an advocacy tool by allowing patients, customers, or clients to determine what went wrong in their experience and why their experience was unsatisfactory. An example is the journey of individual patients as they navigate the healthcare industry or of students pursuing a bachelor's degree. A new avenue is being investigated in journey mapping is to understand the system as a whole. This method allows stakeholders to understand how participants navigate the network of organizations and agencies holistically (Joseph et al., 2020). This type of journey mapping gathers collective knowledge on how the parts of the system interact as someone navigated that system. Instead of an individual's experience navigating a system, it is the system reflecting on itself. The mapping process visualizes how individuals flow through the system. Barriers to successfully navigating the system are more easily identified, allowing a collective group to address those barriers by working together to provide needed services, navigation tools, or creating new programming.

How it works

Journey mapping can be performed to understand systems either by collecting individual information or by gathering a group of people. When working with groups, it is important to include both those using the system and those providing services within it. Facilitating the journey mapping includes small group and large group discussions. The facilitator needs to work to ensure that fair discussion takes place. The discussion should involve all participants, thus allowing each participant to share fully. The facilitator collects the data from the journey mapping workshop. The facilitator should provide discussion topics that dive into the system to identify strengths, gaps, or barriers. Questions should cause participants to reflect on the system's different phases or aspects. Through each phase or aspect of the system, participants need to be asked the following questions: 1) how did they help, 2) what did they struggle with, 3) resources present, and 4) challenges faced? As participants answer these questions, they craft their journey through the different phases or aspects of the system. After participants are given ample time to answer the questions, facilitators should give small groups time to discuss the topics created from these questions. Facilitators should then allow the entire group to discuss small group discussion topics. Records will need to be kept during the group discussion to capture the overall recurring themes of the participant's journey in the system.

Results to date

Journey mapping has been implemented in projects looking at an individual moving through a system, but through a collective or collaborative journey mapping approach, the system itself can identify gaps, challenges, or barriers within a system. To provide evidence of how this works in a setting. The University of Nebraska-Lincoln set up a focus group to do a journey map of the local food system. Both food producers and providers were brought together to outline their journey through the food system. The results of this journey mapping have enabled researchers,

facilitators, and active members of the food system to understand the issues producers and service providers face. This information will be used to address those issues, leading to a more robust and sustainable food system for local and regional communities.

Future plans

Using journey mapping to understand food systems, facilitators will work within the system from the journeys collected to develop plans to address the barriers discovered. We recommend that those looking to identify gaps, challenges, or barriers in any system implement journey mapping. Due to its versatility, journey mapping can be utilized across any system from extension, education, marketing, or community. Other organizations and systems that utilize journey mapping will find similar results, providing them with information on vulnerabilities in their system.

Cost

The direct costs of in-person journey mapping are as follows:

Item	Cost
Meeting Room	$0-$100
Meal/Refreshments	$500
Materials: makers, posterboards, etc.	$10
Total	$510-610

The indirect cost of journey mapping would be participants taking time off work to be a part of the meeting or time away from family. Expert opinions are invaluable to ensure that significant data is collected. There is a need to ensure enough participants to gather sufficient data. Facilitators and researchers can reduce the costs by conducting journey mapping via Zoom using online platforms to construct a visual map.

References

Crosier, A., & Handford, A. (2012). Customer journey mapping as an advocacy tool for disabled people: A case study. *Social Marketing Quarterly, 18*(1), 67-76. https://doi.org/10.1177/1524500411435483

Joseph, A. L., Kushniruk, A. W., & Borycki, E. M. (2020). Patient journey mapping: Current practices, challenges and future opportunities in heathcare. *Knowledge Management & E-learning, 12*(4), 387-404. https//doi.org/10.34105/j.kmel.2020.12.021

Ly, S., Runacres, F., & Poon, P. (2021). Journey mapping as a novel approach to healthcare: A qualitative mixed methods study in palliative care. *BMC Health Services Research, 21*(915), 1-9. https://doi.org/10.1186/s12913-021-06934

Young, A., Dawes, L., & Senadji, B. (2023). Using journey maps as a holistic, reflective approach to capture students engineering identity experiences. *European Journal of Engineering Education 49*(1), 22-44. https://doi.org/10.1080/03043797.2023.2268023

Cultivating Change: Extension Educators' Innovative Community Gardening Practices for Food Access in Urban Low-Income Areas and Rural Food Deserts

Jenna Dyckman
Cache County Extension Office
179 N Main St #111, Logan, UT 84321
435-752-6263
jenna.dyckman@usu.edu

Emma Parkhurst
Davis County Extension Office
80 E. 725 S., Kaysville, UT 84037
435-919-1334
emma.parkhurst@usu.edu

Eva Timothy
Millard County Extension Office
83 Manzanita Ave., Delta, UT 84624
435-864-1483
eva.timothy@usu.edu

Kelsey Hall
Utah State University
ASTE
2300 Old Main Hill, Logan, UT 84322
435-797-3289
kelsey.hall@usu.edu

Cultivating Change: Extension Educators' Innovative Community Gardening Practices for Food Access in Urban Low-Income Areas and Rural Food Deserts

Introduction

The limited access to healthy food among vulnerable populations (VPs), whether due to cost or accessibility, is associated with lower consumption of fruits and vegetables and poor health outcomes (Vozoris & Tarasuk, 2003; Ziso et al., 2022). VPs include individuals or groups below a welfare threshold due to ethnicity, lower socioeconomic status, refugees, age, or food insecurity (Malberg Dyg et al., 2019). Through community gardens (CG), Extension programs can increase VPs' health and well-being, instill gardening independence by enhancing practical skills, and empower youth and adults to proactively shape their food landscapes, as emphasized in Egli et al.'s (2016) model, which highlights key benefits such as food security, community cohesion, ownership and pride, and physical activity (Barnidge et al., 2013). The intersection of low-income in urban areas and food deserts in rural communities created a need for innovative projects, such as CGs, that reach VPs in Utah (Feeding America, 2021).

How It Works/Methodology/Program Phases

Four CG programs, run by Utah State University (USU) Extension faculty in four urban and rural communities, aimed to address food security and food access in youth and adults of VPs. The CG programs target school-aged youth and families in food deserts and underrepresented or disadvantaged urban populations. We used a combination of lecture and experiential learning to increase participants' knowledge, skills, and confidence to grow a successful garden and use the vegetables grown to establish a healthy eating pattern. Various sources funded the programs, including USU Extension, the state SNAP-Ed program, local government, and a Specialty Crop Block Grant. Table 1 shows the steps to establish a CG program.

Table 1

Steps to Establish a Community Garden Program

Task	Task description
Identify partner	Find schools, city or county-owned spaces, and low-income housing locations possessing unused areas suitable for community gardening.
Research & assess space	Evaluate the identified space for the garden, considering sunlight, soil quality, accessibility, and existing infrastructure.
Develop garden plan	Create a plan integrating garden development, water management, and maintenance, addressing needs like raised beds and irrigation.
Educational planning & alignment	Use or adapt curricula, such as Ag in the Classroom, Jr. Master Gardener, Utah SNAP-Ed, and Utah Discover 4-H. Align activities to state educational standards to enhance gardening skills and complement academic goals.

Approach & proposal	Present your CG plan to partners and FFA programs, emphasizing the benefits of food access, education, and health and well-being. Be prepared to address questions or concerns from potential partners.
Advertising & solicitation	Develop messages to advertise the goals and educational benefits. Contact local agencies, FFA chapters, nurseries, lumber yards, and stores, seeking partnerships and resource donations for successful implementation.

Results to Date

The results reported from 2021-2023 are from the four CG programs: Youth Gardening in Rural Utah, Urban SNAP-Ed Adult and Family City Community Garden, SNAP-Ed Latino Community Garden, and SNAP-Ed Somali Refugee Community Garden. Key impacts from these four CG programs include the following:

- We distributed 653 lbs of food, serving 393 individuals through education, food sales, and donations.
- Latino participants (n = 19) met at the community garden once a week for 10 weeks and produced more than 200 lbs of produce.
- Participants increased knowledge of types of produce that grow well in their community (25%), confidence in growing and harvesting food (25%), and knowledge of how to prepare what they grow for consumption (50%).
- Youth participants demonstrated knowledge of when food is ripe for picking/preserving, how to use garden produce, and understood the health benefits (n = 25, 60%), respectively.
- One Somali refugee said, “I benefited from [the SNAP-Ed program] both mentally and physically. I am eating healthy food. I harvested a lot of vegetables [from the SNAP-Ed supported garden]. My sleep and my blood sugar improved.”
- In Cache and Millard counties, community organizations donated bags of soil, compost, seeds and transplants, wood chips, and stone for water conservation, maintenance, soil amendment, and food production.

Future Plans & Advice

We plan to expand programs through community partner collaborations to increase reach to VPs and establish more partnerships for ongoing support. These are key takeaways that could help other professionals implement innovative strategies in developing or sustaining CG programs:

- Keep the program simple and community-driven, focusing on a specific target group.
- Paraprofessionals, such as community health workers or employees of a nutrition education program, should be used to run the CG education program.
- For ongoing support, Foster collaborations with community members, school districts, and local businesses.

Costs & Resources Needed

The resources needed to start a CG program include land, infrastructure materials (i.e., lumber, pots, soil), gardening supplies (i.e., seeds, seed trays, shovels, hoses), education curriculum, community partnerships, water management supplies, and advertising materials. The cost of start-up resources for these community gardens, ranging from $200 to $7,000, varies depending on the location secured for the garden, the number of donations received, and the ability to use volunteers.

References

Barnidge, E. K., Hipp, P. R., Estlund, A., Duggan, K., Barnhart, K. J., & Brownson, R. C. (2013). Association between community garden participation and fruit and vegetable consumption in rural Missouri. *International Journal of Behavior Nutrition and Physical Activity, 10*(128). https://doi.org/10.1186/1479-5868-10-128

Egli, V., Oliver, M., & Tautolo, el-S. (2016). The development of a model of community garden benefits to wellbeing. *Preventative Medicine Reports*, 3, 348–352. https://doi.org/10.1016/j.pmedr.2016.04.005

Feeding America. (2021). Food insecurity among overall (all ages) population in [State]. https://map.feedingamerica.org/county/2021/overall/utah

Malberg Dyg, P., Christensen, S., & Peterson, C. J. (2019). Community gardens and well-being amongst vulnerable populations: A thematic review. *Health Promotion International*, 35(4), 790–803. https://doi.org/10.1093/heapro/daz067

Vozoris, N. T., & Tarasuk, V. S. (2003). Household food insufficiency is associated with poorer health. *The Journal of Nutrition*, *133*(1), 120–126. https://doi.org/10.1093/jn/133.1.120

Ziso, D., Chun, O. K., & Puglisi, M. J. (2022). Increasing access to healthy foods through improving food environment: A review of mixed methods intervention studies with residents of low-income communities. *Nutrients*, *14*(11), 2278. https://doi.org/10.3390/nu14112278

Digital Detox: Elevating Learning through Focus Fridays

Luisa Honeywell
1612 Claflin Rd
Manhattan, KS 66506
785-532-5804
luisahoneywell@k-state.edu

Jason D. Ellis
jdellis@k-state.edu

Katie Starzec
kstarzec@k-state.edu

Digital Detox: Elevating Learning through Focus Fridays

Introduction

The world is rapidly advancing technologically, altering interactions with one another, learning in classrooms, in the workplace, and perceptions of the world around us. People rely on handheld devices and are subconsciously attached to them as if they are a part of their bodies (Mohamed et. al, 2023). With billions of users engaging daily, social media has exceeded its initial purpose of connecting individuals to become an extensive force shaping opinions and behaviors. As society becomes increasingly intertwined with technology, the ascendancy of social media emphasizes the transformation of human interaction and highlights the need for critical reflection on its implications for privacy, democracy, and social cohesion (Wike, 2022).

Due to the rapid growth of technology, both benefits and challenges have affected learning opportunities in the classroom specifically with Generation Z students. While technology offers options for enhanced learning experiences, its overuse can lead to damaging effects. Generation Z, born into a digital age, often grapples with distractions such as social media, messaging apps, and online gaming during class time. This constant connectivity can alter their focus, leading to decreased attention spans and diminished academic performance (Mohamed et al., 2023). Moreover, relying on digital devices for retrieving information may weaken critical thinking skills and the ability to retain knowledge. Balancing technology integration with mindful usage guidelines is essential to mitigate these adverse effects and encourage a more beneficial learning environment.

How it works

The term "Focus Friday" is designed to encourage students to dedicate their attention solely to classroom activities without the use of technological devices. Over an 18-week semester, students were instructed to refrain from using any form of technology for the 50-minute duration of class once a week. At the beginning of class every Friday, the course professor would uniquely split the students into small groups of three or four and make sure that each week would be different groups.

Enforcing “Focus Fridays” promotes a learning environment by canceling out distractions and encouraging face-to-face interactions among students. The idea is by putting away the devices, students can improve their focus, participate more actively in discussions, and collaborate effectively with their peers, which will help them develop valuable skills in critical thinking and interpersonal communication.

Throughout the semester, the instructor used these Fridays to complete career-building activities. The goal was to increase students’ workplace professionalism and help them get the job they wanted. For example, one exercise was practicing how to negotiate terms and conditions when accepting a new job offer. A second was speed networking with other classmates. A third activity was mock interviews with alumni and other professionals.

Results to date

Table 1.

Students’ Evaluation of Focus Fridays Over the Fall Semester (N=22)

Question	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree	M	SD

I like the idea of having one class day per week with no technology	10	8	3	1	0	4.23	0.85
Having one day of no technology should be implemented in other classes too.	5	11	4	2	0	3.86	0.89
Focused Fridays has helped me become more comfortable with communicating or sharing in class	5	10	6	1	0	3.86	0.83
Focused Fridays helped me be better at interacting with other students	6	9	6	1	0	3.86	0.99

Note: **Five-point Likert scale questions; 1= strongly disagree to 5 = strongly agree.**

Students in an Agricultural Communications class were asked to give their opinions on how they felt about the Focus Friday concept. The first four questions were on a five-point Likert scale and the fifth question was a short answer. The question asked, "How would you improve Focus Fridays?" After getting the results back, we saw three trends in their answers.

The first trend seen was positive; these students saw nothing wrong with the activities and wished they were more popular in other classes. One student said "Focus Fridays were a great help throughout the semester because they connected multiple students. Implementing more Focus Fridays involving student learning and interactions will help create a better environment surrounding the idea versus sitting and listening to a different form of lecture".

The second trend was positive, explaining ways to improve it for other classes. The students appreciated trying Focus Fridays but needed more structure to the activities, strongly enforcing the no device rule including lecture slides, and a more diverse group. A third group of students felt they were not challenged enough to get out of their comfort zones and feel heard during a group discussion.

Future plans

Moving forward, educators should consider implementing regular "Focus Friday" sessions into their teaching routines and provide guidance and support to help their students navigate and maximize the benefits of focused learning opportunities. Additionally, consistent assessment and feedback from the students can improve the future of Focus Fridays. One way to maximize quality feedback would be to ask the students in an exit survey at the end of a semester for their opinions on the activities they completed during the semester.

Costs

Focus Fridays are intended to cost nothing but the student's time and attention. The goal is to come to class prepared to be off their device for 50 minutes and engage with the professor, the lesson, and their peers.

References

Mohamed, S.M., Abdallah, L.S., Kotb Ali, F. N. (2023). “Effect of digital detox program on electronic screen syndrome among preparatory school students.” *Nursing Open 10*(4), 2222-2228. DOI: 10.1002/nop2.1472

Wike, R., Silver, L., Fetterolf, J., Huang, C., Austin, S., Clancy, L., Gubbala, S. (2022). “ Views of social media and its impacts on society.” *Pew Research Center.* https://www.pewresearch.org/global/2022/12/06/views-of-social-media-and-its-impacts-on-society-in-advanced-economies-2022/

Engaging One-Health Role-Models to Increase STEM Competency and Motivation in Middle School Students

Julie Harlin, Theresa Murphrey, Torri Whitaker, Christine Budke, Nicola Ritter, and Duncan Walker

Texas A&M University

Department of Agricultural Leadership, Education, and Communications

Department of Veterinary Integrative Biosciences

The Center for Educational Technologies

Department of Computer Science and Engineering

TAMU 2116

College Station, TX 77843-2116

979-862-3014

j-harlin@tamu.edu; t-murphrey@tamu.edu; cbudke@cvm.tamu.edu; nritter@cvm.tamu.edu; walker@cse.tamu.edu; torrilw@tamu.edu

Engaging One-Health Role-Models to Increase STEM Competency and Motivation in Middle School Students

Introduction/Need for Innovation or Idea

Across the nation, we have shown an inability to achieve STEM diversity in higher education (Estrada, et al., 2016). Further, the Pew Research Center consistently finds that American students lag behind other countries in science, regardless of the test used (Desilver, 2017). Compounding these difficulties, science is not among the most liked subjects in school even though STEM plays a critical role in society (Jones, 2022). Many scientific and educational organizations recommend that efforts to interest students in STEM majors and careers begin at the middle school level, a time when students are developing their interests and recognizing their academic strengths (Kier, et al., 2018). One approach to encourage interest in STEM is to introduce students to STEM role models, individuals who can positively shape a student's motivation by acting as a successful exemplar (Gladstone, et al., 2021).

This five–year project is part of a NIH-SEPA funded grant (https://nihsepa.org) which has developed student-centered online modules designed to teach science standards in the context of One-Health (the integration of human, animal, and environmental health). Each module also incorporates case studies focused on real-world issues designed to be of interest to students (Drymiotou, et al, 2021). This project addresses student motivation as well as science competency by incorporating relevant problem-based learning facilitated by near-peer role models who introduce middle school students to science and the scientific community and who can, according to research by Cooper, et al., 2023, promote intellectual interest, provide intellectual autonomy and authority to address problems, build self-efficacy, and normalize the process of science to minimize potential performance anxiety.

Methodology

The project addresses both student science competency and motivation via One Health case studies and near-peer role models. A multidisciplinary team including teachers, scientists, and faculty developed seven bilingual One Health modules and accompanying case studies which adhere to Next Generation Science Standards (NGSS) and incorporate multiple learning styles. Each case study includes a detailed leader's guide, comprised of background information, connections to learning elements from the associated One Health module, delivery strategies, and a relevant capstone project designed to capture student interest. Graduate and professional students were recruited by faculty based on their commitment to underserved youth, their knowledge and experiences in One Health and STEM fields, and their ability to connect with youth in dynamic ways. Prior to engaging with students, a veteran middle school teacher provided instruction in and modeling of classroom effectiveness, engaging diverse populations, and appropriate relations, boundaries, and communication. Role models facilitated One Health learning experiences at schools and camps with high populations of at-risk and underserved students.

Results to Date

A cohort of teachers, scientists, and STEM faculty created case studies associated with the

existing One Health modules. These case studies are aligned to each module as follows: Antibiotic Resistance – Ecology, Antioxidants and Cancer - Cell Biology, Avian Influenza - Infectious Disease, Diabetes – Stress & Homeostasis, Middle East Respiratory Syndrome – Genetics, Pharmaceuticals - Clinical Trials, West Nile Virus - Zoonotic Disease.

Tracking of student engagement and learning outcomes is achieved through Sharable Content Object Reference Model (SCORM) packages hosted on our university based LMS (Moodle). This data aids in determining level of engagement with the module and assessing learning gains. Currently, 185 teachers have classes registered for the One Health curriculum on Moodle. Initial pre and posttest scores indicate an increase in concept knowledge.

Over the past two years 12 graduate and professional students from the colleges of Agriculture & Life Science, Veterinary Medicine, and the School of Public Health, led "One Health Learning Experiences" for over 800 K-12 students from across six school districts, four science summer camps, and a Poultry Science Day. A total of 131 direct contact hours were achieved through these events. Utilizing a One Health case study, students practiced problem-based learning to develop a response to a real-world issue. Middle school students were encouraged to lead the capstone projects, supported by the role-models, thereby strengthening scientific confidence, and promoting intellectual autonomy and authority. Final projects included mock press conferences, poster sessions, and Google Slide presentations. Reflections from role-models and students (noted below) indicate an increase in student interest in and understanding of STEM topics.

> "Man, I wish we learned more stuff like this in school. Maybe I would actually pay attention." – [School] ISD Student Participant
>
> "Although the participants were very young, they were quite inquisitive about One Health" – Agriculture & Life Science PhD Student Leader
>
> "The students began to display a genuine interest in science concepts such as zoonotic diseases and careers in STEM" – Veterinary Student Leader

Future plans/advice to others

Our next phase includes comparison of learning outcomes for students engaged with the modules to similar students who did not use the modules as well as assessing attitudes towards STEM before and after engaging with case studies led by role-models. Longitudinal studies examining whether participating students pursue and persist in STEM fields are also under development. Others who want to implement a similar program are encouraged to engage with stakeholders throughout the process and include an interdisciplinary team of researchers who represent areas of interest to students. Use of the One Health curriculum may also prove beneficial in agriculture education classes. The case studies within the curriculum are of agricultural significance and may promote collaboration between future agriculture leaders and other science professionals.

Costs/resources needed

Those wishing to replicate these learning experiences may access the NIH-SEPA funded One Health curriculum free of charge. Mobile devices or computers with internet access are required as well as staff and faculty engagement and technical support in the form of server space and LMS creation.

References

Cooper, A., Bolger, M. (2023). The Classroom-Research-Mentoring Framework: A lens for understanding science practice-based instruction. *Science Education 108(1) p. 275-307* https://doi.org/10.1002/sce.21835

Desilver, D. (February 15, 2017). U.S. students' academic achievement still lags that of their peers in many other countries. *Pew Research Center.* https://www.pewresearch.org/fact-tank/2017/02/15/u-s-students-internationally-math-science/

Drymiotou, I., Constantinou, C., & Avraamidou, L. (2021) Enhancing students' interest in science and understandings of STEM careers: the role of career-based scenarios, International Journal of Science Education, 43:5, 717-736, DOI: 10.1080/09500693.2021.1880664

Estrada, M., Burnett, M., Campbell, A. G., Campbell, P. B., Denetclaw, W. F., Gutiérrez, C. G., Hurtado, S., John, G. H., Matsui, J., McGee, R., Okpodu, C. M., Robinson, T. J., Summers, M. F., Werner-Washburne, M., & Zavala, M. (2016). Improving Underrepresented Minority Student Persistence in STEM. *CBE life sciences education, 15(3), es5.* https://doi.org/10.1187/cbe.16-01-0038

Gladstone, J. R., & Cimpian, A. (2021). Which role models are effective for which students? A systematic review and four recommendations for maximizing the effectiveness of role models in STEM. *International Journal of STEM Education*, *8*(1), 1-20. https://doi.org/10.1186/s40594-021-00315-x

Jones, M. G., Chesnutt, K., Ennes, M., Macher, D., & Paechter, M. (2022). Measuring science capital, science attitudes, and science experiences in elementary and middle school students. *Studies in Educational Evaluation. 74*.

Kier, M. W., Blanchard, M. R., Osborne, J. W. & Albert, J. (2014). The Development of the STEM Career Interest Survey (STEM-CIS). *Research in Science Education. 44,* 461–481. https://doi.org/10.1007/s11165-013-9389-3

Establishing a new foundation for the [University] Spring Judging Clinics

Introduction/need for innovation or idea

The 2024 [University] Spring Judging Clinics (SpJC) is an annual event that provides the opportunity for FFA students from across [State] to engage with and be exposed to different Career Development Event (CDE) contest areas. This event, post-Covid-19, has traditionally been focused on introducing the concepts of the CDE areas to students with a focus placed more squarely on content and less on practical contest instruction. Previous year's events consisted of two identical days of clinics that brought a limited number of students to [University]'s campus based on a central location for a networking and meal portion of the event. Previous FFA advisor's and clinician's feedback, along with identified research (Baker et al., 1996; Bowling & Ball, 2020; Goodwin & McKim, 2020) showed a need to adapt the clinic instruction to sift away from content and focus on contest tips/tricks/skills along with a component highlighting [University]. Based on limitations of availability, an additional adaptation identified was the length of the entire event. A change from two days to one day was deemed most appropriate; however, this would essentially reduce the number of attendees by half. A compromise of abandoning the networking and meal portion of the event was pursued. This compromise allowed the clinics to be the main focus and open the agenda for new activities and scheduling opportunities to highlight university programs.

How it works/methodology/program phases/steps

The 2024 SpJC was held as a precursor for the attending schools to begin their National FFA Week festivities with an exciting event. In preparation for the event, individuals from across [University] were asked to serve as clinicians for different [State] CDE contest areas ([State FFA Site]). Six faculty and staff members agreed to host clinics in their representative areas (Agricultural Mechanics, Aquaculture, Forestry, Horse Evaluation, Livestock Evaluation, Poultry Evaluation). The clinicians were offered to host their clinic either as a half day event, two identical half day events or a full day event. Registration for the SpJC was limited based on clinic locations rather than a hub location to maximize the number of FFA students that could attend the event. Advisors registered for a number of spots at a clinic to allow for the flexibility of a chapter to provide the opportunity to attend to as many students as possible. Additional individuals were contacted to assist in activities to be provided, at no cost, during the day of the SpJC (Campus Tours, Recruiting Expo, Keynote Speaks). These free-to-attend activities were introduced the 2024 SpJC to provide university exploration opportunities to any students not attending a clinic during that time. These activities included campus tours, an expo comprised of 11 university colleges and entities, and a Q&A with the [State] State FFA officers. A two-hour window was also implemented to encourage advisors to take their students across or near campus for lunch.

Results to date/implications

The 2024 SpJC hosted 215 registrants across eight scheduled clinics leading to 901.5 contact hours for students attending these clinics. An additional 35 students attended the SpJC only participating in the free-to-attend activities. At the end of each clinic, an evaluation

instrument was provided to the students electronically for them to provide their feedback on their experience. Of the 215 participants 92 completed the clinic evaluation, leading to a 42.79% response rate. The respondent average years of participation in FFA was between two and three years (M = 2.34, SD = 1.43), and their average participation in the contest area associated with the clinic, if they were competing in the CDE, was between one and two years (M = 1.69, SD = 0.96). Using a five-point Liker-type scale, participants responded to their agreeance to three questions relating to their preparedness to compete at the state level, benefit gained beyond the scope of the CDE, and their recommendation of the clinic for future FFA members based on their experience. All three areas were highly agreed upon with the statement of recommending this event averaging the highest (M = 4.65, SD = 0.64) and having 83 participants (91.21%) agree with the statement. Eighty-two participants (89.13%) agreed with the perceived benefit beyond the scope of CDE contests statement and all responses averaged between somewhat and strongly agree (M = 4.43, SD = 0.74). The statement regarding the participants perceived preparation to compete at the state contest averaging the lowest (M = 4.28, SD = 0.76); however, 80 participants (86.96%) still agreed with the statement. When asked to identify, using a five-point Likert-type scale, the level of which the instruction was focused on contest versus content, respondents felt that the clinics were focused equally on both (M = 3.00, SD = 0.83). While less participants (f = 20, 21.74%) felt that the clinic focuses more on the contest than the content than the opposite (f = 23, 25.00%), there were more who felt that the clinic focused entirely on the contest which brought the average back to the middle.

Future plans/advice to others

While the attempt of the 2024 SpJC was to focus on the contest during each of the clinics and the apparent result is that there is still work to do, the event was still a success. Students and advisors raved about the clinics and activities and the clinicians were better able to understand what the vision of the event is due to the more focused approach and time commitment. For future SpJC, a continued effort to move toward contest focused clinics will be made by addressing the responses provided through the evaluations and anecdotal data provided during the event. It is our recommendation to any entity hosting CDE related events to work closely with clinicians or facilitators to focus on meeting students where they are at, while instilling the buy-in on contest focused instruction. This year's event allowed students to not only engage in contest related material, but also expose them to [University]. This experience not only provides an invaluable experience on a university campus, but it also allows students to explore the intricacies of the CDE contests they are competing in.

Costs/resources needed

The largest resource needed for this kind of event is time. Space for the clinics was secured by each of the different clinicians for their respective clinics, and the hub space was provided by a supporting college of the event. Meals were provided by university catering and sponsored, in part, by industry partners. Swag was provided, in part, by supporting colleges and university units. Additional costs of meals, swag, and administration costs were covered by the registration fees of the participants.

References

[State FFA Site]

Baker, L. M., Settle, Q., Chiarelli, C., & Irani, T. (2013). Recruiting strategically: Increasing enrollment in academic programs of agriculture. *Journal of Agricultural Education*, *54*(3), 54-66. https://doi.org/10.5032/jae.1996.02034

Bowling, A. M., & Ball, A. L. (2020). More than winning: A mixed methods grounded theory investigation of the career development event preparation process. *Journal of Agricultural Education*, *61*(4), 1-14. https://doi.org/10.5032/jae.2020.04001

Goodwin, C. M., & McKim, A. J. (2020). Teacher philosophies of career development events: Implications for curriculum in agriculture, food, and natural resources education. *Journal of Agricultural Education*, *61*(2), 193-205. https://doi.org/10.5032/jae.2020.02193

Expanding the Reach of AEE Club: Rebranding the Departmental Student Organization as FFA Alumni and Supporters

Introduction/Need for Innovation

Student organizations have tremendous value to the teaching mission of colleges and universities (Aide et al., 1991; Hoover et al., 2004). Involvement in student organizations promotes the educational outcomes of institutions of higher education (Floerchinger, 1988, as cited by Hoover et al., 2004). As it relates to agricultural education specifically, a study from Roberts et al. (2007) found that there is value in and need for a student organization for pre-service agriculture teachers for both professional development and creation of a social network for students.

When participation in the Agricultural and Extension Education Club at [University] began to dwindle for a variety of reasons including a change of department name and the impact of the COVID-19 pandemic, the current AEE Club officer team and advisors began to brainstorm how the mission of advancing agricultural education could be promoted to the broader student body. Thus, FFA Alumni and Supporters at [University] was born. FFA Alumni and Supporters chapters work to rally support of agricultural education and FFA chapters in local communities and support the work of FFA advisors (National FFA Organization, n.d.).

How it Works

Discussions of the potential rebrand began in the semester before the establishment of FFA Alumni & Supporters at [University]. When the idea was initially presented, students and advisors were in agreeance with the idea, but wanted to gather more information. Informal meetings were held with current AEE Club officers and faculty in the department to gather thoughts and more information about the implications of a club rebrand. A meeting was also held with [State] FFA State Staff, to inquire about the possibility of establishing such a chapter and how this chapter could support the work of [State] FFA. With largely positive response from both students and faculty, as well as FFA State Staff, the current AEE Club Officers presented a motion to the general body two weeks before the last scheduled business meeting of the semester to change the name of the organization from AEE Club at [University] to FFA Alumni and Supporters at [University]. All dues paying members were notified of the proposed bylaw amendment and notified of the meeting time and date where they could discuss and vote on the amendment.

The amendment unanimously passed, and a motion was also made and passed to defer the election of officers until the club had been announced to the greater student body. Additionally, a leadership team was formed of those present at the meeting to work to get the organization off the ground.

This leadership team met over the summer to reevaluate the bylaws, plan the Fall semester meetings, and plan for advertising the organization to the student body. This team also worked to file necessary paperwork with the Student Involvement Office at [University] to properly change the name within the university. The bylaws stayed mostly the same because the mission of the organization was still the same, just with a larger scope beyond the just the department. The [State] FFA Advisor and [State] FFA Alumni Council President were invited to

speak at the first and second meetings to share opportunities and ideas for this reformed organization. At the second meeting, officer nominations occurred and at the third meeting, officers were elected. The leadership team worked to promote FFA Alumni and Supporters by rebranding and sharing the social media handles, sending an all-campus email, promoting meetings on the [College] website, and setting up a booth at multiple campus involvement fairs.

FFA Alumni and Supporters at [University] meets on the first and third Wednesdays of every month. These are Wednesdays opposite of Collegiate Young Farmers and Ranchers organization on campus. FFA Alumni and Supporters at [University] has elected a full eight-person officer team, has hosted numerous guest speakers and team-building activities, and has plans to complete service events for the [State] association and local FFA chapters across [State]. Students recently completed an Official Dress drive, are serving as judges for a local federation's Leadership Development Events, are facilitating workshops for local FFA chapters, and are participating in the [State] FFA Alumni Annual Conference. Future plans include volunteering at State FFA Convention, helping with state leadership conferences, and creating a networking event with other FFA Alumni and Supporters corporate and school-based chapters.

Results to Date

The FFA Alumni and Supporters Chapter was established after a vote of the membership body of the former AEE Club in the Spring of 2023. The first meetings were held and officers were elected in the Fall of 2023. During that time, membership has increased from an average of ten students per meeting to fifty students per meeting, an increase of 500%. Additionally, there was enough interest in leadership positions to field a full, eight-person officer team. Plans are in place for club members to volunteer at upcoming state-level CDEs and LDEs. Additionally, more recognition and visibility has come to the agricultural education degree program at [University].

Advice to Others

For other departments that would like to replicate the transition of your departmental club to an FFA Alumni and Supporters chapter, it is recommended to have conversations with your FFA State Staff and FFA Alumni Council early. Through establishing an early partnership, our Alumni & Supporters dues were waived, and a mutually beneficial relationship began. It is also recommended to work with your university's student organization governance office to be sure all proper procedures are in-place before the official name-change vote occurs.

Cost/Resources Needed

A team of supportive students and faculty is essential to getting a newly rebranded organization off the ground. Additionally, low-cost/high-traffic advertising mechanisms such as involvement fairs, mass student emails, social media, flyers, and word of mouth are essential to spreading the word about your organization. A $25 fee was required to change the organization on the club bank account.

Experiential and Transformational Learning as a Professional Development Framework

Dusti M. Ingles & Michael S. Retallick

Iowa State University

Dusti M. Ingles

513 Farm House Lane

201 Curtiss Hall

(515) 294-5872

inglesd@iastate.edu

Michael S. Retallick

513 Farm House Lane

201 Curtiss Hall

(515) 294-5872

msr@iastate.edu

The purpose of this poster is to demonstrate how Iowa's Team AgEd used principles of Experiential Learning (EL) and Transformational Learning (TL) as a framework for a state-wide professional development conference. The conference was intended to build community and empower agriculture teachers to meet the future demands of agricultural education in Iowa within the context of TL.

The program was guided by Preflection, Experience, Reflection, and Transfer (PERT) as a process for utilizing EL in programs. There were three reflective components to the program: preflection (before), formative reflection (during), and summative reflection (after). By using PERT as a process for implementing EL, we employed the principles of EL to engage participants in minds-on learning (Kolb, 2015; Retallick, 2009).

The necessary components of TL include 1) identifying a disorienting dilemma; 2) engaging in critical discourse; and 3) processing experiences by critically reflecting on personally held beliefs, ideas, values, and attitudes (Mezirow, 1997). By creating a space for critical discourse and providing the necessary tools for meeting these criteria for TL, our ambition was to empower agricultural educators to identify and act towards improving dilemmas in their agriculture programs.

Program

Preflection before the Experience

During the preflection stage of the conference, participants engaged in pre-work, completed a pre-survey, and participated in an introductory workshop session. The session aimed at helping participants process (reflect) and share (discuss) through a series of intentionally guided reflection prompts. These prompts began with *descriptive reflection* and asked participants to define and describe their situation and identify their disorienting dilemma. Next, encouraged *reflection* by building awareness on these situations. We asked participants what their role, contribution, and level of responsibility was in the situation and what their feelings were about their dilemma. Finally, we engaged in *critical reflection* by participants to assess the situation and determine desired outcomes. This was accomplished by asking them what their desired outcomes and goals were, who would benefit from improving the situation, and how it would impact their future.

Formative Reflection on the Experience

During the conference, we engaged participants in formative reflection by asking them to utilize transformational learning in a team breakout session and to process and debrief in a whole-group reflection. For the team breakouts, participants were divided into teams of 12 in which the teams were purposefully formed by mixing years of experience. Facilitators were assigned to monitor team progress and serve as a resource. The team members were asked to share the disorienting dilemmas they had identified in the preflection session. They explored options and ideas for solutions in a team discussion. Next, the teams engaged in *action reflection* and considered a plan for implementing viable solutions for their problems. They were asked to create and share their goals for implementation. Finally, the teams regrouped and reflected on their biggest highlights and takeaways from the program experience.

Summative Reflection and Transfer After the Experience

At the end of the conference, participants engaged in summative reflection by asking them to transfer their learning. They were asked to consider how they could integrate the principles of TL into their experiences and programs. We asked them to identify their TL takeaway and to consider how they could apply the concepts from conference to new contexts and situations. Finally, participants were guided to identify their next steps. We asked them to think about who they could connect with after the conference and how they could collaborate in the future. The conference was concluded with a post-survey.

Results and Implications

A pre/post-survey design was administered to determine the effectiveness of the program. Participants reported growth in their knowledge of TL and intention to use TL in their programs. Over half the participants reported changes in the way they looked at themselves, their ideas, their behavior, and their beliefs. Most participants highly valued their time at the conference. One participant shared that the conference helped them to "focus on the reason why we do things." Some participants shared that they wished we had even more time to collaborate with teams and shared that "you [had] us talking and collaborating and good stuff was happening." One participant shared that "this was one of the best state held conferences I have been to."

We found that using the PERT process for utilizing EL and the principles of TL to host a state-wide professional development conference was impactful. Based on our intention to build community and empower change in agricultural education programs through facilitating critical discourse and guided reflection. The broader implication of this project is the usefulness of this framework for developing engaging and impactful professional development.

Future Plans and Advice to Others

Our plans involve following up with participants after the conference to encourage continued engagement in community discourse and reflective thinking. Our goal is to continue to support community building, the development of reflecting thinking skills, and to support the empowerment of agricultural educators to solve the dilemmas that face their programs.

Our advice is to use the PERT process for implementing EL and the principles of TL as a framework for professional development. We plan to continue using this framework for future professional development as we help agricultural educators tackle important challenges. Conceptualizing reflection as preflection, formative, and summative should be considered as a means to develop reflective practice.

Resources Need

A primary requirement for this program is substantive time for reflection and discourse. Reflection and discourse should be intentionally guided with prompts. We found it useful to consider prompts in advance and created a workbook for participants to capture their thoughts and discussions. We also provided participants with guides for EL, TL, discourse, and reflection. We found it useful to designate team leaders and identify facilitators who were available to assist the teams as needed.

References

Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development*. Pearson Educated Limited

Mezirow, J. (1997). Transformative learning: Theory to practice. *New directions for adult and continuing education, 1997(74)*, 5-12.

Retallick, M. S. (2010). A minds-on approach to experiential learning in agricultural education. The Agricultural Education Magazine, 83(1), 9–11.

Exploring Student Perceptions of Mentorship: A Photovoice Evaluation Project

Rebecca Mott
123 Gentry Hall Columbia, MO 65211
(573) 881-0749
mottr@missouri.edu

Jon Simonsen
124 Gentry Hall Columbia, MO 65211
(308) 999-1641
simonsenj@missouri.edu

Hannah-Rose Foote
126 Gentry Hall Columbia, MO 65211
(518) 928-9023
hsfvff@missouri.edu

Innovative

Exploring Student Perceptions of Mentorship: A Photovoice Evaluation Project

Introduction

Each year, the University of Missouri selects a cohort of approximately twenty sophomore agriculture students for involvement in the Litton Leadership Scholars. This program focuses on developing the whole student through leadership education coursework, academic field-based mentorship, and impactful change. To better understand how 2023-2024 Litton Leadership Scholars perceive mentorship, investigators utilized Photovoice; a participatory action research process that allows participants to tell a story using pictures (Wang & Burris, 1997). The goal of this Photovoice evaluation project was to understand how undergraduates involved in the Litton Leadership Scholars program view mentorship. Keller & Mott (2020) suggest Photovoice can help practitioners understand what program content is most salient to program participants through picture clues and discussion. By gaining deeper understanding about scholars' perspectives about mentorship, more robust learning experiences can be designed to help meet the needs of participants.

How it Works

Photographs, combined with written and spoken language, are a powerful communication tool that allow for more richness and depth than traditional survey methods (Wang & Burris, 1997). Photovoice methodology allowed investigators to see the concept of mentorship through the eyes of Litton Leadership scholars (Sanders, 2011). This project was approved through the university's institutional review board and conducted by faculty members and a graduate student with ties to the program. Litton Leadership scholars were invited to take the following steps during their winter breaks:1). Using a phone or camera, take pictures that represent or depict mentorship to them. 2). Choose the photo that best explains their most impactful mentorship observation. 3). Be prepared to reflect on and participate in a discussion with others in the program about their photo and experiences upon return from break.

In a regular weekly program session during the spring semester, investigators conducted and audio recorded focus groups with program participants. Discussion with the group of nine students lasted 45 minutes in length, and the group of ten continued for 60 minutes. We used an adapted SHOWeD model of questioning to learn about participants' photographs and the meaning they attribute to them (Wallerstein, 1994, Wang, 1999). The SHOWeD model includes the following basic prompts: What do we *SEE* in the photo? What is really *HAPPENING? WHY* does this exist? How might we be *EMPOWERED*? What can we *DO*? How does the story relate to *OUR* lives? Before the discussion began, students were provided the prompts associated with the SHOWeD model so they could engage in written reflection in advance. At the conclusion of the Photovoice project, faculty and graduate student investigators engaged in thematic analysis (Braun & Clarke, 2012) of transcripted audio recordings of focus groups, reflective writings, and photographs to identify themes about how participants understood mentorship. Steps included: data familiarization, coding, theme generation, theme review, naming themes, and explaining themes (Braun & Clarke, 2012). The use of multiple investigators, reflexivity, and an audit trail helped promote trustworthiness.

Results / Implications

Three themes emerged from focus group discussions, reflection worksheets, and photographs.

Theme 1: Mentorship involves providing safety when challenges arise
Photographs and participant interviews emphasized the importance of helping mentees feel safe. One participant shared a photograph of a young woman walking ahead of a group down a steep hill, advising followers where to step "*when the path was rough*." She explained that mentors help make the challenge "less difficult for others." Other participants used words like *safety net, safe space, assurance, relieving pressure,* and *comfort zone* to describe their photographs.

Theme 2: Mentorship includes reciprocity between two parties
Several participants' photographs depicted reciprocity in a mentoring relationship. One participant who shared a photograph of two horses explained, *"The mutual grooming in this photograph demonstrates how mentorship is double sided. To get the most out of the bond, both parties need to participate in the relationship." Another participant photographed two people standing under an umbrella and explained, "Where we are in life is always changing. Sometimes you're the person holding the umbrella, and sometimes you're not."*

Theme 3: Mentorship includes challenging someone in a positive way
One participant shared a picture of a kindergarten teacher sitting on the floor with her students helping them learn to read. She explained that mentors "*lift others up when needed and are the biggest and loudest cheerleader*." Other students noted that mentors "*push someone to do bigger things by providing positive feedback* and *acknowledge and encourage to help people feel empowered*."

Future Plans / Advice to Others

Future plans include sharing photographs captioned by the participants at a gallery event for program funders and stakeholders. It is a frequent practice for Photovoice projects to be displayed at a public or community event. We hope this exhibition will help the mentorship conversation to continue among program participants and interested stakeholders. Additionally, we will consider these mentorship themes as we plan future program coursework and activities.

Although Photovoice has the potential to inspire and empower participants while promoting discussion, it is not an appropriate technique for all groups. While adolescents and adults can think abstractly about complex issues, younger audiences may not yet have this ability. Additionally, when utilizing Photovoice to conduct evaluation or research, investigators should be prepared with a plan to provide picture taking devices to participants who may not have access to a phone or camera.

Costs/Resources

The cost of this project was minimal. We planned our gallery event in a way that was budget-friendly, spending approximately $200 enlarging, printing, and matting photographs for display. If financial resources are limited, we recommend utilizing technology to display photographs in a slide show during an event. However, it is important to note that personnel time is required to help with facilitation, planning, and organization.

References

Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol. 2. Research designs: Quantitative, qualitative, neuropsychological, and biological* (pp. 57–71). American Psychological Association. https://doi.org/10.1037/13620-004

Keller, K. J., & Mott, R. (2020). Tips for Using Photovoice in Evaluation of Extension Programs. *The Journal of Extension*, 58(5), Article 10. https://doi.org/10.34068/joe.58.05.10

Sanders, M. L., Boss, A. D., Boss, R. W., & McConkie, M. L. (2011). Increasing student engagement and learning: using big hairy audacious goals as an empowering semester project. *Public Administration Quarterly*, *35*(4), 494+. https://link.gale.com/apps/doc/A303894963/AONE?u=nysl_ca_cshs&sid=bookmark-AONE&xid=5266adf2

Wallerstein, N. (1994). Empowerment education applied to youth. In M.A. Consuela (Ed.), The multicultural challenge in health education (pp. 161-162). Santa Cruz, CA: ETR Associates.

Wang, CC. (1999). Photovoice: a participatory action research strategy applied to women's health. Journal of Women's Health, 8 (2), 185-192.

Wang, C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. Health Education and Behavior, 24, 369-38.

Fostering Connected Communities through Agricultural Celebrations

Kensie Taylor Todd

Graduate Assistant

417-229-5606

mdarst@ttu.edu

Dr. Erica Irlbeck

Associate Dean for Outreach and Engagement

806-834-6708

erica.irlbeck@ttu.edu

Davis College of Agricultural Sciences & Natural Resources

Texas Tech University

Box 42131

Lubbock, TX 79409

Introduction

Facilitating outreach and connection between the campus and its student community is crucial. In-person interactions are an important component of relationship-building and decades of research has demonstrated that students who have a strong sense of belonging at their institutions are more likely to persist and graduate (Beauchamp et al., 2020). Connecting college students' connection to campus life creates a healthy and prosperous college experience (Jorgenson et al., 2018). Connectedness is an overarching construct encompassing students' ease of belongingness, integration, and satisfaction with their relationship with their institution. It can affect student commitment to the institution (Jorgenson et al., 2018).

The practice of advocacy within an agricultural college is to extend outreach within a university and to its community. The purpose of advocating includes providing information regarding various topics so audiences can make informed decisions (Farm, 2022). Less than two percent of the population is involved in production agriculture, with a continuously dwindling percentage of consumers exposed to understanding where their food comes from (Farm, 2022). This makes productive conversations centered around agriculture an increasingly vital topic to endure. Identifying an event where the two components of connecting students and intertwining agricultural advocacy assists in ensuring the Texas Tech University Davis College of Agriculture has fulfilled its mission.

To ignite the value of connectedness and belonging of its students to Texas Tech and agriculture, the Davis College of Agriculture found the importance by celebrating National Milk Day. National Milk Day is an agricultural holiday celebrated annually on Jan. 11. It is a day to commemorate the first U.S. milk delivery to homes in sterilized glass bottles in 1878, marking a turning point in the accessibility of milk (Gula, 2022). Texas ranks fifth nationally in dairy production and in its number of dairy cows with 351 dairies that produced more than 14.8 billion pounds of milk in 2020 (Bryan, et al., 2021). To honor the history and student connection to agriculture and campus, Davis College planned an efficient and interactive way to advocate for the industry. Celebrating national agricultural-based holidays helps reach larger audiences accessible through on-campus events and ensuring students feel appreciated.

How it Works

After generating the idea of an interactive event to bring awareness of agriculture to the student body of Texas Tech, plans began to celebrate National Milk Day as a beginning of the semester celebration to welcome students back to campus. The event lasted approximately two hours and took place in the dairy barn, a building that shares historical facts and stories of dairy production on Texas Tech's campus. The event offered donuts and milk to participants, donated by a local dairy company. Stations were created for participants to learn about dairy and milk

production throughout the event, which included a virtual farm experience through Occulus headsets provided by a Texas producer group. Student representatives from [CLUB NAMES] assisted in the program, as leaders well-positioned to connect with other students, and they often understand and relate to student experiences (Beauchamp et al., 2020).

Results to Date

To address the importance of milk production and its history to the Davis College of Agriculture, the communications team developed an interactive event to connect students to the industry. At least 150 students passed through the event, and all donuts and milk were consumed. Although we were able to quantify the results with a head count, other results that were not quantifiable were students meeting one other, students reconnecting after the winter break, students and faculty getting acquainted, and all participants experiencing the VR headsets to learn more about the dairy industry.

Future Plans

The Davis College of Agriculture plans to celebrate National Ag Day and other agricultural holidays with the goals of increasing public awareness of agriculture's vital role in society and building student connections (Agriculture, 2023). Plans for future events include increased student organization involvement with booths and interactive activities designed to highlight the different industry sectors with professional industry organization representatives to host presentations for students.

Hosting on-campus events allows the students and community in the Davis College of Agriculture to participate in agricultural advocacy, reaching a broader audience where producers and consumers meet, while fostering a community of belonging and connection.

Costs

Costs were minimal as almost everything was donated: the building, milk, donuts, and Occulus headsets. In total, the college saved approximately $700 through these donations. The Dean's office paid for Holstien-print themed decorations: balloons, plates, napkins, table coverings, and balloons, totaling $100.

References

Agriculture: Growing a Climate for Tomorrow. (2023). *Agriculture Council of America*. https://www.agday.org/about

Beauchamp, J., Schwartz, E., & Pisacreta, E. D. (2020, August 27). *Seven Practices for Building Community and Student Belonging Virtually*. https://doi.org/10.18665/sr.313740

Bryan, C., & Lyons, K. (2021, July). Fiscal Notes: The Thriving Texas Dairy Industry. *Texas Comptroller of Public Accounts*. https://comptroller.texas.gov/about/media-center/news/20210719-fiscal-notes-the-thriving-texas-dairy-industry-1627412351164

Farm Credit of Southern Colorado. (2022, June). The Basics of Agricultural Advocacy. *Ag Lending*. https://aglending.com/the-basics-of-agricultural-advocacy/

Gula, L. T. (2022). National Milk Day: Jan. 11. *National Institute of Food and Agriculture*. https://www.nifa.usda.gov/about-nifa/blogs/national-milk-day-jan-11

Jorgenson, D. A., Farrell, L. C., Fudge, J. L., Pritchard, A. (2018, January). College Connectedness: The Student Perspective. *Journal of the Scholarship of Teaching and Learning*, *18*(1), 76. https://doi.org/10.14434/josotl.v18i1.22371

Gear Down! Using the Tractor Pull Challenge to Support STEM-focused Agriculture Teacher Professional Development

Jay Solomonson, Ph.D.
Illinois State University
Department of Agriculture
140 Ropp Agriculture Building
Normal, IL 61790
jksolom@ilstu.edu

Trent Wells, Ph.D.
Murray State University
Hutson School of Agriculture
206 South Oakley Applied Science Building
Murray, KY 42071
kwells23@murraystate.edu

Gear Down! Using the Tractor Pull Challenge to Support STEM-focused Agriculture Teacher Professional Development

Introduction

Science, technology, engineering, and mathematics (STEM) are integral, naturally-occurring components of school-based agricultural education (SBAE). STEM concepts are inherent to a wide range of agricultural subject matter areas found within SBAE, such as plant science, biotechnology, and agricultural mechanics (Swafford, 2017). Regarding agricultural mechanics, scholars (i.e., Parr et al., 2006; Wells & Parr, 2011; Young et al., 2009) have concluded that this subject matter area is prime for granting students opportunities to contextually apply academic concepts to solve agricultural problems. Moreover, the diversity of agricultural mechanics subject matter (Wells et al., 2021) creates numerous chances for agriculture teachers to illustrate applied academic concepts for their students (Parr et al., 2006).

Smith et al. (2015) noted that agriculture teachers perceive integrating STEM within their curricula to be of the utmost importance. Smith et al. (2015) also found that agriculture teachers are not as confident integrating engineering concepts within their curricula. Stubbs and Myers (2015) suggested that agriculture teachers who experience more professional development (PD) in STEM subject matter are better-prepared to contextually teach STEM concepts via agricultural subject matter. Perhaps STEM-focused, agricultural mechanics PD would help prepare agriculture teachers to address the underlying engineering concepts in their subject matter.

How it Works

During the Summer 2022 semester, we engaged 15 agriculture teachers from across Illinois in a multi-day agricultural mechanics and technology PD workshop. Our workshop's primary focus was on identifying and highlighting STEM concepts that could easily be implemented within their pre-existing agricultural mechanics curricula. To assist these 15 teachers with teaching power mechanics and power transfer systems units in their courses, we introduced them to the RealityWorks© RC Tractor Pull Challenge with Pulling Sled Kit. The kit was originally designed as a way to "explore tractor systems and structures and experiment with force and motion, friction and gravity, and other STEM concepts" (RealityWorks, 2024, para. 1). Because we only had scheduled half a day to engage in these concepts, we focused our efforts on the competitive, hands-on application of the tractor pull challenge.

After providing some introductory information about the activity and divvying the teachers into small groups, we demonstrated the use of the radio-controlled (RC) tractor pull kit. We then worked with the agriculture teachers to apply the embedded engineering concepts (e.g. gear rations, weight distribution, etc.) during the training. We subsequently tasked each group to, using only their STEM knowledge, mechanical skills, and provided resources within the kit, build the RC tractor that would drag a weighted pulling sled the farthest distance down our indoor track. We provided them with 90 minutes to configure and test their tractors before beginning our competitive tractor pull activity. At the conclusion of the activity, we led a discussion regarding how they could use this STEM-focused activity within their Agricultural Education programs.

Results and Implications

Anecdotally, we noted that teacher engagement and inquiry were consistency high throughout the duration of the tractor pull challenge activity. Intrigued by the challenge presented, the agriculture teachers spent their limited time configuring, reconfiguring, and testing the variables (e.g., the pinion gear, the spur gear, tire size, weight distribution, and hitch height) on our pulling track. The competitive aspect of the challenge was an attention-holding motivator for the participants and each group desired more time to work on their tractors. Our workshop evaluations provided evidence that the tractor pull challenge was one of their favorite activities during the week. We were further informed that several agriculture teachers who participated in the PD workshop subsequently purchased the RealityWorks© RC Tractor Pull Challenge with Pulling Sled Kit to use in their programs during the 2022-2023 academic year.

Beyond the PD workshop, we purchased and implemented additional kits to use in the introductory-level agricultural engineering course at Illinois State University (ISU). The activity is currently used as a laboratory exercise within the course's power transfer and transmissions module. Similar to the engagement we noticed during our PD workshop, the undergraduate students' engagement in the competitive tractor pull challenge activity has also been high. Moreover, the undergraduate students have also noted their perceived value of the activity both during in-class discussions and on their end-of-course evaluations.

Future Plans and Advice to Others

We plan to continue integrating the RealityWorks© RC Tractor Pull Challenge with Pulling Sled Kit into our summer agricultural mechanics PD workshops and the introductory-level agricultural engineering course at ISU. Based on the feedback provided by the agriculture teachers and the undergraduate students, we will likely increase the time devoted to this activity and dive deeper into the curriculum and extension activities provided. We recommend that other agricultural teacher educators and instructors of agricultural mechanics courses consider employing this activity as an approach to engage agriculture teachers and undergraduate students enrolled in introductory-level agricultural engineering courses when learning applied engineering concepts in agriculture.

Costs

The RealityWorks© RC Tractor Pull Challenge with Pulling Sled Kit cost $2,999.00. The kit includes five RC pulling tractors and one weighted pulling sled. Each tractor includes a RC remote, a rechargeable battery pack, 60 washer weights, two pinion gears, three spur gears, two pairs of tires, and a tractor cover. The pulling sled includes 12 sled weights. A downloadable curriculum and computer-aided design (CAD) drawings are also included in the kit. The CAD drawings can be used to 3-D print your own customizable tractor covers. An additional RC tractor pulling sled can also be purchased for $699.00. All other materials or supplies (e.g. calculators, computers / cell phones, string, tape measures, etc.) needed to complete this activity are commonly found in any Agricultural Education classroom or agricultural mechanics laboratory.

References

Parr, B. A., Edwards, M. C., & Leising, J. G. (2006). Effects of a math-enhanced curriculum and instructional approach on the mathematics achievement of agricultural power and technology students: An experimental study. *Journal of Agricultural Education, 47*(3), 81-93. https://doi.org/10.5032/jae.2006.03081

RealityWorks. (2024). *RC tractor pull challenge with pulling sled*. https://www.realityworks.com/product/rc-tractor-pull-challenge-5-pack-with-pulling-sled/?v=7516fd43adaa

Smith, K. L., Rayfield, J., & McKim, B. R. (2015). Effective practices in STEM integration: Describing teacher perceptions and instructional method use. *Journal of Agricultural Education, 56*(4), 182-201. https://doi.org/10.5032/jae.2015.04183

Stubbs, E. A., & Myers, B. E. (2015). Multiple case study of STEM in school-based agricultural education. *Journal of Agricultural Education, 56*(2), 188-203. https://doi.org/10.5032/jae.2015.02188

Swafford, M. (2017). STEM education at the nexus of the 3-circle model. *Journal of Agricultural Education, 59*(1), 297-315. https://doi.org/10.5032/jae.2018.01297

Wells, T., Hainline, M. S., Rank, B. D., Sanders, K. W., & Chumbley, S. B. (2021). A regional study of the agricultural mechanics knowledge and skills needed by school-based agricultural education teachers. *Journal of Agricultural Education, 62*(2), 148-166. https://doi.org/10.5032/jae.2021.02148

Wells, K. T., & Parr, B. A. (2011). An evaluation of the Alabama FFA agricultural mechanics career development event to determine represented mathematical competencies – An analysis of curriculum alignment. *Journal of Southern Agricultural Education Research, 61*, 1-15. http://jsaer.org/wp-content/uploads/2020/06/Volume-61-Full-Issue.pdf

Young, R. B., Edwards, M. C., & Leising, J. G. (2009). Does a math-enhanced curriculum and instructional approach diminish students' attainment of technical skills? A year-long experimental study in agricultural power and technology. *Journal of Agricultural Education, 50*(1), 116-126. https://doi.org/10.5032/jae.2009.01116

Growing Interest in the Workforce: Using Grant-Based High School Internship Opportunities to Recruit for the Agriculture Industry

Kaitlynn R. Davis
Graduate Student
Washington State University
P.O. Box 646420
387 Clark Hall
Pullman, WA 99164-6402
509-335-1172
kaitlynn.r.davis@wsu.edu

Nicole A. Michol
Graduate Student
Washington State University
P.O. Box 646420
387 Clark Hall
Pullman, WA 99164-6402
509-335-1172
nicole.michol@wsu.edu

Dr. Anna J. Warner
Assistant Professor of Agricultural Education
Washington State University
P.O. Box 646420
387 Clark Hall
Pullman, WA 99164-6402
509-335-1172
anna.warner@wsu.edu

Introduction

The agriculture industry consistently needs knowledgeable and skilled employees to enter the workforce. In agriculture and related fields, 59,400 jobs open to college graduates annually; however, workplace demand exceeds the number of graduates (Fernandez et al., 2020; Truscott, 2021). According to the U.S. Bureau of Labor Statistics, job opportunities for agriculture graduates with expertise in science and engineering has increased from 27% to 31% between 2020 and 2025 (Fernandez et al., 2020). Internships model authentic workplace experiences providing students insight into potential career opportunities (Branco, 2022; Binder et al., 2015; Papadimitriou, 2014). Exposing high school students to different career paths helps them better navigate post-secondary education and the workplace. Furthermore, hands-on learning allows students to make better connections between curriculum and real-life applications, increasing motivation and academic rigor (Papadimitriou, 2014; Levine, 2010). Research also indicates laboratory internships aid students in communication and interpersonal skills while concurrently improving their attitudes towards science and increasing the likelihood they will enter scientific careers (Roth et al., 2009). Many grant initiatives include undergraduate internships. Favorable job prospects and the potential for personal and professional growth highlight the need to provide high school students with quality agriscience research opportunities.

How it Works

As part of the educational initiative for a Sustainable Agriculture Systems Grant, the Soil to Society (S2S) team created a summer research internship and course aligned to the different segments of the grant for high school students. The S2S grant specifically focuses on developing new varieties of crops with increased nutritional values, creating nutritionally enhanced meals attractive to consumers, determining population nutrition needs, and educating secondary students, producers, and the public about the advantages of nutritionally diverse crops.

The internship process began with S2S grant members indicating their desire to mentor a summer intern and submitting a project description. The application was open to interested candidates. Interns could participate at various university laboratories across Washington State. The internship opportunity focused on agriscience and family and consumer science career areas including projects on increasing iron and zinc concentration in wheat through biofortification, determining crude fiber of quinoa, comparing organic versus conventional treatments of soil, and investigating the influence of alternative grain flours on pancake quality. Candidates submitted the application, resume, letter of support from an agriculture or science teacher, and answers to essay questions about research experience and why they wanted to be an intern. Candidates also submitted a signed parent permission form and photographic consent. Interns were required to spend 20 hours on the course and 220 hours working on their research for a total of 240 hours.

Students selected for the summer internship applied to be non-degree seeking students at Washington State University and were enrolled in a 1-3 credit course focused best practices in responsible research, research writing, data collection, and communicating research. The grant covered the cost for one credit and interns paid the remainder if they wanted the additional two credits. Prior to the intern's summer research, they completed a Responsible Conduct of Research training course. The interns began the research course after public schools released for

summer. They participated in seven course session between June 26th and July 26th. Interns continued their work through the end of summer then participated in a poster symposium the last weekend in September. Family members, mentors, teachers, WSU faculty, and grant members were invited to attend the symposium. At the completion of the internship and course, the grant provided interns with a stipend of $1,500. Mentors and interns submitted feedback.

Costs and Resources Needed

The S2S grant funded by the United States Department of Agriculture Sustainable Agricultural Systems program covered the direct internship costs. Table 1 shows the cost breakdown.

Table 1

Resources and Costs for the S2S Summer Internship

Resources	Quantity/ Unit	Unit Cost (US Dollars)	Total Cost (US Dollars)
Graduate Student Stipend	1	4,500.00	4,500.00
Intern Stipend	5	1,500.00	7,500.00
Non-Degree Seeking Student Application Fee	5	35.00	175.00
Non-Degree Seeking Student Credit Fee	5	563.35	2,816.50
Internship Poster Prints	4	66.00	264.00
Poster Symposium Refreshments	various		100.00
Total			**15,335.50**

Results to Date

The S2S High School Summer Internship had five interns at two WSU locations across Washington State. The interns provided positive feedback about the course and internship experience in a follow-up survey. Many shared they were interested in similar research careers in the future. One intern who investigated the influence of different flours on pancake quality was asked to stay on the project after the internship concluded and was able to be a co-author on a paper submitted for peer review.

Future Plans and Advice

Increasing exposure of high school students to various agriculture professions, especially those in research, can provide a positive, educational way to recruit students to the agriculture industry (Beyl et al., 2016). High school internship experiences should be integrated into more grant-based educational initiatives. Based upon the feedback from mentors and interns, the following recommendations were created. Communication with the mentors should begin two months prior to the application opening. When communicating with mentors include an interest meeting with training resources and email communication through the experience. The mentors should provide a description of their project and a general list of responsibilities of the interns. Projects should involve interns in as many aspects of data collection, analysis, and communication as possible. The internship coordinator should begin advertising six months prior to the internship through educational listservs, websites, grant members and local schools. The duration of the course should be no shorter than six weeks with one or two course sessions per week.

References

Beyl, C. A., Adams, A. F., & Smith, E. G. (2016). A proactive model for recruiting students into agriculture disciplines. *North American Colleges and Teachers of Agriculture, 60*(1), 51-59.

Binder, J., Baguley, T., Crook, C., & Miller, F. (2015). The academic value of internships: Benefits across disciplines and student backgrounds. *Contemporary Educational Psychology, 41*, 73–82. http://dx.doi.org/10.1016/j.cedpsych.2014.12.001

Branco, D. A. (2022). *The significance of internship programs in secondary education*. National Career Development Association. https://www.ncda.org/aws/NCDA/pt/sd/news_article/442532/_PARENT/CC_layout_details/false

Levine, E. (2010). The rigors and rewards of internships. *Educational Leadership*, *68*(1), 44-48. https://www.ascd.org/el/articles/the-rigors-and-rewards-of-internships

Fernandez, J. M., Goecker, A. D., Smith, E., Moran, E. R., & Wilson, C. A. (2020). *Employment opportunities for college graduates in food, agriculture, renewable resources and the environment*. Purdue University. https://www.purdue.edu/usda/employment/?utm_content&utm_medium=email&utm_name&utm_source=govdelivery&utm_term

Papadimitriou, M. (2014). High school students' perceptions of their internship experiences and the related impact on career choices and changes. *Journal of Workforce Education and Development, 7*(1) Article 8. https://opensiuc.lib.siu.edu/ojwed/vol7/iss1/8

Roth, W., Van Eijick, M., Hsu, P., Marshall, A, & Mazumder, A. (2009). What high school students learn from internships in biology laboratories. *The American Biology Teacher*, *71*(8):492-496. https://doi.org/10.1662/005.071.0808.

Truscott, S. (2021) *Demand grows for [SU] graduates in agriculture, sustainability. [*SU] News & Media Relations. https://news.[su].edu/news/2021/01/15/demand-grows-wsu-graduates-agriculture-sustainability/?utm_source=[SU]News-enewsletter&utm_campaign=wsunewsenewsletter&utm_medium=email

Intern if U-DAIRE: Adding Value to Dairy Through an Inclusive Undergraduate Experience

Jordan Richardson
University of Tennessee, Knoxville
(423)426-4791
jrich114@vols.utk.edu

Shelli Rampold
University of Tennessee, Knoxville
(865)974-7471
srampold@utk.edu

Alexis Hall
University of Tennessee, Knoxville
(865)946-1089
lex@utk.edu

Sharon Jean-Philippe
University of Tennessee, Knoxville
(865)974-2946
jeanphil@utk.edu

Emily Paskewitz
University of Tennessee, Knoxville
(865)974-0696
epaskewi@utk.edu

Elizabeth Eckelkamp
University of Tennessee, Knoxville
(865)974-8167
eeckelka@utk.edu

Carrie Stephens
University of Tennessee, Knoxville
(865)974-4830
cfritz@utk.edu

Victoria Jessie
University of Tennessee, Knoxville
(615)917-8302
vjessie@vols.utk.edu

Introduction

The agricultural workforce has steadily decreased across all industry sectors over the past decade (Bureau of Labor Statistics, 2023; Economic Research Service [ERS], 2023; Roser, 2023;). In the dairy industry, processors have experienced a ten percent decline in their workforce, with about two job openings for every one person seeking employment (Gibeson, 2023). This decline poses a need for innovative approaches to recruiting and training new professionals. College internships have proved a valuable method of training future professionals by helping students develop job-specific knowledge through hands-on experience (Hall et al., 2017; Johnson, 2020; Wolfgram et al., 2021), increase their employment opportunities when they graduate (Hall et al., 2017; Hora et al., 2021; Johnson, 2020; Wolfgram et al., 2021), and receive higher compensation when first starting (Hall et al., 2017; Hora et al., 2021; Johnson, 2020; Wolfgram et al., 2021).

However, participation in internships can be hindered by students' perceptions toward participating and outside factors that limit their access to internship opportunities. Barriers to students' perceptions include perceived availability of opportunities (Hora et al., 2021; Hora et al., 2022; Johnson, 2020), lack of knowledge of how to access internships (Hora et al., 2022; Wolfgram et al., 2021), and perceived disorganization of the program itself (Hall et al., 2017). Accessibility barriers include lack of transportation, lack of access to housing, having a heavy course load, and having insufficient pay/needing to work a paid job (Hall et al., 2017; Hora et al., 2021; Hora et al., 2022; Johnson, 2020; Wolfram et al., 2021). There are also inclusivity factors that contribute to barriers to entry including academic major, gender, race, and institutional prestige, which can interact to give students a sense they may not be competitive enough to be selected for an internship (Hora et al., 2022). We developed the Undergraduate Development and Internship Research Experience (U-DAIRE) to alleviate barriers and enhance workforce development and diversity across the Southeastern region.

How it Works

U-DAIRE offers undergraduate students of any major the opportunity to gain hands-on experience in the dairy industry, which they might not otherwise have. Students can apply between November and January of the year preceding the internship. During the application process, they are required to provide information about their current college enrollment, ethnicity, race, transportation requirements, and resume with a cover letter expressing their interest. The internship spans a nine-week program, with the initial three weeks dedicated to an on-campus program focused on leadership, team building and conflict resolution, communication, and animal handling protocols at a nearby dairy. The remaining six weeks involve hands-on work experience at a commercial dairy farm. Lastly, students complete the internship by presenting research posters at a regional value-added dairy conference. During the program, students are asked to keep a journal, complete a pre-and post-internship questionnaire, and participate in regular debriefing sessions to help the internship leads evaluate the program. Participating farmers are also asked to participate in a debriefing session.

Results to Date

The program has run for two consecutive summers since 2022 and has attracted a total of fourteen students from three universities across the Southeastern region. Students in each cohort varied in demographic characteristics, including academic year, race, ethnicity, income, animal science background, first-generation status, and in being nontraditional later-career students. Preliminary data from the pre-and post-internship questionnaires and debriefing sessions indicate interns made positive gains in areas of knowledge about the dairy industry, career pathways,

leadership skills, and communication skills. The interns perceived themselves as significantly more knowledgeable about the dairy industry after completing the internship, as well as demonstrated a greater interest in pursuing a career in the industry and more efficacy in overcoming barriers to secure a position in the industry. Regarding their leadership skills, the interns believed themselves to be better leaders and had more confidence in using their leadership skills to address problems. Interns also reported being more likely to go find help when they are unsure of how to address a problem. As for their confidence and abilities to communicate about and within the industry, interns felt overall more confident in their ability to communicate about dairy following the internship. Further, students reported having greater confidence engaging with the public about complex issues, identifying tactics for communicating in crisis situations, and using storytelling to talk about complex issues. Lately, interns noted they were more willing to take time to listen to someone's perspective before responding.

Future Plans

We are continuing the internship program and have expanded it to include an additional participating university. Based on internal evaluations, we have developed a more comprehensive curriculum for the on-campus portion of the internship for the next cohort. This curriculum can be adopted by other practitioners interested in developing a similar internship program. Due to differences in communication styles and backgrounds of interns and host farmers, we also plan to launch a leadership training session that all participating dairy farmers will be required to take prior to hosting interns. The intention behind this training workshop is to help farmers communicate effectively with youth who may not look like them or share their experiences, and how to instruct those who have limited background with animal handling and dairy production. Lastly, we will continue to conduct formative and summative evaluations of the program, as well as debrief with past participants to examine the longer-term impacts of the program on students' perceptions and career pathways.

Costs

The total costs incurred to support 10 interns in a single cohort is roughly $33,470 annually. The total cost includes $5,400 for total intern salary, $4,320 for total benefits, and $23,750 total in participant support costs. Our interns receive $15/hour plus benefits for 360 hours of work over the course of the semester. The participant support costs we built into the program include $250 per intern to travel from home and return home, $2,250 total for interns and mentors to travel to farm visits during the three-week training portion and follow-up check-ins, and $1,000 total for vehicle rental or mileage reimbursement for interns to travel to host farms. Our housing costs ranged depending on whether interns were housed at their participating dairy or on a nearby campus. Costs for intern housing on campus, including the three-week training on campus, is $14,000. Housing costs on the dairy farms were $4,000. These costs can be adjusted based on number of interns and how travel is arranged.

References

Bureau of Labor Statistics. (2023). *Occupational outlook handbook, agricultural workers.* U.S. Department of Labor. https://www.bls.gov/ooh/farming-fishing-and-forestry/agricultural-workers.htm

Economic Research Service. (2023). *Size and composition of the U.S. agricultural workforce*. [Data set]. https://www.ers.usda.gov/topics/farm-economy/farm-labor/

Gibeson, A. (2023). *Dairy industry seeking long-term workforce solutions*. Dairy Processing. https://www.dairyprocessing.com/articles/1568-dairy-industry-seeking-long-term-workforce-solutions

Hall, M. R., Wood, C. M., & Splan, R. K. (2017). Was it worth it? Perceptions of value for a required capstone experience in the animal sciences. *NACTA Journal, 61*(3), 241–247. https://jstor.org/stable/10.2307/90021336

Hora, M., Wolfgram, M., Chen, Z., Lee, C. (2021). Closing the doors of opportunity: A field theoretic analysis of the prevalence and nature of obstacles to college internships. *Sage Journals, 123*(12), 180–210. https://doi.org/10.1177.01614681211070875

Hora, M., Wolfgram, M., Huerta, A., Lee, C., Gopal, A. (2022). A multilevel, agent-centered analysis of intersectionality in a Hispanic-serving institution: The case of college internship access for Latinx students. *AERA Open*, *8*(1), 1–17. https://doi.org/10.1177/23328584221102162

Johnson, C. (2020). *Evaluating the barriers to completing a college internship* [Undergraduate honor's thesis]. East Carolina University. http://hdl.handle.net/10342/9008

Roser, M. (2023, August 11). *Employment in agriculture*. Our World in Data. https://ourworldindata.org/employment-in-agriculture

Wolfgram, M., Akram, T., Vivona, B. (2021). On the intersectional amplification of barriers to college internships: A comparative case study analysis. *Harvard Educational Review, 91*(4), 457–481. https://doi.org/10.17763/1943-5045-91.4.457

Interview an Upperclassman:
The Value of Peer Mentorship to First-Year Students in an Orientation Course

Mary Kate Morgan Lanier
Department of Agricultural and Human Sciences
North Carolina State University
252 Ricks Hall
Campus Box 7607
Raleigh, NC 27695
(919) 515-2144
mkmorga2@ncsu.edu

Interview an Upperclassman: The Value of Peer Mentorship to First-Year Students in an Orientation Course

Introduction/Need for Innovation

First year students often experience difficulty transitioning to college academically, socially, and personally (Robinson, 2018). Both hierarchal and peer mentoring are considered best practice strategies for student success (Collier, 2017). However, because role modeling is present and students perceive their peers as more credible, peer mentoring may be a more effective strategy in mentoring undergraduate students (Collier, 2017). Research from Shin et al. (2017) also shows that endorsement of course material from a student's peer is more essential to motivation than an instructor's endorsement.

At NC State University, first-year students in the Department of Agricultural and Human Sciences are required to take an orientation course designed to help acclimate them to the university and department. Topics discussed in this course include academic policies and planning, goal setting, career opportunities within students' majors, time management, and many other skills essential to success at NC State. To promote the importance of peer mentoring relationships and to reinforce concepts taught by the course instructor, an Interview an Upperclassman Assignment was developed and implemented for students to complete in AEE 103: Foundations of Agricultural and Extension Education at NC State University.

How it Works

Prior to the start of the semester, the instructor of the course sends an email to faculty in the department requesting nominations of worthy upperclassmen to serve as peer mentors for this project. It is explained that the assignment is designed for students in the course to build a network within the department and learn from their peers about how to be successful within the department.

Once nominations have been collected, nominated upperclassmen are informed of their nomination through email. They are congratulated and asked if they are willing to be interviewed by a first-year student in AEE 103: Foundations of Agricultural and Extension Education. It is explained that they would be committing to a thirty-minute interview where first-year students will ask questions related to time management, student involvement, class recommendations, and more. If the nominated upperclassmen are willing to participate, they are asked to fill out a Google Form with their contact information for the incoming students.

Around the third week of classes, students in AEE 103: Foundations of Agricultural and Extension Education are assigned the "Interview an Upperclassman," assignment. First year students are told to sign up for an upperclassman to interview on a Google Sheet. It is explained that the assignment is not due until closer to the end of the semester, but they are challenged to reach out to their Upperclassman sooner rather than later so they can coordinate a time to meet. They are told this interview must be completed in-person and there is a list of required questions on the class Moodle page. These questions included questions about their favorite part of being a student in our department, favorite courses, how they managed their time, organizations they are involved with, and their great lesson learned at NC State. Additionally, they are expected to come

up with three questions of their own and write a reflection on their interview experience. Three weeks before the end of the semester, students will turn in this assignment. The assignment makes up 10% of their final grade.

Results to Date

Ninety students have completed the "Interview an Upperclassman," assignment in the Fall of 2022 and the Fall of 2023. Numerous peer-mentor relationships were established through this assignment. Through collected reflections on the assignment, an estimated 95% of first-year students said they found the advice of their assigned upperclassman valuable and intended to implement some of their advice in the future.

These are some quotes pulled from student reflections on the impact of the assignment:

- "It was very inspirational to hear from someone who faced a lot of the same obstacles I am right now. It seems that many freshmen go through the same struggles but it is always good to hear it firsthand."
- "Her answers have provided me lots of comfort and insight on the things that individuals don't usually think to ask or are not clear in orientation sessions, information sessions, and intro courses."
- "[Student]'s discussion on his transition from living in a small town to attending NC State resonated with me because I came from a small town as well. It made me feel like I had someone who understood."
- "Her response really got me thinking about what impact I want to make while I'm here, even though my time at NC State has just begun."
- "…She said not to be embarrassed because everyone around me is just trying to do the same exact thing I am. This really helped me to let go of some of the expectations I had placed on myself."

Advice to Others

For other departments that would like to implement a similar program, it is recommended to solicit nominations of upperclassmen mentors from trusted colleagues. If students are able to find an upperclassman of their choosing to interview, the advice given cannot be vetted. It is also recommended that face-to-face interviewing is highly encouraged to facilitate relationship building among the upperclassman and first-year student.

Additionally, when first-year students are signing up for an upperclassman to interview, it may be helpful to provide a link to a short biography so first-year students can choose an upperclassman to interview who has some sort of shared interest. It is also recommended to have a fairly large group of upperclassmen for first-year students to interview, so that no upperclassman must participate in more than two interviews.

Cost/Resources Needed

A group of intelligent, kind, motivated, and participative upperclassmen students is essential to the success of this project. The utilization of Google Sheets and Google Forms are also essential to the success of this project, as they are helpful for collection of participant information and interview sign-ups.

References:

Collier, P. (2017). Why peer mentoring is an effective approach for promoting college student success. *Metropolitan Universities*, *28*(3), 9–19. https://doi.org/https://doi.org/10.18060/21539

Robinson, D. (2018). *Perceptions of first-year college students: The impact of peer mentors on student success* (Unpublished doctoral dissertation). Southern Connecticut State University, New Haven, CT.

Shin, T. S., Ranellucchi, J., & Roseth, C. J. (2017). Effects of peer and instructor rationales on online students' motivation and achievement. *International Journal of Educational Research*, *82*, 184–199. https://www.sciencedirect.com/science/article/abs/pii/S0883035516311636

Jigsaw-Based Cooperative Learning to Enhance Reading Comprehension in Agricultural-based Social Science General Education Courses

Molly A. West, PhD
321B Morgan Hall
The University of Tennessee
Knoxville, TN 37996
(865) 974-7860
malbin1@tennessee.edu

Victoria U. Beasley, MS
114D McCord Hall
The University of Tennessee
Knoxville, TN 37996
(865)-974-7010
vutsman@tennessee.edu

Makenzie Smith
320 Morgan Hall
msmit556@tennessee.edu

Bailey Watson
320 Morgan Hall
bwatso33@tennessee.edu

Jigsaw-Based Cooperative Learning to Enhance Reading Comprehension in Agricultural-based Social Science General Education Courses

Introduction

In primary, secondary, and higher education settings, classroom dynamics are evolving to focus more on student-to-student interaction instead of solely teacher-to-student interaction (Johnson & Johnson, n.d.). The idea of cooperative learning through methods such as Task-Based Language Teaching (TBLT) has sparked instructors' interest in using it as an instructional tool (Prasetyaningrum, 2018). Multiple cooperative learning studies conducted on students in the medical education field have shown an overall improvement in not only reading comprehension but also interpersonal and teamwork skills (Azmin, 2015; Baneng, 2020; Jeppu et al., 2023). One technique incorporated into the classroom to promote cooperative learning has been jigsaw-based learning (Azmin, 2015; Baneng, 2020; Jeppu et al., 2023). Jigsaw-based learning involves assigning students to a group in which they first complete a task independently before collaborating with group members to discuss the material. They then report their overall comprehension of the material to the larger group. The idea of group discussion and storytelling through this activity allows students to grasp a better understanding of the presented reading material (Baneng, 2020) while allowing them to practice individual accountability and group interaction (Johnson & Johnson, n.d.).

Comprehension of scientific text can present an obstacle to students (Baneng, 2020), particularly when it comes to agriculture literacy (Park & Osborne, 2007). With cooperative learning techniques, specifically jigsaw-based activities, showing positive impacts on students in other disciplines, it shows hope for its ability to positively impact reading comprehension of students in the agricultural field (Jeppu et al., 2023; Baneng, 2020; Azmin, 2015). The use of both formal and informal cooperative learning (Johnson & Johnson, n.d.) has been implemented into agricultural-based social science general education courses classes at The University of Tennessee and supports prior research that TBLT can enhance a student's learning experience, reading comprehension, and interpersonal skills benefiting them in future professions (Kumar et al., 2017).

How It Works

First, primary sources are broken into sections, if necessary, and assigned to pre-determined student groups. Using a learning management software discussion board for each group, students share three to five findings or insights from the assigned reading portion. Following discussion within their assigned role or reading section, student groups identify at least five educational talking points to share with the entire class to teach peers about the reading or section of the reading. Once completed, students share their talking points on either a classroom whiteboard, Padlet, or other digital collaborative board. After class, instructors share the completed jigsaw on a learning management software as a resource for students to prepare for formative or summative assessments.

Implications

A total of 11 jigsaw activities were implemented during the Spring 2023 and Fall 2023 semesters in two face-to-face agriculture-based social science courses offered at The University of Tennessee, reaching a total of 147 undergraduate students. Jigsaws covered material related to

guest lectures, federal acts, popular press articles, and philosophical subjects such as Plato's *Allegory of the Cave* and *The Divided Line*, Aristotelian Ethics, Hume's thoughts on empiricism, and Pragmatism.

End-of-course evaluations for both courses spoke highly of the small group discussions. Students shared that course discussions improved their understanding, with one student stating, "... I appreciate that there is a combination of notes, discussion, and group work. I learn better when we are not only taking notes and we can do things that help kinesthetic learners." Another student shared, "I liked how the lectures were structured and readings were divided amongst students" with a third reporting how in-class activities "...allowed us to work together and share our ideas and elaborate on them as well." Other students shared that they valued peer interaction and stated, "Discussions was my favorite aspect of this course. I really enjoyed talking with classmates to see how they understood something." Towards the end of the course, students were more comfortable sharing their ideas, which helped with student confidence and classroom rapport. One student stated, "I liked all the group discussions. Talking first can be a little spooky, so just being able to discuss with peers helped me voice my thoughts a lot more thoroughly." A final student reported that smaller group work was their favorite part because they are "not much of a talker and didn't really have much to say but all of the different ideas people had really brought new perspectives to light. It also made the environment feel very welcoming."

Instructors for both courses have continued TBLT in Spring 2024 with adjustments such as group image collaborative assignments, which challenges students to use imagery, quotes, and illustrations to summarize their reading take-aways.

Future Plans/Advice to Others

Following implementation, the Agricultural Leadership, Education and Communications department has increased course capacity, added sections of both courses, and increased the frequency of course offerings to fall, spring, and summer semesters.

As the course instructors, we plan to evaluate the jigsaw-based cooperative learning activities as an instructional method to better understand their effectiveness as a preparation tool for problem-based learning. The course instructors are also developing the process for implementation into online, asynchronous sections of both courses.

After repeated implementation, we recommend evaluating the primary sources selected for students to read to ensure course alignment. It is encouraged to communicate to students the importance of contributing to the group discussion board to be prepared for class and succeed in the course.

Resources Needed

Applying jigsaw-based cooperative learning activities to a course is free with access to a printer or digital learning management system to upload an editable copy for students to submit their collected educational talking points. Jigsaw-based cooperative learning activities do take prior planning to ensure reading groups are well organized, students are evenly dispersed, and the instructor is prepared for facilitation.

References

Azmin, N. H. (2015). Effect of the jigsaw-based cooperative learning method on student performance in the general certificate of education advanced-level psychology: An exploratory Brunei case study. *International Education Studies*, *9*(1), 91–106. https://doi.org/10.5539/ies.v9n1p91

Baneng, M. (2020). Cooperative learning approach applying jigsaw strategy to enhance students' comprehension skill. *Journal of Physics: Conference Series*, *1471*(1), 012027. https://doi.org/10.1088/1742-6596/1471/1/012027

Jeppu, A. K., Kumar, K. A., & Sethi, A. (2023). 'We work together as a group': Implications of jigsaw cooperative learning. *BMC Medical Education*, *23*(1), 734. https://doi.org/10.1186/s12909-023-04734-y

Johnson, D., and Johsnon, R. (n.d.). An overview of cooperative learning. *The Cooperative Learning Institute.* https://www.co-operation.org/what-is-cooperative-learning'

Kumar, C. S. V., Kalasuramath, S., Patil, S., Kumar, K. G. R., Taj, K. R. S., Jayasimha, V. L., Basavarajappa, K. G., Shashikala, P., Kukkamalla, A., & Chacko, T. (2017). Effect of jigsaw co-operative learning method in improving cognitive skills among medical students. *International Journal of Current Microbiology and Applied Sciences*, *6*(3), 164–173. https://doi.org/10.20546/ijcmas.2017.603.018

Park, T. D., & Osborne, E. (2007). A model for the study of reading in agriscience. *Journal of Agricultural Education*, *48*(1), 20–30. https://doi.org/10.5032/jae.2007.01020

Prasetyaningrum, D. I. (2018). Improving agriculture students' reading comprehension through task-based language teaching (TBLT). *EnJourMe (English Journal of Merdeka): Culture, Language, and Teaching of English*, *3*(1), 5–14. https://doi.org/10.26905/enjourme.v3i1.2202

Learning to Do: SAE Management through Hands-On Laboratory Experiences

Alexus G. Eudy, Texas Tech University

Dr. John Rayfield, Texas Tech University

Chelsea Hatch, Texas Tech University

Department of Agricultural Education & Communications, Box 42131-Lubbock, TX 79409
Lubbock, TX 79409

903-706-8233

Aleudy@ttu.edu

Learning to Do: SAE Management through Hands-On Laboratory Experiences

Introduction/Need for Innovation or Idea

Roberts and Dyer (2004) stated, "Creating effective agriculture teachers is imperative for the long-term sustainability of agricultural education programs." The faculty at Texas Tech University and its agricultural teacher education program are responsible for preparing future agricultural teachers to teach and supervise all supervised agricultural experiences, including livestock projects. Supervised Agricultural Experience (SAE) is defined as "the application of the concepts and principles learned in the agricultural education classroom in planned, real-life settings under the supervision of the agriculture teacher. (Talbert et al,. 2022, p.418). According to past graduates of the agricultural teacher education program at Texas Tech, they lacked a course that prepared them to handle traditional SAEs properly and safely, such as livestock projects. A need existed to properly educate the next generation of agricultural teachers prior to student teaching and graduation. To do so, the university adopted the addition of a course to do exactly that, teach future agricultural teachers to select, care for, and execute traditional supervised agricultural experiences.

How it Works/Methodology/Program Phases/Steps

In the course, "*Advanced Supervised Agricultural Experience (SAE) Management*," it delved into each livestock species and the experiential learning component of the three-circle model that all agriculture teachers are required to incorporate in their curriculum. Experts and professionals qualified in ethics, recordkeeping, and safety were brought in one day a week with a lecture-based lesson that corresponds with their field. Once the students received the lecture information and material, they met off campus at a local school project center and had a hands-on learning experience to put the lecture into practice.

During the course, the students were required to complete the following:

1. Attend and participate in county livestock validations for each species (cattle, hog, lamb, and goat) and reflect on their experiences. This includes the agriculture teacher's roles and responsibilities, student and parent interactions, and ways that they could improve the validation process.
2. Create a project supervision notebook that includes information for the various livestock species.
3. A scenario based AET recordkeeping proficiency/star application.
4. Submit an ethics plan which will include specie specific rules, quality counts, show rules, and how they plan to manage parental involvement in SAEs.
5. Weekly and end of semester reflection activities.

Results to Date/Implications

17 Texas Tech student teachers completed the *"Advanced Supervised Agricultural Experience (SAE) Management"* course in the Fall of 2023 which is a 3-hour credit. In three months, these students were taught by experts from Texas FFA, ShowSmart, Quality Counts, and local high schools' agriculture teachers. The students were shown the school project center's facilities, equipment, and livestock projects while the expert addressed topics such as, selection, daily care routines, etc. They also attended three livestock validations to gain hands-on knowledge of how this process works. At the end of the semester, the students enrolled in the course were given a survey to determine if the course gave them the confidence to manage livestock projects once they entered the teaching profession.

Survey Responses:

- Student A: "The *Advanced Supervised Agricultural Experience (SAE) Management* course was the most interesting and student-centered learning course I have taken over my college career. Being able to talk to experts in different fields gave me the opportunity to learn like no other class before." Lastly, they stated, "As agricultural educators we must know how to manage projects and this course has given me the confidence to do exactly that."
- Student B: "SAE Management has been undoubtedly the most useful class that I have taken because of the hands-on learning experiences and the demonstrations taught in lectures. I know this will be extremely useful when providing my students with diverse agricultural education, as well as, giving every student the ability to have a successful SAE."
- Student C: "As an out-of-state student, I've always felt one step behind. This course has eased my nerves and made me aware of the responsibilities that I, as a Texas ag teacher, would experience and must handle."

Future Plans/Advice to Others

Texas Tech plans to continue offering this course to student teachers to strengthen their knowledge and skills of managing traditional supervised agricultural experiences (SAEs). In the upcoming year, Texas Tech aims to bring in more specialists to maximize the student's education on how to manage SAEs. One of the main challenges in managing this course is logistics and scheduling. Many of the experts utilized are agricultural teachers that have busy schedules themselves and when asking these experts to participate and teach must be thoroughly planned out beforehand (weeks to months in advance). Another recommendation is to ensure that the lecture and laboratory time is long enough to thoroughly cover each species to the degree that these students can safely and knowledgeably work with them. Lastly, the students are having to transport themselves to and from the project centers so having a way to provide transportation for them would guarantee that each student makes it on time and all at once.

Costs/Resources Needed

This course relies on professionals providing their personal time, equipment, and livestock for the students to observe and use. The use of facilities, equipment and livestock has not been burdensome to any of the presenters. However, students must travel to the destination where the laboratory sessions will take place, and these were no further than 30 minutes from the

university. Furthermore, the students and professionals must have a time commitment to this course because of the travel time required before and after each lab session. Inherently, students and professionals will have travel expenses to and from laboratory sessions while taking part in this course.

References

Roberts, T. G., & Dyer, J. E. (2004). Characteristics of effective agriculture teachers. *Journal of Agricultural Education, 45*(4), 82–95. https://doi.org/10.5032/jae.2004.04082

Talbert, B. A., Croom, B., LaRose, S. E., Vaughn, R., & Lee, J. S. (2007). *Foundations of Agricultural Education*. Purdue University Press.

Lessons learned from multiple-campus mentoring programs

Olivier Ntaganzwa
Purdue University
Department of Agricultural Sciences Education and Communication
Lilly Hall, Room 4-401
915 Mitch Daniels Blvd.
West Lafayette, IN 47907
(574) 931-6647
ontaganz@purdue.edu

Alejandra M. Prado Jaramillo
Purdue University
Department of Agricultural Sciences Education and Communication
Lilly Hall, Room 4-401
915 Mitch Daniels Blvd.
West Lafayette, IN 47907
(765) 694-9100
apradoja@purdue.edu

Rama B. Radhakrishna, PhD.
Purdue University
Department of Agricultural Sciences Education and Communication
Lilly Hall, Room 3-230
915 Mitch Daniels Blvd.
West Lafayette, IN 47907
(765) 494-8423
rbradhak@purdue.edu

Neil A. Knobloch, PhD.
Purdue University
Department of Agricultural Sciences Education and Communication
Lilly Hall, Room 3-232
915 Mitch Daniels Blvd.
West Lafayette, IN 47907
(765) 494-8439
nknobloc@purdue.edu

Lessons learned from multiple-campus mentoring programs

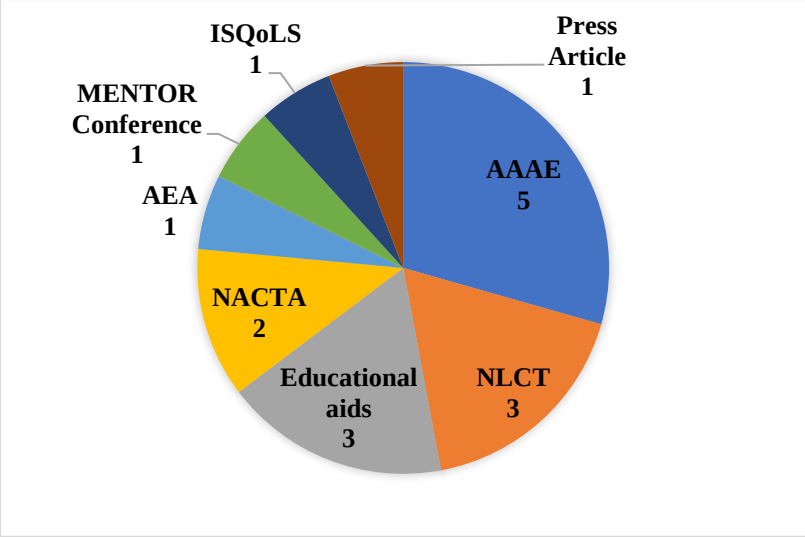
Introduction/Need for Innovation

The Multi-Institutional Mentoring Network for Transforming Organizational Culture (M.E.N.T.O.R.) was funded to establish collaborative capacity building between 1862 and 1890 land-grant institutions (LGUs), and to empower faculty leadership teams (FLTs) to develop campus-based mentoring programs for underrepresented minorities in food, agriculture, natural resources and human (FANH) disciplines (Esters & Knobloch, 2020). A total of 11 FLTs made up of three individuals each currently serve as primary organizers of the project activities for their respective LGUs. This multistate mentoring network is an alternative to single institutional efforts attempted in the past, as it provides innovative ways to work together to find common solutions and share useful mentoring resources. That is why in the final six months of the project, we are discussing the lessons learned from the implementation of different programs within the larger MENTOR project, with the hopes that the innovative mentoring approaches brought by a consortium of mentors across different LGUs can inspire future implementors of similar mentoring programs, who will leverage the knowledge acquired by this network of mentors to anticipate and/or successfully navigate the challenges they may meet along the way.

How It Works/Methodology/Program Phases/Steps

Figure 1

Outputs from the mentoring programs implemented



Our main goal was to highlight the innovative mentoring approaches brought by a consortium of researchers as they implemented a multistate mentoring project across different LGUs. Firstly, we made a compilation of all products related to mentoring developed by FLTs from 2020 to 2023 (Figure 1). Second, we identified the different challenges outlined in those products, and they were discussed during a Consortium Convening held in 2023, where multiple solutions to the challenges were proposed. The emerging challenges were (1) limited participation due to COVID-19 restrictions, (2) lack of clear communication between mentors and mentees, (3) differing goals between mentors and mentees, and (4) lack of buy-in from departmental and school administrators. All of the products are published in the project website

(https://ag.purdue.edu/department/asec/mentor/resource.html) and include presentations delivered during conferences and workshops, educational aids/curricula, articles published in the press, annual progress project reports and reports from the 2023 MENTOR Convening. The events and conferences covered can be found in the references.

Results to Date/Implications

Overall, across all programs, in-person participation was hampered by the restrictions brought by COVID-19. FLTs adapted to this challenge by moving most of their mentoring activities online. As the pandemic's impact subsided, FLTs were able to resume in-person workshops and other activities that reached over 70 faculty and 300 students across LGUs, and produced 12 accepted conference abstracts co-authored by FLTs. However, FLTs quickly noticed that for a mentoring program to be successful, faculty (mentors) and students (mentees) needed to be on the same page in terms of goals and expectations. Mentees were focusing on doing their research and graduate, while faculty mentors were channeling most of their efforts in trying to get tenure (Rodriguez et al., 2022). Furthermore, a platform at one 1890 LGU (UAPB) to facilitate effective communication between mentees and mentors, and can now be used by mentees to communicate the challenges they encounter to their peer mentors and the administration . Last but not least, two FLTs identified management buy-in, i.e., the commitment and support from institutional leadership and administrative offices, as a crucial ingredient for an effective mentoring program in their LGUs. The most successful FLTs were the one who had obtained administrative assurances for funding and including mentoring as part of tenure and career development initiatives (Radhakrishna et al., 2022).

Future Plans/Advice to Others

In addition to the abovementioned sources, workshop modules, webinars recordings, and other outputs produced by the different MENTOR programs are being compiled and shared on the MENTOR website (https://ag.purdue.edu/department/asec/mentor/resource.html). We hope these materials will help everyone looking to start an intentional and inclusive mentoring program at their institutions. For now, we would advise them to: (1) launch their mentoring program in collaboration with other universities since multi-institutional efforts are more conducive to a an inclusive systematic reform of FANH education (APLU, 2009), (2) move to secure administrative buy-in from the beginning of each mentoring program, (3) adjust communication efforts to show both the students/mentees and faculty/mentors the importance of taking part in a mentoring program, and (4) plan for several opportunities to check-in with the different stakeholders of the project and address the challenges they face.

Costs/Resources Needed

Although the project was funded by a NIFA Higher Education Challenge Grant (Award number 2019-70003-29089), and each participating LGU received a mini-grant to start and implement their mentoring program, this kind of program can be operationalized with limited funding. The different programs have demonstrated that with a budget of $15,000, two committed and dedicated faculty leaders, with the support of the administration, can, for a period of two years, initiate a mentoring program, communicate with stakeholders, implement the mentoring activities (workshops, webinars, communication campaigns, campus outreach, data collection and travel to conferences).

References

Association of Public and Land-Grant Universities. (2009). Human capacity development: The road to global competitiveness and leadership in food, agriculture, natural resources, and related sciences (FANRRS). *Washington, DC: Association of Public and Land-Grant Universities*.

Esters, L. & Knobloch, N. (2020). (2020). Multi-institutional mEntoring Network for Transforming Organizational cultuRe. Retrieved from https://ag.purdue.edu/department/asec/mentor/index.html

Radhakrishna, R., Knobloch, N., & Esters, L. (2022). Feedback as a Formative Evaluation Approach to Minimize Implementation Fidelity and Maximize Evaluation Use in a Multi-institutional M.E.N.T.O.R. Project. *Proceedings of the American Association for Agricultural Education*.

Bowden, A., Young, D. & Georges, S. (2021). An Interrogative Approach to Creating a Culture of Mentoring. *Proceedings of the American Association for Agricultural Education*. Retrieved February 19,2023, from https://aaea.wildapricot.org/

Chaney, Z., Hains, B. J., & Hains, K. D. (2021). Mentoring for Academic and Community Sustainability. *International Society for Quality-of-Life Studies (ISQoLS) Annual Conference*. (Virtual)

McKim, A.J., Warsaw, P., & Bessette, D. (2020). Spartans mentoring Spartans: launching a peer mentoring program at Michigan State University. *Multi-Institutional Mentoring program for Developing Inclusive Excellence (MENTOR) Conference*. (Virtual)

Patton, M. Q. (2001). Evaluation, knowledge management, best practices, and high-quality lessons learned. *The American Journal of Evaluation, 22*(3), 329-336.

Rodriguez, M.T., Niewoehner-Green, J. E., Hand, F., & Chen, J. (2022). Enhancing Culturally Relevant Mentorship for Under-represented Minorities in Colleges of Food, Agriculture, and Environmental Sciences. *NACTA Journal, 66*(1), 61.

Innovative Idea Poster

Mindfulness as a Tool for Stress Management in Formal and Non-Formal Education

Mariah Awan, M.S.
Lilly Hall of Life Sciences Room 4-401,
915 Mitch Daniels Blvd , West Lafayette IN, 47907
awan3@purdue.edu

Rama Radhakrishna, PhD.
Lilly Hall of Life Sciences Room 3-230
915 Mitch Daniels Blvd , West Lafayette IN, 47907
rbradhak@purdue.edu

Introduction/need for innovation or idea

Extension educators are under workplace stress due to increasing job demands and decreases in resources (Donaldson et. al., 2022). The *Stress in America 2023: A Nation Recovering from Collective Trauma* survey indicated that individuals across the lifespan are still recovering from the stress of the COVID-19 epidemic (APA, 2023). Extension educators and the general public need ways to more effectively manage their stress post-pandemic.

Many Extension educators already use or hope to implement mindfulness programming into their programs (Awan & Radhakrishna, 2024). Overall, educators are interested in learning more about how to integrate mindfulness into their existing programming (Awan & Radhakrishna, 2024). Due to these desires among Extension educators, and the need for programs and resources to better help people manage stress, the first author began piloting a mindfulness program series for Extension educators in Indiana. The workshops focus on stress management, mindfulness programming with youth audiences, and mindfulness programming with adult audiences. Workshop 1 introduces Extension educators to short mindfulness techniques that can be implemented to reduce work-related stress. Workshop 2 introduces developmentally appropriate and research-based approaches to teaching mindfulness to youth. Workshop 3 achieves the same tasks as Workshop 2 for an adult audience program context.

How it works/program phases

We began the mindfulness series with a workshop to help educators better understand mindfulness first because having a personal mindfulness practice helps a mindfulness instructor in developing as a mindfulness teacher (Shonin & Van Gordon, 2015). We implemented the first two workshops in 2022 and 2023 for Indiana Extension educators at the Purdue Extension Professional Development Conference and Indiana Extension Educators Association Conference with 70 (virtual) participants and 17 (in-person) participants, respectively. We implemented workshop 3 in 2024 at the Indiana Extension Educators Association Conference and had 20 in-person participants. Objectives for each workshop are shared below.

Workshop 1- “Intrapersonal Leadership Development: Mindfulness for Stress Management” learning objectives include the following:

- Define stress,
- Identify stressors,
- Define mindfulness,
- Learn why mindfulness reduces stress,
- Learn and practice 2 breathing techniques to reduce stress,
- Learn and practice guided imagery,
- Learn and practice 4 techniques to manage anxious and negative thoughts,
- Discuss how these practices can fit into daily life, and
- Learn about a goal setting-resource for mindfulness.

Workshop 2 – “Mindfulness Practices in Youth Extension Programming” learning objectives include the following:

- Define mindfulness,
- Identify the benefits mindfulness can provide to youth from the literature,
- Explain different approaches to incorporating mindfulness into youth programming

- Practice 2-3 mindfulness techniques, and
- Brainstorm ways to incorporate mindfulness into existing youth Extension programming in your county.

Workshop 3 – "Mindfulness Practices in Adult Extension Programming" (Was implemented April 2024 at the Indiana Extension Educator Conference. The workshop achieved the same objectives as workshop 2, with a focus on mindfulness for adult Extension audiences rather than youth audiences.

Results to date/implications

Extension educators participating in workshop 1, 2 and 3 shared positive feedback, indicating they were interested in learning more about mindfulness in the future and shared examples of how they might want to apply it in their programming for both youth and adults. These results are consistent with Awan and Radhakrishna's (2024) work assessing mindfulness perceptions among Extension educators. Other states should determine if mindfulness is a topic of interest among their educators. If needs assessments in mindfulness indicate interest among educators, similar mindfulness series to ours could be adapted and replicated across states.

Our results may also be useful for our colleagues in formal agriculture education. The workshops could be adapted and replicated for school-based agriculture teachers as well as faculty members in school-based agriculture education, Extension education, agriculture communication, and agricultural leadership.

Future plans/advice to others

We hope to share the program with neighboring Extension systems as well as formal agriculture educators in the future, as there is value of mindfulness in both formal and non-formal program settings. We recommend that states and organizations interested in replicating our program first conduct a needs assessment to determine knowledge of and interest in mindfulness for stress management among employees. The opportunity exists for educators in consultation with the authors to offer workshops or trainings for the larger good of the Extension organization. Others completing this program in the future should add an evaluation for each session and a follow-up evaluation to the series to determine what Extension educators have learned and applied as a result of the workshop.

Costs/resources needed

The curriculum and the time to attend a train-the-trainer session would be needed for others to replicate this work. Both may be available from the authors upon request. Possibility also exists for a train-the-trainer session in the future.

References

American Psychological Association (APA). (2023). *Stress in America 2023: A nation recovering from collective trauma*. American Psychological Association. https://www.apa.org/news/press/releases/stress/2023/collective-trauma-recovery

Donaldson, J. L., Graham, D. L., Arnold, S., Taylor, L. K., & Jayaratne, K. S. U. (2022). Extension education trends and research needs: Views from professionals and faculty. *Journal of Agricultural Education, 6*3(3), 73-82

Awan, M.K.S & Radhakrishna, R. (2024). *Perceptions of Mindfulness among Extension Educators in Ohio, Pennsylvania and Indiana: Implications for Practice*. Unpublished manuscript.

Shonin, E., & Van Gordon, W. (2015). Practical recommendations for teaching mindfulness effectively. *Mindfulness, 6*, 952-955.

Mirror, Mirror: Reflecting for Progress

Christopher J. Eck

Oklahoma State University
457 Agricultural Hall
Stillwater, OK 74078
(405) 744-8027
Chris.eck@okstate.edu

Mirror, Mirror: Reflecting for Progress

Introduction

Reflection has been noted to enhance metacognition (Schunk, 2012), increase critical thinking (Brookfield, 2017), promote self-directed learning (Baxter Magolda, 2004), and increase student motivation (Shulman, 1992). While reflection has been continually researched in education, the importance of reflection in the learning process dates to John Dewey (1933). Reflection happens in multiple modes, but this innovation focuses on self-reflection as a deliberate process (Lew & Schmidt, 2011). Similarly, the use of video technology for feedback and training in education and teacher preparation is not a new concept (Bueno de Mesquita et al., 2010), but the integration of Mirror by Swivl to promote higher order thinking and automate reflection in teacher preparation is.

When considering the preparation of school-based agricultural education (SBAE) teacher aspirants and future faculty members, reflection helps to improve practice (Schön, 1983), foster creativity (Brookfield, 2017), and reduce stress (Schonfeld, 2014). Therefore, Dr. Eck has piloted the integration of Mirror within the agricultural education program at Oklahoma State University, which aligns with the findings of Greiman and Covington (2007) who found agricultural education students to prefer verbal reflection. Specifically, Mirror has been integrated as a reflection tool across two courses, one at the undergraduate level and one at the graduate level to further establish student's preparedness for professional practice (Schön, 1983).

How It Works

Swivl Mirror "is a tool that automates reflection using AI [Artificial Intelligence] to align classrooms and develop even higher order skills" (Swivl, 2024, para. 1). Mirror is a standalone reflection tool that provides students an opportunity for individual or group reflection. Standard reflection prompts are available, or the educator can input customized prompts based on class needs. In addition to prompt selection, educators can build class rosters in Mirror to allow for easy reflection. Once classes are built, individual students or groups of students can be selected based on the reflection style (i.e., individual or group) being implemented. When prompted, students select their name from the Mirror dashboard and then have 30 seconds to reflect on each of the assigned prompts. Each reflection ends with students having the opportunity to engage in a mindfulness activity built into the Mirror platform. AI capabilities allows for student feedback to help motivate students and improve reflection, and provide educators with key insights (e.g., activity, reflection quality, goal alignment, sentiment, and mindset) on their personal dashboard.

Undergraduate Implementation

Undergraduate SBAE teacher aspirants engaged with Mirror throughout a required laboratory teaching methods course. Students ($N = 23$) reflected individually using Mirror twice throughout the semester and once in small groups. For individual reflection, a secondary room was used to allow students privacy as the reflected across four prompts focusing on their preparedness to integrate laboratory teaching methods and their interest in pursuing a career as an SBAE teacher. Group reflection focused on a specific learning activity during class and prompted groups of four to five students to reflect on their experience.

Graduate Implementation

Five PhD students reflected with Mirror four times throughout the semester in a *Faculty Preparation in Agricultural Sciences and Natural Resources* course. The three reflection prompts focused on student's preparedness to enter the professorate, their concerns with a faculty career, and their goals to prepare them for desirable faculty positions. Given the smaller class size, the Mirror was set up in the back of a large classroom and students reflected on assigned days as the enter the classroom.

Results to Date

Reflection in both courses aimed to provide an opportunity for personal reflection and student growth. Student's perceptions of Mirror reflections have been positive overall, as it has allowed for personal growth and goal setting through purposeful reflection. Setting up the educator side of Mirror had a steeper learning curve than classroom implementation, as the educator needs to create an account, establish classes, add students, and select/develop relevant reflection prompts. Students found the interface to be user friendly and intuitive. A key to implementation is clearly articulating the goals of Mirror reflection with students and providing an overview/demonstration of the Mirror.

Future Plans

While the integration of Mirror has been limited to one faculty member, results to date support expansion of reflection with Mirror. The Oklahoma State University agricultural education program has plans to implement purposeful reflection in additional courses (both undergraduate and graduate), provide opportunities for student teacher reflection during block week, mid-term seminar, and capstone seminar, and offer Mirror reflection during Curriculum for Agricultural Science Education (CASE) summer institutes. With the flexibility to add multiple courses and add/change students within courses, the plans to purchase additional Mirror devices is still unknown, but the educator dashboard is limited to a single user. In addition, the expansion of Mirror use could become problematic with conflicting class times depending on the individual class reflection needs. Therefore, continued implementation will dictate departmental needs for Mirror devices. Mirror provides additional opportunities for use that have yet to be explored at Oklahoma State University, these include immersive video calls, whiteboard functionality, video observation, and guided student work with objectives and step-by-step instructions (Swivl, 2024). Future plans also include consideration of the additional capabilities of Mirror.

Costs/Resources Needed

To implement purposeful reflection with Mirror, the purchase of a Swivl Mirror is needed. The mirror is complete with a large screen, 180-degree camera, stand, and remote control. The base price for the mirror is $2500. While quantity of devices depends on the intended use, multiple classes and students can be added to the Mirror for broad integration. The agricultural education program at Oklahoma State University currently has one Mirror that was used across two courses for the semester. In addition to the purchase of Mirror, an annual subscription for the AI reflection platform and educator dashboard is needed, a one-year subscription is provided with the purchase of Mirror.

References

Baxter Magolda, M. B. (2004). *Making their own way: Narratives for transforming higher education to promote self-development*. Stylus Publishing, LLC.

Bueno de Mesquita, P., Dean, R. F., & Young, B. J. (2010). Making sure what you see is what you get: Digital video technology and the preparation of teachers in elementary science. *Contemporary Issues in Technology and Teacher Education*, *10*(3), 275–293. https://citejournal.org/volume-10/issue-3-10/science/making-sure-what-you-see-is-what-you-get-digital-video-technology-and-the-preparation-of-teachers-of-elementary-science/

Brookfield, S. D. (2017). *Becoming a critically reflective teacher* (3rd ed.). John Wiley & Sons.

Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educational process*. Heath.

Greiman, B., & Covington, H. (2007). Reflective thinking and journal writing: Examining student teachers' perceptions of preferred reflective modality, journal writing outcomes, and journal structure. *Career and Technical Education Research, 32*(2), 115-139.

Lew M., & Schmidt H. (2011). Self-reflection and academic performance: Is there a relationship? *Advances in Health Science Education Theory and Practice, 16*(4), 529–545. https://doi.org/10.1007/s10459-011-9298-y.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

Schonfeld, I. S. (2014). *On complexity and education: Educating for reflection in an uncertain world*. Teachers College Press.

Schunk, D. H. (2012). *Learning theories: An educational* perspective (6th ed.). Wadsworth Publishing.

Shulman, L. S. (1992). Making the case for teaching teacher case methods. *Journal of Education for Teaching, 18*(1), 1–19.

Swivl. (2024). *Mirror*. https://www.swivl.com/mirror/

Partnering with Junior Achievement to Provide Field Experience for Preservice Teachers

Introduction/Need for Idea

Field-based experiences are a central tenant of teacher education in which preservice teachers transition from theory to practice (Ball & Cohen, 1999; Darling-Hammond, 2014). Field experiences provide opportunities for preservice teachers to apply pedagogy and engage in varied teaching practices that provide a foundation for continued learning. Additionally, there is value in providing field experiences in diversified learning environments. If preservice teachers are to expand their understanding of teaching and learning, they must participate in field experiences in settings different from those they experienced as students (Brayko, 2013).

Various strategies have been employed by teacher educators to identify and plan field experiences that meet the developmental needs of preservice teachers. In early teaching methods courses, preservice teachers often practice applying new skills to their peers. However, the controlled environment of a laboratory-style experience limits the opportunity for future teachers to understand the full scope and complexities of teaching students (Graham, 2006). There are mutual benefits for utilizing partnerships to support preservice teachers' learning and development through authentic field experience. These opportunities can expand preservice teachers' understanding of learning environments, classroom management, and teaching methodologies. The objective of this partnership was to utilize a community-based organization, Junior Achievement, to better prepare preservice teachers by providing an authentic field experience in a local school. Junior Achievement (JA) is a national organization that provides youth with knowledge and skills for economic and academic success. Their purpose is to "inspire and prepare young people to succeed in a global economy" (Junior Achievement, 2023). Over the past 40 years, the JA program has expanded their presence in schools, reaching more than 4.8 million students per year (Junior Achievement, 2023).

How it Works

To fulfill their purpose, Junior Achievement has an established curriculum to promote financial literacy, work and career readiness, and entrepreneurship aligned with state and national educational standards. As a nonprofit organization, local volunteers are utilized to deliver the curriculum in area classrooms. Given the need for local volunteers to deliver curriculum, a partnership between JA and Ohio State's teacher education program was formed to support preservice teacher learning through an authentic field experience.

Preservice teachers in their first teaching methods class taught JA curriculum as part of their final course assignment. The teaching methods class taught preservice students how to establish a positive learning environment, manage student behavior, identify parts of lesson plans, utilize engaging techniques with teacher-centered methodologies, and implement ready-made lesson plans. Therefore, the partnership with JA provided an opportunity for preservice teachers to apply the science and theory of these concepts into practice through a field-based experience.

Preservice teachers worked with fourth and fifth grade students in an urban school district located near campus, providing a diversified experience outside agriscience education. The JA curriculum for fourth and fifth grade students included a series of six sequential lessons; each lesson was estimated to take 45 minutes to complete. Preservice teachers were paired with a classmate to teach three JA lessons together. JA lessons were taught over two days: lessons one through three were taught on Friday, while lessons four through six were taught on Monday. Junior Achievement volunteer coordinators contacted the school and arranged the logistics of the experience, including establishing the time of the teachings, securing classrooms, and managing paperwork for volunteers. A week prior to the field experience, a JA volunteer coordinator visited the methods class to train the preservice teachers on the lessons. The volunteer coordinator brought ready-made kits with all curriculum materials, provided an overview of each lesson, and assisted the teaching pairs in organizing their materials. A second day of methods class was used to allow preservice teachers to practice lessons with their partners and make adaptations to individualize the delivery of the content.

Results to Date

To date, 13 preservice teaches at Ohio State have participated in the Junior Achievement program as a field experience. Following the teaching opportunity, participants were asked to reflect on their experience. Feedback from the preservice teachers included: “This experience pushed me beyond my comfort zone by exposing me to education through a new perspective,” “This was a great experience, and I would recommend it for future Ag. Ed. students,” “I really enjoyed this experience! I think it was a very unique way to get us our of our comfort zones and gain real experience…,” and “I really enjoyed this opportunity! But I think that tweaking the lessons more would have made me feel more comfortable when presenting the information. I could see where adding things would have made the content easier for the kids.”

Future Plans/Advice to Others

There are plans to continue the partnership with Junior Achievement with minor adjustments. Adjustments include encouraging preservice teachers to add more individualized modifications to the curriculum. Feedback indicated that preservice teachers did not feel they were allowed to make more than a few minor modifications, but through reflection, preservice teachers could identify parts of the lessons where strategies like E-Moments could have enhanced the delivery. Furthermore, several preservice teachers taught individually, due to logistics. The length of time teaching, size of the classrooms, and the level of classroom management needed proved to be difficult for novice teachers. It would be advised that groups of three teachers would be more ideal than a single teacher if this were used as an early or mid-field experience. Lastly, providing an opportunity for reflection is critical, both individually and as a group.

Costs/Resources Needed

There were no costs for this partnership, as the training and materials were provided by Junior Achievement. A space is needed for the volunteer training. Preservice teachers were responsible for their own transportation to the local school.

References

Ball, D. L., & Cohen, D. K. (1999). "Developing practice, developing practitioners: toward a practice-based theory of professional education," in *Teaching as the Learning Profession: Handbook of Policy and Practice*, eds G. Sykes and L. Darling-Hammond (San Francisco, CA: Jossey Bass, 3–32.

Brayko, K. (2013). Community-based placements as contexts for disciplinary learning: a study of literacy teacher education outside of school. *J. Teacher Educ. 64*, 47–59. doi: 10.1177/0022487112458800

Darling-Hammond, L. (2014). Strengthening clinical preparation: the holy grail of teacher education. *Peabody J. Educ. 89*, 547–561. doi: 10.1080/0161956X.2014.939009

Graham, B. (2006). Conditions for successful field experiences: Perceptions of cooperating teachers. *Teaching and Teacher Education*, *22*, 1118-1129. https://doi.org/10.1016/j.tate.2006.07.007

Junior Achievement. (2023). Junior Achievement of Central Ohio. Retrieved December 20, 2023 from https://centralohio.ja.org/

Promoting Agritourism Through Online Agricultural Education Programs

Brenda Kakungulu
Master's Student, Agribusiness Management, Makerere University, Kampala
Chief Executive Officer and Co-founder, Bris Agro Safaris (U) LTD
kakungulubrenda@gmail.com

Reagan Mulungi Mwenyi
Master's Student, Students Affairs in Higher Education, Missouri State University
Agribusiness Education Officer, Bris Agro Safaris (U) LTD
rm642s@MissouriState.edu

Samuel Ikendi
University of California Agriculture and Natural Resources
University of California Merced
5200 N. Lake Rd, Merced, CA 95343
sikendi@ucanr.edu

Morris Natwijuka
Agribusiness Management, Makerere University, Kampala
Programs Director and Co-founder, Bris Agro Safaris (U) LTD
morisrays111@gmail.com

Apollo Arinda
Master's Student, Agribusiness Management, Makerere University, Kampala
Agribusiness Consultant – Beekeeping, Bris Agro Safaris (U) LTD
arindaapollo@gmail.com

Leninmarx Muhe
Animal Science, Makerere University, Kampala
Extension and Community Outreach Officer – Animal Husbandry, Bris Agro-Safaris (U) LTD
mlenin2019@gmail.com

Florence Namirembe
Agribusiness Management, Makerere University, Kampala
Finance Specialist, Bris Agro Safaris (U) LTD
mirembeflorah22@gmail.com

Criton Ahabwe
Agribusiness Management, Makerere University, Kampala
Agribusiness Consultant – Poultry, Bris Agro-Safaris (U) LTD
ahabwe.cri2019@gmail.com

Promoting Agritourism Through Online Agricultural Education Programs

Introduction/Need for the Innovation

Agritourism, a form of authentic rural tourism, involves the attraction of visitors to farms for recreation and sustainable agricultural education (Ammirato et al., 2020; Ifandi & Rahma, 2020; Chenge et al., 2023; Hassan et al., 2023; Son et al., 2023). The agritourism sector encompasses several activities relating to the management of agricultural enterprises, ecosystem preservation, and leisure management (Son et al., 2023) targeting visitors who seek seasonal relief from the busy urban setting (Widener, 2022). Agricultural educators reflect on innovative avenues to disseminate agricultural information calling for a positive shift towards agritourism webinars and online marketing that responds to dynamism in consumer needs (Mao et al., 2022; Rich et al., 2011). Additionally, Agritourism webinars and online marketing tools are cost-effective, conveniently accessible, encourage immediate information sharing, and connect diverse audiences by sharing agricultural information either synchronously or asynchronously.

In Uganda, our study area, agritourism is a recently recognized enterprise by the Uganda Tourism Board (UTB). The board acknowledges that until the global COVID-19 pandemic that halted traditional outdoor recreation tourism and international travel, little attention had been placed on agricultural tourism as a lucrative source of income in Uganda (UTB, 2020). Similarly, due to the March 2020 nationwide lockdown in Uganda, there was a general increase in interest by urban dwellers migrating to rural areas and investing in subsistence agriculture to cope with business closure, increase in processed food prices, decline in cross-border trade, and loss of office jobs in the metropolitans (Fowler, 2020; Olupot et al., 2021). In 2019, Bris Agro-Safaris was launched as an agritourism enterprise to facilitate the participation of marginalized populations like youth, women, and people with disabilities in agribusiness.

How it works/Methodology/Program Phases/Steps

Bris Agro-Safaris (BAS) employs a diverse range of initiatives, including monthly webinars, agricultural education excursions, investment advice, and partnerships with rural farms to offer internship placements to university agriculture students. BAS employs targeted online marketing campaigns to promote its monthly agribusiness webinars, leveraging social media platforms such as a dedicated WhatsApp group and its official Facebook page. The selection of webinar themes is guided by both current trends and monthly national and international public holiday celebrations (events), ensuring the content remains relevant and engaging. To gauge participants' interest in specific discussion topics, BAS utilizes the WhatsApp polls feature. Based on the identified areas of interest, the BAS team invites field experts, including model farmers and extension workers to present on these subjects during the scheduled webinars.

Proceeding with the webinars, BAS organizes quarterly farm visits aligned with prior webinars for participants to experience the practical aspects. During one of the four monthly webinars, BAS invites farmers and/or their employees to share practical experiences, providing valuable knowledge on how to navigate the challenges of running enterprises. BAS schedules both the webinars and farm trips on weekends ensuring optimal convenience and participation of members in formal employment. The WhatsApp page was created to allow participants to ask questions and receive answers from fellow farmers and agricultural experts on the platform. Also, farmers seek out contracting BAS to run their farm enterprises on their behalf where they pay a fee to the BAS team to draft a farm business plan.

Results to Date/Implications

A total of 226 members have participated in BAS programs since its inception in 2019, among whom 193 are active in the WhatsApp group including 59 former agriculture graduates. Members (108) came from non-agricultural backgrounds, 63 of whom attended at least one webinar, and 45 participated in farm visits. BAS has had 16 guest speakers, including five Ugandan farmers, a DR Congolese, four agriculture graduates, two agricultural educators, and four practitioners from partnering organizations. Four farmers have contracted BAS to assist in managing their farming enterprises. In addition to Ugandans, three from the DR Congo and four from Kenya, have also attended the webinars. Through BAS, 18 student interns have been paired with partnering dairy and goat farms to complete their required college experiential learning.

BAS has organized 35 webinars including four in 2019 before the COVID-19 pandemic, 12 in 2020 and 2021 during the pandemic, and 19 in 2022 and 2023 after the pandemic. In 2019, the webinars covered introductory topics such as What is agritourism? What is the agribusiness value chain? however, these topics generated limited interest, with an average attendance of eight members per session and an average of seven for farm visits. Using group feedback, BAS modified the approach by organizing webinars centered around national and international public holidays to raise awareness about the connections between agriculture and social events which increased the average attendance to 19 members in 2020. Improved attendance was attributed to the inclusion of, particularly farmers and using online fliers and a shift to agricultural investment topics, such as poultry farming and kitchen gardening, increased engagement in the webinars.

In 2021, seven webinars focused on business planning, climate change, and dairy production with an average attendance of 43 participants. In 2022, topics centered on chicken farming, goat farming, disability-inclusive agriculture, women empowerment through agriculture, and dairy farming. Goat farming was attended most with an average of 56 members. In 2023, BAS organized three quarterly farm visits, two small-scale goat farms, and one breeder farm. A total of 33 individuals participated in the goat farming trips. In 2023, BAS also introduced beekeeping and duck farming attended by 27 and 18 members respectively.

Future Plans/Advice to Others.

There is a rising interest in urban farming within the Kampala metropolitan area. BAS plans to organize agricultural education excursions for small-scale urban farming enterprises. Access to information from urban farming centers would provide attendees with the opportunity to venture, for instance, into kitchen gardening, for individuals with limited access to land. In our advice, agritourism enthusiasts can fully invest in encouraging youth participation in agribusiness by investing in webinars as informative and persuasive advertisement tools to increase awareness about the opportunities available in agribusiness value chain and the quintessential role played by agriculture education in community development and fostering inclusive involvement.

Costs/Resources Needed

Organizing a webinar costs approximately $30 to pay for online video conferencing services, flier design, and Facebook advertisement. Costs for trips to farms vary depending on the distance traveled, training fees charged by the farm per attendee, and estimated cost of meals purchased at the farm. Social capital is critical, having connections to model farmers and experts in the field of interest as identified by the participating members. Time and personal dedication are needed.

References

Ammirato, S., Felicetti, A. M., Raso, C., Pansera, B. A., & Violi, A. (2020). Agritourism and sustainability: What we can learn from a systematic literature review. *Sustainability, 12*(22), 9575. https://doi.org/10.3390/su12229575

Chenge, D., Iancu, T., Adamov, T., Ciolac, R., Pascariu, R., & Gordan, I. (2023). Relaunching possibilities of rural area from Mountain Banat through agritourism activities. *Agricultural Management/ Lucrari Stiintifice Seria I, 25*(1), 167–174. https://www.lsma.ro/index.php/lsma/article/view/2371/pdf

Fowler, M. (2020, September 1). *The impact of the COVID-19 pandemic on Uganda's agricultural sector.* Retrieved from United States Agency for International Development (USAID) https://pdf.usaid.gov/pdf_docs/PA00X8JX.pdf

Hassan, K. H. M., Mahbub, T., & Chowdhury, A. M. (2023). Agritourism, community attachment, and their contributions to tourism and community: An empirical study. *Tourism: An International Interdisciplinary Journal*, *71*(4), 708–722. https://doi.org/10.37741/t.71.4.4

Ifandi, S., & Rahma, Y. A. (2020). Potential of ecology based agrotourism for agricultural education in Besur Village, Lamongan Regency. *Biosaintifika: Journal of Biology & Biology Education*, *12*(3), 335–342. https://doi.org/10.15294/biosaintifika.v12i3.25886

Mao, S., Chunmeng, L., Ahmed, F., & Ranran, W. (2022). Analysis on the change of tourists' leisure agricultural tourism behavior and the influence of individual intrinsic characteristics. *Asia Pacific Management Review, 27*(2), 115–119. https://doi.org/10.1016/j.apmrv.2021.06.001

Olupot, C., Kasse, J. P., & Kyejjusa, S. (2021, May 10–14). *Leveraging COVID-19 Impact: Innovation, Science and Technology (IST) integration for boosting resilience of citrus fruit farmers in Teso Region of Uganda* (Proceedings, pp. 1–8). *IST-Africa Conference*. South Africa.

Rich, S. R., Komar, S., Schilling, B., Tomas, S. R., Carleo, J., & Colucci, S. J. (2011). Meeting extension programming needs with technology: A case study of agritourism webinars. *The Journal of Extension, 49*(6), Article #5. https://doi.org/10.34068/joe.49.06.05

Son , N. T., Nguyen, Q. N., & Hoang, T. H. (2023). Factors influencing tourist satisfaction with agritourism in the Mekong delta, Vietnam. *GeoJournal of Tourism and Geosites, 49*(3), 998–1005. https://doi.org/10.30892/gtg.49315-1099

Uganda Tourism Board (UTB). (2020, September 19). *UTB partners with agribusiness enterprises to enhance agro-tourism development in Uganda*. Retrieved from Uganda Tourism Board Web site: https://utb.go.ug/press-releases/utb-partners-agribusiness-enterprises-enhance-agro-tourism-development-uganda

Widener, J. (2022). Agritourism purposes in Colorado's Grand Valley. *Material Culture, 54*(2), 58–78. https://web.p.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=1&sid=acf55ee6-e3c2-4202-b0fb-2407dda1d658%40redis

Reconceptualizing Youth Leadership Board Curricula: An Instructional Design Approach to 4-H State Officer Leadership Development Programming

Need for Innovation

4-H youth development professionals have found that electing officers provides youth with the opportunity to practice leadership that could translate to adulthood, particularly with respect to delegation, communication, negotiation, and teamwork (Van Horn et al., 1998). There is also a historical precedent for formal leadership trainings in 4-H. Early iterations for such leadership development opportunities included regional leadership training schools and camp counselor leadership programs at the local and state levels (Hoover et al., 2007). With regard to 4-H officer training programs, particularly for 4-H state officer boards (also known as 4-H State Council in some states), a general history or summary of curricular inputs is not readily apparent. Conversely, organizations such as FFA can trace leadership training schools for officers at state, regional, and national levels to the 1940s and 1950s (Knauer, 1950; Tenney, 1977). If formal 4-H state officer training programs have been independently initiated and developed by state 4-H programs over the years, efforts to document these and share best practices are absent from the literature.

From a single state's perspective, the [State] 4-H State Council has operated as the youth governing board for the [State] 4-H program since the 1960s. The group currently consists of 13 total members with five officers (president, vice-president, treasurer, secretary, outreach coordinator) and representatives from each of the [State's] extension regions. In addition to a listening tour conducted with state 4-H staff associated with the [State] 4-H State Council both past and present, document analysis techniques (Bowen, 2009) were used to conduct a thorough review of the electronic and paper records pertaining to the council. These documents included applications, personal correspondences, fact sheets, internal reports, and how-to guides. It was surmised that no formal curriculum has been used for the training and leadership development of these youth nor has any consistent, longitudinal means of assessment or evaluation ever been conducted to measure program impacts on any known variables. Given that the council falls under [State] 4-H's leadership and civic engagement program areas, it was determined that a formal state officer curriculum should be instituted to serve as the foundation for the youths' leadership development.

This sentiment is in line with recommendations from previous research regarding 4-H officers in which it has been found that 4-H officers who receive some type of formal officer training generally perform at higher levels than those who do not receive formal training (Tassin et al., 2010). Research specifically about 4-H state leadership boards is somewhat limited, but what has been found suggests that serving as a 4-H state officer has positive implications for leadership life skills development (see Kelsey, 2020; Kelsey & Fuhrman, 2020) and the perceptions of youth adult partnerships (see Moran et al., 2019). There is justification to conduct more research on leadership and 4-H state officers particularly regarding the relationship between external factors and leadership life skills development (Moran et al., 2019) as well as 4-H state officers' leadership development in other contexts (i.e., different states/4-H programs). While 4-H as a national entity purports to develop youth leaders and as a matter of programmatic philosophy

(see National 4-H Council, 2020), the word leadership appears nowhere in the most recent National 4-H Index Study publication (see Gagnon et al., 2023). Though a simple observation, it might suggest the existence of a broader knowledge gap regarding leadership research and evaluation in 4-H programming as a whole.

Program Phases

A formal curriculum has been devised for the [State] 4-H State Council in an effort to establish obtainable learning outcomes and to standardize the experience for 4-H'ers directly impacted by the program so that they can develop their leadership in such ways that are grounded in purposive educational inputs and evidence-based practices. The new curriculum for the [State] 4-H Council was developed using the principles of instructional design (Gagné, 1985). Specifically, the model devised by Dick et al. (2005) served as the curricular planning mechanism for outlining program purpose, learning outcomes, inputs, and assessments. The resulting "syllabus" for the council was essentially developed much like a college course's syllabus. The key differences are the target population consists of adolescents rather than emerging adults; exposure to the curriculum is a full year (officer term length) rather than an academic semester; and learning occurs in non-formal settings more often than formal settings due to the disposition of council members (e.g., council members are from all corners of the state geographically speaking; council members participate in events and meetings at various points during the year). During their term in office, state council members will engage in activities, leadership lessons, and experiences devised by university faculty to contribute to their leadership development. Throughout the year, they will complete cornerstone assessments such as reflections, exploratory essays, interviews with leaders, and check-in activities to determine the degree to which they are synthesizing and applying the content learned during their time on council. During the year, group discussions guided by the nominal group technique (Delbecq et al., 1975) will inform formative evaluation efforts, while exit interviews and surveys will serve as the mechanisms for summative program evaluation at the end of council members' term of office. Data-driven evaluation efforts will be vital for programmatic improvements and adjustments to ensure that the [State] 4-H State Council and its curriculum provide youth the best opportunities to grow and thrive as leaders in adolescence and emerging into adulthood.

Implications

In addition to program enhancement, the evaluation data is intended to be shared with other state 4-H leadership boards' faculty and youth development professionals with a long-term intention of strengthening the leadership development experiences of 4-H officer programs nationally and fostering a spirit of collaborating over best practices in this aspect of 4-H programming. Likewise, collecting research data on leadership life skills development in a new context and taking into account external factors as additional variables should contribute to the small body of literature regarding 4-H state officers and leadership development. Additionally, efforts in this area should also contribute to the extant knowledge gap regarding an empirically-substantiated relationship between leadership development and 4-H programming. At present, there is no associated monetary cost with these efforts. However, funding could be necessitated for program enhancement as a result of needs identified by evaluation.

References

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal, 9*(2), 27-40. http://dx.doi.org/10.3316/QRJ0902027

Delbecq, A., Van de Ven, A.H., & Gustafson, D. H. (1975). *Group techniques for program planning*. Scott, Foresman & Co.

Dick, W., Carey, L., & Carey, J. O. (2005). *The systematic design of instruction.* HarperCollins Publishers.

Gagné, R. M. (1985). The conditions of learning (4th ed.). Holt, Rinehart, and Winston.

Gagnon, R. J., Arnold, M. E., Lingard, J., & Mullendore, J. (2023). *2022 National 4-H Annual Index Study*. National 4-H Council. https://www.4-h.org/wp-content/uploads/2024/01/23154256/230707-2022-4H-National-Index-Study-FNL.pdf

Hoover, T. S., Scholl, J. F., Dunigan, A. H., & Mamontova, N. (2007). A historical review of leadership development in the FFA and 4-H. *Journal of Agricultural Education*, *48*(3), 100-110. https://doi.org/10.5032/jae.2007.03100

Kelsey, K. D. (2020). The sharpening stone: A phenomenological study of the impact of a 4-H state-level leadership role on youth leadership and life skills development. *Journal of Human Sciences and Extension*, *8*(1), 1-16. https://doi.org/10.54718/ICYS8304

Kelsey, K. D., & Fuhrman, N. E. (2020). Leadership and life skills development among 4-H state-level youth leaders. *Journal of Human Sciences and Extension, 8*(2), 15-27. https://doi.org/10.54718/IZUO2900

Knauer, D. (1950). *A recommended procedure for Future Farmers of America leadership training programs in Pennsylvania* [Unpublished master's thesis]. Pennsylvania State University.

Moran, L., Bunch, J. C., & Cater, M. (2019). 4-H state leadership boards: Measuring leadership life skills and youth-adult relationships. *Journal of Human Sciences and Extension*, *7*(1), 68-78. https://doi.org/10.54718/LJMA4777

National 4-H Council. (2020). Beyond the gap: How American can address the widening opportunity gap facing young people [White paper]. 4-H. https://4-h.org/wp-content/uploads/2022/11/28021112/Beyond-the-Gap-White-paper.pdf

Tassin, M. G., Higgins, C. C., & Kotrlik, J. W. (2010). An examination of life skill development by Louisiana 4-H club officers. *Journal of agricultural education*, *51*(2), 10-23. https://doi.org/10.5032/jae.2010.02010

Tenney, A. (1977). *The FFA at 50*. National FFA

Van Horn, B. E., Flanagan, C. A., & Thomson, J. S. (1998). The first fifty years of the 4-H program. *Journal of Extension*, *36*(6). https://archives.joe.org/joe/1998december/comm2.php

Research Journal Engagement in Agricultural Education: An AI-Driven Approach

Jason Peake, Madison Race

University of Georgia
405 College Station Road,
Athens, GA 30602

229.392.6097

jpeake@uga.edu, madison.race@uga.edu

Research Journal Engagement in Agricultural Education: An AI-Driven Approach

In research, it is paramount for graduate students and researchers to remain updated with the latest research journals to advance knowledge and enhance their own research. However, the sheer volume of research articles can pose a significant challenge, making it time-consuming and laborious to access and digest this wealth of information. To overcome this obstacle, some researchers are utilizing generative artificial intelligence (AI) to streamline engagement with the existing research (Dwivedi, 2023).

Researchers are increasingly turning to innovative tools such as Research Rabbit, Lit Maps, and Elicit to enhance their efficiency in conducting literature reviews (Hu, 2023). These tools offer unique capabilities that streamline the process of identifying relevant research articles, extracting key information, and synthesizing findings.

The integration of AI in this context represents a more efficient approach to facilitating access to and interaction with research articles. Researchers may now efficiently navigate through the vast repository of articles, enabling them to quickly identify relevant research and glean insights that can inform their work (Van Noorden, 2023). These innovative tools not only save time but also enhances the overall research experience, empowering graduate students and researchers to stay at the forefront of agricultural education advancements.

Need for Innovation or Idea

In agricultural education, staying abreast of the latest research is crucial for advancing knowledge and improving practices. However, accessing and digesting a vast amount of research articles can be time-consuming and challenging. To address this need, we developed an innovative solution that leverages artificial intelligence (AI) to enhance research collaboration.

How It Works/Methodology/Program Phases/Steps

The researcher began by downloading the last five years' worth of research articles from the Journal of Agricultural Education. Next, these articles were uploaded into a vector database, which enabled researchers to convert text data into numerical vectors that represent the semantic meaning of each article (Douglas, 2023).

Using these vectors, researchers next created an AI bot capable of interacting with the vector database. The bot employs natural language processing (NLP) techniques to understand and respond to queries from researchers. By simulating a conversation between researchers and the Journal of Agricultural Education, the AI bot facilitates efficient access to and synthesis of research findings. The AI bot prompts are constructed to disallow information from the Internet, this creates and isolated knowledge base of only the Journal of Agricultural Education.

Results to Date/Implications:

Preliminary results suggest that the AI bot represents a significant advancement in the efficiency of accessing and synthesizing research articles. By enabling researchers and graduate students to query the database using natural language, the AI bot streamlines the search process, ensuring

that relevant articles are quickly identified. Moreover, the concise and relevant summaries provided by the bot offer insights that might have otherwise been overlooked, allowing researchers to gain a deeper understanding of the literature in a more efficient manner. This approach saves time but also enhances the quality of research by ensuring that researchers are exposed to a broader range of relevant studies.

Furthermore, the implementation of this AI-driven solution has the potential to increase efficiency in how researchers collaborate and engage with research journals. By facilitating quicker access to relevant articles and insights, the AI bot can enhance collaboration among researchers, enabling them to build upon each other's work more effectively. Additionally, the efficiency of the bot could lead to increased engagement with research journals, as researchers are able to access and digest the latest research findings more easily.

Future Plans/Advice to Others

In the future, researchers plan to increase the capabilities of the AI bot by integrating machine learning algorithms. These algorithms will enhance the accuracy and relevance of the bot's responses and enable it to learn from user interactions, continuously improving its performance over time. Additionally, researchers plan to expand the database to include a more extensive collection of journal articles. This expansion will not only increase the breadth and depth of the database but also facilitate the creation of a comprehensive knowledge base that encompasses a wide range of research topics and disciplines.

For those contemplating a similar innovative approach, we recommend leveraging open-access datasets as a foundational resource. Open-access datasets provide information that can be used to train AI models and develop innovative solutions. Furthermore, collaborating with AI experts is essential to ensure the successful development and implementation of AI-driven solutions. AI experts can provide valuable insights and expertise that can help researchers navigate the complexities of AI development and implementation, ultimately leading to more effective and impactful solutions.

Costs/Resources Needed

The development and implementation of this AI bot was accomplished by the researcher and an online AI bot development software. Access to the Journal of Agricultural Education articles was accomplished through the Journal of Agricultural Education website. Minimal computing resources were required for AI bot building; more computer resources were needed for data processing, AI model training, and hosting the database and AI bot.

Despite the initial investment, the long-term benefits of our AI-driven solution appear to outweigh the costs. The AI bot has demonstrated its ability to significantly enhance research analysis by providing quick and accurate access to relevant literature. Overall, the initial investment in our AI-driven solution has proven to be a worthwhile investment in advancing research and knowledge in agricultural education.

Finally, yes, an AI bot wrote this article with minimal input from the credited author.

References

Douglas, W (March 3, 2023). "The inside story of how ChatGPT was built from the people who made it". MIT Technology Review. Archived from the original on March 3, 2023. Retrieved March 6, 2023.References

Dwivedi, Y., Kshetri, N, Hughes, L., Slade, E., Jeyaraj, A., Kar, A., Baabdullah, A., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M., Al-Busaidi, A., Balakrishnan, J., Barlette, Y. (2023). "Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice, and policy". *International Journal of Information Management*. 71: 102642. doi:10.1016/j.ijinfomgt.2023.102642.

Hu, Krystal (February 2, 2023). ChatGPT sets record for fastest-growing user base – analyst note. *Reuters*. Archived from the original on February 3, 2023. Retrieved June 3, 2023.

Van Noorden, R; Webb, R (2023). "ChatGPT and science: the AI system was a force in 2023 — for good and bad". *Nature*. 624 (7992): 509. doi:10.1038/d41586-023-03930-6.

Risky Business: Applying Risk and Crisis Communication Principles in a Field Trip Setting

Dr. Cara Lawson
200 Agricultural Administration
2120 Fyffe Road
Columbus, OH 43210
614-292-6909
lawson.182@osu.edu

Nicole Volk
200 Agricultural Administration
2120 Fyffe Road
Columbus, OH 43210
614-292-6909
volk.97@osu.edu

Introduction / Need for Idea

Using experiential education as a teaching approach helps students make connections between education, society, and life (DeMartini, 1983). While it is not a new approach (Knobloch, 2003; Roberts, 2006), experiential learning provides a foundation for profound learning by connecting experience with theory and classroom instruction (Bringle & Hatcher, 1999). In this vein, short-term experiential education opportunities that offer a real-world perspective can be implemented through field trips (Scarce, 1997), a strategy that lends itself well to crisis communication preparation.

To prepare for a potential crisis, crisis communication managers must first identify and assess potential for risk by exploring and diagnosing vulnerabilities that exist within businesses and organizations (Coombs, 2021). The field trip enables an atmosphere of risk assessment, which can be used to pinpoint and prioritize potential risks to ultimately develop a crisis communication plan (Irlbeck, 2023). Field trips also allow students to engage with stakeholders, whose perspectives are key to consider when developing a crisis communication plan (Veil & Husted, 2012). Additionally, the observation of risk provides a scenario for students to practice the crucial skill of drafting potential crisis responses, a key element of a crisis communication plan (Coombs, 2021; Ozanne et al., 2020). The field trip experience provides students a chance to observe and strategize for potential risk and crisis in an actual business or organization and allows students to apply many elements of risk and crisis communication.

How it Works

An end-of-the-term field trip was selected to allow students to apply concepts discussed throughout the semester during an agricultural issues communication course. Subject matter should guide field trip topics and locations (Scarce, 1997), and given the course focus on risk and crisis communication needs for a fictional food company during the semester, the instructor and students brainstormed food-oriented locations that were easily accessible to students. As choice plays an important role in intrinsic motivation to learn (Evans & Boucher, 2015), together, the students and instructor selected [Market], a 148-year-old landmark with merchants, farmers, and bakers offering local and fresh products. Before the field trip, students were provided with details including the date, address, where to meet inside [Market], and information on carpooling and parking. Students were instructed to bring a writing utensil and optional funds for shopping. They were also reminded of the activity objectives, which focused on assessing potential for risk and crisis, and developing a potential crisis response.

At [Market], students met at the previously identified location and received a worksheet and instructions for their risk and crisis field trip experience. Students were instructed to visit at least three vendors in [Market] and identify one risk or vulnerability for each. After identifying the risks, students were instructed to create messages for social media to potentially be used should the risk elevate to a crisis (Ozanne et al., 2020). After students completed the risk diagnosis and drafted their social media messages, the class debriefed as a group what they observed and the approaches they took when crafting a crisis response. The activity sheets were collected, and participatory grades were issued. Students unable to attend the [Market] field trip were offered the option to complete the activity by visiting food company websites of their choice.

Results to Date

A survey was distributed to the students to collect feedback on the learning experience. Ten of 15 students attended the field trip to [Market] and all attendees completed the survey. Taking a field trip off-campus to a consumer-facing business allowed the students to practice both identifying potential risks and writing potential crisis responses (Ozanne et al., 2020). Students indicated via survey response that the field trip was an enjoyable and creative learning activity. Specifically, students said they appreciated the chance to recognize real risk and apply the classroom content in a different setting (Coombs, 2021; Irlbeck, 2023). Some students also mentioned their eagerness and preparedness to apply their risk and crisis communication skillsets to their future careers. Students who completed the survey indicated they approached looking for risk and vulnerabilities at [Market] by reflecting on class activities and assignments, talking with their peers/classmates, observing potential risk issues on-site, considering potential social media issues, and considering the perspectives of stakeholders (Veil & Husted, 2012). Overall, students reported the location was very convenient due to its short distance from campus, but also noted some difficulty with parking and local construction in the area.

Future Plans / Advice to Others

The instructor organized the field trip without communicating with [Market] managers. While [Market] is a public, consumer-facing business, a few students reported some vendors appeared to be nervous as students took notes without clearly communicating about the class activity. It is recommended that the instructor contact the business manager or representative to let them know about the field trip and the nature of the students' tasks. At the same time, it is recommended the instructor prepare the students to better engage with the employees and other stakeholders to promote mutual partnership and learning. Students should be encouraged to ask questions about what they see as risks to determine a more precise level of risk based on stakeholder insights (Veil & Husted, 2012).

Selecting a convenient location is also key to the success of an experience like this. The instructor offered to drive students, and other students carpooled. Locations should be varied to encourage and maintain excitement about the experience (Evans & Boucher, 2015) and to determine locations that enable the application of course content (Scarce, 1997). It is recommended this experience take place at the end of the academic term to allow students to apply content from throughout the semester. The worksheet and instructions provided a roadmap to applying content in a new location, and the social media activity encouraged students to practice drafting crisis responses. This activity took place in the spring semester of 2023, and the instructor plans to provide another similar field trip opportunity in the spring of 2024.

Costs / Resources Needed

Aside from minimum transportation costs for some students and the optional market purchases, there were minimal costs associated with this experience. Time was a needed resource, as the instructor needed to plan the field trip experience and allocate time within the course schedule. The instructor also needed to create field trip objectives and a worksheet for the students to use as a guide, and copies of the worksheet were needed on-site.

References

Bringle, R. G., & Hatcher, J. A. (1999). Reflection in service learning: Making meaning or experience. *Educational Horizons*, *77*(4), 179. https://digitalcommons.unomaha.edu/slceeval/23

Coombs, W. T. (2021). *Ongoing crisis communication: Planning, managing, and responding*. Sage Publications.

DeMartini, J. R. (1983). Sociology, applied work, and experiential learning. *Teaching Sociology*, *11*(1), 17-31. https://doi.org/10.2307/1316921

Evans, M. & Boucher, A. R. (2015) Optimizing the power of choice: Supporting student autonomy to foster motivation and engagement in learning. *Mind, Brain, and Education, 9*(2), 87–91. https://doi.org/10.1111/mbe.12073

Irlbeck, E. (2023). *The crisis communications guide for agriculture, food, and natural resources.* XanEdu Publishing Inc.

Knobloch, N. A. (2003). Is experiential learning authentic?. *Journal of Agricultural Education*, *44*(4), 22-34. https://doi.org/10.5032/jae.2003.04022

Ozanne L. K., Ballantine, P. W., & Mitchell, T. (2020). Investigating the methods and effectiveness of crisis communication. *Journal of Nonprofit & Public Sector Marketing*, *32*(4), 379-405. https://doi.org/10.1080/10495142.2020.1798856

Roberts, T. G. (2006). A philosophical examination of experiential learning theory for agricultural educators. *Journal of Agricultural Education, 47*(1), 17–29. https://doi.org/10.5032/jae.2006.01017

Scarce, R. (1997). Field trips as short-term experiential education. *Teaching Sociology*, *25*(3), 219-226. https://doi.org/10.2307/1319398

Veil, S. R. & Husted. R. A. (2012). Best practices as an assessment for crisis communication. *Journal of Communication Management, 16*(2). 131-145. https://doi.org/10.1108/13632541211217560

SBAE READY: Equipping developing countries with a usable guide to implement School-Based Agricultural Education

Haley Q. Traini, Oregon State University
Ehi-Kowochio Blessings Ogwiji, Oregon State University

108 Strand Agriculture Hall
Corvallis, OR 97331
Haley.Traini@oregonstate.edu
Ehi.Ogwiji@oregonstate.edu

SBAE READY: Equipping developing countries with a usable guide to implement School-Based Agricultural Education

Introduction/Need for Innovation or Idea

School-Based Agricultural Education (SBAE) has proven to be a practical and cost-effective educational system (State University, 1969; Park, 2014; Schlutt, 1957; Wessel & Wessel, 1982), fostering youth empowerment as change agents and early adopters of agricultural innovations (Okiro et al., 2011). With successful implementations in Ghana and Liberia (Dado et al., 2023) by AgriCorps since 2015 and positive results from Northwestern University's randomly controlled trial, interest from other developing countries is growing. Over the past year, AgriCorps has fielded requests from various organizations seeking practical and technical guidance to implement SBAE in their respective communities and countries. These organizations include but are not limited to the Liberian Vice President, the Liberian Minister of Agriculture, the Liberian Minister of Education, the President of the Rwandan Development Bank, representatives from the World Bank, USAID's Feed the Future team, the Swedish Development Corporation, and the French Development Agency (AFD). There is currently a lack of comprehensive resources for developing countries to effectively implement SBAE. In response, the SBAE READY project aimed to fill this void by developing a user-friendly, open-access technical guide for developing countries, NGOs, and agencies. The guide fills the current dearth of resources and supports both the sustaining of existing SBAE programs and initiating of new ones.

How it Works

SBAE READY, fully titled *SBAE Ready: A Practical Guide to Launching School-Based Agricultural Education in Developing Countries,* is a complete technical guide, or book, that guides readers on how to begin SBAE in their country. Its primary audience is government bodies, non-governmental organizations (NGOs), development agencies, and individuals keen on promoting SBAE initiatives globally. This guide, organized into four main sections, spans a broad spectrum, from the national to the local levels, covering the entire implementation process. Section 1 introduces SBAE's four components: classroom instruction, school demonstration farms, home entrepreneurship projects, and leadership development. It emphasizes youth empowerment in transforming agricultural communities (Sumberg & Okali, 2013) and outlines phases for national and local SBAE introduction. Section 2 details key steps for national SBAE implementation, such as securing government support, hiring staff, and identifying suitable schools and communities. Section 3 covers essential curriculum and training aspects (Smalley, et al., 2019) specifying recommendations for training and offering best practices for practical sessions. Section 4 guides SBAE launch in schools and communities, providing practical recommendations for strengthening components like student-centered teaching (Madende & Jordaan, 2023; Mukembo et al., 2014), effective farms, home projects, and leadership development through agricultural student organizations like 4-H clubs at different levels. Embedded throughout the document are case studies, examples, and stories of Liberian 4-H Clubs, Field Officer (similar to 4-H Extension Agents) advice, and student stories showcasing the experiences and outcomes of SBAE engagement in developing countries, specifically Ghana and Liberia.

Results to Date

Beginning from summer to fall of 2023, SBAE READY was cowritten by Haley Traini and Trent McKnight of AgriCorps while KJ Jospeh spearheaded Field Officers interviews, transcription, and writing of success stories. After engaging several experts to review and provide feedback on the tone, content, and usability of our writing, an undergraduate intern, Deborah Miller was hired to format the document into a beautiful book using InDesign. The completed document is 86 pages and in the form of a visually appealing guide. The SBAE READY project has created opportunities for international graduate students to be involved in research projects exploring the experiences of change agents implementing SBAE in developing countries. It is projected to alleviate food insecurity in Sub-Saharan Africa through clearly outlined technical guidance for SBAE implementation, informed by extensive research. We consider this a springboard for securing funding for SBAE READY 2.0 as student-led international agricultural education initiatives are birthed through this project.

Future Plans

AgriCorps will facilitate the circulation of the guide across its network by presenting it to Liberia's Vice President and Minister of Agriculture, the Rwandan Development Bank, the World Bank, USAID, the Swedish Development Corporation and the French Development Agency (FDA) before the end of 2024. Also, it will be freely accessible through the Movement for SBAE website and widely distributed to institutions with a vested interest in community transformation in low to middle-income countries. Considering the project scope, the written guide is just the start. We look forward to developing a suite of open-access resources for facilitating SBAE implementation. These resources include self-paced online modules, comprehensive and instructional videos, curriculum, instructional guides for specific SBAE activities (e.g., electing 4-H officers), and guidance and tips for home entrepreneurship projects, school demonstration farms, and other agricultural innovations.

Our interactions with Field Officers and agriculture teachers will open up research opportunities as ample data is collected via interviews, surveys, direct observation, and other instruments to enable continuous refinement in the face of a dynamic agri-food system (Kabasa et al., 2015). In order to scale up SBAE Ready, significant funding is required to incorporate feedbacks in reiterations of the written document while also embarking on the development of more open-access resources. The feedback from partners and users will strengthen grant proposals to enable recruitment and support of more international graduate students to facilitate the other components of SBAE Ready project.

Costs/Resources Needed

Three partners funded this project including the College of Agricultural Sciences Global Seed Grant, a grant through our college with a goal to support faculty with emerging projects and startup funds for international projects. The college grant amount was $8,000 and additional funding of $3,700 from the Agricultural Education and Agricultural Sciences and $400 from AgriCorps. These funds totaled $12,100 and was used to hire the writers and design intern. However, additional costs for printing a few copies for our partners was omitted from the budget. We intend to solicit other departmental funds to enable us make copies available for key partners.

References

Dado, M., Spence, J., & Elliot, J. (2023). Going the distance: examining the impact of a long term international fellowship. *Journal of International Agricultural and Extension Education*, *30*(1), 59-73. https://doi.org/10.4148/2831-5960.1088

Kabasa, J., Kirsten, J., & Minde, I. (2015). Implications of changing agri-food system structure for agricultural education and training in sub-Saharan Africa. *Journal of Agribusiness in Developing and Emerging Economies*, *5*(2), 190-199. https://doi.org/10.1108/JADEE-03-2015-0016

Madende, P., Henning, J., & Jordaan, H. (2023). Tailor-made development pathways: A framework to enhance active participation of youth in agriculture. *Social Sciences*, *12*(11), 630. https://doi.org/10.3390/socsci12110630

Mukembo, S., Edwards, M., Ramsey, J., & Henneberry, S. (2014). Attracting youth to agriculture: the career interests of young farmers club members in Uganda. *Journal of Agricultural Education*, *55*(5), 155-172. https://doi.org/10.5032/jae.2014.05155

Okiror, J. J., Oonyu, J., Matsiko, F., & Kibwika, P. (2011). Can schools offer solutions to small-scale farmers in Africa? Analysis of the socioeconomic benefits of primary school agriculture in Uganda. *Journal of Agricultural Education and Extension*, *17*(2), 135-151

OSU. (1969). Oklahoma State University in Ethiopia: Terminal Report 1952–1968. Stillwater, Oklahoma.

Park, G. (2014, November 1). Pre-recorded remarks for final session. Global 4-H Summit. Seoul, Korea.

Schlutt, E.F. (1957). The Influence of 4-H Club on the acceptance of approved dairy, corn and small grain practices of club members in Cass County Michigan. (Master's Thesis). Retrieved from University of Wisconsin Library. (AWM.SCH394).

Smalley, S. W., Hainline, M. S., & Sands, K. (2019). School-based Agricultural Education Teachers' Perceived Professional Development Needs Associated with Teaching, Classroom Management, and Technical Agriculture. *Journal of Agricultural Education*, *60*(2), 85–98. https://doi.org/10.5032/jae.2019.02085

Sumberg, J., & Okali, C. (2013). Young people, agriculture, and transformation in rural Africa: An "opportunity space" approach. Innovations: Technology, Governance, Globalization, *8*(1-2), 259-269. 0.1162/INOV_a_00178

Wessel, T. & Wessel, M.(1982). 4-H: An American idea 1900-1980. Chevy Chase, MD: Nation 4-H Council

Sharing is Caring: Zotero for Agricultural Literacy Research

Amelia J. Miller, Ph.D.
Utah State University
amelia.miller@usu.edu

Debra M. Spielmaker, Ph.D.
Utah State University
debra.spielmaker@usu.edu

School of Applied Sciences, Technology & Education
Utah State University
6000 Old Main Hill
Logan, Utah 84322

Introduction

Reviewing literature is a tedious, insightful process required in most scholarly writing. Many different methods are suggested for organizing reference publications. From handwritten notes to spreadsheets to web-based tools, researchers continually refine their organizational methods to maintain lists of previous literature to support their research efforts (Joyner et al., 2013). The American Psychological Association (APA), the most frequently required publication style in our profession, emphasizes accuracy and consistency in in-text citations (American Psychological Association, 2020). Citation managers offer an effective way to digitally categorize publications for future reference (Sungur & Seyhan, 2013). Most citation managers allow users to create sub-folders, assign keyword tags, link related publications, and some even offer text annotation and highlighting. Many have word processing plug-ins making it easy to cite publications and manage a reference list more accurately and efficiently. University writing resource centers compare features of citation managers, helping students and faculty select an option that will work best for their research discipline, computer operating system, and publication needs (University of Chicago, 2023). Common citation managers include EndNote, Mendeley, Zotero, and Refworks.

Multistate Research Committees managed through State Agricultural Experiment Stations are supported by the Hatch Multistate Research Fund within the U.S. Department of Agriculture National Institute for Food and Agriculture. These efforts focus on advancing U.S. agriculture and rural life through research that concerns more than one state. Through these research committees, nearly 60 universities have access to more than $60 million for use across more than 140 committees and topics (USDA, 2023). Established in 2014, the Multistate Agricultural Literacy Research Committee works to advance society's fundamental understanding of agriculture as it relates to daily life. More than 40 faculty representing 22 institutions plus their graduate students have engaged with the committee in its tenure. From 2001-2006 a multistate research coordination and information exchange group laid the foundation for the formation of this multistate committee. From 2006-2012, this effort expanded into a multistate research project then later into a multistate research committee which has been renewed twice (NIMSS, 2019). Through these coordinated iterations of multistate efforts, more than 130 publications and 24 presentations have been authored by committee members. To catalog and share the work of this committee, a public Zotero group library has been maintained.

How it Works and Cost

Zotero is a free, public, open-source citation manager with a desktop app for Windows, Mac, Linux, and iOS operating systems as well as plug-ins for MS Word, Google Docs, and LibreOffice. Through connectors in web browsers such as Chrome, Firefox, Edge, or Safari, users can save resources to folders within their digital Zotero library. Zotero records metadata associated with each digital resource to automatically catalog necessary information for generating citations. Users may manually edit this data to match current publication requirements or add any missing information. Using the word processing plug-ins, writers can recall their saved documents' citations to insert directly into their writing and automatically add each cited source to their reference list. If changes are made to the saved resource, the word processing plug-in can be manually refreshed to update the items. Zotero offers the option to create private

and public group libraries to share cataloged resources with colleagues. Within the public groups, options are offered for public viewing with closed management or public groups with open management. Closed management means only designated individuals can edit or add to the group's library, but anyone can view and cite resources. Open management allows for anyone to view, use, cite, edit, and add/delete resources in the library.

Leadership of the Agricultural Literacy Multistate Research Committee manage a public Zotero group library with closed management. This allows for curation of useful publications within the library that are visible to the public while allowing leadership to filter publications through the lens of the committee's objectives. Zotero was selected because the program works well, is flexible, collaborative, and all features are free to all users. Publications generated by individuals not participating in the multistate research committee are included in the catalog if they are relevant to agricultural literacy research. The public group library can be found by searching groups on Zotero's website and is linked on the Multistate Agricultural Literacy Research Committee's page on the National Center for Agricultural Literacy's website.

Results to Date

As of February 2024, 280 publications are housed within the agricultural literacy Zotero public group library. Eight individuals are managers of this content. The group contains 32 subfolders categorizing aspects of agricultural literacy research. Some folders directly relate to a specific project such as all references associated with the creation of the Logic Model for Agricultural Literacy, a cornerstone publication in this discipline (Spielmaker et al., 2014). While other folders organize a broader subsection of research such as assessment literature. Subfolders organize work of each iteration of the research committee, separating work into W1006, W2006 and W3006 folders. Some publications are duplicated within folders for ease of locating. For example, a publication might have been published under the W2006 committee and focuses on assessment of agricultural literacy therefore it is also located in the assessment literature folder. While Zotero does not track number of visitors to the public groups, through analytics of the Multistate Agricultural Literacy Research Committee webpage, 704 users have viewed the portion of the website with links to this group. This curated Zotero group library makes it easy for agricultural literacy researchers to conduct literature reviews for their research. It also provides a place to share committee members' publications for use by their peers.

Future Plans and Advice to Others

The current W3006 Multistate Research Committee authorization is valid through September 2024. An annual report will be compiled at that time, soliciting any research published by committee members in the past year. These publications will then be added to the Zotero library. A proposal to continue with a W4006 committee has been submitted. As future research is conducted and reported through these committees, publications will be added to the Zotero group library by multistate committee leadership. Other Multistate Research Committees, other research teams, or individual project groups could easily implement citation manager group libraries to share and catalog research pertinent to their field.

References

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th Edition). American Psychological Association. https://doi.org/10.1037/0000165-000

Joyner, R. L., Rouse, W. A., & Glatthorn, A. A. (2013). *Writing the winning thesis or dissertation* (3rd Edition). Corwin.

NIMSS. (2019). *Multistate Agricultural Literacy Research Project* (W3006). National Institute of Food and Agriculture. https://www.nimss.org/projects/view/mrp/outline/18611

Spielmaker, D. M., Pastor, M., & Stewardson, D. M. (2014). *A logic model for agricultural literacy programming*. American Association for Agricultural Education, Snowbird, UT. https://www.agliteracy.org/research/logic/

Sungur, M. O., & Seyhan, T. Ö. (2013). Writing references and using citation management software. *Turkish Journal of Urology*, *39*(Suppl 1), 25–32. https://doi.org/10.5152/tud.2013.050

University of Chicago. (2023, December 15). *Library Guides: Citation management: Which tool is best for me?* https://guides.lib.uchicago.edu/c.php?g=297307&p=1984557

USDA. (2023). *The Hatch Act of 1887 Fiscal year 2024 request for applications*. https://www.nifa.usda.gov/sites/default/files/2023-10/FY24-Hatch-Multi-State-RFA-508-MOD1-P.pdf

Starting With a Blank Canvas: Introducing LMS Management to Preservice Teachers

D. Brett Milliken
Virginia Tech
175 Campus Drive
Blacksburg, VA 24061
540.231.1003
bmilliken@vt.edu

Kendrick L. Spencer
Virginia Tech
175 Campus Drive
Blacksburg, VA 24061
kendrickls@vt.edu

Hannah H. Scherer
Virginia Tech
175 Campus Drive
Blacksburg, VA 24061
hscherer@vt.edu

Starting With a Blank Canvas: Introducing LMS Management to Preservice Teachers

Introduction & Need for Innovation

Looking back at the pandemic, many teachers and institutions across the United States were forced to shift to remote learning through a variety of asynchronous and synchronous methods, using a variety of online learning platforms (Cahapay, 2020, Francom et al. 2021). A survey found that 98% of educational institutions moved their operations online, with learning management systems (LMS) being at the center of those changes (Lang, 2023). During this time, many K-12 teachers and teacher educators discovered that they were unprepared for the challenges of online teaching, lacking the skills and resources needed to effectively use the technology and online learning platforms (Short et al., 2021). Arguably, an unfamiliarity with LMSs was just one of the aspects that made the transition challenging. In many cases, schools adopted or enhanced their use of an LMS such as Canvas, Blackboard, Schoology, or Google Classrooms to facilitate remote online learning (Francom et al., 2021).

In a post-pandemic world, it would be challenging to find a teacher, school, or district that doesn't use an LMS to deliver instruction in some capacity. With the prevalence of LMSs in the K-12 setting, it becomes critical that preservice teachers develop professional knowledge and skills to effectively facilitate teaching and learning using technology such as an LMS. Many post-secondary students, including those in agricultural education teacher preparation programs, use an LMS as part of their schooling. However, students predominantly use their institution's LMS from the student perspective. Although this perspective is beneficial to developing skills and knowledge in relation to LMS management, it doesn't fully prepare preservice teachers to enter the profession with the expectation that an LMS will be used to deliver instruction to students.

How It Works

Six undergraduate students in the Teaching and Training Methods in Agriculture Life Sciences (ALCE 4244) course at Virginia Tech were given instructor access to an empty course landing page on Canvas. These students were challenged to work in teams to navigate Canvas from the teacher's perspective with the purpose of building out a unit of instruction which included learning materials and resources, assignments, and assessments necessary to provide a learning experience using the LMS. The instructors provided basic Canvas management instruction, assistance, and feedback throughout the entire process. Once the components were developed, the student teams presented their module to the class, students navigated through their peers' modules, and provided feedback.

Results to Date & Implications

After the class was completed, students provided feedback on their experience working with Canvas in their daily reflection. Students were encouraged to share both the positive and frustrating aspects of their experience:

Liz said "I was surprised at how easy it was to personalize when it came to the educator's perspective because I found it easy to process what modules you had paired with specific assignments. So, it made it easier to make sure you were not duplicating assignments or could ensure you had published" the right things. Sue recognized that "Canvas is beneficial and working in it as a teacher is something that will become part of a routine if it is what my school system uses". Leslie acknowledged the learning curve and said that it was "interesting to be on the other side of the screen. I have a new appreciation for the teachers that go above and beyond

to make the Canvas site easy to navigate" and Claire realized that it gave her "important insights into how time-consuming making a great canvas site is for instructors, especially if the instructor receives little to no instruction".

Unlike Leslie, Amy said that she "found it surprising how difficult it is to customize a course in Canvas. I also felt frustrated about where to start; the page is so blank, and none of the buttons you want are where you want them to be". Alexis said that she felt like it "would be easy to forget to publish things because there are multiple steps in some sections to publish things". Leslie mentioned that she was "surprised how difficult it was to manage the Canvas website. It was hard to find where to post things at/how to move things around. I found it frustrating to create our home page (as silly and little as that is)".

Overall, students found the experience to be valuable to their future career paths in education, they discovered that Canvas was more complex than they had previously thought, and they gained an appreciation for the time and effort that instructors put into managing Canvas to create a well-planned course.

Future Plans

We plan to continue to require students in ALCE 4244 to work with a partner or in small groups to develop a module of instruction during a class focused on LMS integration into teaching and learning. In Spring of 2024, students will also be required to build out a 30-minute microteaching lesson into a module of instruction (including learning resources, assignments, and assessments addressing the needs for diverse learners) in Canvas. Additionally, we plan to review the courses in our Agricultural and Extension Education major to assess where learning objectives could be improved to more intentionally address technology integration in teaching and learning which would include future LMS-technology integration activities to better prepare preservice teachers to enter the profession where there is an expectation that they effectively use an LMS to deliver instruction to their students.

Costs & Advice to Others

Although the authors used Canvas, other LMS platforms such as Google Classrooms, Schoology, or Blackboard may be used. We believe that it is beneficial to use the LMS that students are familiar with at the institution they attend. To make the most of this or a similar activity, the instructor should set clear guidelines and expectations for the students, and have a plan for guiding and supporting students through the process. Do not get caught up in teaching all the minute details of the LMS; let the students explore, struggle, and problem solve. Be willing to step in and demonstrate specific skills based on the needs of the students. Encourage students to share their findings with their peers, likewise, have them present their finished build out with the class.

There was no additional cost to integrating this activity into the course and all the instructors who taught the course were proficient in navigating the instructor and student sides of the LMS. Additional assistance may be needed to provide students with access to the instructor side of the LMS; this will vary depending on institution and LMS being used.

References

Cahapay, M. B. (2020). Rethinking education in the new normal post-COVID-19 era: A curriculum studies perspective. *Aquademia*, *4*(2), ep20018.

Francom, G. M., Lee, S. J., & Pinkney, H. (2021). Technologies, challenges and needs of K-12 teachers in the transition to distance learning during the COVID-19 pandemic. *TechTrends*, *65*(4), 589-601.

Lang, S. (2023). Learning management systems (LMSs). In O. Kruse, C. Rapp, C. M. Anson, K. Benetos, E. Cotos, A. Devitt, & A. Shibani, A. (Eds.), *Digital writing technologies in higher education: theory, research, and practice*. (pp. 172-183). Springer. https://doi.org/10.1007/978-3-031-36033-6

Short, C. R., Graham, C. R., & Sabey, E. (2021). K-12 blended teaching skills and abilities: An analysis of blended teaching artifacts. *Journal of Online Learning Research*, *7*(1), 5-33.

The 4-H Youth Development Mentoring Guidebook: A Resource for New Employees

Kelly L. Gill
kellylg2@illinois.edu

Amy M. Leman
bunselme@illinois.edu

University of Illinois at Urbana-Champaign
905 S. Goodwin Ave.
Urbana, IL 61801

Introduction

Employee turnover has become a prevalent issue in the Cooperative Extension Service (Extension). Personal costs such as demanding job responsibilities, long workdays, and weekend obligations contribute to job dissatisfaction and lead employees to leave their Extension jobs (Lakai et al., 2012). Moreover, hiring a new Extension employee costs more than investing in retaining an employee (Strong & Harder, 2009). Many Extension employees start out with a lack of knowledge about the Extension organization and how it works (Safrit & Owen, 2010). Therefore, Extension can save money and current employees time by investing in programs that address factors that help to retain employees (Safrit & Owen, 2010).

When new employees start in the Extension organization, there are several skills and knowledge that need to be learned in a short amount of time. Many employees start their jobs with minimal knowledge of the Extension organization, therefore having no solid understanding of their jobs and responsibilities (Benge & Beattie, 2021; Hagerman et al., 2022). Another skill that current Extension employees highlighted as most important to learn in the first three years includes how to plan, implement, and evaluate programs (Brodeur et al., 2011). Brodeur et al. (2011) propose that training created for Extension employees be designed to scaffold these skills in order to help new Extension employees begin their careers. Having a mentor would help new employees develop those skills to help them become successful (Windon et al., 2019).

One solution that addresses these issues is creating mentorship opportunities for new employees to learn from experienced employees. Formal mentors with training are more effective in supporting new employees because they understand the information they need to know to get started. (Mueller, 2020) Starting out with a mentor gives new employees a designated person to ask questions to (Place & Bailey, 2010). Having a mentor can serve as a source to share job-related struggles to help when facing challenges (Windon et al., 2019).

How it Works

The 4-H Youth Development Mentoring Guidebook is a workbook to guide new 4-H Extension employees through experiences important to their Extension work, with the guide of a mentor. The Guidebook is designed specifically for the 4-H Youth Development activities in Illinois, but can be used with minimum adaptation in other states. The Guidebook activities include interviews with other Extension staff and collaborators, attending meetings, observing programs, and learning about program planning and implementation.

The Guidebook is designed for new 4-H employees to be paired with a mentor in close proximity to their location, which will allow in-person visits to the mentor's programs. Research on mentoring reveals that personality characteristics should also be considered in the pairing process (Place & Bailey, 2010).

Once paired with a mentor, the new employee and the mentor can determine which of the activities and interviews to complete. All Guidebook activities are designed to help new educators learn about all of the aspects of their job while having the support of their mentor. The new employee completes the activities in the Guidebook and then discusses them with the mentor. Learning about the Extension organization and programming skills are an important part

of the 4-H youth development program educator's job. Therefore, the activities in the guidebook are arranged to scaffold new educators through working in Extension and the process of planning, implementing, and evaluating programs.

The guidebook starts with a few introductory activities, allowing the new educator to network through interviews with their mentor and other employees in similar roles. Another set of activities is for the new educator to observe programs to learn about planning programs and take note of future ideas and strategies they would like to implement. After completing the previous activities, the mentee will be able to plan, implement, and evaluate their program and then receive feedback from their mentor.

Results to Date

The guidebook has been evaluated by four current Extension employees with varying years of experience working in Extension. All four employees discussed how the guidebook will be very useful for new employees and developing the skills required to be a successful educator. Additionally, the four evaluators gave suggestions for improvement to ensure the activities align with the Extension organization's current practices. The Guidebook is currently in use by five mentees in a kindergarten through high school afterschool program affiliated with Extension.

Future Plans

Our future plans are to make a virtual version of the Guidebook on an online platform to create a collaborative document that both the mentor and mentee could access with the most up-to-date information. If online, supervisors could also reference the Guidebook to see the extent to which the mentee has completed the activities or offer comments within the document. We also plan to use the same online format to update our pre-service teacher early career observation activities from their current paper copy version for the same purpose of multiple people (student teacher, cooperating teacher, teacher educator) accessing the information and offering comments.

Costs & Resources

The cost of the Guidebook itself is negligible. However, the activities within the Guidebook require in-person observations of activities and potential in-person interviews with individuals. The travel cost depends on the mentee's location and mentor coverage areas. However, the mentee could complete multiple activities in one trip to visit the mentor's area. Also relevant to cost and resources is the investment of the mentor's time. Many Extension employees discuss having a large workload and not enough time for all commitments. For a successful mentee/mentor partnership, the mentor will have to invest their time in working with the mentee, with their supervisor's permission, which could mean decreasing their program load.

References

Benge, M., & Beattie, P. (2021). Challenges of early career Extension agents in Florida. *Advancements in Agricultural Development*, *2*(1), 42–55. https://doi.org/10.37433/aad.v2i1.87

Brodeur, C. W., Higgins, C., Galindo-Gonzalez, S., Craig, D. D., Haile, T. (2011). Designing a competency-based new county Extension personnel training program: A novel approach. *The Journal of Extension, 49*(3), https://doi.org/10.34068/joe.49.03.02

Hagerman, A. D., Marshall, T. L., Sullins, M. J., & Burdine, K. H. (2022). The role of mentoring in increasing new Extension faculty success rates. *Agricultural & Applied Economics Association 4*(3), 12-22. https://www.aaea.org/UserFiles/file/AETR_2022_002RProofFinal.pdf

Lakai, D., Jayaratne, K., Moore, G. E., & Kistler, M. J. (2012). Barriers and effective educational strategies to develop Extension agents' professional competencies. *The Journal of Extension, 50*(4). https://doi.org/10.34068/joe.50.04.18

Mueller, A. (2020). Mentoring in action model-exploring the mentoring process in Nebraska Extension. *The Journal of Extension, 58*(8). https://doi.org/10.34068/joe.58.05.22

Place, N. T. & Bailey, A. (2010). Extension mentoring: Steps leading to greater program effectiveness. *The Journal of Extension, 48*(4). https://doi.org/10.34068/joe.48.04.03

Safrit, R. D. & Owen, M. B. (2010). A conceptual model for retaining county Extension program professionals. *The Journal of Extension, 48*(2). https://doi.org/10.34068/joe.48.02.02

Strong, R., & Harder, A. (2009). Implications of maintenance and motivation factors on Extension agent turnover. *The Journal of Extension, 47*(1). https://tigerprints.clemson.edu/joe/vol47/iss1/1/

Windon, S. R., Cochran, G. R., Scheer, S. D., & Rodriguez, M. T. (2019). Factors affecting turnover intention of Ohio State University Extension program assistants. *Journal of Agricultural Education, 60*(3), 109-127. https://doi.org/10.5032/jae.2019.03109

The AgBadging Field Guide Program

Saydee C. Longhurst
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
saydee.longhurst@usu.edu

Michelle S. Burrows
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
michelle.burrows@usu.edu

Tyson J. Sorensen
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
tyson.sorensen@usu.edu

The AgBadging Field Guide Program

Introduction/Need for Innovation

Agriculture in the Classroom (AITC) programs work to increase agricultural literacy in pre-kindergarten through twelfth grade education (NAITCO, 2024a). Within AITC, there are various programs to aid teachers in using agriculture as a vehicle to teach core education topics. However, there has previously been little incentive for students to engage with agricultural literacy in a sustained way. A program that can provide incentives or rewards for sustained student engagement with agricultural literacy can serve an important function to increase the knowledge about agriculture among youth. That is why the AgBadging Field Guide was developed (NAITCO, 2024b).

How it Works/Methodology/Program Phases/Steps

Dr. Debra Speilmaker from Utah State University curated the AgBadging Field Guide program. Patterned after the idea of earning badges in Girl Scouts, the hope was to engage youth about agriculture through an avenue that allowed for choice and motivation to earn a reward, i.e. the badge(s) within each theme. The program was launched in late October of 2022 and thousands of AgBadging Field Guides have been sent to Agriculture in the Classroom programs and teachers across the United States.

The AgBadging program is designed for students in grades 3-5. The guide leads learners through an exploration of the agriculture industry and the way it relates to them personally—what you eat, wear, and use every day as a consumer. It is designed for non-formal (e.g., farm field days, agricultural expos through FFA chapters) as well as being used formally in the classroom guided by a teacher. Students can earn five different themed badges and a completion badge. Badges provide recognition for learning and serve to positively motivate learning about agriculture. Students select activities to earn badges within the themes of Agriculture & the Environment, Plants & Animals, Food & Health, Technology & Engineering, and Geography & Culture. Each theme has milestones that track the student's agricultural journey. Students select three milestones to complete for each badge. Students can opt to do more than three milestones. Upon reaching the required number of milestones, students can visit the Agriculture in the Classroom website to receive their field scout code name by completing a survey to indicate what milestone(s) they completed from each of the five themes.

Results to Date/Implications

Thus far, data has been collected by National Agriculture in the Classroom, summarizing popular milestones to earn the five badges within the AgBadging Field Guide. The information was submitted to AITC through a survey by individuals who had completed at least one milestone in each of the 5 badge areas. Descriptive statistics were calculated. A total of 87 students visited the AgBadging website to redeem their field scout name. Of those students, 18 (21%) completed all five milestones for the Plants & Animal Badge, 28 (33%) completed Seed

Sprout, Weather Watch, and Light Investigation. Within the Agriculture and Environment Badge, 34 (39.1%) completed Agriculture & Me, Farm Tour, and Life Cycles as milestones to earn this badge. The Food and Health Badge reported 30 (34.5%) students completed the MyPlate Menu, Produce Poster, and My Energy Cycle as chosen milestones. For the Technology and Engineering Badge, 25 (28.7%) students completed Agricultural Inventors, Build a Barn, and Career Exploration. 17 (19.5%) students completed all five milestones, Agricultural Inventors, Innovating Farm Equipment, Build a Barn, Farming the Future, and Career Exploration. Finally, for the Geography and Culture Badge, 22 (25.3%) students completed the Where in the World? milestone. Closely following, were 20 students (23%) who reported completing all five milestones, Cooking Video, Where in the World?, What's for Lunch?, Food Supply Chain, and Holiday Traditions.

Based on these results, it is easy to see what milestones were most popular among students. A large number of participants choose to do all five milestones within each theme. This is encouraging to see. Only a small number of students did the minimum of only completing one milestone within each theme to receive a badge. Statistics also showed a large portion of the respondents choose 3 milestones to complete each badge. When looking at the data, it is important to note the milestones that were most popular and making note of it when considering the impact this field guide can have on students.

Future Plans/Advice to Others

Regarding badging as a way of teaching and motivating students, the Ag Badging Field Guide encourages students to take ownership in the learning experiences they have. In regard to the current data collected, it is easy to see what milestones were most popular within each theme and others that were not as popular. Most participants reported doing all five milestones within each badge theme. Going forward, it begs the question of how the Field Guide was utilized for those who completed all five milestones. While thousands of field guides have been distributed, there were only 87 participants that visited the AgBadging website to receive their field scout code name. Going forward, AITC aims to find a way to better track participants that receive field guides and if completed. This innovation also provides the opportunity to see what level of agriculture literacy students can reach by participating in this program.

Costs/Resources Needed

This innovation is funded fully through the National Agriculture in the Classroom. Expenses included wages for a full-time staff member who designed the guide as well as a full-time staff member with web design skills who edited and updated the National AITC website.

References

National Agriculture in the Classroom Organization. (2024a). *About Agriculture in the Classroom*. National Agriculture in the Classroom. https://www.agclassroom.org/get/about/

National Agriculture in the Classroom Organization (2024b). *AgBadging overview.* National Agriculture in the Classroom. https://agclassroom.org/agbadging/overview/

The Other AI: Pre-Service Teacher Utilization of AI Technology to Create Lesson Plans

KaCee James
Department of Communications and Agricultural Education
Kansas State University
317 Umberger Hall
Manhattan, KS 66506
785-532-5804
kaceet@ksu.edu

Gaea Hock, PhD.
Department of Communications and Agricultural Education
Kansas State University
315 Umberger Hall
Manhattan, KS 66506
785-532-1166
ghock@ksu.edu

The Other AI: Pre-Service Teacher Utilization of AI Technology to Create Lesson Plans

Introduction/Need for Innovation

Some school-based agricultural education (SBAE) teachers are exiting the profession because they lack the confidence to teach curriculum (Solomonson et al., 2018), while others leave because they struggle to find a healthy balance between their professional and personal lives (Solomonson et al., 2022; Sorenson et al., 2016).

Teacher workload can be reduced by using information and communication technology (ICT) (Selwood & Pilington, 2005). ICT includes tools that store, process, transmit, convert, duplicate, or receive electronic information (Idaho Assistive Technology Project, n.d., para. 1). The introduction of the new ICT, generative artificial intelligence (AI), such as ChatGPT, holds the potential to reduce teachers' workloads by providing contextualized learning for students, modernizing assessments, and providing intelligent learning environments through tailored feedback for students (Chaudhry & Kazim, 2021; Javaid et al., 2023). Additionally, teachers need to stay abreast of technological advancements like ChatGPT and consider how they may be used to benefit students. (Javaid, 2023). ChatGPT saves teachers' time and energy by creating materials such as prompts and discussion topics (Javaid, 2023).

Implementing an extra credit assignment in which pre-service students created lesson plans with AI allowed the exploration of how pre-service teachers' perceptions of these factors influence their willingness to adopt AI applications for educational purposes.

How it Works

"Utilizing AI Technology to Create Lesson Plans" was an extra credit opportunity for students in an agriculture teaching methods course at Kansas State University. The lead author introduced this assignment by prompting students to reflect on the resources they use to create lesson plans. The class discussed the potential benefits and challenges of using AI applications like ChatGPT.

The assignment was graded using a rubric created with the assistance of ChatGPT. The rubric assessed the structure of the lesson plan, alignment of supplementals with the lesson plan, identification of AI components throughout the submission, and a reflection of how the use of AI connected to educational practice. An alternate option was provided, which included reading and summarizing three Edutopia articles about AI in education. Students were awarded a maximum of 20 extra credit points.

All students in the course (N = 22) were given a handout with the instructions and rubric necessary for completion. The assignment was also located on the course Canvas page. Students who chose to participate had four weeks to complete an AI-assisted lesson plan and supplementals for a future lesson they would teach this semester at their Professional Development School or the following semester during student teaching. Students submitted their document(s) and responded to a reflection question. Before the assignment was distributed, the instructors identified objectives and data collection procedures approved by the Institutional Review Board.

Results to Date/Implications

Student participants (n = 6) used AI to generate individual lesson plan components, including learning objectives, introductions, activities, a slideshow, content, and full lesson plans. Although students were free to use any AI source for this extra credit assignment, all students in this course opted to use ChatGPT. They shared that AI tools like ChatGPT could benefit them as teachers in multiple ways, notably that ChatGPT helped spark creativity. One student said, "This really helped when I could not get my creative juices flowing and allowed me to spend more time finding supplementals that will help my students."

Students also found ChatGPT to help summarize complex information. One student noted that ChatGPT helped them feel more comfortable creating a lesson plan about a subject they were not well versed in by summarizing it and providing a concise explanation. The student explained, "This relieved so much of my stress and made it easier for me to concisely cover information about animal reproduction."

Some students had previously used AI and were comfortable with its features, while others were apprehensive. One student said, "When I first learned about AI tools… I was a little skeptical. A part of me felt like I was almost cheating in a way or stealing someone else's content." Another student shared, "At first I was very anti-ChatGPT, but after doing this I would say I am sold."

Although each student who participated in this extra credit activity acknowledged the convenience of AI, several shared concerns. A notable concern was about the reliability of the AI-generated content. One student worried about relaying inaccurate information to students, and said they have "used [ChatGPT] in the past and have caught the facts being incorrect." Others shared they are concerned that AI does not provide accurate information on controversial topics. These revelations opened the door in class for discussion about the appropriate, effective, and ethical use of AI.

Future Plans/Advice to Others

The authors will continue using this assignment to show the benefit of online teaching resources and appropriate use of AI tools. Student feedback from this assignment will be used in future teacher-education courses to encourage students to try new resources. We recommend teacher educators practice using AI prior to assigning this in class to be better equipped to answer questions. We also recommend requiring all students to practice using these tools now, so they are better equipped to use them and help students navigate AI when they begin teaching.

Costs/Resources Needed

There were no costs associated with this extra credit assignment. Teacher educators need ample time before introducing the assignment to research and practice using AI tools to guide students and create a rubric. Additionally, time is needed during the course to introduce the assignment and answer questions and debrief after completion.

References

Chaudhry, M.A. & Kazim, E. (2021). Artificial Intelligence in Education (AIEd): a high-level academic and industry note 2021. *AI and Ethics, 2022*(2), 157-165. https://doi.org/10.1007/s43681-021-00074-z

Idaho Assistive Technology Project. (n.d.). *How is "ICT" different from "AT"?.* https://idahoat.org/services/resources/ict#:~:text=Electronic%20textbooks%2C%20instructional%20software%2C%20email,are%20also%20examples%20of%20ICT.

Javaid, M., Haleem., A., Signh, R.P., Shahbaz, K., & Khan, I.H. (2023). Unlocking the opportunities through ChatGPT Tool towards ameliorating the education system. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations, 2023*(3). https://doi.org/10.1016/j.tbench.2023.100115

Selwood, I. & Pilkington, R. (2005). Teacher workload: using ICT to release time to teach. Educational Review, 57(2). https://doi:10.1080/0013191042000308 41

Solomonson, J.& Retallick, M. (2018). Over the edge: Factors nudging mid-career, school-based teachers out of the profession. *Journal of Agricultural Education, 59*(4), 1-19. https://doi.org/10.5032/jae.2018.04001

Solomonson, J., Still, S., Maxwell, L., & Barrowclough, M. (2022). Exploring relationships between career retention factors and personal and professional characteristics of Illinois agriculture teachers. *Journal of Agricultural Education, 63*(2), 119-130. https://doi.org/10.5032/jae.2022.02119

Sorenson, T.J. & McKim, A.J. (2014). Perceived work-life balance ability, job satisfaction, and professional commitment among agriculture teachers. *Journal of Agricultural Education, 55*(4), 116-132. https://doi.org10.5032/jae.2014.04116

Thinking Inside the Box: Partnering with Veterinary Medicine Faculty to Develop Low-cost Cattle Palpation Simulator Models

Trent Wells, Ph.D.
Murray State University
Hutson School of Agriculture
206 South Oakley Applied Science Building
Murray, KY 42071
kwells23@murraystate.edu

Brittany L. Kirby, DVM
Murray State University
Hutson School of Agriculture
103 South Oakley Applied Science Building
Murray, KY 42071
bkirby4@murraystate.edu

Thinking Inside the Box: Partnering with Veterinary Medicine Faculty to Develop Low-cost Cattle Palpation Simulator Models

Introduction

Agriculture teachers are responsible for teaching diverse agricultural subject matter, such as agricultural mechanics, plant science, and animal science. Within animal science specifically, agriculture teachers are expected to competently perform and teach a range of technical agriculture skills, such as administering vaccinations, caring for live animals, and performing physical examinations (Wells et al., 2023). However, using live animals for teaching and learning purposes continues to become increasingly difficult and sometimes impractical (Hart et al., 2005), especially when considering facility requirements and student safety concerns (Wells et al., 2023). Thus, perhaps using an alternative method (i.e., simulation) to deliver technical agriculture skill instruction to students would be helpful and appropriate.

As a teaching tool, simulation encompasses various mediums, such as virtual reality (Bailenson, 2018) and physical models (Agnew & Shinn, 1990). Further, simulation can be a viable approach for facilitating student learning (Brown & Knobloch, 2022). The appropriate use of simulation can yield practical and effective learning outcomes for students (Bailenson, 2018; Wells & Miller, 2022). In the context of learning new procedures, Agnew and Shinn (1990) found that "simulation activities can provide students with basic knowledge and understanding" (p. 15). From the student perspective, there is value in carefully using simulation for teaching and learning purposes; however, simulation should be used judiciously to supplement, not entirely replace, actual learning experiences (Tiffany & Hoglund, 2014; Wells & Miller, 2022).

While the preceding literature indicates that simulation shows potential for use in educational settings, barriers remain. Specifically, the costs associated with simulation acquisition and use remain a primary barrier (Wells & Miller, 2020). High-fidelity simulators can be quite expensive and often require users to spend valuable time learning their functionality to successfully use them. While high-fidelity simulators can offer the most realistic approach for preparing students for the situations they will encounter beyond formal education settings (Chinnugounder et al., 2015), using such simulators may not be possible in budget-constricted contexts, such as Agricultural Education programs in public schools. Thus, perhaps a low-cost approach to simulation use remains a more preferable alternative for agriculture teachers.

How it Works

During the Fall 2023 semester, the lead author began a collaborative partnership with a veterinary medicine faculty member at the Murray State University (MSU), who is the second author of the present abstract. The purpose of this partnership was: (1) to assist the veterinary medicine faculty member with a simulator model construction project that would benefit her Veterinary Technology and Pre-veterinary Medicine students and (2) to provide an opportunity for the lead author's pre-service agriculture teachers to learn how to construct and use low-cost simulator models to help provide animal science-focused technical agriculture skill instruction in their forthcoming programs. The simulator models in question are designed to provide users with the opportunity to learn cattle palpation techniques before working with live cattle.

To initiate the simulator model construction process, the second author began gathering various low-cost, common household items (e.g., cardboard boxes, bubble wrap, cardboard tubing, etc.) in September 2023. She ultimately gathered enough materials to build several simulator models. In early October 2023, the lead author began soliciting his pre-service agriculture teachers via e-mail to assist with the simulator model construction process. Seven pre-service agriculture teachers agreed to assist with the project.

On the evening of October 25, 2023, the lead author, the second author, the seven pre-service agriculture teachers, and one in-service agriculture teacher personally invited by the lead author met at the A. Carman Pavilion Animal Health Technology Facility on the MSU campus. The facility contains classrooms and laboratory spaces for instruction in veterinary technology and medicine. Before initiating the simulator model construction process, the second author provided background information about cattle palpation and an overview of the simulator models and materials. Afterward, the second author distributed the project materials and supervised the project construction process, circulating between the small groups and answering technical questions as-needed. Over a timeframe of approximately 45 minutes, the pre-service and in-service agriculture teachers constructed and tested six simulator models.

Implications

From the authors' perspectives, this collaborative effort yielded the intended outcomes: (1) the authors leveraged their respective resources to prepare learning resources for Veterinary Technology and Pre-veterinary Medicine students and (2) pre-service and in-service agriculture teachers received hands-on instruction on procedures for constructing low-cost simulator models to teach technical agriculture skills to students. From the perspective of engagement, the authors observed that the pre-service and in-service agriculture teachers were highly interested in the functionality and utility of the simulator models and verbally indicated that they each intended to construct and use models when introducing cattle palpation techniques to their own students.

Future Plans and Advice to Others

Based on the feedback that resulted from this collaborative effort, the authors plan to expand the scope of this learning opportunity via a half-day professional development (PD) workshop for pre-service and in-service agriculture teachers. This forthcoming PD workshop will be offered during the Summer 2025 semester and will dive deeper into animal science-related subject matter and yield simulator models that participants can take with them upon the conclusion of the PD workshop. When possible and appropriate, the authors suggest that other agricultural teacher educators consider partnering with technical agriculture faculty at their respective institutions to provide similar learning opportunities for the pre-service and in-service agriculture teachers they serve.

Costs

The materials for all six simulator models cost approximately $50.00. Beyond the materials expenditures, the authors used approximately three hours of their time to gather materials, solicit project construction participants, and construct and test the simulator models.

References

Agnew, D. M., & Shinn, G. C. (1990). Effects of simulation on cognitive achievement in agriculture mechanics. *Journal of Agricultural Education, 31*(2), 12-16. doi:10.5032/jae.1990.02012

Bailenson, J. (2018). *Experience on demand: What virtual reality is, how it works, and what it can do.* W. W. Norton & Company, Inc.

Brown, A. H., & Knobloch, N. A. (2022). Effects of a simulation on eighth grade students' business management knowledge and entrepreneurial intent in an exploratory agriculture course. *Journal of Agricultural Education, 63*(2), 88-101. https://doi.org/10.5032.jae.2022.02088

Chinnugounder, S., Hippe, D. S., Maximin, S., O'Malley, R. B., & Wang, C. L. (2015). Perceived barriers to the use of high-fidelity hands-on simulation training for contrast reaction management: Why programs are not using it. *Current Problems in Diagnostic Radiology, 44*(6), 474-478. https://doi.org/10.1067/j.cpradiol.2015.03.006

Hart, L. A., Wood, M. W., & Weng, H. (2005). Mainstreaming alternatives in veterinary medical education: Resource development and curriculum reform. *Journal of Veterinary Medicine Education, 32*(4), 473-480. https://doi.org/10.3138/jvme.32.4.473

Tiffany, J., & Hoglund, B. A. (2014). Teaching/learning in Second Life: Perspectives of future nurse-educators. *Clinical Simulation in Nursing, 10*, 19-24. https://ac.els-cdn.com/S1876139913001606/1-s2.0-S1876139913001606-main.pdf?_tid=7a59f746-aaad-4f1f-8f6e d959a27a3b3b&acdnat=1549230213_383ec46e8fc044eff5c08c3c0551a515

Wells, T., & Miller, G. (2020). Teachers' opinions about virtual reality technology in school-based agricultural education. *Journal of Agricultural Education, 61*(1), 92-109. https://doi.org/10.5032/jae.2020.01092

Wells, T., & Miller, G. (2022). Students' perspectives on using virtual reality technology in a university-level agricultural mechanics course. *Journal of Agricultural Education, 63*(2), 17-36. https://doi.org/10.5032/jae.2022.02017

Wells, T., Solomonson, J. K., Hainline, M. S., Rank, B. D., Wilson, M., Rinker, S. P., & Chumbley, S. B. (2023). Technical agriculture skills teachers need to teach courses in the animal systems pathway. *Journal of Agricultural Education, 64*(3), 158-175. https://doi.org/10.5032/jae.v64i3.117

Urban Neighbors and Neighborhoods: Professional Development for School-Based Agricultural Educators

Robert L. Williams, Texas A&M University-Commerce

Courtney Leftrick, Emerson High School-Frisco ISD

Carolina Garcia, Nimitz High School-Aldine ISD

Jennifer Gonzalez, CTE Administration-Aldine ISD

Priscilla Pina, Skyline High School-Dallas ISD

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Urban Neighbors and Neighborhoods: Professional Development for School-Based Agricultural Educators

Introduction

One of the core research values for the American Association for Agricultural Education is "Ensuring Diversity, Equity, Inclusion, and Belonging," suggesting that a diverse and sustainable workforce is essential for the agricultural industry (AAAE, 2023). Essential in developing that workforce is school-based agricultural education and its teachers. A national shortage of school-based agricultural educators has existed for the past several years with a shortfall of 606 unfilled vacancies in 2022 (Foster et al., 2023). Warner and Washburn (2009) reported that urban agricultural educators expressed major concerns about parents' lack of understanding about agriculture and agricultural careers, ineffective parental communications, and lack of parental involvement. A previous professional development interest assessment for urban school-based agricultural educators administered by Williams (2023) revealed strong interest in the topic, *Working effectively in urban settings*. As a result, a professional development workshop, *Getting to Know Your Urban Neighbors and Neighborhoods* was developed and delivered at the state summer conference for school-based agricultural educators.

Steps/Phases

A panel of four early-career school-based agricultural educators was organized by a professor from Texas A&M University-Commerce for the purpose of planning, organizing, and presenting this workshop. Each of the panel members taught in large, urban high school with predominantly minority student enrollment in their classes. The panel participated in two planning sessions via Zoom with follow-up emails to confirm the style, direction, and content of the workshop. A pre-workshop meeting to finalize plans was held prior to the presentation, and a follow-up/reflection meeting was held the day after the presentation.

The presentation consisted of the following phases:
(1) Welcome and introduction by the moderator;
(2) Personal introduction and overview of the campus program, student demographics, and neighborhood where each panelist taught along with a short synopsis of engagement opportunities for their students;
(3) The final panelist who had just transitioned to administration also described some district-wide scenarios and opportunities since many urban agricultural education programs have multiple campuses in the same district;
(4) Guiding *turn and talk* prompts for discussion among pairs or small groups in the audience
   a. *Teachers should treat all students the same regardless of class, gender, or race.*
   b. *What are some barriers at your school that prevent students from joining FFA?*
   c. *How often do you plan or adapt curriculum based on your current environment?*
(5) Reporting out of discussion groups to audience, and
(6) Questions from audience directed to panelists.

Results to Date and Implications

This workshop at the Summer Professional Development Conference of the Agriculture Teachers Association of Texas competed with 10 other workshops held at the same time. A total of 158 participants attended and completed the evaluation questionnaire. Two questions were asked. Question #1, "Would you attend another workshop conducted by the presenter(s)?" resulted in 99% responding with "Yes." Question #2, "Would you recommend this workshop to a peer?" resulted in 98% responding with "Yes." There were also eight individual comments, all positive, included in evaluation results.

A follow-up/reflection meeting was held with the moderator and three of the panelists the day after the presentation. Each of the three panelists indicated a high level of satisfaction with their involvement as well as the overall attendance and participation level of the audience. Each expressed a new degree of confidence about presenting to their professional peers and indicated interest in proposing another workshop for the same conference for the following year.

Participants in the workshop were introduced to strategies for increasing student, parental, and community engagement in agriculture and FFA activities in urban settings. They may use some of those strategies in their school and community. As the number of programs and students in school-based agricultural education increases, so will the demand for teachers. To fill that demand, we must recruit prospective teachers from urban programs and communities. We must also prepare our students from rural backgrounds for the possibility of teaching in urban schools. Early field experiences that include observation and participation in urban programs may foster or strengthen consideration of that possibility.

Future Plans

The idea of *getting to know your urban neighbors and neighborhoods* has been integrated into additional informal discussions with inservice and preservice school-based agricultural educators. It also served as a key theme in the development of a recently funded grant proposal for a university-public school partnership between the university and three urban school-based agricultural education programs. Inversely, university teacher educators in other areas of secondary educator preparation have expressed a possible need for a similar workshop or seminar for preservice educators from urban areas who may wish to work in rural areas.

Costs and Resources Needed

Since planning and preparation for this workshop was done virtually, and all panelists and the moderator were already planning to attend the conference, there was no additional expense for developing and presenting this professional development. Each of the panelists contributed 3-5 hours of planning time prior to the presentation. The was a cost of for the follow-up reflection luncheon of the panelists and moderator was the only cash expenditure.

References

American Association for Agricultural Education (AAAE). (2023). *AAAE Research Values*.

Foster, D. D., Smith, A. R., Lawver, R. G., & Spiess, M., (2023). National Agricultural Education Supply and Demand Project [data set]. American Association for Agricultural Education. Retrieved from: http://aaae.agedweb.org/nsd.

Warner, W. and Washburn, S. (2009). Issues facing urban agriscience teachers: A Delphi study. *Journal of Agricultural Education (50)*1. pp. 105-115. https://doi.org/10.5032/jae.2009.01105

Williams, R. (2023). Urban agricultural education: Priorities, projects, & plans. Abstract in Proceedings and oral presentation at the North American Colleges and Teachers of Agriculture Annual Conference. Las Cruces, NM.

Using a Virtual Reality Trainer to Improve School-Based Agricultural Education Teachers' Welding Performance

Ashley Thompson and Justin Pulley
Tarleton State University
Department of Agricultural Education and Communication
College of Agriculture and Natural Resources
1333 W. Washington
Stephenville, Texas 76402
ashley.jenson01@go.tarleton.edu
jpulley@tarleton.edu

Introduction/Need for Idea

Despite over half of all SBAE teachers in the United States offering agricultural mechanics courses, and the perception that it is one of the most important course offerings available to students enrolled in SBAE programs (Whitehair et al., 2020; Burris et al., 2005; Lafferty, 2004), teachers are often dangerously unprepared to teach this subject. One reason they do not feel prepared to teach agricultural mechanics is a lack of course offerings available at the postsecondary level. Only half of all preservice agricultural education teacher preparation programs offer agricultural mechanics courses; the ones who do offer them do not offer them in a high enough quality or quantity to increase self-efficacy much, if at all, especially in the crucial area of laboratory instruction (Granberry et al., 2022; Clark et al., 2021; Saucier & McKim, 2011).

One way to supplement welding instruction at the postsecondary level is through virtual reality welding trainers. VR welding trainers allow for experiential learning, problem-based learning, social cognition, and reflective practice to take place, thus increasing welding ability and self-efficacy in an environment free from the dangers of a live welding scenario (Pulley et al., 2023; Heibel et al., 2022; Dalgarno & Lee, 2010; Whittington, 2005). While there have been studies about the effects of VR welding trainers on the ability of undergraduate agriculture students (Heibel et al., 2022; Ramos et al., 2022), neither of these studies have been specific to preservice SBAE teacher welding ability, which is where this idea hopes to fill that gap.

How it Works

This innovative idea was implemented in a laboratory-based agricultural mechanics course geared towards preservice SBAE teachers over a period of two weeks. The idea sought to determine whether the participants' ability to perform SMAW welding in a virtual setting increased because of using the Lincoln Electric VRTEX 360 Compact welding trainer. This trainer scores virtual welds completed by participants on a scale from 0 to 100 depending on factors such as work angle, travel angle, travel speed, distance and position (Lincoln Electric, 2023).

During week 1 of the study, participants were introduced to SMAW concepts in a lecture setting and signed up for a two-hour VRTEX 360 Compact practice period for the following week. All practice periods were held in the engines shop of the agricultural mechanics building but could be held anywhere with a table and an outlet to plug the machine into. This setting allowed the participant to have two hours of uninterrupted solo time to practice separate from the class.

During week 2 of the study, participants completed their two-hour practice period. This involved virtually welding beads on ¼" steel plate with 7018 welding rods. The first 10-15 minutes of their practice window was spent receiving safety instructions and directions on how to use the virtual welding trainer. Participants were then asked to run a virtual bead before beginning practice to establish a pre-training score. The rest of the time was spent practicing with the welding trainer; participants used visual and audial aids on the welding trainer to improve their score. At the end of the practice period, a final virtual bead was run without visual and audial aids and scored to establish a post-training score. Data was analyzed using a paired samples t-test and was tested for normality through analysis of skewness, kurtosis, and QQ plot diagrams using IBM SPSS© Version 28.0 software.

Results to Date/Implications

All participants (n = 8) saw an increase in scores. Pre-treatment scores ranged from 21 to 46 *(M* = 34.13), while post-treatment scores ranged from 72 to 88 *(M* = 81.13). On average, participants given a two-hour training period with the VRTEX 360 Compact virtual trainer saw an increase in scores compared to the scores earned before using the virtual trainer (M = -47.00, SE = 3.650). This difference was significant (p = < .01), meaning the participants would not have scored as high as they did without the two-hour practice period with the virtual welding trainer.

These results could have serious implications for the future training of preservice SBAE teachers in the SMAW process. Participants used the virtual trainer to build muscle memory and use audial and visual clues to correct their welds both during a pass and while running the following pass, which contributed to the increase in scores during the two-hour training period. The virtual trainer could be used in SBAE teacher preparation programs to build welding confidence in all preservice teachers, no matter how much or how little experience they have with a particular welding process, due to the fact it provides a learning environment that is safer and less intimidating than starting to practice welding in a live laboratory setting.

Future Plans/Advice

This innovative idea is part of a larger study working to see if VR welding skill transfers to live welding skill through use of the VRTEX 360 Compact and the Lincoln Electric REALWELD live welding trainer. Through observation of the participants, and analysis of the scores, it is clear to see the value in the visual and audial aids and instant feedback given. Because of both the increased scores and positive feedback, the VRTEX 360 Compact could be used to increase confidence and ability prior to live welding.

Considering the equipment the VRTEX 360 Compact comes with, future studies could analyze the benefits of training using different SMAW consumables, as well as the GMAW, TIG, and cutting torch processes. It could also be used to analyze the benefits of using the virtual trainer on different welding joints and positions. Future studies could also begin with a pre-treatment live welding score as opposed to a pre-treatment virtual welding score to further determine the significance of the results.

This idea could be incorporated into an agricultural mechanics class/lab by using the VRTEX 360 Compact as a training tool prior to and during live welding training. In this study, participants signed up for a two-hour solo training period that may or may not have been during the scheduled class/lab time, and all participants shared one virtual trainer. However, students could easily be rotated between the virtual trainer and either a traditional set up or a REALWELD trainer in predetermined increments to enhance their skills. Once they have been trained in how to use the machine, students can then go back and forth between these platforms as needed to practice skills they may be struggling with, then implement those skills in a live welding setting. The virtual trainer could also be used as a supplemental tool for students to use in their own time as many did in this study. Sign-ups could be coordinated with the professor to ensure proper use of the equipment.

Costs/Resources Needed

The only resource needed for this study was a Lincoln Electric VRTEX 360 Compact welding trainer. The VRTEX 360 Compact is available through your local Lincoln Electric distributor and costs $34,899. Due to the high cost, a VRTEX 360 Compact was used on loan from Lincoln Electric. It is possible to coordinate in advance with your regional Lincoln sales representative to use one of their travel units.

References

Burris, S., Robinson, J. S., & Terry, R., Jr. (2005). Preparation of preservice teachers in agricultural mechanics. Journal of Agricultural Education, 46(3), 23-34. https://doi.org/10.5032/jae.2005.03023.

Clark, T. K., Anderson, R., & Paulsen, T. H. (2021). Agricultural Mechanics Preparation: How Much Do School Based Agricultural Education Teachers Receive?. *Journal of Agricultural Education*, *62*(1), 17-28. https://eric.ed.gov/?id=EJ1297848.

Dalgarno, B., & Lee, M. J. W. (2010). What are the learning affordances of 3-D virtual environments? British Journal of Educational Technology, 41(1), 10–32. doi:10.1111/j.1467-8535.2009.01038.x.

Granberry, T., Roberts, R., & Blackburn, J. J. (2022). "A challenge that I'm willing to take on": The self-efficacy of female undergraduate students in agricultural mechanics. *Journal of Agricultural Education*, 63(3). https://doi.org/10.5032/jae.2022.03044.

Heibel, B., Anderson, R., & Swafford, M. (2022). Integrating virtual reality technology into beginning welder training sequences. AAAE Conf. Proceedings.

Lafferty, J. B. (2004). *An analysis of beginning Texas state agricultural science teachers' perceived importance and knowledge of basic agricultural mechanics competencies*. Stephen F. Austin State University.

Lincoln Electric VRTEX 360 Compact Brochure. (2023). https://ch-delivery.lincolnelectric.com/api/public/content/a7b1deac86a2498cb281da86b49b84f4?v=233c20de.

Pulley, J., Bowling, A., Jepsen, D., & Kitchel, T. (2023). School Based-Agricultural Education Teachers' Lived Experience of Integrating Virtual Reality into their Classroom.

Ramos, J., Anderson, R., Swafford, M., Borges, B., & Heibel, B. (2022). Identifying the relationship between augmented reality welding instruction and welding performance. AAAE Conf. Proceedings.

Saucier, P. R., & McKim, B. R. (2011). Assessing the Learning Needs of Student Teachers in Texas regarding Management of the Agricultural Mechanics Laboratory: Implications for the Professional Development of Early Career Teachers in Agricultural Education. *Journal of Agricultural Education*, *52*(4), 24-43. doi:10.5032/jae.2011.04024

Whitehair, R. L., Schramm, K. R. S., Wells, T., & Hainline, M. S. (2020). Preservice Teachers' Conceptualizations of Agricultural Mechanics. Journal of Agricultural Education, 61(3), 60-74. https://doi.org/10.5032/jae.2020.03060.

Whittington, M. S. (2005). The presidential address to the Association for Career and Technical Education Research: Using standards to reform teacher preparation in career and technical education: A successful reformation. *Career and Technical Education Research,* 30(2), 89–99.

Using Agricultural Education to Build a Regional Farm Safety Database

Ruth D. Toole
University of Kentucky, 300 W.P. Garrigus Building
Lexington, KY 40546
(859) 257-7588
ruth.toole@uky.edu

Stacy K. Vincent
University of Kentucky, 500 W.P. Garrigus Building
Lexington, KY 40546
(859) 257-7588
stacy.vincent@uky.edu

A. Preston Byrd
2808 Moore Hwy
Tifton, GA 31793
(229) 391-5256
alex.byrd@abac.edu

Kang Namkoong
2126 Skinner Building, University of Maryland,
College Park, MD 20742
(301) 405-6525
namkoong@umd.edu

Yongwook Song
329 Rose St.
Lexington, KY 40506
(859) 257-1257 ext. 82249
ywsong2@uky.edu

Using Agricultural Education to Build a Regional Farm Safety Database

Need For Innovative Idea

In the United States, agriculture, food, and other related industries are major contributors to the nation's gross domestic product, totaling nearly $1.264 trillion in 2021 (United States Department of Agriculture, 2022). Within these industries, however, farming has one of the highest fatal injury rates at 20 deaths per 100,000 full-time workers in 2021, while the rate for all U.S. industries is set at 3.6 deaths (Bureau of Labor Statistics, 2022a, 2022b). Due to the high rate of farm equipment incidents annually, it is evident that increased safety awareness and practice is a current need for farm operations and employees across the United States. With over 2.3 million individuals working and living on a farm and around farming equipment, including youth (Bureau of Labor Statistics, 2022b), it's important to include individuals of all ages when seeking out endeavors in agricultural education to increase farm safety and awareness. Since adults are the primary demographic employed in agriculture and related industries, efforts should made to inform and educate them about farm safety. Unfortunately, the motivation to learn and make changes to current practices can be challenging with adults; thus, many initiatives are pointed toward youth. However, the use of andragogical principles in adult safety education could help overcome these challenges.

Within andragogy, Knowles (1980) states that, in general, adults have a deep need to be self-directed in their learning. Self-Directed Learning Theory involves the interaction of three dimensions, motivation, self-monitoring, and self-management to guide one's self-directed learning (Garrison, 1997). When these three dimensions are involved in facilitating adult education programs, it is more likely to generate meaningful learning experiences and outcomes. Therefore, involving andragogical principles in adult farm safety education programs could help improve the effectiveness and continued awareness of farm safety practices across the country.

Currently, no regional database in the Southeast United States is available, nor large enough to help safety officials identify the farm implements, farm facilities, and areas within each that are red flag areas of concern (Hair, 1991). The scope of the database would become useful for the medical, engineering, education, and farming industries in giving perspective into the current state of farm safety and areas of improvement to develop safer farm communities.

How It Works

The Safe Farm Steward (SFS) Project is funded by the National Institute for Occupational Safety and Health, a branch of the Center for Disease Control and Prevention. The project encompasses nine states in the Southeast region of the United States (AR, GA, KY, MS, NC, SC, TN, VA, and WV). The SFS Project aims to bring awareness to the current state of safety on farms and recognize the farms that exemplify they are *stewards* of farm safety. Within the SFS Project, the SFS application serves as an evaluative tool to determine whether farms adequately maintain and update the safety features of their equipment and facilities. The application requires the preparer to include farm information and a safety level of *Good, Fair,* or *Replace*, based on visual observations, for each construct within each implement and farm facility present. Once the information is submitted, an overall farm score is generated. Applications are completed by postsecondary students and agriculture extension agents on the SFS website, where all the data is stored. Once the application is submitted, the agricultural education SFS research team reviews it

for errors or questionable entries and determines the status by using a cut score to decide whether the farm needs to make safety changes and revise its application or if it meets the threshold to become a Certified Safe Farm Steward.

Throughout the nine-state region, post-secondary faculty and agriculture extension agents meet in a southeastern community for a three-day educational program that prepares them for educating college students on how to use the service. The trainings are developed by the agricultural education SFS research team and facilitated utilizing the three dimensions of Self-Directed Learning Theory, including motivation, self-monitoring, and self-management.

Following the training, postsecondary faculty were expected to implement the SFS curriculum provided during the training into their courses to prepare their students to successfully complete one SFS application in their community. If a student chose to complete five or more SFS applications, then they would be certified as a Safe Farm Advocate, which permits them to begin training others on how to complete the SFS application. Agriculture extension agents received program materials to include in extension lessons to farmers in the community and were expected to complete 10 or more applications at farms in their community.

Results To Date/Implications

Following our first training in the summer of 2023, 204 SFS applications were submitted, with 166 farms being accepted and recognized as Safe Farm Stewards, 28 farms with applications in progress, and 10 farms whose applications require improved farm safety measures before they can become accepted. Among the accepted farms, we currently have information on 2,204 implements and facilities where all safety constructs are documented in an overall dataset. In addition, 166 students from the six postsecondary institutions have received the lessons designed by the agricultural education SFS research team.

Future Plans

To continue improving the students' knowledge base, a digital scanner and Meta Oculus were purchased that would allow access to visually comprehend each piece of equipment they could potentially evaluate. Recently the team released a series of videos that serve as an educational tool for faculty to share with students on how to complete the SFS application. Through the SFS Program, we aim to utilize both pedagogical and andragogical agricultural education to build a regional farm safety database that can be used by professionals to improve safety in the agricultural industry. Over the course of this program, our goal is to successfully admit 2,000 farms into the Safe Farm Steward program, which we anticipate will provide us with a dataset that contains information on at least 20,000 implements and facilities.

Cost/Resources Needed

This is a five-year project that encompasses a $1,500 annual stipend to each participating postsecondary institution; a sign for all admitted farm stewards; the housing allowance for the three-day training; the use of a graduate student for monitoring the SFS applications, redeveloping curriculum for faculty, and maintaining contact with the participants; and the digital work in virtual work, augmented work, educational videos, website, and mobile application. The overall five-year grant project, which serves as a research core at the Southeast Center for Agricultural Health and Injury Prevention, is valued at over $1.2 million.

References

Bureau of Labor Statistics. (2022a). *National census of fatal occupational injuries in 2021.* Bureau of Labor Statistics. https://www.bls.gov/news.release/pdf/cfoi.pdf

Bureau of Labor Statistics. (2022b). *Fatal occupational injuries by industry and event or exposure, all United States, 2021.* Bureau of Labor Statistics. https://www.bls.gov/iif/fatal-injuries-tables/fatal-occupational-injuries-table-a-1-2021.htm

Garrison, D. G. (1997). Self-directed learning: Toward a comprehensive model. *Adult Education Quarterly*, *48*(1), 21–29. https://doi.org/10.1177/074171369704800103

Hair, D.M. (1991). Farm safety: Problems and opportunities. *Professional Safety, 36*(10).

Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy*. Cambridge.

United States Department of Agriculture. (2022). *Value added to U.S. GDP by agriculture and related industries, 2011-21.* https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=58270

Using Laerd Statistics as a Data Analysis, Interpretation, and Reporting Tool in Agricultural Education Research

Trent Wells, Ph.D.
Murray State University
Hutson School of Agriculture
206 South Oakley Applied Science Building
Murray, KY 42071
kwells23@murraystate.edu

Jay Solomonson, Ph.D.
Illinois State University
Department of Agriculture
140 Ropp Agriculture Building
Normal, IL 61790
jksolom@ilstu.edu

Using Laerd Statistics as a Data Analysis, Interpretation, and Reporting Tool in Agricultural Education Research

Introduction

Field (2018) expressed that competence in correctly interpreting data is fundamental to producing high-quality quantitative research. However, researchers sometimes fall victim to misusing statistics in their academic endeavors (Gardenier & Resnik, 2002; Marino, 2014). As outlined by Gardenier and Resnik (2002), statistics misuse can come about through various means, including: (1) limited competence with the subject, (2) unintentional errors that may result due to limited competence, (3) negligence when using statistics, and (4) deliberate research misconduct. Interestingly, researchers' misuse of statistics has a long and substantial history, as Cohen (1938) wrote about the topic over 80 years ago. More recently, Marino (2014) highlighted that researchers' motivations to achieve statistical significance "has hampered research via the publication of incorrect analysis driven by rudimentary statistical training" (p. 78), which thus compromises the integrity and value of scholarly research.

Such issues are not lost on the discipline of agricultural education. Johnson and Shoulders (2019) recently indicated that some traditional practices (e.g., using incorrect statistical analysis procedures, etc.) passed along from one generation of agricultural education researchers to the next may negatively impact the overall rigor and quality of agricultural education scholarship. As an example of this, Johnson and Shoulders (2019) noted that "[a]gricultural education researchers often seem addicted to inferential statistics and their associated *p* values! So much so that we often force the square pegs of our data into the round holes of inferential statistics" (p. 300). Johnson and Shoulders (2019) further explained that vague descriptions of research methods written by researchers (perhaps due to some limited understanding of the appropriate methods) can inadvertently undermine the value of agricultural education scholarship.

As a discipline, we should continue to hone the quality of our scholarship by adhering to best scholarly practices. Doing so will help to ensure both current and future researchers make appropriate decisions that ultimately impact the quality of scholarship produced (Johnson & Shoulders, 2019). Considering the preceding literature, perhaps Laerd Statistics could be a valuable resource for helping to positively impact both agricultural education researchers and their scholarship.

How it Works

As a continuously-updated platform that is intended for researchers of all experience levels, Laerd Statistics is a subscription-based statistics education resource (Lund Research Ltd, 2023a). The subscriptions vary in duration and price yet provide the same level of content access. Further, Laerd Statistics is geared toward IBM® SPSS® Statistics software and provides expansive details for a wide range of both parametric and non-parametric statistical tests, such as a Mann-Whitney U test, a one-way analysis of variance (ANOVA), and an ordinal regression. The details for each statistical test include: (1) correctly setting up the data, (2) meeting statistical test assumptions, (3) procedures for running the statistical test, and (4) details for properly writing-up the results in a manuscript. The website makes use of screenshots to help users

navigate the processes. The website also includes a "Statistical Test Selector" that details step-by-step instructions to ensure researchers are using the appropriate data analysis procedures (Lund Research Ltd, 2023b).

Regarding our own initial experiences with Laerd Statistics, the lead author of this abstract was informed about this resource by a member of his doctoral program committee. He subsequently used Laerd Statistics extensively while completing his dissertation research in 2019. Afterward, he continued using Laerd Statistics during subsequent research projects that he led. During one such project, he collaborated with the second author of this abstract and shared information about Laerd Statistics with him. In turn, he likewise began using it when planning, conducting, and documenting his own research projects. To date, we have both used Laerd Statistics to help us successfully conduct several state- and national-level research projects.

Implications

Our experiences using Laerd Statistics have led us to conclude that this resource can be particularly valuable for both graduate students and early-career researchers who are still working to build their statistics knowledge and skill sets. We would even suggest that this resource would be valuable for mid- and late-career researchers as well, particularly when attempting to use new and unfamiliar statistics. We found that this resource has, on numerous occasions, provided us with practical advice regarding analyzing and interpreting our data and reporting our results. When considering Johnson and Shoulders' (2019) advice regarding improving the quality of scholarship produced within our profession, we believe that Laerd Statistics could very well be an innovative and impactful tool for helping to heed their advice.

Future Plans and Advice to Others

We plan to continue using Laerd Statistics in our scholarly endeavors for the foreseeable future. While both of us currently work with very few research-oriented graduate students, we do plan to advise our current and future graduate students who are completing their thesis projects to use Laerd Statistics. Further, as the lead author will soon advise his first doctoral students, he plans to have them use the resource extensively. Based on our experiences, we do advise that other agricultural education researchers consider using Laerd Statistics not only when conducting their own studies but when working with graduate students' projects as well. We acknowledge that an online resource should not be a substitute for formal graduate-level coursework in either research methods or statistics. However, we likewise believe that introducing yet another tool into researcher's toolboxes could help to overcome some of the agricultural education scholarship issues that have been documented in our profession (Johnson & Shoulders, 2019).

Costs

A single-user license subscription ranges in price from $5.99 for one month's access to $40.99 for three years' access. Each plan type provides the same level of access to the website's resources (Lund Research Ltd, 2023c). Moreover, we found that faculty members can have free access to Laerd Statistics in perpetuity simply by contacting the company directly via e-mail and requesting such.

References

Cohen, J. B. (1938). The misuse of statistics. *Journal of the American Statistical Association, 33*(204), 657-674. https://www.tandfonline.com/doi/epdf/10.1080/01621459.1938.10502344?needAccess=true

Field, A. (2013). *Discovering statistics using IBM SPSS Statistics: And sex and drugs and rock 'n' roll*. Sage.

Gardenier, J., & Resnik, D. (2002). The misuse of statistics: Concepts, tools, and a research agenda. *Accountability in Research: Ethics, Integrity and Policy, 9*(2), 65-74. https://doi.org/10.1080/08989620212968

Johnson, D. M., & Shoulders, C. W. (2019). Beyond magic words and symbols: Rethinking common practices in quantitative research. *Journal of Agricultural Education, 60*(3), 291-303. https://doi.org/10.5032/jae.2019.03291

Lund Research Ltd. (2023a). *About us*. https://statistics.laerd.com/aboutus.php

Lund Research Ltd. (2023b). *Features overview*. https://statistics.laerd.com/features-overview.php

Lund Research Ltd. (2023c). *Plans & pricing*. https://statistics.laerd.com/pricing.php

Marino, M. J. (2014). The use and misuse of statistical methodologies in pharmacology research. *Biochemical Pharmacology, 87*(1), 78-92. https://doi.org/10.1016/j.bcp.2013.05.017

Using Mock Interviews with School Administrators to Prepare Pre-service Teachers to Successfully Navigate the Teaching Position Interview Process

Trent Wells, Ph.D.
Murray State University
Hutson School of Agriculture
206 South Oakley Applied Science Building
Murray, KY 42071
kwells23@murraystate.edu

Jay Solomonson, Ph.D.
Illinois State University
Department of Agriculture
140 Ropp Agriculture Building
Normal, IL 61790
jksolom@ilstu.edu

Using Mock Interviews with School Administrators to Prepare Pre-service Teachers to Successfully Navigate the Teaching Position Interview Process

Introduction

The teacher selection process is complicated and often has numerous steps. One of the most common and important steps in selecting a teacher for a vacancy is interviewing with building-level personnel, such as school administrators (Strong & Hindman, 2006). The interview process itself can be quite rigorous and comes with its own set of advantages, such as an in-depth examination of a prospective candidate, as well as disadvantages, such as subjectivity to interviewer bias. Ideally, interviewers seek to hire high-quality, effective teachers who can adequately serve their students, their schools, and their community at-large. However, when considering newly-certified teachers for positions in comparison to experienced teachers, interviewers may sometimes encounter challenges when asking questions, such as those related to experiences with classroom management and successful student motivation techniques (Strong & Hindman, 2006). Likewise, newly-certified teachers may encounter unexpected challenges in the teaching position interview process if they are not adequately prepared (Talbert et al., 2022).

Talbert et al. (2022) provided several recommendations for newly-licensed teachers when preparing to interview for a teaching position, including: (1) preparing an organized, quality application materials packet, (2) dressing professionally for the interview, and (3) engaging in mock interviews to both help overcome potentially bad habits and to anticipate possible interview questions. Considering the preceding literature, perhaps engaging pre-service teachers in mock interviews with current school administrators would be valuable for helping them prepare to navigate their first teaching position search.

How it Works

During the Fall 2022 semester, the lead author of this abstract taught 13 pre-service teachers in a senior-level instructional methods course. Within this course, he developed and implemented an activity that focused on preparing his pre-service teachers to interview for actual teaching positions during the Spring 2023 semester and beyond. To initiate the process, the lead author collaborated with another agricultural teacher educator at his university to identify prospective school administrators who would be willing to work with his pre-service teachers. He originally sought current administrators who were previously school-based agricultural education (SBAE) teachers. However, he found the pool of administrators with such experience who were simultaneously located within reasonable driving distance from the university was rather limited. Instead, he reached out to school administrators who have strong ties to the SBAE programs at their schools and who likewise openly value the programs. Two administrators from two different high schools approximately two hours away agreed to travel to the university and conduct the mock interviews.

The lead author scheduled the mock interviews to take place between 10:00 A.M. and 12:00 P.M. on Thursday, November 10, 2022. On Tuesday, November 8, 2022, the lead author led an in-class discussion about the teaching position interview process and posed several example interview questions to the pre-service teachers to stimulate their thinking about the

topic. He further instructed the pre-service teachers to be prepared to ask their own questions, to dress professionally for the interview, and to bring an updated copy of their resumé with them.

The school administrators arrived at the university shortly before 10:00 A.M. on November 10th. Prior to their arrival, the lead author staged two interview areas for each one. These interview areas were placed in separate rooms and consisted of a collapsible metal classroom table and two office chairs. After the school administrators and the pre-service teachers arrived in the classroom, they introduced themselves in a large group setting. The lead author then assigned seven pre-service teachers to one school administrator and six to the other. To make the best use of the available timeframe, the lead author asked both school administrators to restrict each one-on-one interview to a maximum length of 15 minutes. The school administrators then called each pre-service teacher in for their mock interview. After the 13 mock interviews concluded, the school administrators debriefed all the pre-service teachers as a group and shared their advice regarding further interview preparation strategies. The lead author requested that the pre-service teachers ask any questions they had. He then dismissed the pre-service teachers and took the school administrators to lunch as a token of appreciation for their assistance with the mock interviews.

Implications

The school administrators privately expressed to the lead author that they were impressed with the quality and preparation exhibited by all the pre-service teachers they interviewed. They were also appreciative of the opportunity to be part of the mock interview activity and desired to do so again during the 2023-2024 academic year. All 13 pre-service teachers indicated to the lead author that they believed this activity was helpful to them. Regarding the eight pre-service teachers who completed their student teaching experience during the Spring 2023 semester, four of them had been offered teaching positions prior to graduation. Anecdotally, all eight pre-service teachers reported that the mock interview activity had aided them in the teaching position search. However, they did advise him to consider selecting school administrators with more direct knowledge about, and experience with, SBAE in future activity iterations.

Future Plans and Advice to Others

The lead author plans to continue conducting this activity for the foreseeable future. He will use the feedback that he received to amend future iterations of the mock interview activity. If they are not already doing so, the lead author recommends that other agricultural teacher educators consider implementing similar activities with their own pre-service teachers to better-prepare them for the teaching position interview process.

Costs

The lead author spent approximately $60.00 to purchase lunch for the two school administrators. While he was unable to do so for this iteration of the activity, the lead author plans to offer mileage reimbursement to school administrators who participate in the future. The school administrators used approximately six hours of their time to participate in this activity. The lead author used roughly four hours of his time to plan and implement this activity.

References

Strong, J. H., & Hindman, J. L. (2006). *The teacher quality index: A protocol for teacher selection*. Association for Supervision and Curriculum Development.

Talbert, B. A., Croom, B., LaRose, S. E., Vaughn, R., & Lee, J. S. (2022). *Foundations of agricultural education* (4th ed.). Purdue University Press.

Using Simulated Activities in Teacher Preparation Programs

Elle Carter
Undergraduate Student
ecarter6@stallions.abac.edu

Grace Dooley
Undergraduate Student
cdooley@stallions.abac.edu

Dr. Sallie McHugh
Associate Professor
smchugh@abac.edu

Dr. Farish Mulkey
Associate Professor
fmulkey@abac.edu

Department of Agricultural Education and Communication
Abraham Baldwin Agricultural College
ABAC 8, 2802 Moore Hwy
Tifton, Ga 31793

Introduction/Need for Idea

Due to the amount of material taught in agricultural education teacher preparation programs, there is a need to keep the students engaged, to be challenged, and gain the most knowledge from the courses. Simulated activities, such as assisting local and national agricultural education program events help the students to better understand the material being presented, the model of school-based agriculture education, and gain hands-on experience. “Simulation training could reinforce common practice and could solve their lack of precision and strengthen their confidence in teaching without the risk of harming real pupils” (Samuelsson et al., 2022). These methods allow students to see and understand daily activities that they might have to complete when they get into the classroom.

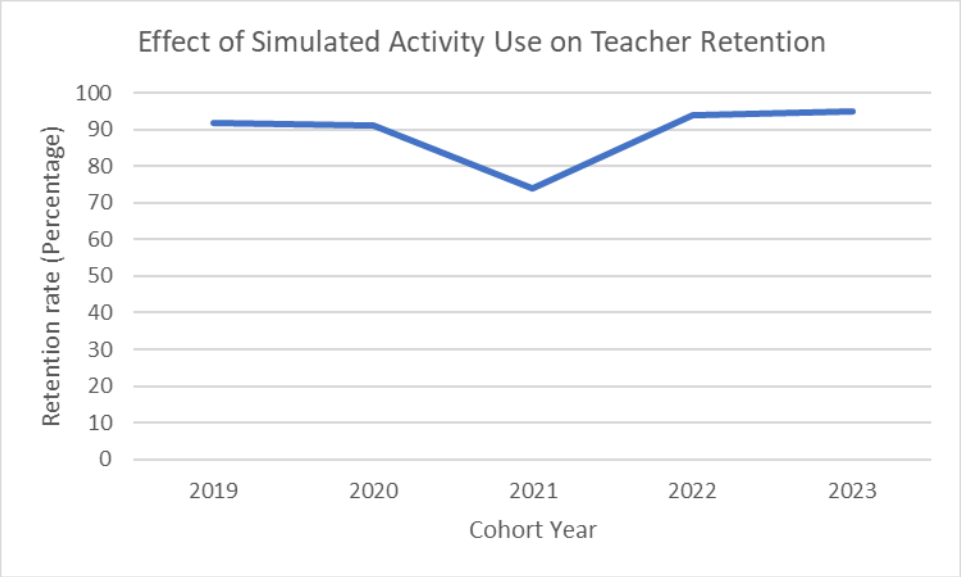
Methodology

In two of the senior cohort classes, Agriculture Practicum and Early Clinical Experience in Ag Education, students follow a model where they receive experience from going into classrooms, team-teaching, completing 10 “pick 10” events outside of class time, and facilitating events for current middle and high school level agriculture students. “Most agriculture teachers have a college degree in agricultural teacher education plus additional formal and informal education.” (Talbert, 2022). Following the simulations that the students complete, they must reflect on what they have learned, along with ways to use the knowledge they have gained from the simulation in their future classroom. These experiences were developed based on the working knowledge professors received through their school-based agricultural teaching experience, cooperating teacher feedback, and advisory committee recommendations. Students completed the following activities the semester before student teaching:

Event:	Participation/Reflection:
Coordinated and conducted Sunbelt Ag Expo Youth Challenge for 800+ students.	Students in the program curated, proctored, and graded an exam for middle through high school students to complete. They then had to reflect on what role they took in the development of the event and how it would help them in their future career.
Received performance evaluations based on the state Ag Education Program of Work and a mock interview.	Cohort members were required to become familiar with the state Program of Work for Agricultural Education to complete a notebook, mock interview, and program review. This allows the students to become more knowledgeable of what is required of them when entering the profession.
Multiple visits to local and statewide ag program facilities	Students were able to travel to ag programs in local counties and across the state. These visits were facilitated by leading agriculture teachers from the programs. This allowed students to experience what ag education program labs may be offered in future positions.
Facilitate state FFA events such as CDE’s, region rallies, and livestock shows.	Senior Agriculture Education majors attended state FFA sanctioned events and assisted with judging, scoring, monitoring holding rooms, and directing students. By partaking, they will be better able to prepare their future students for competitions.

Results to Date/Implications

This simulated teaching style has proven to be effective as the graduating students are more prepared as first-year teachers for how to handle the different varieties and levels of tasks that they will be facing during their time in and out of the classroom than those of programs with little or no simulated teaching style. Data was collected from the previous five cohorts as to how many of those graduates are still in the field of education, whether that is through the traditional classroom or extension services. Graph 1 shows those results. "Research documents a positive connection between teachers' subject matter knowledge and their performance in the classroom, it has been established that teachers with advanced preparation (in addition to typical coursework and fieldwork experiences) in teaching methods and strategies have a greater chance of successful longevity in the classroom" (Landon-Hays et al., 2020).



Graph 1

Future Plans

After reviewing the methods of using simulated activities within the teacher preparation program, the professors have decided to continue using the simulated model. It has proven to be beneficial for the students coming through the program. To keep getting the most out of the simulations in the courses, the professors plan to gain further feedback by surveying all agricultural education graduates, cooperating teachers, and the advisory committee to ensure that the model is preparing the students for both student teaching and the workforce. This survey will include questions about how prepared they felt about various program components such as classroom management, using the three-ring model, and other aspects of the daily ag teacher life, then be used to make changes to content and delivery methods.

Costs/Resources Needed

For the simulated teaching process to work in a pre-service teacher program, there must be professors who have experience in the field, who are inclined to provide the students with outside experiences and advice. Cooperation from school-based agricultural educators and their local school systems, as well as regional and state agricultural education staff and other stakeholders, is vital. Support from college administration is critical and must be encouraging to the professors, the students, and of the courses. Financially, there are travel expenses required to make the simulated activities possible. Each fall semester, the department spends about $450 on fuel costs and any other miscellaneous expenses like meals.

References

Samuelsson, M., Samuelsson, J., & Thorsten, A. (2022). Simulation training-a boost for pre-service teachers' efficacy beliefs. *Computers and Education Open*, *3*, 100074. https://doi.org/10.1016/j.caeo.2022.100074

Landon-Hays, M., Peterson-Ahmad, M. B., & Frazier, A. D. (2020). Learning to teach: How a simulated learning environment can connect theory to practice in general and special education educator preparation programs. *Education Sciences*, *10*(7), 184. https://doi.org/10.3390/educsci10070184

Talbert, B. A. (2022). *Foundations of Agricultural Education*. Purdue University Press.

Using Student Check-in Meetings for Feedback, Assessment, and Coaching

Laura Hasselquist, Tony Durr, and Patrick Hales
South Dakota State University

Box 507 Wenona Hall 104
Brookings, SD 57007

605-688-5039

Laura.hasselquist@sdstate.edu

Introduction/Need for Innovation

Student feedback and assessment are vital for promoting student growth and learning. Timely feedback is crucial and is associated with a positive impact on learning outcomes (Hattie & Timperley, 2007). Incorporating self-assessment and reflection into the feedback process enhances metacognitive skills and contributes to a deeper understanding. Customizing feedback to individual needs, aligning it with learning goals, and utilizing various feedback methods contribute to more effective learning outcomes (Sadler, 1989; Carless & Boud, 2018). To address these areas related to feedback and assessment, we have begun using check-in meetings to assess and provide feedback to students in our program.

How it Works

Check-in meetings are a required component in many of our courses. The instructor identifies strategic times within the course content to meet with students individually or in small groups. Students sign up for a time slot, ranging from 15 to 30 minutes, depending on the meeting objectives. Prior to the meeting, students receive a list of prompts to respond to in writing, to guide their reflection and prepare for in-depth conversation on their performance and learning. Some of the prompts used include: "How are you growing as a teacher this semester?" "What does student engagement look like in your lesson?" “What did you learn from your classmates reflective teaching lessons, what could you incorporate in future lesson of your own?” This preparation, for both students and the instructor, lends structure to the meetings and allows for more in-depth discussion.

Upon the student's arrival for the meeting, we work through the discussion prompts and ask follow-up questions to expand on or challenge students' thinking. Additionally, the instructor often provides feedback on assignments. The interaction takes on a more conversational nature, with students responding to statements or posing follow-up questions to enhance their work. This approach enables students to witness the assessment process in action, fostering a better understanding of the assignment's intended assessment criteria. There are times when students leave the meeting with additional tasks related to revisions or improvements to course assignments. This type of mastery approach to the assignments supports the development of a growth mindset (Dweck, 2008).

The final student-centered aspect of the check-in meeting involves a direct discussion about their progress toward the class's learning outcomes and their own professional development. They gain a clearer understanding of their current knowledge and skills, identify their desired goals, and develop strategies to achieve them. Additionally, students are asked for suggestions on improvements to the class, providing the instructor with real-time feedback for immediate action to enhance the student experience.

Results to Date & Implications

Various sources of data indicate successful outcomes from both the student and instructor perspectives. Students reported in end-of-course evaluations and graduation surveys that check-in meetings were crucial to their growth and development. Accreditation survey data further suggests that students identify course instructors as the most impactful element of the program. Classes that regularly incorporate check-in meetings consistently receive higher student

satisfaction scores. Additionally, students frequently express interest in implementing check-in style meetings in their future classrooms.

From the instructor's standpoint, these meetings provide an opportunity to connect with individual students on a deeper level. We can offer personalized feedback to support their ongoing development as well as the improvement of our own courses. This type of reciprocal benefit allows us to improve as instructors along with our students. It becomes easier to identify student misconceptions or dispositional concerns and guide them through any issues they may be facing. As education students enter the field, these meetings enable faculty to engage in conversations with both the student and their placement about their needs and how to maximize their growth.

Future Plans and Advice to Others

It is important to note that these meetings do require extra time, but there is a trade-off in the strength of relationships with students and reduced time spent giving feedback on assignments that students may or may not read. When deciding when and how many check-in meetings to schedule for a class, be thoughtful about the course content. These meetings should be designed to explore and reinforce key knowledge and concepts from the course. It is crucial to be selective when scheduling these meetings to balance and maximize relationship building and the assessment of student learning. Another aspect to consider is whether the meetings should be individual or in small groups. It is possible to use a combination of both in a class. While most check-in meetings are individually focused, group meetings can help students learn from each other, especially when discussing field placements and observations.

Once you have identified the points in the semester when you wish to conduct these meetings, it is essential to block off time on your calendar for them to ensure you have enough time to accommodate check-in meetings in addition to the regular tasks associated with being a faculty member. While student meetings may be weeks away, faculty calendars can fill up quickly, making it difficult to find time for student meetings amidst other responsibilities. Block off more meeting time than needed for the course size to give your students some flexibility in their schedules. Students tend to prefer meetings earlier in the allotted time.

Use some form of scheduling assistant to help manage student meetings. SignUp Genius can be set up to send students a reminder email, and Google Sheets is always available for students to update and make changes. Finally, recognize that this is a process, and it will take some time for both you and the students to become comfortable with it. Do not be afraid to make adjustments as you progress throughout the meetings and the semester. This process is focused on maximizing student growth, which might require some changes.

Costs

There is no financial cost associated with this activity. Student sign-ups can be done via Google Sheets or the free version of SignUp Genius. There is a considerable time investment in these meetings. However, if you are already providing students with feedback on course assignments, it substantially reduces the time spent assessing and providing feedback on student work during other periods.

References

Carless, D., & Boud, D. (2018). The development of student feedback literacy: enabling uptake of feedback. *Assessment & Evaluation in Higher Education, 43*(8), 1315-1325.

Dweck, C. S. (2008). Mindset. Ballantine Books.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of educational research, 77*(1), 81-112.

Sadler, D. R. (1989). Formative assessment and the design of instructional systems. *Instructional science, 18*, 119-144.

Using the Global Competence Aptitude Assessment for Measuring Student Development during Education Abroad Experiences

Kameron Rinehart, M.S., & Jason Headrick, PhD

Department of Agricultural Education and Communications

Texas Tech University

2810 15th Street, Lubbock, TX 79409

Javonne Mullins, M.S.

Agricultural Department

Wilmington College

1870 Quaker Way Wilmington, OH 45177

Author Notes:

Kameron Rinehart, M.S., Kameron.Rinehart@ttu.edu, (740) 505-2805.

Javonne Mullins, M.S., Javonne.Mullins@wilmington.edu, (740) 606-7775.

Jason Headrick, Ph.D., Jason.Headrick@ttu.edu, (859) 608-5686.

Using the Global Competence Aptitude Assessment for Measuring Student Development during Education Abroad Experiences

Introduction

Today's agricultural students are tomorrow's future workforce. Employees today must welcome and understand the interrelationship of globalization (Zuo et al., 2019). Zuo et al. (2019) emphasize future agriculturalists must be adaptable to change, whether domestic or abroad. Higher education should prepare students to become globally competent citizens (Kuh, 2008; National Research Council, 2009; Stearns, 2009; Tarrant et al., 2014). Many college and university travel abroad programs' primary goals include student growth in cultural experience and global citizenship (Hoeflinger, 2012; Tarrant et al., 2014). The Global Competence Aptitude Assessment (GCAA®) is a model that can be used in education to examine students, faculty, and staff's global competence which has been developed and modified by the work of Hunter (2004).

How it Works & Study Details

The GCAA® Model is composed of eight dimensions, which are divided into internal and external dimensions (Global Competence, 2023). The internal dimension includes the aspects of self-awareness, attentiveness to diversity, risk-taking, and open-mindedness (Global Competence, 2023). The external dimension is made up of the concepts of global awareness, historical perspective, intercultural capability, and collaboration across cultures (Global Competence, 2023). The GCAA® assessment can be used in many settings, including education. Students would take the student assessment that has been developed. The assessments are designed to have four areas within them to measure global competence. "The assessment items are based on all the regions of the world, with particular emphasis placed on those countries that make significant contributions to the world's population and economy for practical yet comprehensive measurement of global competence" (GCAA® Design, 2023, p. 1). We have implemented a pre-and post-assessment strategy to measure students' global competence before and after a short-term study abroad program. GCAA® provided a pre- and post-format for us to use for our study with varying questions. Students from two universities traveled to Greece and Kenya in the summer of 2023. The pre-assessment was given three to five weeks before students' departure, and the post-assessment was given four weeks following their return to their home states.

Results to Date & Implications

To date, our research has been conducted with 31 students ($N = 31$) who have been engaged in a short-term study abroad program. Because participation in this research was optional, researchers had 22 students ($N = 22$) participate in the pre-assessment. Their group mean for internal readiness was 70.9 ($M = 70.9$) with a standard deviation of 6.1 ($SD = 6.1$). The group mean for external readiness was 62.9 ($M = 62.9$), with a standard deviation of 16.9 ($SD = 16.9$). Participation in the post-assessment decreased, with only 18 students completing it ($N =$

18). The post-assessment data showed a group mean of 71.5 (M = 71.5) with a standard deviation of 7.9 (SD = 7.9) for international readiness and a group mean of 61.1 (M = 61.1) with a standard deviation of 15.1 (SD = 15.1) for external readiness.

Through this data, researchers are able to collectively see how students' global competence mean scores change based on their participation in a short-term study abroad program. It is critical to note that with an N less than 10, it is challenging to analyze comparative data based on the information learned in the GCAA® facilitator training session. However, it is not just their participation that impacts these scores based on the eight dimensions of the GCAA® model. Critical engagement in the process is essential to show development among students' internal development and the cognitive processes of the participants.

Future Plans & Advice to Others

The research team plans to use the GCAA® in the future when measuring a student's global competence. It was evident through our findings and following the certification training that seeing “significant” growth is uncommon when measuring students who have just short-term experiences (two weeks or less) in the country. Therefore, in the future, researchers plan to use this assessment tool to measure students who are participating in study abroad experiences that last between four weeks to a semester.

Researchers recommend that others who might want to use this tool incorporate this into a course or build it as part of the study abroad program to ensure full participation. This now only provides data to you as the instructor or researcher. This assessment shows individuals areas where they can continue to grow, develop, and strengthen their global competence. As this was a separate study and not connected to the courses that the study abroad program was attached to, this made it difficult for researchers to obtain participants. Having it embedded within the curriculum or program plan will increase participation and provide more accurate data on the entirety of the group.

Costs & Resources Needed

The use of the GCAA® does come with a cost, and in our case, our research was supported by the Department of Agricultural Education and Communications. In order to use the GCAA®, one member of your team must be certified through Global Competence Associates. The GCAA® certification is a three-week training program, which costs $750 for individuals involved in education. The assessments also come with a cost, and the price varies by the number of assessments that individuals purchase. In our case, since we did a pre-and post-assessment, we had to purchase double the assessments since each student would take two. Therefore, we purchased 66 assessments. This came as a total investment of about $2,137, including the costs of the assessment, the additional purchase of demographic data, and a service fee. While there are costs associated with the use, this tool can provide valuable data to researchers and participants on global competence and areas where individuals can focus attention to work toward improving and strengthening their global and cultural competence in the future.

References

GCAA® Design and reporting. Global Competence Associates. (2023a, October 11). https://globallycompetent.com/gcaa-design-and-reporting/

Global competence modelTM. Global Competence Associates. (2023, November 6). https://globallycompetent.com/global-competence-model/

Hoeflinger, D. (2012). Teaching students to be global citizens. *Delta Kappa Gamma Bulletin*, *79*(1), 15.

Hunter, W. D. (2004). Knowledge, skills, attitudes, and experiences necessary to become globally competent.

Kuh, G. D. (2008). Excerpt from high-impact educational practices: What they are, who has access to them, and why they matter. *Association of American Colleges and Universities*, *14*(3), 28-29.

National Research Council, Committee on a Leadership Summit to Effect Change in Teaching and Learning (2009). Transforming Agricultural Education for a Changing World. Washington, DC: The National Academies Press, 2009.

Stearns, P. N. (2009). Educating global citizens in colleges and universities: Challenges and opportunities.

Tarrant, M. A., Rubin, D. L., & Stoner, L. (2014). The added value of study abroad: Fostering a global citizenry. *Journal of Studies in International Education*, *18*(2), 141-161. DOI: 10.1056/NEJMoa1307491

Zuo, H., Balmaseda, M. A., Tietsche, S., Mogensen, K., & Mayer, M. (2019). The ECMWF operational ensemble reanalysis–analysis system for ocean and sea ice: a description of the system and assessment. *Ocean Science*, *15*(3), 779-808. https://doi.org/10.5194/os-15 779-2019

Using the Study Cycle to Study for FFA Career Development Events

Kaylee M. Shouse
kshouse2@illinois.edu

Hayden W. Kinkade
hkinkad2@illinois.edu

Amy M. Leman
bunselme@illinois.edu

University of Illinois at Urbana-Champaign
905 S. Goodwin Ave.
Urbana, IL 61801

Introduction & Need for Innovation

One important aspect of agriculture education includes participation in FFA. Academically, FFA consists of both Leadership Development Events (LDEs) and Career Development Events (CDEs) designed to provide students with skills that build off of subjects learned through their agriculture education classroom instruction, as well as skills that will help them in the working world. Croom et al. (2009) studied both teacher and student thoughts as to why students participate in CDEs. They found that while teachers thought students participated in CDEs for the competition, female students participated because they felt CDEs related to their career choices, and male students participated because CDEs allowed them to develop leadership skills and potentially earn scholarships. Ball et al. (2016) completed a case study to observe and describe potential patterns that demonstrate strategies for improving student CDE team success. The study consisted of a mixed methods design which included both an observational instrument (Career Development Event Coaching Assessment) and interviews of participants. The results indicated that practice design, knowledge level of coaches, and goal setting for both teams and coaches are key to CDE team success.

We observed through our own experience that CDEs provide valuable experiences for students, and that practice design is an integral part of coaching a CDE team. We wanted to know how using Louisiana State University's Study Cycle methods (2021) would influence the success of Agronomy CDE teams. Because CDEs are an integral part of FFA and can often include several components, it is crucial that educators are able to adequately prepare students when possible so that students can succeed both in competition and beyond.

How it Works

The Study Cycle Method involves five distinct phases. The first phase is the "Preview" phase, where you preview the main ideas that will be discussed during a practice session through various methods. After previewing the material, it is vital that you attend the practice session in order to learn more concrete details about the material and make connections with previously viewed material (Louisiana State University, 2021). When the practice session is complete, students will then review materials learned in class in order to evaluate notes, close any gaps in learning, and form questions if there are concepts that they are still struggling to understand. When those phases are complete, it is then time to move into a productive study session involving setting a goal for the session, studying the material, taking a break, recapping material, and then deciding whether or not to continue the study session. When studying is complete, it is then time to do a final check for understanding by asking yourself questions such as "Can I teach this material to someone else?" For our work, we followed this sequence with our experimental groups using agronomy concepts.

Results to Date/Implications

In order to test the Study Cycle method, students from 2 schools in Illinois who volunteered to participate in an Agronomy contest were randomly assigned to two groups. One group was given direct instruction on study methods (Study Cycle Group) and the other group was not instructed on how to study and prepare (Non-Study Cycle Group). The students who were assigned to the Study Methods group were led through two virtual resources. Students were instructed to preview and plan the information that they would be practicing for five to ten minutes, be active participants in each practice, and then review what they practiced when it was over. After these scheduled practices, students were instructed to study for a thirty-minute to

fifty-minute time period, and then check their learning individually. These students were then reminded at the beginning of every Agronomy CDE practice of these study methods introduced. This group of students was only to study and prepare for the CDE with the other members of this group. The non-study method group was not given additional instruction on preparing or studying, but they were given the same access to the CDE practice materials.

Practices for the Agronomy CDE were held every weekday for nine days, with practice times varying between each chapter. The day after the practice cycle ended, a chapter Agronomy CDE was held at each FFA Chapter. The majority of materials that were used for the CDE were gathered from the [state] FFA 2020 Virtual Agronomy CDE. The following practicum materials from this CDE were used: General Knowledge Exam, Crop Identification, Weed Identification, and Equipment/Machinery Identification. Because Illinois rotates practicums on odd/even years, the Soil Practicum from 2020 was substituted for the Insect ID Practicum from the 2019 Agronomy CDE. Time limits from the Illinois FFA State Agronomy CDE were followed. Students filled out their answers on Judging Card scantrons. After students were finished with the CDE, the scantrons were hand-scored. There were 340 points possible in this CDE.

Looking at the data from the chapter CDE, it is clear that students who were taught the study cycle had higher scores than those who were not taught the study cycle. Students from Chapter A who were in the study cycle group averaged 45.28 more points in the chapter contest than the students in the non-study cycle group. Students from Chapter B who were in the study cycle group averaged 44.5 more points in the chapter contest than the students in the non-study cycle group. Qualitative data collection also showed that students across both study cycle groups felt better prepared for participation in the CDE contest through the utilization of study cycle methods. Specific responses include that breaking their study sessions into mini sessions with breaks included had a positive effect on the effectiveness of their overall study sessions.

Future Plans/Advice to Others

Our hope with this research is that Study Cycle Methods will become a tool that other chapters are able to utilize to promote success among their CDE teams. We would like to continue this research by using the same methods with other CDEs and LDEs to determine effectiveness across a variety of contests. As we were relatively limited in our scope of participants, we feel it is important that as this research expands, more schools are able to join in evaluating these methods. It would also be beneficial to someday create a nationwide study around these methods and CDE or LDE success. Our advice to others wishing to implement this is to spend a great deal of time prior to utilizing this method to verify if it will work with their chosen CDE or LDE. As with any other study method, students must be dedicated to preparing for the CDE or LDE for this method to be effective. By having students be more effective in their study methods for CDEs and LDEs, students will have the opportunity to advance their skills and knowledge in each area, which will ideally lead to better future career choices.

Cost/Resources

This project can be completed at little to no cost. We were able to complete this project without expenses through the use of accessible CDE contest materials.

References

Ball, A. L., Bowling, A. M, & Bird, W. (2016.) A case study of learning, motivation, and performance strategies for teaching and coaching CDE teams. *Journal of Agricultural Education, 57*(3), 115-128. https://doi.org/10.5032/jae.2016.03115

Croom, B., Moore, G., & Armbruster, J. (2009). An examination of student participation in National FFA career development events. *Journal of Southern Agricultural Education Research, 59*(1), 109-121. http://jsaer.org/category/journal/vol-59/

Louisiana State University. (2021). *The Study Cycle.* [Infographic]. lsu.edu/cas. https://www.lsu.edu/cas/earnbettergrades/tipsandtools/files/2021studycycle.pdf

Visualizing Student Teaching

Jillian C. Ford, Misty D. Lambert, Travis D. Park, and Mary Kate Morgan Lanier
North Carolina State University

NCSU Box 7607
Raleigh, NC 27695-7607
(919) 515-2707
jrcasey2@ncsu.edu

Introduction/Need for Innovation or Idea

First year teachers have been known to experience high and low points during their induction year in the classroom (Disberger et al., 2023; Moir, 1990; Rayfield et al., 2014). Even though student teachers are under the supervision of multiple veteran teachers, they can also experience a range of high and low emotions during the various phases of their clinical internships (Caruso, 1977). Instructors of the School-Based Agricultural Education (SBAE) clinical internships at North Carolina State University noticed that their student teachers seemed especially overwhelmed throughout the 2022 spring student teaching experience. This led to conversations among instructors to identify potential stressful phases and determine ways to support students through their clinical internship experience to finish with a positive attitude towards teaching and desire to enter the SBAE classroom. After learning about research conducted by Disberger (2020), it was decided to ask the 2023 student teachers to share one word that described their feelings towards teaching each week that could be used to inform instructors of unintentional pinch points during the semester.

How it Works/Methodology/Program Phases/Steps

Student teachers were already tasked with submitting a brief reflection about their week of teaching to the course Moodle page. In the instructions for the weekly reflection, student teachers were also asked to "list one word that describes your feelings toward teaching for the week." After reflections were submitted each Friday, the teaching assistant for the course read through the student reflections and entered the one-word into a spreadsheet. If students did not submit a reflection or did not include the one-word in the reflection, the teaching assistant would send a reminder email to those students at the beginning of the following week. At the end of student teaching, during the final day of seminar, students were provided with their list of one-words in order and a reflection chart that asked them to identify how they felt about the word on a scale from 1-10. On the chart, one was identified with a sad emoji, five with a neutral emoji, and ten with a big smile emoji. The numerical ratings were then compiled into a spreadsheet where averages were totaled for each week and each student.

Results to Date/Implications

On average, students were above the mean and their final scores ended higher than their beginning. The data shows the excitement to begin and end student teaching with an anticipated dip in the middle (see Figure 1). For some individual students, the lowest point of the dip aligns with the middle of the semester when they were responsible for all classes while others appear to align with when they were finishing and submitting their edTPA assessment. See Figure 2 below for a visualization of the mean data for all students. While there is not room in this abstract to indicate all words that came up for all students each week, we can offer brief examples of the information that would be shared in the final poster.

Figure 1

Average weekly rating by cohort during student teaching

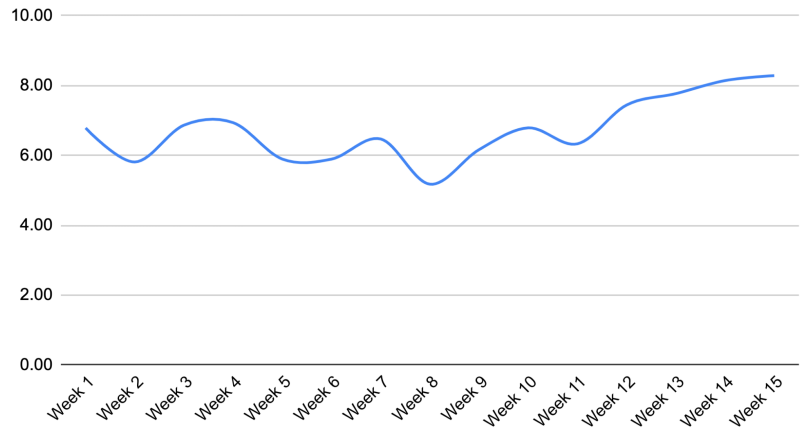


Figure 2

Examples of the one word used by students to describe their week in student teaching

Week 1	Week 3	Week 8	Week 14
Excited	Optimistic	Happy	Grateful
Optimistic	Hopeful	Behind	Fun
Nervous	Stressed	Tired	Accomplished
Overwhelmed	Overwhelmed	Disappointment	Bittersweet

Future Plans/Advice to Others

We plan to continue the project. In the future, we intend to shift the rating scale to be -5 to +5 (from our previously used 0-10) to better have students thinking about the positive or negative nature of the word they are choosing for the week. During the time students are in their internship, they are enrolled in courses taught by three different instructors. After reviewing the data, these instructors intend to review assignment deadlines for student teachers and reorganize some content to avoid the lowest rated weeks from the previous year. Our program incorporates a mid-semester seminar that brings student teachers to campus. This timing tends to align with edTPA deadlines, teaching a full load, and FFA activities in full-swing. It is worth considering if the timing of this seminar is the most appropriate to support our student teachers.

For others interested in this approach as a measure of pre-service teachers' feelings toward teaching during the clinical internships, we offer the following recommendations. Begin the semester with a process in place for collecting one-words, reviewing them regularly, and communicating with students. Incorporate activities that encourage intentional gratitude during the weeks with the lowest ratings to support student mental health (Emmons & McCullough, 2003; Sansone & Sansone, 2010). To wrap up the activity, create a word cloud to share with students at the end of student teaching as a reminder that there are highs and lows in teaching.

Costs/Resources Needed

There is no financial cost to implement weekly one-word reflections for student teachers. Instructors of student teachers do need to designate time to communicate regularly with students and compile data as it is submitted, approximately 30 minutes per week. One hour at the end of the semester for the student teachers to reflect on their compiled words and rate them on a scale. We also recommend having somewhere convenient for students to enter their one-word reflections, like built-in with a weekly assignment.

References

Caruso, J. J. (1977). Phases in student teaching. *Young Children, 33*(1), 57–63. http://www.jstor.org/stable/42643480

Disberger, B. S. (2020). *The lived experiences of traditionally certified agriculture teachers through their first three years of teaching: A phenomenological longitudinal study* (Publication No. 28090664) [Doctoral dissertation, Kansas State University]. ProQuest Dissertations & Theses Global.

Disberger, B., Washburn, S., Hock, G., & Ulmer, J. (2023). A qualitative analysis of agriculture teacher's attitudinal changes toward the teaching profession in the first three years of teaching. *Journal of Agricultural Education*, *64*(1), 61–81. https://doi.org/10.5032/jae.v64i1.30

Emmons, R. A., & McCullough, M. E. (2003). Counting blessings versus burdens: An experimental investigation of gratitude and subjective well-being in daily life. *Journal of Personality and Social Psychology, 84*(2), 377–389. DOI: 10.1037/0022-3514.84.2.377

Moir, E. (1990). *Phases of first-year teaching*. California New Teacher Project. (CDE) [Online]. Retrieved from: http:// www.newteachercenter.org/article3.html

Rayfield, J., McKim, B. R., Smith, K. L., & Lawrence, S. G. (2014). Analyzing Moir's curve: A quantitative look at attitudinal changes in induction-year agricultural educators. *Journal of Agricultural Education*, *55*(3), 147–161. https://doi.org/10.5032/jae.2014.03147

Sansone, R. A., & Sansone, L. A. (2010). Gratitude and well being: The benefits of appreciation. *Psychiatry (Edgmont), 7*(11), 18–22. Retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3010965/

Work Smarter, Not Harder: How Educators Can Use Generative AI Tools to Increase Efficiency in their Work

Kylie Harlan, M.S.
Lecturer
Department of Agricultural Education and Communications
Texas Tech University
(806) 834-8105, kylie.harlan@ttu.edu

Courtney Meyers, Ph.D.
Professor
Department of Agricultural Education and Communications
Texas Tech University
(806) 834-4364, courtney.meyers@ttu.edu

Laura Fischer, Ph.D.
Assistant Professor
Department of Agricultural Education and Communications
Texas Tech University
(806) 834-0630, laura.fischer@ttu.edu

Introduction/Need for Innovation or Idea

Generative AI (GenAI) tools draw upon "deep-learning models" to "generate high-quality text, images, and other content" (Martineau, 2023, para. 1). Currently, higher education students use GenAI inside and outside of the college classroom to complete tasks to improve efficiency in their daily lives. Within the academic setting, 49% of students reported using GenAI tools to assist them with summarizing or paraphrasing questions, understanding and deconstructing difficult concepts, and ultimately with assistance in answering homework questions and completing writing assignments (Coffey, 2023). Despite widespread use from students, only 22% of faculty were using GenAI and that was primarily to "see what students see," and apply these techniques to teach students how to effectively and ethically use these GenAI tools (Shaw et al., 2023). In fact, only one-third of faculty members had used GenAI to create more engaging lesson plans and in-class activities (Coffey, 2023).

However, in the emerging "Age of Artificial Intelligence," faculty must learn how to leverage the power of GenAI to help improve as educators (Christian, 2023). While these tools present some concerns regarding ethical use, they also provide an opportunity to help faculty increase in operational efficiency to complete time-consuming, tedious, or mundane tasks (Coffey, 2024). For example, faculty can use these tools to accomplish tasks such as brainstorming, outlining papers, drafting emails, developing engaging activities, and saving time on administrative tasks (Coffey, 2023; Heaven, 2023). While many GenAI tools exist, the purpose of this innovative idea poster is to describe how we have used two specific platforms in an educational setting: ChatGPT and Magic School AI. ChatGPT is an online platform that generates text in response to a user's prompts (OpenAI, 2023); whereas Magic School AI is a resource designed to help complete educator-based tasks (Magic School AI, 2024).

How it Works

Each of these platforms require users to create an account. After you have the account, you can begin entering prompts. After logging into *ChatGPT*, you will be redirected to a screen with a message box where you can write a prompt. The more specific your prompt is, the more tailored the generated response will be. After, you can copy the response, regenerate it, or dislike it. If you would like to change the response, you may enter another prompt telling ChatGPT what you would like to do, and it will generate another response. *Magic School AI* is geared for educators and includes over 60 different "magic tools" (Magic School AI, 2024). The tools help educators to develop lesson plans, create innovative teaching lessons, write emails and letters, and craft questions for assessment (Magic School AI, 2024). Different from ChatGPT, Magic School AI, provides a few specific prompts for you to answer to generate your designated output such as the grade level, number of questions, type of topic, type of questions, and type of assessment. The prompt also instructs users to be specific.

Results to Date/Implications

We have found useful applications of GenAI tools (Table 1). Despite potential and promise, these tools still require a human touch to check for accuracy. They are useful when brainstorming ideas and generating new content to be further refined to meet educational goals.

Table 1
Applications of generative AI tools and examples of prompts

Application of GenAI	Prompt Example
Writing quiz or discussion questions	Give me 5 multiple choice questions that force students to recognize active and passive voice; Write discussion questions about ag-gag laws and first amendment concerns.
Outlining class lectures	Create an outline for an hour-long college class lecture about influencer marketing on social media.
Creating activities for class; outlining tutorials for skill-based activities	Create a 40-minute activity about event planning. The activity should include elements related to creating event agendas, enhancing flow, facilitating a comfortable atmosphere, etc.
Editing instructions for clarity and conciseness	Review this marketing and communications package assignment description for clarity for a 2000 level class.
Drafting recommendation letters	Write a recommendation letter for a college student recommending them for a scholarship. The student is engaged in class, hardworking, kind, and involved in extracurriculars.
Writing assignment descriptions and rubrics	Write an assignment description in which students select a communications theory or model we NOT DID specifically address in the class and provide a 7-slide, 5-minute narrated presentation regarding the topic.
Drafting emails	Write an email to a student who has missed four days of class and will receive deductions based on course policy.
Drafting outline for research projects, thesis, or dissertation	Write an outline for a research poster with the following purpose "To explore the relationships between attitude and purchasing intent for sustainable cotton products."
Exploring data analysis	Describe the assumptions and steps to conduct a two-way ANOVA in SPSS and template to report in APA format.

Future Plans/Advice to Others

We will continue to experiment with the tools to identify strengths and weaknesses. Although they provide useful content, the responses always need more editing for refinement and to ensure accuracy. Unless something radically changes, these tools are part of our technology landscape and students are using them. Faculty need to be aware of these resources and consider ways to use them to enhance their teaching and research. While we are most familiar with the GenAI tools mentioned in this poster, many others are available. We recommend educators continue to search for platforms that help them enhance the educational experience for their students.

Costs/Resources Needed

GenAI tools require internet access; however, the tools referenced in this poster are free to use with the option to upgrade to a paid plan with additional features. For example, ChatGPT Plus is $20/month and Magic School AI is $8.33/month. We have only used the free versions of ChatGPT and Magic School AI. It should be noted that these platforms can become overwhelmed by the number of inquiries, causing the site to go down for periods of time.

References

Christian, K. (2023). The future of communication in the age of artificial intelligence. *Forbes.* https://www.forbes.com/sites/kwamechristian/2023/05/04/the-future-of-communication-in-the-age-of-artificial-intelligence/?sh=32365043469c

Coffey, L. (2023). Students outrunning faculty in AI Use. *Inside Higher Ed.* https://www.insidehighered.com/news/tech-innovation/artificial-intelligence/2023/10/31/most-students-outrunning-faculty-ai-use#:~:text=A%20new%20study%20finds%20over,not%20regularly%20use%20the%20technology.

Coffey, L. (2024). What's next for Ed Tech in 2024. *Inside Higher Ed.* https://www.insidehighered.com/news/tech-innovation/teaching-learning/2024/01/04/ai-vr-and-techy-classrooms-whats-next-ed-tech

Heaven, W. D. (2003, April 6). ChatGPT is going to change education, not destroy it. *MIT Technology Review.* https://www.technologyreview.com/2023/04/06/1071059/chatgpt-change-not-destroy-education-openai/

Martineau, K. (2023, April 20). *What is generative AI?* [Blog post]. IBM. https://research.ibm.com/blog/what-is-generative-AI

Magic School AI. (2024). https://www.magicschool.ai/

OpenAI. (2023). Introducing ChatGPT. https://openai.com/blog/chatgpt

Shaw, C., Yuan, L., Brennan, D., Martin, S., Janson, N., Fox, K., & Bryant, G. (2023, October 23). *Gen AI in higher education: Fall 2023 update Time for Class Study*. Tyton Partners. tytonpartners.com/time-for-class-2023/GenAI-Update

Research Poster

Beefing Up Influencer Credibility: The Effect of Source and Message Type on Perceptions of Source Expertise and Trust

Jessica Hemphill, B.S.
Texas Tech University

Laura Fischer, Ph.D.
Texas Tech University

Courtney Meyers, Ph.D.
Texas Tech University

Brooke Vyvlecka, M.S.
Texas Beef Council

Courtney Gibson, Ph,D.
Texas Tech University

Jessica Hemphill, B.S.
Box 42131
Lubbock, Texas 79409-2131
(254) 595-1324
jdammers@ttu.edu

Beefing Up Influencer Credibility: The Effect of Source and Message Type on Perceptions of Source Expertise and Trust

Introduction & Need for the Study

As individuals become further removed from agriculture, their trust in the food chain is dwindling (Fischer et al., 2020). In fact, only 24% of U.S. adults have a high degree of trust in the information they receive about where and how their food is produced (UM CFNAS, 2022). It is becoming imperative to communicate information about agricultural food products to build consumer confidence in the food system (Fischer et al., 2020). One trust barrier is the misconception regarding beef nutrition, which is a pivotal factor in changing meat consumption habits (Latvala et al., 2012). Consumers have turned to online sources before, consulting with professionals for guidance on health and nutrition (Bergeron et al., 2017). This online content consumption creates an opportunity for agriculturalists to leverage social media to potentially motivate consumers' eating habits and expand their nutrition knowledge (Ahmad & Bruno, 2021) leading to behavioral and diet change (Cash et al., 2014; IFIC, 2023). A variety of content types exist; however, many consumers make purchasing decisions based on the advice from social media influencers (Rogers et al., 2022). However, for influencers to effectively communicate complex topics such as health and nutrition, they must be perceived as credible.

Theoretical Framework

This study was guided by Framing Theory and the Elaboration Likelihood Model (ELM). Framing explains the way information is presented can evoke different responses from the audience, impacting perceptions and trust (Entman, 1993; Goffman 1974). This study leveraged two distinct frames for beef nutrition: evidence-based messages (i.e., utilizing statistics and data) and advice-based messages (i.e., incorporating recommendations and opinions). Framing can work in tandem with the ELM to influence consumers' information processing pathways. The ELM outlines two cognitive routes individuals use to process messages: central, a more critical analysis of the message through deep analysis and scrutinization, and peripheral, a "short cut" route where an individual places emphasis on external cues for message acceptance (Petty & Cacioppo, 1986). When messages are beyond an individual's cognitive capacity, they look for cues or heuristics to make a judgement to accept the message (Petty & Cacioppo, 1986). One cue is the perceived source credibility, where the person quickly evaluates two criteria: expertise and trustworthiness (Cooper et al., 2016; Petty & Cacioppo, 1986). This study seeks to determine if source type and message type affected perceived-source credibility of influencer messages related to beef nutrition.

Methods

A Qualtrics survey was distributed to a nationwide non-probability opt-in sample. We gathered 1,010 complete responses with a sample reflecting the U.S. census demographics in terms of age, gender, income, race, and regionality. The research was conducted through a 2 (message type: evidence-based or advice-based) X 3 (source type: registered dietician, fitness coach, or beef advocate) experimental design with the dependent variables of source expertise and trust. To differentiate the two message types, we used prior literature insights, feedback from a panel of experts, and pilot testing to align the script, tone, and appearance (Chambers et al., 2023; Harrington et al., 2015). Both messages conveyed beef as an excellent source of protein based on the FDA Daily Value Recommendation. The source type was described in the profile contents

and influencer introduction. The respondents were randomly exposed to 1 of 6 Instagram scenarios (i.e., the stimuli) where they viewed an Instagram profile and Reel. Efforts were made to control all aspects of the profile (e.g., same influencer, profile metrics) other than the manipulated aspects of message type and source type. Following the scenario, the respondents provided their perceptions of expertise and trust using 5-point semantic differential scales to the statement, "I believe [influencer name] was…" Source expertise ($\alpha = .93$) was measured using: *not an expert/expert, unskilled/skilled, inexperienced/experienced, unqualified/qualified,* and *unknowledgeable/knowledgeable* (Ohanian, 1990). Source trust ($\alpha = .92$) was measured using: *dishonest/honest, unreliable/reliable, untrustworthy/trustworthy, insincere/sincere,* and *undependable/dependable*. We analyzed this data independently using two-way Analysis of Variance (ANOVAs) in SPSS version 29.

Results

The first two-way ANOVA tested the effects of source type and message type on *source expertise*. We found the main effect of source type to be significant, $F(2,1004) = 7.12$, $p < .001$, partial $\eta^2 = .014$. Bonferroni post hoc comparisons revealed significant differences of source expertise between the Registered Dietician, the Coach ($p = .002$), and the Beef Advocate ($p = .005$); however, there was not a significant difference between the Coach and the Beef Advocate ($p = 1.00$). Additionally, the main effect of message type was significant, $F(1,1004) = 17.00$, $p < .001$, partial $\eta^2 = .017$. However, the interaction effect of source type and message type was not significant, $p = .23$. This analysis shows that respondents who received the influencer message about beef nutrition from the Registered Dietician sharing the evidence-based message had higher levels of source expertise.

The second two-way ANOVA tested the effects of source type and message type on *source trustworthiness*. We found the main effect of source type to be significant, $F(2,1004) = 3.77$, $p = 0.023$, partial $\eta^2 = .007$. Bonferroni post hoc comparisons revealed significant differences of source trustworthiness between the Registered Dietician and the Coach ($p = .021$); however, there were not significant comparisons between the Registered Dietician and the Beef Advocate ($p = .180$), nor between the Coach and the Beef Advocate ($p = 1.00$). The main effect of message type was not significant, $p = .18$, nor was the interaction effect of source type and message type, $p = .58$. This analysis revealed those who received an influencer message from a Registered Dietician had the most positive source trustworthiness.

Conclusions/Discussion/Recommendations

When using influencer marketing for beef nutrition, communicators should focus on utilizing credentialed professionals to improve source credibility. In this study, credentials induced the ELM, leading respondents to look at heuristic cues of the source's qualifications to trigger their brain to perceive the source as an expert (Petty & Cacioppo, 1986). This study suggests consumers prefer evidence-based messages to make decisions regarding beef nutrition. Communicators should prioritize data, facts and statistics for credibility and avoid personal opinions. Following registered dietitians, respondents indicated a moderate amount of trust for the industry advocate. Communicators can leverage beef industry advocates to serve as a secondary source of information. Additional research to explore influencer marketing in different sectors and with varying credential types is warranted.

References

Ahmad, S., & Bruno, D. E. (2021). Social media influencers and the dietary choices among university students. *Malaysian Journal of Social Sciences and Humanities, 6*(10), 543-557. https://doi.org/10.47405/mjssh.v6i10.1125

Bergeron, C. D., Ory, M., Goltz, H. H., Towne Jr., S. D., Ahn, S., Mier, N., & Smith, M. L. (2017). Preferred health information sources: An examination of vulnerable middle-aged and older women. *Journal of Family Strengths, 17*(1). https://digitalcommons.library.tmc.edu/jfs/vol17/iss1/8

Cash, T., Desbrow, B., Leveritt, M., & Ball, L. (2014). Utilization and preference of nutrition information sources in Australia. *Health Expectations, 18*, 2288-2295. https://doi.org/10.1111/hex.12198

Chambers, A. V., Baker, M. T., Leggette, H. R., Osburn, W. N., & Lu, P. (2023). Effect of message framing and information source on consumers' attitudes toward an amino acid-based alternative meat curing system. *Foods, 12*(7), 1535. https://doi.org/10.3390/foods12071535

Cooper, J., Blackman, S., & Keller, K. (2015). *The science of attitudes* (1st ed.). Routledge. https://doi.org/10.4324/9781315717319

Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of Communication, 43*(4), 51-58. https://doi.org/10.1111/j.1460-2466.1993.tb01304.x

Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Northeastern University Press.

Harrington, N. G., Helme, D. W., & Noar, S. M. (2015). Message design approaches to health risk behavior prevention. In L. M. Scheier (Ed.), *Handbook of adolescent drug use prevention: Research, intervention strategies, and practice* (pp. 381–396). American Psychological Association. https://doi.org/10.1037/14550-022

International Food Information Council (IFIC). (2023). *2023 food and health survey.* https://foodinsight.org/wp-content/uploads/2023/05/IFIC-2023-Food-Health-Report.pdf

Fischer, L., Meyers, C., Cummins, G., Gibson, C., and Baker, M. (2020). Creating relevancy in agricultural science information: Examining the impact of motivational salience, involvement and pre-existing attitudes on visual attention to scientific information. *Journal of Applied Communications, 104*(2). https://doi.org/10.4148/1051-0834.2287

Latvala, T., Niva, M., Mäkelä, J., Pouta E., Heikkilä J., Kotro J., Forsman-Hugg, S. (2012) Diversifying meat consumption patterns: Consumers' self-reported past behaviour and intentions for change. *Meat Science*, *92*(1), 71-77. https://doi.org/10.1016/j.meatsci.2012.04.014.

Ohanian, R. (1990). Construction and validation of a scale to measure celebrity endorsers' perceived expertise, trustworthiness, and attractiveness. *Journal of Advertising, 19*(3), 39-52. https://doi.org/10.1080/00913367.1990.10673191

Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral routes to attitude change*. Springer-Verlag.

Rogers, A., Wilkinson, S., Downie, O., & Truby, H. (2022). Communication of nutrition information by influencers on social media: A scoping review. *Health promotion journal of Australia, 33*(3), 657–676. https://doi.org/10.1002/hpja.563

University of Minnesota College of Food, Agricultural and Natural Resource Sciences. (UM CFANS) (2022). *Bridging the food trust gap.* https://cfans.umn.edu/news/bridging-food-trust-gap

Exploring College Students' Perceptions of Using Generative AI to Produce Agricultural-Related Vector Images

Kyler Hardegree
Graduate Student
kyhardeg@ttu.edu

Courtney Gibson Ph.D.
Associate Professor
courtney.d.gibson@ttu.edu

Department of Agricultural Education & Communications
Texas Tech University
Box 42131
Lubbock, TX 79409-2131
806-742-2816

Exploring College Students' Perceptions of Using Generative AI to Produce Agricultural-Related Vector Images

Introduction/Need for Research

Within the agricultural communications discipline, graphic design courses are popular reflecting the emphasis on visual communication and the multimedia nature of the modern field (Cannon et al., 2016). Recently, artificial intelligence (AI) has become a popular concept to explore (Dehman, 2023), and recent advancements in AI technology have led to a range of questions and concerns from both design practitioners and academia about the future of AI-driven designs (Engawi et al., 2021). AI-powered tools have increasingly become more prevalent and assist designers in tasks like generating ideas, enhancing productivity, and improving overall design quality (Engawi et al., 2021). Generative AI refers to AI technologies that automatically generate visual or written content based on text prompts (Oppenlaender, 2023). Generative AI is designed to create new data, like images or text, that is like, but not identical to, existing data. However, it is unknown if AI can create accurate depictions of text-based prompts, for agricultural topics. Practitioners have expressed a need to better understand AI tools and their use and have outlined ethical concerns such as lazy design work and the transparency of their own work as a challenge in using AI technology (Engawi et al., 2021). Traditional approaches to creating agricultural graphics involve manual efforts, often requiring a team of experts with diverse design, technology (i.e., Adobe Illustrator), and drawing skills. Additionally, practitioners have highlighted a need to study AI and the loss of the more traditional, human-touch approach to design and the impacts that may have on the accuracy of images created (Fatima, 2023). As we work to train future generations of agricultural communicators, we need to better understand the potential use of generative AI tools in crafting agricultural images. A logical place to start is to first explore students' perceptions of the images these tools create to determine their accuracy and usefulness for agricultural communicators.

Theoretical Framework

Davis (1985) developed the Technology Acceptance Model (TAM), to gauge an individual's desire to adopt different technologies. Davis (1985) suggested that user motivation, influenced by external stimuli containing the system's features and capabilities, can explain or predict responses to system use (Chuttur, 2009). According to TAM, technology acceptance involves a three-stage process. The initial stage involves external factors, such as system design features, triggering a cognitive response in the second stage, like perceived ease of use, which then shapes an effective response in the third stage, such as a person's attitude toward technology and intention to use, influencing user behavior (Davis, 1989; Davis, 1993).

Purpose and Objectives

In this study, we sought to analyze college students' perceptions of the accuracy and perceived usefulness of generative AI tools in Adobe Illustrator in the creation of agricultural images. The following research objectives guided this study:

1. Determine students’ perceptions of the accuracy of generative AI graphics in representing agricultural-related prompts.
2. Evaluate students’ perceived usefulness of generative AI tools for agricultural communicators.

Methodology

Students ($N = 37$) enrolled in an advanced agricultural communications graphic design course were asked to create vector graphics using generative AI in Adobe Illustrator. Each student was given a unique prompt related to an agricultural topic (i.e., a farmer standing in a wheat field with a barn in the distance under a blue sky.) They were then tasked with generating six vector scenes of their prompt using Illustrator's text-to-vector tool. After creating their AI graphics, students were asked to reflect on this activity and record their thoughts related to the accuracy of their vector images and how useful they felt this tool could be to agricultural communicators via a Google Form. Students also uploaded PDF versions of their generated images to the Form. Responses were coded and analyzed to define common themes using open and axial coding and the constant comparison method (Creswell,1998).

Results

Most students (62.1%, $n = 23$) were favorable of the generative AI tool and felt that the technology produced images that accurately portrayed agriculture based on the prompts given to them. Some students ($n = 11$, 29.7%) felt the AI images only somewhat represented agriculture, while only 8.2% ($n = 3$) felt they did not accurately portray agriculture.

Five main themes were identified from students' thoughts regarding their AI-created vector scenes. Students suggested that using the text-to-vector tool is great for *idea generation*. One student mentioned, "While it is not our own work, AI can be used to get the ball rolling on ideas and help us move forward creatively." Another indicated, "There are a lot of ways in which the generator tool can help people design and come up with ideas for when we are in a creative rut." Students also expressed that using the text-to-vector feature can help agricultural communicators when there is a need *to produce work quickly*. "This can produce some awesome scenes that would take someone hours in a short time." Another mentioned, "AI makes quality graphics, better than what I could do on my own, in a fraction of the time I would spend designing them." However, students did find the graphics created to be somewhat *stereotypical.* "It seems to generate scenes and subjects that are stereotypical, not what we see in our everyday life." Additionally, students learned the *prompts must be detailed* for them to be accurate. "I learned that if you want specific details in your graphic you need to add those elements as keywords." Lastly, students said the tool was *easy to use.* "This exercise helped me learn about how I can better use AI in creating certain graphics," and "It is very easy to use and get results fast."

Conclusion/Implications/Recommendations

The themes identified from students' reflections echoed the potential use of generative AI for idea generation, rapid production, and design quality (Engawi et al., 2021). The use of AI for idea generation can be a powerful way to leverage the capabilities of machine learning models to assist and inspire creative thinking. The students' perceptions of the perceived usefulness of the text-to-vector tool indicate that they believe that the system will help improve their tasks and may influence their behavior and intention to use generative AI in the future (Gonçalves et al., 2023). Generative AI can create accurate agricultural images; however, there may be a lack of detail and some stereotypical imagery used which can reflect the loss of human touch in the designs (Fatima, 2023). Addressing these concerns will require a comprehensive and ongoing effort from developers and users to build fair, unbiased, and inclusive AI systems. It is recommended that designers run prompts through AI software, like Chat-GPT, to generate language that AI can understand for the best results. This could enhance the accuracy or level of detail provided in generated images.

References

Cannon, K. J., Specht, A. R., & Buck, E. B. (2016). Agricultural communications: A national portrait of undergraduate courses. *Journal of Applied Communications*, *100*(1). https://doi.org/10.4148/1051-0834.1018

Chuttur, M. (2009). Overview of the technology acceptance model: Origins, developments, and future directions. *All Sprouts Content*. 290. https://aisel.aisnet.org/sprouts_all/290

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions.* Sage Publications, Inc.

Davis, F. (1985). *A technology acceptance model for empirically testing new end-user information systems: Theory and results*. [Unpublished doctoral dissertation]. Massachusetts Institute of Technology.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340. https://doi.org/10.2307/249008

Davis, F. D. (1993). User acceptance of information technology: System characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies, 38*, 475-487. https://doi.org/10.1006/imms.1993.1022

Dehman, H. (2023). Graphic design, already intelligent? Current possibilities of generative AI applications in graphic design. *DIVA*, 59. https://www.diva-portal.org/smash/record.jsf?dswid=5956&pid=diva2%3A1797022

Engawi, D., Gere, C., & Richards, D. (2021). The impact of artificial intelligence on graphic design: Exploring the challenges and possibilities of AI-driven autonomous branding. *Proceedings of the International Association of Societies of Design Research*. Springer Nature Singapore. https://doi.org/10.1007/978-981-19-4472-7_238

Fatima, I. (2023). Designing with AI: A user study to explore the future role of AI as a collaborative tool in graphics design. *DIVA,* 12. https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A1811190&dswid=-6130

Gonçalves, A. R., Pinto, D. C., Rita, P., & Pires, T. C. (2023). Artificial intelligence and its ethical implications for marketing. *Emerging Science Journal, 7*(2), 313–327. Doi: 10.28991/ESJ-2023-07-02-01

Oppenlaender, J. (2023). A taxonomy of prompt modifiers for text-to-image generation. *Behavior & Information Technology*, 1–14. https://doi.org/10.1080/0144929x.2023.2286532

Exploring Context as an Amplifier or Filter in Implementing Blended Teaching in SBAE

D. Brett Milliken
Virginia Tech
175 Campus Drive
Blacksburg, VA 24061
540.231.1003
bmilliken@vt.edu

Josh Stewart
Oregon State University
130 Strand Hall
Corvallis, OR 97331
541.737.3552
josh.stewart@oregonstate.edu

Haley Q. Traini
Oregon State University
130 Strand Hall
Corvallis, OR 97331
541.737.2661
haley.traini@oregonstate.edu

Exploring Context as an Amplifier or Filter in Implementing Blended Teaching in SBAE

Introduction and Conceptual Framework

In the consensus model of teacher professional knowledge and skills (TPK&S), Gess-Newsome (2015) identified teachers as free agents with the ability to "embrace, reject, or modify new knowledge, skills, and practices" (p. 34). A teachers' beliefs, orientations, prior knowledge, and context all act as amplifiers or filters when a teacher is presented with new knowledge (Gess-Newsome, 2015). In general, amplifiers and filters mediate the transition from professional and content specific knowledge to classroom practice (Gess-Newsome, 2015). For example, as teachers encounter new instructional strategies, such as blended teaching, contextual variables such as infrastructure, administration, and school community, among others, can act as amplifiers or filters as teachers seek to transfer their new knowledge into practice. Drawing on the definition of blended learning established by Horn and Staker (2015), *blended teaching* can be defined as the purposeful integration of a formalized online and face-to-face instructional program that incorporates student choice and personalization which can be achieved through an awareness of how time, place, pace, and path impact student learning.

Purpose

The purpose of this qualitative study was to explore how school-based agricultural education (SBAE) teachers discussed how their blended teaching practice was amplified or filtered by contextual factors impacting their SBAE classrooms, specifically how school administration supported or hindered the adoption and implementation of blended teaching and learning.

Methods

This study was part of a larger project that employed a phenomenological approach, seeking to explore, describe, and analyze the meaning of a shared experience or phenomenon (i.e., blended teaching) by several individuals (Creswell & Poth, 2018; Marshall & Rossman, 2014). Using the TPK&S framework and relying specifically on the concept of amplifiers and filters (Gess-Newsome, 2015), we explored how five SBAE teachers who self-identified as blended educators discussed the impact contextual factors had on their blended teaching practice. Each participant engaged in hour-long, semi-structured interviews in which they were asked several questions regarding their beliefs and practices about blended teaching. Data were transcribed and coded in two rounds following steps outlined by Saldaña (2009). We drew on Lincoln and Guba's (1986) criteria for trustworthiness and on Berger (2015) and Malterud (2001) to tend to reflexivity.

Findings

The SBAE teachers who participated in this study identified that there were important contextual factors that amplified their blended teaching knowledge and skills. The contextual factors frequently discussed included infrastructural support and support from administration and school districts. The infrastructural support the participants referenced most frequently was access to computers in their classrooms. Each of the SBAE teachers in this study had one-to-one computing available in their classrooms. Blended teaching requires teaching and learning to happen, in part, in an online setting. As such, student access to computers, particularly one-to-one computing, becomes a critical contextual and supportive component of blended teaching.

Participants also identified instances where support from their school administration and school districts was an important part of being able to practice blended teaching. One participant,

Nancy, discussed how her school district was in the process of implementing blended learning when she was hired:

> When I was hired, I had a principal who was very supportive and said, 'We really want some change in the program, and we want you.' Because, at my last school, I had dabbled in blended learning, but it was a much larger district. And so, when I came here, we journeyed into…blended learning together.

Similarly, Jill recounted how the environments between her first and second school impacted her ability to explore and try new things in her teaching practice, such as blended teaching:

> So, the first six years of teaching, I was in a newer building in an up-and-coming district, and they were very into performance, which puts a lot of pressure on a new teacher who's just trying to learn how to manage a kid that doesn't want to do work, or learn how to plan a good lesson. A job opened up that was closer to home, and that district very much focused on the opportunities we can get for kids. We don't care, you have flexibility to do that, how you want to do that…but that's what we want, is opportunities for kids. And it took a couple years for me to be okay with that flexibility and freedom.

When Jeremy's school district started talking about moving to one-to-one computing, he decided that he wanted to be a part of the conversation and his administration supported him in that; he wanted to be one of the decision-makers:

> When it became apparent to me that computers were going to be the way we started teaching, and I started seeing districts around us go one-to-one, I started hearing those conversations here in our school district…if we're gonna do it, I want to be one of the people that decides how we do it. I don't want to be told how to do it. I want to figure it out and be part of the group that says, hey, here's the best way to do it.

Conclusion and Recommendations

In the TPK&S model, Gess-Newsome (2015), identified context as one of the potential amplifiers and filters leading to decisions that influence classroom practice. The SBAE teachers in this study spoke to the importance of context, particularly the support they received and how it impacted their ability to adopt and implement blended teaching in their classrooms. This type of support ranged from one-to-one computing, which has been widely adopted because of the pandemic, along with administrative support in providing an environment that allowed teachers the ability to be flexible and seek teaching and learning opportunities that benefited students.

The contextual amplifiers and filters that SBAE teachers use to accept, reject, or modify knowledge of blended teaching merits additional investigation of how support (e.g., infrastructural, administrative, community) received or denied could potentially be a gatekeeper for further adoption and implementation of blended teaching in SBAE. We recommend that further research is needed to better understand the contextual factors that impact how SBAE teachers can either amplify their knowledge and skills related to blended teaching or how context acts as a filter of their blended teaching knowledge and skills. Additional qualitative research could illuminate the nuances of context related to the adoption of blended teaching in SBAE. Quantitative research methods could be used to multiply and diversify SBAE teacher participants who represent a wider range of career stages, geographic locations, and program sizes to further examine blended teaching amplifiers and filters at the profession wide.

References

Berger, R. (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research*, *15*(2), 219-234.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches*. Sage.

Gess-Newsome, J. (2015). A model of teacher professional knowledge and skill including PCK. *Re-examining pedagogical content knowledge in science education*, *41*(7), 28-42.

Horn, M. B., & Staker, H. (2017). *Blended: Using disruptive innovation to improve schools*. John Wiley & Sons.

Lincoln, Y. S., & Guba, E. G. (1986). But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New Directions for Program Evaluation*, *1986*(30), 73-84.

Malterud, K. (2001). Qualitative research: standards, challenges, and guidelines. *The Lancet*, *358*(9280), 483-488.

Marshall, C., & Rossman, G. B. (2014). *Designing qualitative research*. Sage.

Saldaña, J. (2009). *The coding manual for qualitative researchers*. Sage.

Identifying the Taxonomy of Questions Used by Experienced Agriculture Educators

Cassandra Goff
University of Florida
P.O. Box 110540
Gainesville, FL 32611-0540
(352) 392-3261
goffc@ufl.edu

R. G. (Tre) Easterly III
University of Florida
P.O. Box 110540
Gainesville, FL 32611-0540
(352) 273-4052
tre.easterly@ufl.edu

Identifying the Taxonomy of Questions Used by Experienced Agriculture Educators

Introduction

Questioning is vital for critical thinking, active engagement, and curiosity. It helps assess understanding, encourages collaboration, and personalizes learning. Effective questioning encourages students to actively engage with the material, rather than passively receiving information (Lewis & Smith, 1993; Shanmugavelu, 2020). Additionally, questions in the learning process can lead to retention of the content, develop communication skills, and prepare students for real world challenges (Corley & Rauscher, 2013). Teachers can gauge students' comprehension levels using questioning as assessment or a measurement tool allowing them to identify areas where students may be struggling and adjust their teaching accordingly. (Krathwohl, 2002; Lewis & Smith, 1993; Wilen, 1991). Questioning also provides teachers insight into students' misconceptions, enabling them to provide timely feedback and address misunderstandings. Moreover, it also encourages students to reflect on their own learning processes. These assessment pieces can be formative or summative in nature but require prior planning by the teacher.

Well-crafted questions can spark meaningful discussions among students, allowing them to share their perspectives, debate ideas, and collaborate with their peers (Wilen, 1991). Using thoughtful questioning helps students to think critically about materials, analyze concepts, and make connections to previous knowledge or experiences. If questions are intentionally created as a part of the learning process, students will be able to critically think and become better independent learners. This research examines and categorizes the type of questioning used by experienced agriculture educators through the taxonomy of questions.

Theoretical and Conceptual Framework

Tofade et al. (2013) proposed a taxonomy of questions building on the prior works of Bloom (1956) and Anderson and Krathwohl (2001). The taxonomy of questions served as the conceptual framework for this study. The questions were quantified first by convergent or divergent categories and then by focal, brainstorm, shotgun, and funnel categories. Convergent questions are closed and do not offer many answer options. They also converge on a narrow list of “best” answers and encourage focused, succinct responses. Divergent questions are open and could have multiple answers which permits the exploration of diverse perspectives and encourages dialogs. Students must justify a position in focal questions including a why or why not in their answers. Questions that generate lists of ideas or viewpoints are brainstorming questions. Questions that contain several content areas with no link are shotgun questions. Multiple questions in a row that start broadly and lead to more focused inquiry are funnel questions. These definitions question types were provided by Tofade et al. (2013).

Methodology

This study used a quantitative approach for examining the classroom practices of experienced teachers. Classroom observations were analyzed as part of a larger study of experienced teachers. Four Florida teachers were selected to participate in this study. The teachers’ experience in the classroom was: Teacher 1, 8 years; Teacher 2, 4 years; Teacher 3, 13 years; and Teacher 4, 7 years. These teachers were identified as effective teachers. Three individuals not involved with the study, but with a working relationship with the teachers (state

staff, teacher educators, department of education consultants) were asked to develop a list of teachers they considered effective. The lists were triangulated, and teachers appeared on multiple lists and were selected to participate. Since the teachers were selected for this study using non-probability sampling procedures, this study cannot be generalized to a larger population. Data was collected through video of classroom instruction as part of a larger study. The videos were analyzed, and questions asked were recorded for each class period. The questions were sorted using a priori coding based on the recommendations of Tofade et al. (2013), types of nonhierarchical questions used as teaching tools. An additional category was added to the question categories labeled routine which includes questions pertaining to how the classroom functions but does not have to be related to content, such as checks for understanding and/or classroom management.

Results/Findings

There were 16 hours and 42 minutes of recorded observations and 439 questions coded. Teacher 1 asked 142 total questions, 91 were convergent and 51 were divergent. Teacher 2 asked 128 total questions, 99 were convergent and 29 were divergent. Teacher 3 asked 97 total questions, 86 were convergent and 11 were divergent. Teacher 4 asked 103 total questions, 87 were convergent and 16 were divergent.

Table 1

Frequency and percentage of questions asked during observation

	Total Questions	Focal *f* (%)	Brainstorming *f* (%)	Shotgun *f* (%)	Funnel *f* (%)	Routine *f* (%)
Teacher 1	91	15	39	35	48	5
Teacher 2	128	18	23	39	38	10
Teacher 3	97	6	13	9	39	30
Teacher 4	103	9	22	22	41	9

Conclusions/Implications/Recommendations/Impact

This study provides insight into the breakdown of questions experienced agriculture teachers asked in their classes. These results are not generalizable, but the analysis provides an overview of how SBAE teachers use questions in their instruction. The teachers asked more convergent than divergent questions, however there was a range in ratio of these question distribution. All four teachers had more convergent questions than divergent questions. These questions ranged from yes or no answers to definition and terminology questions. This observational data supports that teachers use lower-order questions more often than higher-order questions. The additional category of routine was added to include questions that were more classroom management in nature. A limitation of this study was the number of teachers observed. Teachers' questions were also impacted by delivering different content utilizing different methods. To investigate questioning more thoroughly, longer observation time of a more diverse set of teaching methods would be appropriate.

Teachers can integrate higher-order thinking questions into their lessons if they understand the taxonomy of questions. Including questions that are at a higher level will not only engage learners better but will increase understanding, knowledge retention, and will help teachers identify misunderstandings. A recommendation for future research would be to examine teacher planning materials to determine how questions are developed and guided through planning. The impact of this study highlights the necessity of questioning in classroom lessons

and the intentionality of teachers including these moments for students to actively reflect and engage in their learning.

References

Anderson, L.W. & Krathwohl, D. R. (Eds.) (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* Addison Wesley Longman.

Corley, M. A., & Rauscher, W. C. (2013). *Deeper learning through questioning* [Fact sheet]. Teaching Excellence in Adult Literacy. https://lincs.ed.gov/sites/default/files/12_TEAL_Deeper_Learning_Qs_complete_5_1_0.pdf

Lewis, A., & Smith, D. (1993). Defining higher order thinking. *Theory into Practice, 32*(3). 131–137. http://www.jstor.org/stable/1476693

Shanmugavelu, G., Ariffin, K., Vadivelu, M., Mahayudin, Z., & R K Sundaram, M. A. (2020). Questioning techniques and teachers' role in the classroom. *Shanlax International Journal of Education, 8*(4). 45–49. https://doi.org/10.34293/education.v8i4.3260

Tofade, T., Elsner, J., & Haines, S. (2013) Best practice strategies for effective use of questions as a teaching tool. *American Journal of Pharmaceutical Education, 77*(7). 155 https://doi.org/10.5688/ajpe777155

Wilen, W. W. (1987). *Questions, questioning techniques, and effective teaching.* National Education Association.

Wilen, W. W. (1991). *Questioning skills, for teachers.* (3rd ed.). National Education Association.

Inservice Needs of Selected Arkansas Agriculture Teachers Related to Precision Agriculture

Henry Akwah
University of Arkansas
1120 W. Maple St.
AFLS E111
Fayetteville, AR 72701
(479) 575-2035
hoakwah@uark.edu

Donald M. Johnson, PhD
University of Arkansas
1120 W. Maple St.
AFLS E111
Fayetteville, AR 72701
(479) 575-2035
dmjohnso@uark.edu

George Wm Wardlow, PhD
University of Arkansas
1120 W. Maple St.
AFLS E111
Fayetteville, AR 72701
(479) 575-2035
wardlow@uark.edu

Cengiz Koparan, PhD
University of Arkansas
1120 W. Maple St.
AFLS E111
Fayetteville, AR 72701
(479) 575-2035
ckoparan@uark.edu

Aurelie Poncet, PhD
University of Arkansas
1354 W Altheimer Dr
Fayetteville, AR 72704
(479) 575-3979
poncet@uark.edu

Inservice Needs of Selected Arkansas Agriculture Teachers Related to Precision Agriculture

Precision Agriculture (PA) ensures that the right quantity of agricultural inputs like fertilizer, water, pesticides, and insecticides are applied at the right amount in specific locations in a field to ensure optimal economic yields and continuous sustainability (UNDP, 2021). Despite the promising features of PA, it is reported that PA education is primarily taught at universities or colleges (Reichardt et al., 2009) and it is not common at the high school level (Chad, 2022). According to Chad, the absence of PA coursework in teacher preparation programs makes it difficult for high school agriculture teachers to acquire PA knowledge during their teacher education preparation. This hinders secondary agricultural educators from developing PA competencies and makes it difficult for them to teach PA-related courses. Currently, in agricultural education, there is a call to incorporate 21st-century competencies in the agriculture curriculum (DiBenedetto et al., 2018) and this will call for trained teachers. According to DiBenedetto et al., conducting needs assessments and delivering relevant in-service education have been identified as necessary steps in enhancing the competencies of school-based agriculture teachers.

Conceptual/Theoretical Framework

This study was designed using Shulman's (1986) Teacher Knowledge theory, which posits that teachers need seven specific types of knowledge to proficiently oversee teaching and learning. However, for this research, only two of the knowledge components, content knowledge (CK) and pedagogical content knowledge (PCK) were employed. CK refers to mastery of a specific content and PCK is knowing how to effectively teach that content to students (Shulman, 1987). This study assessed agriculture teachers' perceptions of their CK and PCK in PA.

Purpose

The purpose of this study was to determine the in-service needs of Arkansas agriculture teachers in PA. The results will be used to plan and deliver relevant in-service education.

Methods

The researchers, in collaboration with three PA experts from the University of Arkansas, organized a PA workshop for agriculture teachers in Arkansas. Before the workshop, participating teachers (n = 44) completed a PA needs assessment instrument. This instrument was designed using Borich's (1980) needs assessment model which allows for the prioritization of in-service needs based on calculated mean weighted discrepancy scores (MWDS). With MWDS, skills deemed highly important but with low competence ratings will be given higher rankings compared to skills with low importance ratings and high competence ratings (Courson, 1999). To ensure reliability, a test-retest was conducted with 13 pre-service agriculture teacher education students at the University of Arkansas, resulting in a coefficient of stability of .91. A panel of four experts in PA and survey research evaluated the instrument and judged it to possess face and content validity. Participating teachers evaluated the perceived importance of selected PA topics for high school-level instruction, as well as their ability to teach these topics. The survey contained 29 competencies categorized under seven PA technologies: Real-time Kinematic GPS, Variable Rate Technology (VRT), Unmanned Aerial Vehicles (UAVs), Guidance and Auto Steering Systems, Soil Sensing Systems, Yield Monitoring and Mapping, and Geographic Information Systems (GIS). A brief description of each technology was provided. Each competency was measured on a

Likert scale ranging from 1 to 5, where 1 denoted "No Importance (or Ability)" and 5 signified "High Importance (or Ability)." All teachers provided usable responses.

Results

Among the seven PA technologies, the mean importance of teaching ranged from 3.98 (“Above Average" on the Likert Scale) to 4.40 (deemed "High" on the Likert Scale). Unmanned Aerial Vehicles emerged as the top priority, while Geographic Information System ranked second, and Guidance and Auto Steering Systems topics were considered the least important. In terms of teaching ability, all received mean scores below 2, indicating a "No" response on the Likert scale. This implied that none of the teachers possessed the ability to teach any of the 29 competencies. In addressing in-service needs, GIS emerged as the top priority area with a MWDS of 11.85, followed by Soil Sensing Systems at 10.76 MWDS. UAVs ranked third with a MWDS of 10.61, while Real-time Kinematic GPS came in fourth with 10.28 MWDS. VRT followed closely with 10.25 MWDS, and Yield Monitoring and Mapping obtained a MWDS of 9.71. Guidance and Auto Steering Systems topics were identified as the area requiring the least in-service training, garnering a MWDS of 8.16 (Table 1).

Table 1

Mean Weighted Discrepancy Score of Inservice Needs of Selected Arkansas Agriculture Teachers Related to Precision Agriculture

Area	Importance		Ability		
	M	*SD*	*M*	*SD*	*MWDS*
Geographic Information System	4.39	0.63	1.70	0.95	11.81
Soil Sensing Systems	4.23	0.66	1.68	0.88	10.76
Unmanned Aerial Vehicles	4.40	0.60	1.99	1.09	10.61
Real-time Kinematic GPS	4.17	0.66	1.71	0.82	10.28
Variable Rate Technology	4.20	0.75	1.76	0.89	10.25
Yield Monitoring and Mapping	4.07	0.88	1.68	0.96	9.71
Guidance and Auto Steering Systems	3.98	0.89	1.93	1.22	8.16

Conclusions and Recommendations

Overall, the teachers recognized the importance of the chosen topics and recognized the need to include them in the high school curriculum. However, they expressed a deficiency in the requisite content knowledge and skills needed to effectively teach these topics. Based on the MWDSs, in-service education is needed in all seven areas with immediate priorities in GIS, Soil Sensing Systems and UAVs. Therefore, it is recommended that PA in-service education on these highest priorities be organized for the Arkansas agriculture teachers. Subsequent inservice workshops should be offered for the lower-rated priorities. Additionally, Arkansas agricultural education leaders, teachers, teacher educators, and PA experts should partner to develop PA curriculum on the identified topics. This would enable agriculture teachers to develop PA competencies and provide relevant PA educational opportunities for Arkansas agricultural education students.

References

Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education*, *31*(3) 39-42. https://doi.org/10.1177/002248718003100310

Chad, R. (2022). Barriers to adoption of precision agriculture competencies in secondary agriculture education programs: a case study. [Doctoral dissertation, University of Missouri]. https://mospace.umsystem.edu/xmlui/handle/10355/93986

Courson, J. (1999). An assessment of the computer-related skills needed and possessed by county extension professionals in the Mississippi Arkansas University Extension Service. [Doctoral dissertation, Mississippi Arkansas University]. https://www.proquest.com/dissertations-theses/assessment-computer-related-skills-needed/docview/304510792/se-2

DiBenedetto, C. A., Willis, V. C., & Barrick, R. K. (2018). Needs assessments for school-based agricultural education teachers: A review of literature. Journal of Agricultural Education, *59*(4), 52-71. https://doi.org/10.5032/jae.2018.04052

Reichardt, M., Jürgens, C., Klöble, U., Hüter, J., & Moser, K. (2009). Dissemination of precision farming in Germany: Acceptance, adoption, obstacles, knowledge transfer and training activities. Precision Agriculture, *10* (2009), 525-545. https://doi.org/10.1007/s11119-009-9112-6

Shulman, L. S. (1986). Those who understand: knowledge growth in teaching. *Educational Researcher*, *15*(2), 4-14. https://doi.org/10.3102/0013189X015002004

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review 57* (1), 1-22. http://dx.doi.org/10.17763/haer.57.1.j463w79r56455411

UNDP. (2021). *Precision agriculture for smallholder farmers.* United Nations Development Programme. https://www.undp.org/publications/precision-agriculture-smallholder-farmers

Research

Investigating Identity and the Integration of Alternatively Certified Teachers in the School-Based Agricultural Education Profession

Matthew J. Wood

Utah State University

2300 Old Main Hill

Logan, Utah 84322-2300

matthew.wood@usu.edu

Tyson J. Sorensen

Utah State University

2300 Old Main Hill

Logan, Utah 84322-2300

tyson.sorensen@usu.edu

Investigating Identity and the Integration of Alternatively Certified Teachers in the School-Based Agricultural Education Profession

Introduction/Need for Research

Professional identity is a crucial factor influencing the success and dedication of educators in the teaching field (Canrinus et al., 2011). This concept involves a teacher's sense of belonging, identification with, and dedication to their role as an educator (Zhao, 2022). It includes their understanding of professional duties, beliefs about the essence of teaching, and emotional ties to their career (Beijaard et al., 2000). Teachers with a robust professional identity tend to experience greater job satisfaction, more involvement in professional development, and a stronger voice in advocating for the teaching profession's interests (Day & Gu, 2007; Skaalvik & Skaalvik, 2011). Specifically in agricultural education, Knobloch and Whittington (2003) observed that novice school-based agricultural education (SBAE) teachers with high self-efficacy also show strong professional identities, affecting their commitment to teaching. Given the challenges in recruiting and retaining qualified SBAE teachers, particularly as the profession increasingly hires individuals through alternative certification paths, it is essential to explore and support the professional identities of these educators. This research aims to investigate the professional identities of alternatively certified SBAE teachers to determine how these teachers integrate into the SBAE profession.

Theoretical Framework and Literature Review

Self-efficacy is crucial in shaping teachers' professional identity, influencing their self-perception and role engagement. Defined by Bandura as belief in one's abilities to manage tasks and challenges (Bandura, 1997), high self-efficacy is linked to teachers' sense of competence, enhancing their professional pride and commitment (Ashton & Webb, 1986). Cultivating self-efficacy, therefore, is key to empowering teachers and fostering a strong, affirmative professional identity.

Research by McKim and Velez (2015) underscores the impact of self-efficacy on early-career teachers' commitment, indicating that when teachers firmly believe in their abilities to handle various classroom challenges, they are more likely to feel committed to their careers. This highlights the importance of fostering self-efficacy among novice SBAE teachers to ensure their long-term commitment to the SBAE profession. Furthermore, Bandura (1997) also highlighted that strong self-efficacy is essential for teachers to develop and maintain their professional identity. Understanding the professional identities of alternatively certified SBAE teachers is crucial due to the limited research in this area. This understanding is essential for their effective integration into the profession and for supporting them.

Methodology

The primary objective of this study was to describe the professional identities of alternatively certified SBAE teachers. Our study, which was part of a larger quantitative relational study, focused on SBAE teachers actively teaching SBAE courses throughout the United States during the 2023-2024 academic year. We employed cluster sampling to determine participation, categorizing teachers by NAAE region, and then used random sampling to select states or series of states within each cluster. We invited all teachers within the selected states to participate. In October of 2023, we administered an online survey using Qualtrics. This survey asked respondents to rank a series of professional identity statements using a five-point Likert-type scale. Of the three hundred and ninety-eight participants in the larger study, 35.9% (n = 143) identified as alternatively certified.

Results/Findings

Our study revealed that alternatively certified teachers generally view their professional identities favorably. They rated the following statements the highest (strongly agree or agree): (1) It is important for me to develop my teaching skills; (2) I see myself as a teacher; and (3) I would miss teaching if I stopped doing it. In contrast, the statements receiving the lowest ratings were: (1) I know very few agriculture teachers in the profession; (2) It is important for me to work in the teaching profession; and (3) I feel that my building/district administration support my efforts as an agriculture teacher.

Table 1

Self-Assessment of Professional Identity among Alternatively Certified SBAE Teachers

	SA %	A %	N %	D %	SD %
It is important for me to develop my teaching skills	47.5	46.9	4.9	0.0	0.7
I see myself as a teacher	51.0	39.2	7.7	1.4	0.7
I would miss teaching if I stopped doing it	38.7	47.9	10.6	2.8	0.0
Students and colleagues view me as an effective teacher	37.1	42.6	18.9	1.4	0.0
I feel skilled as a teacher	34.9	43.4	15.4	5.6	0.7
I belong to a community of teachers	36.3	39.2	16.8	5.6	2.1
I frequently talk to colleagues about teaching	20.3	51.0	20.3	7.0	1.4
I feel that my building/district administration support my efforts as an agriculture teacher	28.0	37.0	16.1	11.2	7.7
It is important for me to work in the teaching profession	25.9	37.7	24.5	8.4	3.5
I know very few agriculture teachers in the profession	27.3	33.5	18.9	12.6	7.7

Note. SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree.

Conclusions/Recommendations/Impacts

These findings suggest that while alternatively certified teachers identify with their role and value professional growth, they experience less support from their administration, place less emphasis on remaining in the SBAE profession, and face challenges in integrating into the SBAE community. Regarding integration into the profession, the study results mirror the findings of Claflin et al. (2022), suggesting that the SBAE profession is welcoming yet is an exclusive community where integration can be challenging. It is recommended that future research should focus on exploring the support systems and professional networks available to alternatively certified teachers in the SBAE profession. This research could examine the extent and nature of administrative support these teachers receive and investigate how it impacts their job satisfaction and commitment to the profession. Additionally, the study should delve into the challenges these teachers face in integrating into the SBAE community and seek strategies to enhance their sense of belonging and connectivity within the profession. Moreover, further research should explore how closely the professional identities of traditionally certified SBAE teachers align with alternatively certified teachers. Lastly, the researchers recommend the need for qualitative research, exploring the nuances of professional identity among alternatively certified teachers.

References

Ashton, P. T., & Webb, R. B. (1986). Making a Difference: Teachers' Sense of Efficacy and Student Achievement. New York: Longman.

Bandura, A. (1997). Self-Efficacy: The exercise of control. New York: W. H. Freeman and Company

Beijaard, D., Verloop, N., & Vermunt, J. D. (2000). Teachers' perceptions of professional identity: an exploratory study from a personal knowledge perspective. *Teaching and Teacher Education*, *16*(7), 749–764. https://doi.org/10.1016/s0742-051x(00)00023-8

Canrinus, E., Helms-Lorenz, M., Beijaard, D., Buitink, J., & Hofman, A. (2011). Profiling teachers' sense of professional identity. *Educational Studies*, *37*(5), 593–608. https://doi.org/10.1080/03055698.2010.539857

Claflin, K., Stewart, J., & Traini, H. (2022). The best of both worlds: exploring the experiences of alternatively certified agriculture teachers. *Journal of Agricultural Education*, *63*(2), 219–237. https://doi.org/10.5032/jae.2022.02219

Gu, Q., & Day, C. (2007). Teachers resilience: A necessary condition for effectiveness. *Teaching and Teacher Education*, *23*(8), 1302–1316. https://doi.org/10.1016/j.tate.2006.06.006

Knobloch, N. A., & Whittington, M. S. (2003). Differences in teacher efficacy related to career commitment of novice agriculture teachers. *Journal of Career and Technical Education*, *20*(1). https://doi.org/10.21061/jcte.v20i1.625

McKim, A. J., & Velez, J. J. (2015). Exploring the relationship between self-efficacy and career commitment among early career agriculture teachers. *Journal of Agricultural Education*, *56*(1), 127–140. https://doi.org/10.5032/jae.2015.01127

Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, *27*(6), 1029–1038. https://doi.org/10.1016/j.tate.2011.04.001

Zhao, Q. (2022). On the role of teachers' professional identity and well-being in their professional development. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.913708

Research Poster

Preparing Internationally Engaged Graduate Students in Agricultural and Extension Education

Colby Silvert
University of Maryland

Rafael Landaverde
Texas A&M University

Melissa Leiden Welsh
University of Maryland

John Diaz
University of Florida

Mary Rodriguez
The Ohio State University

Dharmendra Kalauni
University of Florida

Correspondence concerning this article should be addressed to Colby J. Silvert, Department of Plant Science and Landscape Architecture, University of Maryland, College Park, MD, 20742. Telephone: 301.405.7041; Email: csilvert@umd.edu; Fax: 301.314.9308. 4291 Fieldhouse Dr. 2119 Plant Sciences Building. College Park, MD 20742.

Introduction/Need for Research

Experts have called for agricultural disciplines in higher education (e.g., agricultural education) to better ensure curricula and learning experiences account for contemporary agri-food system shifts toward global interconnectedness and multiculturalism (Bedenlier et al., 2018; Johnson et al., 1995; Navarro & Edwards, 2008). Graduate students may increase their interest and knowledge in international agriculture through formal coursework and curricula. However, more practical and career-translatable capacities are often derived from extracurricular activities and high-impact experiences, including professional and academic associations (Akkerman & Torenvlied, 2013; Coulter et al., 2004). The existence of such associations and networks for graduate students to gain international agricultural education capacities and career preparation appears limited (only three located by the authors) while the need for such collectives is great. Therefore, this study examined graduate students' perceptions about how an international agricultural education (IAE) association could best address their needs.

Theoretical Framework

Socialization was the guiding theory for this study. At its foundation, the theory proposes that the process by which people engage with (and become socialized to) a collective or association has influences on both those people and the respective group (Austin & McDaniels, 2006; Staton & Darling, 1989). Contemporary perspectives of the theory describe this as dynamic and culturally driven co-construction (Antony, 2002). Four key principles of socialization theory most closely guided this needs assessment with an international lens: a) socialization is both a formal and informal process; b) homogenization and assimilation of members are problematic and should be avoided; c) socialization is often mediated by communication methods and systems; and d) participants' involvement, investments, and knowledge acquisition drive the bidirectional dynamics of socialization (Austin & McDaniels, 2006; Staton & Darling, 1989; Tierney & Rhoads, 1993). In the present study, socialization was applied within a three-phased needs assessment centered on the premise that graduate students' engagement with an association embodies a process of socialization to international agriculture.

Methodology

We followed a convergent mixed-methods research design aligned with the Witkin and Altschuld (1995) three-phased needs assessment approach. Phase one (pre-assessment exploration) involved the review of secondary data and relationship-building with stakeholders and phase two (assessment) was dedicated towards data collection and analysis, using a survey and a focus group. Phase three (utilizing the assessment findings) activities are not described in this study. The convergent design allowed for the simultaneous collection of quantitative and qualitative data, followed by an integration/comparison analysis (Creswell & Plano Clark, 2018).

We used purposive and snowball sampling to achieve a representative sample from the broader population of graduate students with an association membership (Plowright, 2011). The survey instrument design included two indexes measuring students' satisfaction with their engagement in networking, collaboration, and student diversity, capacity building and learning, funding and value, the annual conference, and scholarship. For this, a five-point Likert satisfaction scale was

used: *Extremely dissatisfied* (1), *Somewhat dissatisfied* (2), *Neither satisfied nor dissatisfied* (3), *Somewhat satisfied* (4), and *Extremely satisfied* (5). Closed-ended questions also explored students' types of involvement and additional input related to the quantitative inquiry. We also conducted a virtual focus group facilitated around the causal analysis fishbone technique to further explore and triangulate students' perceptions on optimal association engagement (Harder, 2020). We analyzed the quantitative data using descriptive and central tendency statistics and the qualitative data were analyzed using thematic analysis (Creswell & Plano Clark, 2018).

Results/Findings

Of the 26 graduate student survey respondents, the majority (18) were from the United States, while the sample represented a total of six nationalities including Afghanistan (2), Ecuador (1), India (1), Nigeria (3), and Rwanda (1). Most respondents reported their level of involvement in the association as somewhat involved or very involved (combined = 69.2%). Based on the lowest means (*M*) of satisfaction, the greatest needs were, in order: Networking with nonprofit and private sector practitioners and leaders ($M = 2.65$); Communication with students via social media ($M = 2.92$); and Networking that leads to professional opportunities ($M = 3.27$); In contrast, respondents were most satisfied with learning about relevant international research, relevant professional development/skill building, and participation in the annual conference. The qualitative analysis found the greatest needs were mentoring and professional development; information and communication; participation and cost; and diversifying the organization.

Conclusions and Implications

Findings underscore a need for IAE associations to better provide graduate students networking experiences with nonprofit and private sector professionals. This need could be addressed by engaging with global practice and research networks such as the CGIAR research and development consortium, funded with nearly one billion U.S. dollars and employing more than 9,000 staff globally (CGIAR, n.d.). Respondents seek IAE to facilitate mentoring and networking, especially focused on linking to international career opportunities. Mentoring systems to pair students with senior mentors (e.g., experts in international development practice or research) could help fill this gap leveraging in-person and online connectivity to ensure an equitable and inclusive global linking infrastructure. The qualitative data revealed that some respondents feel there is a potential lack of diversity from their association experience pointing to the importance of diverse collectives that reflect the multicultural food system stakeholders (Tierney & Rhoads, 1993). While this study offers emergent understanding, a longer-term or longitudinal evaluation on students' (including alumni) involvement in IAE associations is recommended to better determine how the associations may lead to globally relevant careers.

References

Akkerman, A., & Torenvlied, R. (2013). Public management and network specificity: Effects of colleges' ties with professional organizations on graduates' labour market success and satisfaction. *Public Management Review, 15*(4), 522–540. https://doi.org/10.1080/14719037.2012.677213

Austin, A. E., & McDaniels, M. (2006). Preparing the professoriate of the future: Graduate student socialization for faculty roles. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (pp. 397–456). Springer.

Bedenlier, S., Kondakci, Y., & Zawacki-Richter, O. (2017). Two decades of research into the internationalization of higher education: Major themes in the Journal of Studies in Internationalization (1997-2016). *Journal of Studies in International Education, 22*(2), 108–135. https://doi.org/10.1177/1028315317710093

CGIAR. (n.d.). *Funders*. https://www.cgiar.org/funders/

Coulter, F. W., Goin, R. P., & Gerard, J. M. (2004). Assessing graduate students' needs: The role of graduate student organizations. *Educational Research Quarterly, 28*(1), 15–26. http://refhub.elsevier.com/S0748-5751(20)30004-X/h0050

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.

Harder, A. (2020). Conducting the needs assessment #11: Causal analysis techniques. *University of Florida Cooperative Extension Electronic Data Information Source.* https://edis.ifas.ufl.edu/publication/WC352

Johnson, B., von Bargen, K., & Schinstock, J. (1995). Shifting the curriculum paradigm in a land grant college. In J. P. Lunde, M. Baker, F. H. Buelow, & L. S. Hayes (Eds.), *Reshaping curricula: Revitalization programs at three land grant universities* (pp.54-62). Anker.

Navarro, M., & Edwards, M. C. (2008). Priorities for undergraduate education and the inclusion of internationalized curriculum in colleges of agriculture: Interpreting the "comparison dilemma". *Journal of Agricultural Education, 49*(4), 72–82. http://dx.doi.org/10.5032/jae.2008.04072

Staton, A. Q., & Darling, A. L. (1989). Socialization of teaching assistants. *New Directions for Teaching and Learning*, (39), 15-22.

Tierney, W. G., & Rhoads, R. A. (1993). *Enhancing promotion, tenure and beyond: Faculty socialization as a cultural process.* The George Washington University. https://files.eric.ed.gov/fulltext/ED368322.pdf

Witkin, B. R., & Altschuld, J. W. (1995). *Planning and conducting needs assessments: A practical guide*. SAGE

School-Based Agricultural Education Teachers Support Needs

Kayla N. Marsh
Graduate Teaching and Research Associate
458 Agricultural Hall, Stillwater, OK 74078
Oklahoma State University
405-714-8289
Kayla.marsh@okstate.edu

Christopher J. Eck, Ph.D.
Assistant Professor
457 Agricultural Hall, Stillwater, OK 74078
Oklahoma State University
405-744-8027
Chris.eck@okstate.edu

William Doss, Ph.D.
Assistant Professor
1120 W. Maple, Fayetteville, AR 72701
University of Arkansas
479-575-3799
Wd009@uark.edu

Introduction and Theoretical Framework

In an effort to build and maintain complete and comprehensive agricultural education programs, school-based agricultural education (SBAE) teachers must prioritize an exorbitant number of tasks, potentially adding to the overwhelming workload required to manage a successful and comprehensive SBAE program (Best et al., 2023). Twenty-first century societal pressures and educational policy further exacerbate SBAE teachers' professional workload, thus reducing job satisfaction and increasing teacher burnout, often resulting in mental, physical, and emotional stress, thus driving the ill-being of SBAE teachers (Doss et al., 2023; Marsh et al., 2023; Ryan & Deci, 2000). Such a system conflicts with the recommendation of Eck et al. (2019), who posited that leading a balanced life is critical for SBAE teachers to develop career-specific human capital to be effective in their role and maintain adequate job satisfaction. Establishing healthy boundaries, personal wellness, and work-life balance are essential components of maintaining a balanced life as an SBAE teacher (Eck et al., 2019; Shoulders et al., 2021). However, despite SBAE teachers' mental, physical, and emotional career-related stress being well-documented (Doss et al., 2023; Marsh et al., 2023; Marsh et al., 2024; Shoulders et al., 2021), little is known about the extent of the personal needs of SBAE teachers to bridge and support these gaps to increase job satisfaction, promote teacher wellness, and reduce teacher attrition (Doss et al., 2023; Eck & Edwards, 2019; Marsh et al., 2023; Ryan & Deci, 2000).

While a valid instrument exists to evaluate these components, the specific support needs of SBAE teachers are still unknown (Marsh et al., 2024). Therefore, this study aimed to identify the humanistic needs of SBAE teachers, which was guided by the overarching question of, what is the current level of SBAE teachers' support needs based on the SBAE model of support instrument? This inquiry is supported by the *Conceptual Model of Support for SBAE Teachers* was used to provide a human lens (Marsh et al., 2023). The conceptual framework is grounded in *Maslow's Hierarchy for Teachers* (Fisher & Royster, 2016), *The Three-Component Model for Agricultural Education* (FFA, n.d.), and *The Effective Teaching Model for SBAE Teachers* (Eck et al., 2019), which provides researchers a lens to identify the level of SBAE teachers needs within their professional roles and responsibilities to provide opportunities to develop their career-specific human capital and increase job satisfaction and career retention.

Methods/Procedures

In-service SBAE teachers in Region II of the National Association of Agricultural Educators (i.e., Arkansas, Louisiana, Kansas, Colorado, New Mexico, Oklahoma, and Texas) were the population of interest ($N = 3729$) for this study (Privitera, 2013). A researcher developed email frame was established using existing listservs and publicly available email addresses from the seven states. Recruitment emails were personalized by the state and included three reminders following the recommendations of Dillman et al. (2014). The 46-item instrument used in this study is a validated instrument representing the 21st century job satisfaction and personal human capital needs of SBAE teachers (Marsh et al., 2024). The five defined instrument support components represent the essential support needs of SBAE teachers, including *personal needs* represented by 17 items, 15 *intracurricular needs* items, seven *relationship needs* items, five *classroom and instructional needs*, and two items focused on *school-based support needs* (Marsh et al., 2024).

Survey instruments were distributed to the population of interest, asking SBAE teachers to identify the current level of ability on a five-point Likert-type scale (i.e., 1 = never/high need and 5 = always/low need). Data collection resulted in 553 emails being returned undeliverable and 581 SBAE teachers participating, resulting in an 18.3% response rate. Unfortunately, only 257 instruments were complete for data analysis. Given the low response rate, non-response bias was addressed by comparing early to late respondents based off the recommendations of Lindner et al. (2001), finding no difference between respondent groups. Statistical Package for the Social Sciences (SPSS) Version 25 was used for data analysis for descriptive statistics and calculations of summated need scores.

Results/Findings

To determine the current level of SBAE teachers' support needs based on the SBAE model of support instrument, summated scores across the 46-items were calculated. Summated score ranges were aligned with the *Model of Support for SBAE Teachers* hierarchy with potential scores ranging from 46 to 230 for the complete instrument. Scores less than 79 represent a *subsistence* level of needs, 80 to 119 represent security, 120 to 159 represent association, 160 to 199 represent *respect*, and *self-actualization* is represented by scores greater than 200. Composite mean scores from the participants (n = 257) ranged from a low of 78 to a high of 230, with a mean of 162.06 (SD = 30.42) for all 46 items. The composite mean score represents a corresponding level of *respect* within the *Model of Support for SBAE Teachers* based on participant responses.

Conclusions/ Discussion/ Implications

The overall mean needs scores for SBAE teachers align at the level of *respect* within the *Model of Support for SBAE Teachers*, with scores ranging from 78 to 230, indicating that participants vary greatly on their current level of support needed within the profession (Marsh et al., 2023). The span of needs identified within the study demonstrates that evaluating participants alignment within the hierarchy can provide insight needed to better address the depth of SBAE teacher's career-specific human capital needs (Eck et al., 2019; Marsh et al., 2023).

The supports that are essential for those at *subsistence* and *security* levels (i.e., scores of 119 or less), who are currently surviving within the profession, need support in managing and maintaining their daily practice. In addition, guidance and structure for developing the needed career-specific human capital needs to be retained within the profession (Eck et al., 2019; Fisher & Royster, 2016; Marsh et al., 2023) are essential for teachers at these levels. Could it be that these factors limit an individual's ability to ascend to higher levels within the hierarchy (Fisher & Royster, 2016; Marsh et al., 2023), ultimately impacting their career tenure? Participants aligning with the *association* level are in need of collaboration and belonging within the profession while continuing to develop competency as effective SBAE teachers managing complete programs (Eck et al., 2019; Fisher & Royster, 2016; Marsh et al., 2023). It is recommended that the model of support instrument be used for mentoring and developing preservice and inservice SBAE teachers.

Reference

Best, R., Robinson, J.S., Terry, R., Edwards, M. C. and Cole, K. (2023). Tasks associated with teaching school-based agricultural education. National AAAE Conference, Raleigh, NC. http://www.agedweb.org/aaae/Proceedings.asp?EventID=92

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed- mode surveys: The tailored design method* (4th ed.). Wiley.

Doss, W., Rayfield, J., & Lawver, D. (2023). A national study assessing the influence of perceived challenges faced by school-based agricultural education teachers on their ability to do their job. *Journal of Agricultural Education*, *64*(3), 184–202. https://doi.org/10.5032/jae.v64i3.2476

Eck, C. J., & Edwards, M. C. (2019). Teacher shortage in school-based, agricultural education (SBAE): A historical review. *Journal of Agricultural Education, 60*(4), 223–239. https://doi.org/10.5032/jae.2019.04223

Eck, C. J., Robinson, J. S., Ramsey, J. W., & Cole, K. L. (2019). Identifying the characteristics of an effective agricultural education teacher: A national study. *Journal of Agricultural Education***,** *60*(4), 1–18. https://doi.org/10.5032/jae.2019.04001

The National FFA Organization [FFA]. (n.d.). The National FFA Handbook. https://www.ffa.org/agricultural-education/

Fisher, M. H., & Royster, D. (2016). Mathematics teachers' support and retention: Using Maslow's Hierarchy to understand teachers' needs. *International Journal of Mathematics Education in Science and Technology, 47*(7), 993–1008. https://doi.org/10.1080/0020739X.2016.1162333

Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social research. *Journal of Agricultural Education*, *42*(4), 43–53. https://doi.org/10.5032/jae.2001.04043

Marsh, K. N., Eck, C. J., Layfield, K. D. & Donaldson, J. L. (2023). Identifying school-based agricultural education teacher needs and support gaps. *Advancements in Agricultural Development*, *4*(3), 117 –130. https://doi.org/10.37433/aad.v4i3.347

Marsh, K. N., Eck, C. J., and Doss, W. (2024, February 5–7). Validation of the School-Based Agricultural Education Model of Support Instrument. *2024 Southern Region AAAE Conference, Atlanta, GA*. https://aaea.wildapricot.org/resources/Documents/Southern%20Region/2024%20Southern%20Region%20Atlanta/SR%20Paper%20Proceedings%202024.pdf

Privitera, G. J. (2020). *Research methods for the behavioral sciences.* Sage.

Ryan, M. R, & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://www.doi.org/10.1037//0003-066x.55.1.68

Shoulders, C. W., Estepp, C. M., & Johnson, D. M. (2021). Teachers' stress, coping strategies, and job satisfaction in COVID-induced teaching environments. *Journal of Agricultural Education, 62*(4), 67–80. https://doi.org/10.5032/jae.2021.04064

Seeds of Communication:
A Communications Audit of Instagram Posts Promoting the AgriStress Helpline for Texas

Kyler Hardegree
Graduate Student
kyhardeg@ttu.edu

Courtney Gibson Ph.D.
Associate Professor
courtney.d.gibson@ttu.edu

Department of Agricultural Education & Communications
Texas Tech University
Box 42131
Lubbock, TX 79409-2131
806-742-2816

Seeds of Communication: A Communications Audit of Instagram Posts Promoting the AgriStress Helpline for Texas

Introduction/Need for Research

Mental health is a growing topic of conversation and concern for people around the globe. According to the Centers for Disease Control and Prevention (2024), one in five adults live with a mental illness making it one of the most common health conditions in the U.S. Since the 1980s, a substantial body of literature has reported mental health concerns within the agricultural industry (Younker & Radunovich, 2021). Agricultural producers face unique challenges contributing to stress, anxiety, depression, and other mental health disorders (Baker et al., 2022). The burden of these mental illnesses on farmers continues to grow with large impacts on health and major social, human rights, and economic consequences (Yazd et al., 2019). In the U.S., agricultural producers die by suicide at almost twice the rate of individuals in differing occupations (Peterson et al., 2020). In response to these high suicide rates, AgriSafe (2023) and The Southwest Center for Agricultural Health, Injury Prevention and Education (SW Ag Center) have developed platforms and communication channels with the mission of reducing occupational injuries, mental health concerns, and diseases among agricultural workers and their families. This led to the creation of the AgriStress Helpline, a free and confidential 24/7 crisis and support line designed specifically for agricultural producers. Mental health literacy campaigns have been effective in raising awareness of resources available to agricultural producers, who value basic messaging and layouts in print and digital materials with relatable photos (Ward & Witt., 2023). However, it is not yet known how or how well the AgriStress Helpline for Texas is communicating to producers.

Conceptual Framework

To understand the creation and utilization of posts promoting the AgriStress Helpline for Texas, we applied Shen and Bigsby's (2013) conceptual framework for crafting messages and Siricharoen and Siricharoen's (2015) insights into the fundamentals of effective design. Messages should be developed by first determining the content (i.e., topic and theme) and then specifying the visual format (i.e., structure) of the message (Shen & Bigsby, 2013). Additionally, effective design is achieved through the use of effective visuals, content, and knowledge (Siricharoen & Siricharoen, 2015). These frameworks were applied to determine if posts promoting the AgriStress Helpline for Texas are effectively reaching and resonating with the target audience.

Purpose and Objectives

The purpose of this study was to analyze the presentation of visual messages on social media promoting the AgriStress Helpline by focusing on the key elements of content, structure, and visual components. We focused our investigation on posts promoting the AgriStress Helpline for Texas via Instagram due to the platform’s popularity among adult users and its focus on visual and engaging content (Gottfried, 2024). The following research objectives guided this study:

1. Examine the messages found in Instagram posts promoting the AgriStress Helpline for Texas.
2. Determine the design elements used in Instagram posts promoting the AgriStress Helpline for Texas.

Methodology

A communications audit was conducted to gain more insight into what content was being shared on Instagram to promote the AgriStress Helpline for Texas by agricultural organizations and state agencies. "Communication audits identify what is being done well, what is not being done well, and how communication efforts can be improved" (Goodwin et al., 2014, p. 1). To retrieve Instagram posts, we searched pages and hashtags for key terms related to the AgriStress Helpline – AgriStress, #AgStrong, #Agmentalhealth, #seasonschangeyouremain. The earliest post found using the AgriStress Helpline logo was from March 4, 2022, and the most recent post was on October 10, 2023. We found and analyzed 57 posts on four Instagram pages – @swagcenter95, @txagriculture, @agwomenconnect, and @capitalfarmcredit. A codebook based on previous research (Butler, 2022) was created and used to code posts. Each post was examined and coded on the message, design elements, and demographics of people depicted in the post. Messages were coded for content; design elements were coded for fonts, colors, QR codes, and logos used; and demographics were coded for the gender and ethnicity of individuals shown in the posts. Descriptive statistics and frequency counts were calculated for each coded variable in Microsoft Excel. Two coders made notes regarding the message and design elements included.

Results

We found that within the 57 posts, 10 different messages were found with the most common message being “It's okay to ask for help” (n = 17, 29.8%), followed by the message “Is stress getting the best of you?” (n = 14, 24.5%). A majority of the posts (n = 41, 71.9%) used an image of a male, while only 29.8% (n = 17) used an image of a female. Additionally, the most common ethnicity depicted was Caucasian (n = 36, 63.1%), followed by Hispanic (n = 9, 15.7%), African American (n = 5, 11.4%), and Asian (n =1, 1.7%). A majority of the posts (n = 45, 78.9%) used the same design elements as other posts including fonts, colors, and Helpline logos. However, 21% (n = 12) used additional design elements such as a QR code or the Texas Department of Agriculture seal. Lastly, a majority of posts (n = *53,* 92.9%*)* had the same design structure and layout.

Conclusion/Implications/Recommendations

The messages and layout structure depicted in the Instagram posts promoting the AgriStress Helpline align with previous research on what agricultural producers value because of their basic messaging and simple designs (Ward & Witt, 2023). However, the unequal distribution of ethnicities and genders within the posts raises important considerations. The prominent use of males and Caucasians does not accurately reflect the diversity within the agricultural population. This could potentially further isolate individuals who already feel isolated (Younker & Radunovich, 2021), hindering the inclusivity of mental health support messages. Future efforts should focus on creating designs that close the gender and ethnicity gap as cultural competence is vital when designing suicide prevention campaigns (Joe et al., 2008). Efforts to increase awareness and engagement with the AgriStress Helpline may require tailored strategies for different demographic groups that can enhance the effectiveness of the outreach initiatives. By acknowledging these unique needs and communication styles, AgriStress could develop more personalized messages that resonant with those who need these messages most.

References

AgriSafe Network. (2023, September 7). *The AgriStress Helpline - AgriSafe Network*. https://www.agrisafe.org/agristress-helpline/

Baker, C., Strong, R. L., McCord, C. E., & Redwine, T. (2022). Seeking support for mental health: Evaluating social identity, social capital, and self-stigma of agricultural producers and their help-seeking preferences. *Advancements in Agricultural Development*, *3*(1), 57–69. https://doi.org/10.37433/aad.v3i1.179

Butler, R. D. (2022). *Communicating cooperatively: Exploring the social media platforms and online communication channels utilized among agricultural commodity cooperatives in* Texas. [Unpublished master's thesis]. Texas Tech University.

Center for Disease Control and Prevention. (2024, February 12). *About mental health*. https://www.cdc.gov/mentalhealth/learn/index.htm

Goodwin, J. N., Davis, A., & Telg, R. W. (2014). Communication audits: Adding value and social impact to agricultural communications. *Journal of Applied Communications, 98*(1), 8–16. https://doi-org.lib-e2.lib.ttu.edu/10.4148/1051-0834.1071

Gottfried, J. (2024, January 31). *How Americans use social media*. Pew Research Center: Internet, Science & Tech. https://www.pewresearch.org/internet/2024/01/31/americans-social-media-use/

Joe, S., Canetto, S. S., & Romer, D. (2008). Advancing prevention research on the role of culture in suicide prevention. *Suicide & Life-Threatening Behavior, 38*(3), 354–362. https://doi.org/10.1521/suli.2008.38.3.354

Peterson, C., Sussell, A., Li, J., Schumacher, P. K., Yeoman, K., & Stone, D. M. (2020). Suicide rates by industry and occupation — National Violent Death Reporting System, 32 States, 2016. *Morbidity and Mortality Weekly Report*, *69*(3), 57–62. https://doi.org/10.15585/mmwr.mm6903a1

Shen, L., & Bigsby, E. (2013). The effects of message features: Content, structure, and style. In J.P. Dillard & L. Shen (Eds.), *The Sage Handbook of Persuasion: Developments in Theory and Practice* (pp. 20-35). Sage Publications, Inc.

Siricharoen, W. V., & Siricharoen, N. (2015) How infographic should be evaluated. *The 7th International Conference on Information Technology*. 558-564. https://doi.org/10.15849/icit.2015.0100

Ward, J. M., & Witt, C. (2023). Let it out: A digital communication campaign to reduce suicide and mental health stigma in Kentucky farmers. *Health Marketing Quarterly*, 1–24. https://doi.org/10.1080/07359683.2023.2196196

Yazd, S. D., Wheeler, S. A., & Zuo, A. (2019). Key risk factors affecting farmers' mental health: a systematic review. *International Journal of Environmental Research and Public Health, 16*(23), 4849. https://doi.org/10.3390/ijerph16234849

Younker, T., & Radunovich, H. L. (2021). Farmer mental health interventions: A systematic review. *International Journal of Environmental Research and Public Health*, *19*(1), 244. https://doi.org/10.3390/ijerph19010244

Unearthing Agricultural Legacies: The Jesup Wagons Impact on Black Heritage and Extension Services

Mikayla Daniels
NC State University
Ricks Hall, Campus Box 7607
Raleigh, NC 27695
madanie5@ncsu.edu

Joy Morgan
NC State University
Ricks Hall, Campus Box 7607
Raleigh, NC 27695
jemorga2@ncsu.edu

Wendy Warner
NC State University
Ricks Hall, Campus Box 7607
Raleigh, NC 27695
wjwarner@ncsu.edu

Introduction

Following emancipation, Black Americans struggled to establish independent lives amid limited education and resources. Many resorted to sharecropping, perpetuating dependence on white landowners. However, the Tuskegee Institute, founded in 1881 by Booker T. Washington, became a beacon of hope. Collaborating with visionaries like Seaman A. Knapp, George Washington Carver, and Thomas M. Campbell, Tuskegee pioneered innovative agricultural education for Black communities. Initiatives such as the Annual Negro Conference and Farmer's Institute disseminated crucial knowledge and advocated for land ownership. However, rural Blacks faced challenges in leveraging this education. It would be the invention of the Jesup Wagon in 1906 that marked a significant milestone, enabling the delivery of agricultural education directly to rural Black farmers of the South. (Jones, 1975; Mayberry, 1991; North Carolina Agricultural and Technical State University, 2023).

Purpose and Objectives

This study focused on the Jesup Wagon's significance in highlighting African Americans' role in extension services, aiming to acknowledge and motivate minorities in agriculture as this wagon showcased African Americans' active engagement in agricultural education dissemination (Akins, 2013). The study aimed to analyze the wagon's purpose, the key individuals involved, its impact, and influence, on subsequent programs and ideas.

Historical Framework

Booker T. Washington, recognizing the educational and financial challenges faced by Black farmers in the South, aimed to empower them with knowledge and resources for agricultural success (Jones, 1975). To address this, Washington established Tuskegee Institute to provide Blacks with practical agricultural skills and scientific knowledge (Jones, 1975). Despite initial efforts to educate Black farmers of the South, many rural Blacks lacked access to instruction (Jones, 1975). To bridge this gap, Washington proposed the creation of a mobile education unit. These innovations, driven by the determination of Black communities, revolutionized agricultural education and extension work, serving as a catalyst for the Cooperative Extension System. (James, 1971; Jones, 1975).

Methodology and Procedures

Historical research is the systematic collection and evaluation of data to understand past events (Fraenkel & Wallen, 2006). Researchers used primary sources and secondary sources to gather information. To ensure the accuracy and genuineness of information, researchers adopted a critical attitude (Fraenkel & Wallen, 2006) and triangulated data from primary and secondary sources (Cresewll, 2012). Content analysis methods then organized data, to draw meaningful conclusions, along with consulting external experts to limit personal biases.

Results/Findings

Embodying Booker T. Washington's vision of agricultural advancement and self-sufficiency, and serving as a transformative tool for Black farmers, the Jesup Agricultural Wagon, facilitated practical learning experiences and promoted economic stability within Black communities in Alabama (Atkins, 2013; Jones, 1975). The wagon was equipped with agricultural resources used

by Black demonstration agents to offer rural Black communities comprehensive and hands-on education in home economics, health, and agriculture (James, 1971). Through the dedication of individuals like Booker T. Washington, Seaman A. Knapp, George Washington Carver, and Thomas M. Campbell, the wagon transcended traditional educational boundaries and laid the foundation for modern extension services (USDA, 2009).

The collaborative efforts of influential figures such as Washington, Knapp, Campbell, and Carver were pivotal in the realization and expansion of the Jesup Wagon (Jones, 1975; USDA, 2009). Inspired by Washington's vision and with financial backing from Morris K. Jesup, Carver initiated weekend demonstrations targeting Black communities in the South (National Park Service, 2000). The wagon's impact grew exponentially, and as Knapp recognized its potential, he offered support for expansion, extending its reach beyond Alabama (Jones, 1979). Campbell's role as the first Black extension agent further solidified the wagon's influence, establishing him as a prominent leader in Black agricultural extension work and positioning Tuskegee Institute as a central hub for agricultural education in the South (Jones, 1975; Jones 1979). The Jesup Wagon's immediate and lasting impact on Black communities was profound, fostering economic empowerment and educational enlightenment (Moore, 2019; Jones, 1975). The initiative not only revolutionized agricultural education but also influenced the emergence of similar programs and ideas both nationally and internationally (Mayberry, 1991). The wagon’s legacy continues to shape modern extension services, emphasizing community engagement and education, and inspiring Black minorities to pursue STEM-related disciplines (Atkins, 2013). Through its influence and innovative approach to education, the Jesup Wagon remains a symbol of progress and empowerment for Black communities across the United States (Williams, 2022).

Conclusions and Recommendations

After examining the impact of the Jesup Wagon, the researcher recommends that extension agents implement programs highlighting the heritage and contributions of Blacks. Leveraging history can be a meaningful approach to recruiting, retaining, and empowering Black youth in agriculture. Initiatives should spotlight the narratives and experiences of Black community leaders, educators, and professionals, while actively involving youth in projects designed to document and preserve local Black history. Additionally, these programs and initiatives should provide hands-on experiences, mentorship opportunities, and interactive workshops to help youth gain a practical understanding of their true potential. By taking deliberate and inclusive steps, extension agents can create programs acknowledging the valuable contributions of Black individuals both past and present, and ignite a profound sense of cultural identity that inspires Black youth to take the lead in carrying forth their legacies of excellence and resilience. Furthermore, it is important to also recognize the impact of the Jesup Wagon traveling to the communities. As agents consider their outreach efforts, consideration should be given to traveling and working within the communities of the individuals they are trying to reach.

References

Akins, A. M. (2013). An introduction to STEM courses and careers through a brief historical narrative of the Tuskegee movable school. *Black History Bulletin, 76*(1), 20–25. https://doi.org/10.1353/bhb.2013.0004

James, F. (1971). The Tuskegee Institute Movable School, 1906-1923. *Agricultural History (45*)3, 201-209.

Jones, A. W. (1975). The role of Tuskegee Institute in the education of Black farmers. *The Journal of Negro History, 60*(2), 252–267. https://doi.org/10.2307/2717374

Jones, A. W. (1979). Thomas M. Campbell: Black Agricultural Leader of the New South. *Agricultural History, 53*(1), 42–59.

Mayberry, B. D. (1991). The Tuskegee Movable School: A unique contribution to national and international agriculture and rural development. *Agricultural History, 65*(2), 85-104.

Moore, G. (2019, April 5). *Booker T. Washington and the NFA.* The Friday Footnote. https://footnote.wordpress.ncsu.edu/2019/04/05/booker-t-washington-and-the-nfa-4-5-2019/

National Parks Service. (2000, April 7). *Legends of Tuskegee: George Washington Carver-Movable School*. https://www.nps.gov/museum/exhibits/tuskegee/gwcwagon.htm

North Carolina Agricultural and Technical State University. (2023). *A rich history*. https://www.ncat.edu/caes/cooperative-extension/history.php

Tuskegee University Archives Repository. (2021, February 8). *Jesup Agricultural Wagon.* http://archive.tuskegee.edu/repository/jesup-wagon/

USDA. (2009, September). Jesup Agricultural Wagon Information. https://folklife-media.si.edu/docs/festival/2012/Jesup_Agricultural_Wagon_Information.pdf

Williams, W. (2022, November 17). *The Jesup Wagon: Rooted in history, still used today*. Alabama Cooperative Extension System. https://www.aces.edu/blog/topics/business-community-urban/the-jesup-wagon-rooted-in-history-still-used-today/

"Where have all the young men gone?" Exploring the AAAE National Supply and Demand Dataset

Amy R. Smith
Associate Professor and Program Leader
University of Minnesota
146 Ruttan Hall
St. Paul, MN 55108
(612) 624-6590
arsmith@umn.edu

Daniel Foster
Associate Professor
The Pennsylvania State University
212 Ferguson Building
University Park, PA 16802
(814) 863-0192
foster@psu.edu

Rebecca Lawver
Department Head & Professor
Applied Sciences, Technology and Education
Utah State University
1498 N 800 E | ASTE 101C
UMC 2300
Logan, UT 84321
(435) 797-1254
rebecca.lawver@usu.edu

Michael Spiess
Professor Emeritus
California State University, Chico
College of Agriculture
Chico, CA 95929-0310
(530) 521-6866
mspiess@csuchico.edu

"Where have all the young men gone?"
Exploring the AAAE National Supply and Demand Dataset

Introduction

The National FFA (2023) reports more than 43% of membership is female, 49.8% is male, .6% nonbinary, and 6.4% undisclosed. Such numbers suggest that FFA members, who are a critical component of school-based agricultural education (SBAE) programs, are more likely to be male. Research (Anderson & Paulsen, 2023: Sansone, 2017; Saucier & McKim, 2011; McKim, et al, 2018) supports the notion that gender is not evenly distributed among subject areas of SBAE. Relative to gender, enrollment in some SBAE content areas reflects broader trends in education and the workforce, with varying participation rates across disciplines. One study (Anderson & Paulsen, 2023) revealed that gender may influence self-efficacy, which in turn affects the perceived competence to teach certain subjects, such as agricultural mechanics. Sansone (2017) found that gender also impacts STEM instruction. However, he found teacher beliefs mattered more than teacher gender, suggesting awareness of gender trends is important.

A case study in California showed that while gender parity of the SBAE teaching population occurred in 2011 (Spiess, 2016), the number of female teachers has continued to increase, to approximately 65% of the SBAE workforce at present (AET, 2023). In fact, 75% of program completers (PC) reported by California agricultural education teacher preparation programs in 2023 were female (Foster et. al. 2024). Spiess (2016) found significant gender differences relative to teacher attrition between 6-10 years teaching, presenting the possible implication that as the gender ratio of teachers changes, the attrition rate would also change. However, Sorensen, McKim and Velez (2016) found no significant difference between genders when examining attrition related to family factors. Given that attrition rates impact teacher demand, understanding related gender trends is important to predicting, and preparing for, future teacher demand.

Conceptual Framework

The conceptual framework for the National Supply and Demand (NSD) study (adapted from Lyndsey et al., 2009) identifies factors contributing to SBAE teacher supply and demand. This research explores the effects of the supply side of the model provided by license ready program completers (PC) and the effect of teacher attrition on the demand side. This analysis sought to answer the following questions: 1) What is the national gender trend for program completers?; 2) What is the national gender trend for practicing teachers?; and 3) What is the national trend for teacher attrition rates, and are rates correlated with gender changes?

Methods

The NSD study utilizes a census survey of agricultural education state staff and faculty contacts at agricultural education teacher preparation programs. The NSD study collects gender data on both SBAE teachers and PCs. Response rates for state staff, providing demand data, average 90% and 88% for teacher preparation programs, providing supply data (Foster et. al. 2024). This analysis examined gender data for both SBAE teachers and PCs from 2015 to 2023. Since response rates vary, data were normalized and reported as percentages. Due to the binary nature of the data (male and female), one group is a mirror of the other. Female gender was used in the analysis. Attrition was calculated as the number of teachers leaving per 1000 total teachers. Nonbinary gender data was excluded since reported teachers and PCs were <0.06% of

the totals. Regression analysis was used to examine the trend of female teachers, female PCs, and attrition rates. A correlation analysis was used to examine the relationship between female teachers and teacher attrition rates. Data analysis was performed using Microsoft Excel.

Results

The trend for PCs is clearly flattening at about 75% female (Table 1). The trend for SBAE teachers shows a steady increasing percentage of female teachers, which is likely to continue for some time. Gender parity was reached in 2020. The difference between the two groups is narrowing. Attrition rates are variable and non-linear over the study period. Attrition rates have been increasing over the past 5 years. The correlation between female SBAE teachers and the attrition rate over the last 5 years was 0.79 (P>.05) suggesting that other factors may be important.

Table 1 (abbreviated)

	Teachers		Program Completers			
Year	% Female	% Male	% Female	% Male	Difference	Attrition Rate
2015	41%	59%	67%	33%	26%	7.7%
2017	45%	55%	69%	31%	24%	5.6%
2019	48%	52%	74%	26%	26%	4.3%
2021	52%	48%	76%	24%	24%	6.5%
2023	53%	47%	80%	20%	26%	10.8%
Slope	0.019	-0.019	0.0146	-0.0146		0.0198
R^2	0.97	0.97	0.83	0.83		0.88**
2025*	58%	42%	82%	18%		23%

* Linear projection. ** Last 5 years.

Conclusions/Implications

Data indicates the PC gender gap is continuing to increase. Linear projection (trend) estimates that female PCs will grow to 82% by 2025. Could this be modified by actively recruiting more men into teacher preparation programs? Given that many SBAE teachers have prior FFA experience, and more than half of FFA members are male, we must seek to understand and address factors that may prevent male FFA members from considering agricultural education as a career. Female SBAE teacher numbers continue to climb as well. Linear projection estimates that female SBAE teachers will comprise 58% of the workforce by 2025. There are many causes for attrition, including leaving teaching for industry and retiring. The correlation coefficient of .41 is not strong. Some factors, such as retirement, are not expected to be gender neutral as older teachers are more likely to be male. Additionally, the study period does include COVID-19 years which have an unknown effect on attrition and PC numbers. On average, 74% of PCs enter SBAE (Foster et.al., 2024), however it is unknown if there is a gender difference in this rate. PCs make up an average of 55% of new hires between 2014-2023; little is known about the remaining 45%, but it should not be assumed that this group of is gender balanced. Additional research should explore the demographics of non-PCs. Sansone's observation suggests that teacher beliefs about gender are important. While teacher preparation programs cannot change student gender, programs can address students' beliefs. Little is known about the impact of teacher gender on the desire to teach specific subject areas (e.g. animal science) or interest in SAE. The rapidly changing gender demographic could have profound implications for delivery of SBAE.

References

AET (Agricultural Experience Tracker) (2023). *California Agricultural Teacher Data*. https://theAET.com.

Anderson, R. & Paulsen, T. H. (2023). School-Based Agricultural Education Teachers' Importance to Teach Agricultural Mechanics: A Gender Comparison, *The CTE Journal, 11(*2). ISSN 2327-0160

Foster, D. D., Smith, A. R., Lawver, R. G., & Spiess, M. (2024). *National Agricultural Education Supply and Demand Project [data set]*. American Association for Agricultural Education. Retrieved from: http://aaae.agedweb.org/nsd.

Lindsay, J. J., Wan, Y., & Gossin-Wilson, W. (2009). *Methodologies used by Midwest Region states for studying teacher supply and demand* (Issues & Answers Report, REL 2008–No. 080). Washington, DC: U.S. Department of Education, Institute of Education Sciences,. Retrieved from http://www.eric.ed.gov/?id=ED506631

McKim, A. J., Velez, J. J., & Sorensen, T. J. (2018). A National Analysis of School-Based Agricultural Education Involvement, Graduation, STEM Achievement, and Income. Journal of Agricultural Education, 59(1), 72-73 https://doi.org/10.5032/jae.2018.01070

National FFA (2023). *Membership in National FFA Organization Reaches All-Time High*. https://www.ffa.org/press-releases/national-ffa-announces-record-membership-numbers/

Sansone, D. (2017) Why does teacher gender matter? *Economics of Education Review, 61*, 9-18. https://doi.org/10.1016/j.econedurev.2017.09.004.

Saucier, P. R., & McKim, B. R. (2011). Assessing the Learning Needs of Student Teachers in Texas regarding Management of the Agricultural Mechanics Laboratory: Implications for the Professional Development of Early Career Teachers in Agricultural Education. *Journal of Agricultural Education, 52(*4), 24-43. https://doi/10.5032/jae.2011.04024

Sorensen, T. J., McKim, A. J., & Velez, J. J. (2016). Why Agriculture Teachers Leave: A National Examination of Turnover Intentions and Work-Family Conflict. *Journal of Agricultural Education, 57*(4), 186–201. https://doi.org/10.5032/jae.2016.04186

Spiess. M. (2016). *Gender and Teacher Movement*. American Association for Agricultural Education, Kansas City, MO.

Addressing Professional Development Needs of Middle School-Based Agricultural Education Teachers Through CASE AgXplore Training

Chaney Mosley, Ph.D.
Chaney.mosley@mtsu.edu
615-904-8037
Middle Tennessee State University
Box 5
Murfreesboro, TN 37132

Kevin Ragland, Ph.D.
Kevin.ragland@mtsu.edu
615-904-8405
Middle Tennessee State University
Box 5
Murfreesboro, TN 37132

Ying Jin, Ph.D.
Jin4yx@jmu.edu
540-568-5394
James Madison University
MSC 6913
395 South High Street
Harrisonburg, VA 22807

Addressing Professional Development Needs of Middle School-Based Agricultural Education Teachers Through CASE AgXplore Training

Introduction

In 1992, middle schools across the United States offered agricultural education programs serving 52,968 students (Rossetti, 1992). Nearly 30 years later, that number more than doubled. Around 2020, 442 teachers exclusively taught middle school agricultural education courses to 107,856 students (Jones et al., 2020). Jones et al. (2020) recommended a high-quality teacher is needed at the middle school level to enhance middle school agricultural education programs. Teaching agriculture at the middle school level is markedly different than teaching high school (Talbert et al., 2007). Because middle school is a critical time for youth development, curriculum and instruction should be developed differently than approaches taken in elementary and high school (Golden et al., 2014). Where middle school agricultural education is concerned, there is a serious need for curriculum support (Rayfield & Croom, 2010). The Curriculum for Agricultural Science Education (CASE) worked to address the curricular needs through the AgXplore (AgX) Middle School curriculum materials training (CASE, n.d.). The purpose of this study was to explore middle school-based agricultural education teachers (MSTs) familiarity with agricultural topics, pedagogical content knowledge, and self-efficacy before and after participating in the AgX training. The research questions were: (RQ1) how does MST familiarity with agricultural topics differ before and after attending AgX training; (RQ2) how does MST pedagogical content knowledge differ before and after attending AgX training; and, (RQ3) how does MST self-efficacy differ before and after attending AgX training?

Theoretical Framework

This study is grounded in Bandura's Social Cognitive Theory (SCT), with a specific emphasis on the concept of self-efficacy. According to SCT, an individual's self-efficacy, or belief in their ability to succeed in specific situations, significantly influences their behavior and motivation in social contexts (Bandura, 1986). This research examines the relationship between MSTs' self-efficacy and their exposure to agricultural topics, pedagogical content knowledge enhancement, and professional development experiences. The researchers posit that AgX training enhances self-efficacy through mastery and vicarious experiences, thereby improving teaching effectiveness. By applying SCT theory, the researchers aim to illustrate how teacher professional development, like CASE AgX, plays a pivotal role in enhancing teachers' self-efficacy, highlighting the significance of such training in bolstering educators' confidence and capabilities in the classroom (Bandura, 1986).

Methodology

The population was MSTs attending an AgX training in January 2024 ($N = 20$). A questionnaire was designed based on agricultural content topics addressed in AgX curriculum and pedagogical strategies as well as dimensions of self-efficacy (items adapted from Sonmark et al., 2017) including motivational and instructional strategies, classroom management, and educational outcomes. Face and content validity were evaluated by a panel of experts ($N = 3$) experts in agriculture and STEM education with revisions made based on expert panel feedback. The survey, delivered before and after AgX, had three sections: familiarity with agricultural topics, pedagogical content knowledge, and self-efficacy. The Cronbach’s alpha reliability coefficients for familiarity with agricultural topics were .93 (pre-) and .98 (post-); for pedagogical content

knowledge were .94 (pre-) and .98 (post-); and, for self-efficacy were .93 (pre-) and .94 (post-). Convenience sampling, in which all members of the target population are easily accessible, geographically proximate, available at a given time, or willing to participate (Etikan et al., 2016) was used and 20 MSTs (100%) completed the questionnaire. Most respondents were White (100%), female (75%), currently teaching at a middle school (95%) with an average of 8 years total teaching and an average of two years teaching at the middle school level. Data were analyzed by calculating standard descriptive statistics and conducting paired samples *t*-tests.

Results

RQ1. The comparison between the pre- ($M = 66.06$, $SD = 12.34$) and post-training ($M = 80.13$, $SD = 14.87$) data demonstrated a significant impact of the AgX training on teachers' content knowledge ($t(19)=2.35$, $p<0.05$) with a medium effect size (Cohen's $d = 0.53$)

RQ2. The comparison between the pre- ($M = 62.13$, $SD = 11.66$) and post-training ($M = 73.94$, $SD = 13.02$) data demonstrated a significant impact of the AgX training on teachers' pedagogical knowledge ($t(19)=2.66$, $p<0.05$) with a medium effect size (Cohen's $d = 0.60$).

RQ3. The comparison between the pre- ($M = 71.88$, $SD = 9.29$) and post-training ($M = 82.06$, $SD = 8.50$) data demonstrated a significant impact of the AgX training on teachers' self-efficacy ($t(19)=3.56$, $p<0.05$) with a large effect size (Cohen's $d = 0.80$).

Conclusions

The results of the *t*-tests reveal statistically significant improvements in familiarity with content knowledge, pedagogical content knowledge, and teacher self-efficacy after completing CASE AgX training, with all *p*-values being less than 0.05. The effect size, as measured by Cohen's *d*, indicates a moderate effect for both familiarity with content knowledge ($d = 0.53$) and pedagogical content knowledge ($d = 0.60$), suggesting noticeable improvements in these areas. The effect on teacher self-efficacy is particularly strong ($d = 0.80$), highlighting a substantial increase in teachers' beliefs in their abilities to motivate and educate students effectively. Therefore, we conclude that attending AgX had a meaningful impact on enhancing teachers' knowledge and confidence in teaching middle school agriculture. These results align with a study by Velez et al. (2013) revealing CASE training has been shown to improve teachers' personal science teaching efficacy.

Implications

The study's findings highlight the value of professional development programs aiming to enhance teachers' content knowledge, pedagogical skills, and self-efficacy. Educational institutions should prioritize such training to improve teacher effectiveness. Because this study only involved one cohort of AgX trainees, future research should replicate this study with other cohorts. Investigating before and after differences in more demographically diverse cohorts would enhance understanding of the AgX intervention. A follow-up study with this cohort should investigate implementation of AgX and a longitudinal study is recommended to assess the long-term impacts on teacher development. Englin (2023) reported middle school agriculture teachers are concerned about their ability to effectively teach middle school students. Results of the current study suggest AgX may be a viable approach for addressing those concerns; however, these findings are not generalizable to a larger population, as sampling is a limitation.

References

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory.

Curriculum for Agricultural Science Education. (n.d.). *AgXplore Middle School (AgX)*. Retrieved August 28, 2022, from https://www.case4learning.org/curriculum/agxplore-middle-school-agx/
Englewood Cliffs, NJ: Prentice Hall.

Englin, J. P. (2023). *Advancements in middle school agricultural education: An examination of emerging trends and exemplary programs* [Master's thesis, Louisiana State University and Agricultural and Mechanical College]. LSU Scholarly Repository.

Etikan, İ., Musa, S., & Alkassim, R. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11

Golden, M. E., Parr, B., & Peake, J. (2014). An assessment of the needs of middle school agricultural education instructors in Georgia. *Journal of Agricultural Education, 55*(5), 222-234. https://doi.org/10.5032/jae.2014.05222

Hainline, M.S., Ulmer, J., & Carraway, C. (2016, February 7-9). *School board members' and administrators' perceptions of the CASE curriculum* [Poster Presentation]. Southern Region Conference of AAAE, San Antonio, Texas, United States. http://www.aaaeonline.org/resources/Documents/Southern%20Region/2016%20Poster%20Session%20Proceedings.pdf#page=143

Jones, S., Doss, W., & Rayfield, J. (2020). Examining the status of middle school agricultural education programs in the United States. *Journal of Agricultural Education*, *61*(2), 41-56. https://doi.org/10.5032/jae.2020.02041

Rossetti, R. (1992). *A nationwide examination of middle school enrollment in agricultural education and membership in the national FFA organization.* The Ohio State University.

Sonmark, K., Révai, N., Gottschalk, F., Deligiannidi, K., & Burns, T. (2017). Understanding Teachers' Pedagogical Knowledge: Report on an International Pilot Study. OECD Education Working Papers, No. 159. In *OECD Publishing*. https://doi-org.ezproxy.mtsu.edu/10.1787/43332ebd-en

Talbert, B. A., Vaughn, R., Croom, D. B., & Lee, J. S. (2007). *Foundations of agricultural education.* Danville, IL.

An Analysis of Professional Development Impact on Teacher Confidence in Turfgrass Science

Clarissa Darby
Texas Tech University
806.834.3286
cladarby@ttu.edu

Joey Young
Texas Tech University
Department of Plant and Soil Science
806.834.8457
joey.young@ttu.edu

Erica Irlbeck
Texas Tech University
806.834.6708
erica.irlbeck@ttu.edu

Rudy Ritz
Texas Tech University
806.834.4807
rritz@ttu.edu

Department of Agricultural Education & Communications
Box 42131
Lubbock, TX 79409-2131
806.742.2816

Introduction

The demand for teachers in career and technical education (CTE) to incorporate science, technology, engineering, and math (STEM) within their curriculum has increased in recent years (Asunda, 2014). Often, agricultural science teachers face challenges developing curriculum and effectively integrating STEM into their programs (Smith et al., 2015). Agricultural science teachers have a unique opportunity to construct learning opportunities for students in the laboratory and classroom settings. Professional development has led to improved teaching practices and student outcomes by promoting integration of quality knowledge and utilizing rigorous standards (Drape et al., 2016). Professional development has also been reported to increase teacher efficacy in terms of knowledge, skill acquisition, and post-training performance which increases the likelihood that teachers will incorporate their new knowledge into their courses (Bray-Clark & Bates, 2003). The purpose of the study was to determine the effectiveness of a professional development workshop in teaching efficacy and intent to implement turfgrass curriculum. The objective of the study is to describe and analyze levels of perceived efficacy and intent to implement content before and following the workshop.

Theoretical Framework

The theoretical framework for this study is Ajzen's Theory of Planned Behavior. This theory is guided by attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). An individual's attitude toward the behavior includes their beliefs about the consequence of the behavior. If an individual perceives a positive outcome, they are likely to engage in that behavior (Ajzen, 2006). Subjective norms refer to the social pressure one receives from others to either perform or not perform the behavior. If an individual feels strong about these pressures, they will follow them. Subjective norms can be influenced by opinions of others, social norms, and a range of other factors (Ajzen, 2002). Perceived behavioral control is the last factor in the Theory of Planned Behavior in which considers an individual's perceived ability to perform a behavior (Ajzen, 2006). Resources, environmental constraints, and personal competence can influence behavior control. Providing individuals with resources and preparing them with essential skills can increase perceived behavior control and they are more likely to engage in the behavior (Ajzen, 2006).

Methods

Agricultural science teachers from around the state were invited to attend a one-day professional development course hosted by Texas Tech University and Texas A&M University. Thirty participants engaged in lecture and lab portions of turfgrass science topics such as career paths, hands-on stations, and turfgrass technology and research. Teachers also toured Texas A&M University's ballpark and a grow facility. Participants completed a pre and post survey using Qualtrics that consisted of Likert-type scale questions (1 = strongly agree, 5 = strongly disagree). The data was entered into IBM SPSS Statistics and analyzed for means and standard deviations. This data is a subset of a larger study.

Results

Table 1 outlines the responses of the pre-survey and the post-survey that followed the completion of the professional development event. The statement with the highest mean in the pre-survey results was "I am confident in teaching a ½ credit turfgrass management unit" (*M = 3.26, SD = 1.17*), and the statement with the lowest mean was "I plan to utilize the iCEV curriculum" (*M = 1.96, SD = 0.74).* After the participation in the professional development, the same statement with the highest mean was "I plan to develop my own learning modules" (*M = 2.32, SD = 1.01*), and the statement with the lowest mean was "I plan to utilize the iCEV curriculum" (*M = 1.44, SD = 0.57*). The overall mean deceased from the pre to the post-survey.

Table 1

Analysis of Pre and Post Instrumentation Responses (N = 30)

Statement	Pre- Survey Response		Post- Survey Response	
	M	*SD*	*M*	*SD*
I am confident in teaching a ½ credit turfgrass mgmt. unit	3.26	1.17	1.80	0.69
I plan to implement turfgrass mgmt.	2.48	0.92	2.12	0.86
I plan to incorporate turfgrass mgmt. into an existing course	2.41	1.06	1.88	0.65
I have students with an interest in learning about turfgrass	2.26	0.07	2.08	0.63
I plan to utilize the iCEV curriculum	1.96	0.74	1.44	0.57
I plan to develop my own learning modules	2.89	0.92	2.32	1.01
Overall	2.54	0.81	1.94	0.74

Conclusions/Implications/Recommendations

It can be concluded that teachers are more confident in teaching a turfgrass management course after receiving professional development. Teachers are also more likely to implement turfgrass management into their programs, and perhaps even implement the content into a course that they are currently teaching. Teachers are more likely to use curriculum that has already been created, but still agree that they feel more confident to make their own modules. This aligns with the results from Bray-Clark & Bates (2003) that found professional development is needed to increase confidence and implementation of subjects. This data also aligns with the Theory of Planned Behavior, as the teachers became more exposed to curriculum their confidence increased, and they stated they are more likely to perform in the classroom. Professional development should be offered and implemented more to increase teacher confidence and further integrate STEM education. Paulsen et al. (2014) states that workshops have the potential to change in-service teacher behavior, but for long- term results, ongoing support is needed to maintain confidence. Therefore, workshops such as this should be offered more than once a year and conducting a longitudinal study could determine the effectiveness of this professional development event. More workshop events should be implemented and measured to gain a more complete picture of their confidence in creating their own modules to teach the content.

References

Asunda, P. A. (2014). A conceptual framework for STEM integration into curriculum through career and technical education. *Journal of STEM Teacher Education*, *49*(1), 4.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211. https://doi.org/10.1016/0749- 5978(91)90020-T

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior. *Journal of Applied Social Psychology*, *32*(4), 665- 683. https://doi.org/10.1111/j.1559-1816.2002.tb00236.x

Ajzen, I. (2006). Behavioral interventions based on the theory of planned behavior. In P. Norman, C. Abraham, & M. Conner (Eds.), *Understanding and changing health behaviour: From health beliefs to self-regulation* (pp. 111-137). Elsevier.

Bray-Clark, N., & Bates, R. (2003). Self-efficacy beliefs and teacher effectiveness: Implications for professional development. *Professional Educator*, *26*(1), 13-22.

Drape, T. A., Lopez, M., & Radford, D. (2016). Teacher efficacy and professional development needs of mid-career agriculture educators integrating the Next Generation Science Standards and other content areas. *Career and Technical Education Research, 41*(1), 33-48.

Paulsen, T. H., Han, G., Humke, S. J., & Ohde, N. (2014). Teacher self-efficacy as a result of an agriculture-based renewable energy professional development workshop. *J. Agric. Syst. Technol. Manag*, *25*, 44-60.

Smith, K. L., Rayfield, J., & McKim, B. R. (2015). Effective practices in STEM integration: describing teacher perceptions and instructional method use. *Journal of Agricultural Education*, *56*(4), 182-201. https://doi.org/10.5032/jae.2015.04183

An Analysis of the Time Allocation of Student Teachers in Each Circle of the Three-Circle Model of Agricultural Education

Krysti Kelley, M.S.
Graduate Student
Department of Agricultural Education and Communications
Texas Tech University
krystkel@ttu.edu
(806)742-2816

John Rayfield, Ph.D.
Professor
Department of Agricultural Education and Communications
Texas Tech University
John.Rayfield@ttu.edu
(806)834-1956

Texas Tech University
Box 42123
Lubbock, TX 79409-2131

An Analysis of the Time Allocation of Student Teachers in Each Circle of the Three-Circle Model of Agricultural Education

Introduction

Many studies have explored the factors that lead to the recruitment and retention of agricultural science teachers and have found that both external and internal motivations draw and keep these educators in the classroom (Borman & Dowling, 2008; Cano & Miller, 1992; Crutchfield, et al., 2013). These motivations include job satisfaction and efficacy. A strong link between time spent perfecting the craft of teaching and coaching and these factors have been identified (Rocca & Washburn, 2006). This is achieved through a capstone experience also known as their student teaching practicum and is crucial to their growth as a teacher (Edwards & Briers, 2001). Within agricultural education, teachers must be able to facilitate student experiences in the three circles of the agricultural education model: classroom, FFA, and SAE. Studies have explored the use of time within the student teaching experience but have not evaluated the balance of time spent in each of the three circles (Coleman, et al., 2021).

Theoretical Framework

This study is guided by Bandura's (1997) Model Sources of Efficacy Information. Bandura asserted that people succeed if they are confident in their abilities. Confidence is created through experience and leads to improved performance (Bandura, 1994). Bandura (1977) identified four sources of efficacy: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. This study concentrates on the performance accomplishments and vicarious experiences sources. Performance accomplishments are formed during experiences and can lead to the raising or lowering of self-confidence in performing a task. Vicarious experiences which are inducted through live modeling and symbolic modeling allow for expectations to be gained through a person's previous experiences and the experiences of others.

Methodology

The purpose of this study was to determine the amount of time student teachers from Texas Tech University spent during their 17-week student teaching experience in each of the three circles of the agricultural education model. The following research objectives guided this study: determine the activities student teachers engage in during their student teaching experience and examine the balance of time spent in each of the three circles. This longitudinal census study involved the agricultural education preservice teachers (N=29) enrolled in their student teaching placement at Texas Tech University during 2021 and 2022. Eighty-three percent of participants were Caucasian, and seventeen percent were Hispanic. Most of the student teachers were female (79%). As student teachers completed their 17-week placement, they were asked to log their time daily by activity. Data was self-reported using a Microsoft Excel sheet to track their time spent. The time spent on each activity was totaled. Activities were categorized by the area of the three-circle model they fall into and each circle was summed. Total hours spent in all three circles was computed and percentages per circle were calculated.

Results/Findings

Preservice teachers spent the most time in classroom instruction (Σ=7047, 28.29%), SAE supervision (Σ=4239, 17.02%), and instruction preparation (Σ= 3110, 12.49%). They spent the least amount of time completing administrative duties (Σ= 87, 0.35%), laboratory preparation/maintenance (Σ= 382, 1.53%), and adult education (Σ= 486, 1.95%). Table 1 outlines the time spent by preservice teachers from the perspective of the three-circle model.

Table 1
Time Spent by Preservice Teachers in the Three Circles of the Agricultural Education Model

Category	Time Spent	%
Classroom	15639	62.79
FFA	5030	20.19
SAE	4239	17.02
Total (N=29)	24908	100.00%

When evaluating the data from the perspective of the three-circle model of agricultural education, the most time was spent immersing in classroom activities (Σ= 15639, 62.79%). Student teachers spent similar amounts of time in activities pertaining to the FFA (Σ=5030, 20.19%) and SAE (Σ=4239, 17.02%) circles of the model.

Conclusions/ Discussion/ Implications

The results of this study have three major implications. First, the amount of time student teachers are engaging in the classroom circle is important to their preparation. Often, student teachers come with a plethora of experiences in SAE and FFA but lack efficacy and competence in the classroom (Miller & Wilson, 2010). Student teachers in this study spent more time instructing courses than any other activity. Bandura's theory (1977) found that efficacy can be attained through performance accomplishments. The extended time student teachers are spending on instruction allows them more opportunities for success and hopefully increases their efficacy. The second implication is that more time should be spent in conferences with their cooperating teachers. This study found that only 3.32% of their student teaching experience consisted of this feedback time. Miller and Wilson (2010) expressed the importance of the cooperating teacher guidance and evaluation to student-teacher development. The third implication is the need to intentionally create opportunities for uncommon activities. Many student teachers had little to no time to engage in administrative duties or adult education which could lead to a lack of self-confidence in these career-related activities (Bandura, 1977).

Based on the results of this study, universities need to be intentional in ensuring that student teachers can participate in activities that reflect all three circles of the agricultural education model. Cooperating teachers need to be made aware of specific expectations so that student teachers receive a holistic experience. Universities should also monitor time to find deficits and contact sites to ensure opportunities for engagement in the future. Further research should explore if the time spent in each of the three circles is reflective of the schedule of an agricultural educator. If student teaching is to prepare preservice teachers to run their program and classroom, the more accurate this experience is, the more influential it can be.

References

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84(2), 191–215. https://doi.org/10.1037/0033-295x84.2.191

Bandura, A. (1994). Self-efficacy. In V.S. Ramachaudran (Ed.), Encyclopedia of human behavior (Vol. 4, pp. 71–81). Academic Press.

Borman, G. D., & Dowling, N. M. (2008). Teacher Attrition and Retention: A Meta-Analytic and Narrative Review of the Research. Review of Educational Research, 78(3), 367-409. doi:310.3102/0034654308321455

Cano, J., & Miller, G. (1992). A gender analysis of job satisfaction, job satisfier factors, and job dissatisfier factors of agriculture education teachers. Journal of Agricultural Education, 33(3), 40-46. doi:10.5032/jae.1992.03040

Coleman, B., Ferand, N., Bunch, J. C., & Israel, G. (2021). Examining preservice teachers' performance during a 14-week student teaching experience: A longitudinal study. Journal of Agricultural Education, 62(3), 258-274.https://doi.org/10.5032/jae.2021.03258

Crutchfield, N., Ritz, R., & Burris, S. (2013). Why agricultural educators remain in the classroom. Journal of Agricultural Education, 54(2), 1-14. doi: 10.5032/jae.2013.02001

Edwards, M. C., & Briers, G. E. (2001). Cooperating teachers' perceptions of important elements of the student teaching experience: A focus group approach with quantitative follow-up. Journal of Agricultural Education, 42(3), 30–41. doi:10.5032/jae.2001.03030

Miller, G., & Wilson, E. B. (2010). Designing field-based and experiential education for preservice teachers in agriculture. In R. M. Torres, T. Kitchell, & A. L. Ball (Eds.), Preparing and advancing teachers in agricultural education (pp. 131–141). Curriculum Material Service, The Ohio State University

Rocca, S. J., & Washburn, S. G. (2006). Comparison of teacher efficacy among traditionally and alternatively certified agriculture teachers. Journal of Agricultural Education, 47(3), 58-69. doi:10.5032/jae.2006.03058

An Analysis of Time Spent in Activities During Student Teaching Before and During the COVID-19 Pandemic

Krysti Kelley, M.S.
Graduate Student
Department of Agricultural Education and Communications
Texas Tech University
krystkel@ttu.edu
(806)742-2816

John Rayfield, Ph.D.
Professor
Department of Agricultural Education and Communications
Texas Tech University
John.Rayfield@ttu.edu
(806)834-1956

Texas Tech University
Box 42123
Lubbock, TX 79409-2131

An Analysis of Time Spent in Activities During Student Teaching Before and During the COVID-19 Pandemic

Introduction

Agricultural education relies heavily on the student teaching experience to prepare preservice teachers for their future careers (Coleman, et al., 2021; Gates, 2018). During this time, the goal is to expose the student teacher to a variety of experiences in each of the circles of the three-circle model of agricultural education (Schreurs, 2020). Time spent in activities can increase not only the level of experience of preservice teacher but also increase their efficacy (Putman, 2012). The COVID-19 pandemic has changed the way many processes operate, including education (Salleh, et al., 2022). More than ever before, schools have had to shift resources including time and staff to manage the consequences of the pandemic. Research has yet to explore if this shift has impacted the opportunities available and time spent in activities by preservice teachers during student teaching in the years succeeding the pandemic.

Theoretical Framework

The framework for this investigation was shaped by Bandura's (1997) Model of Sources of Efficacy Information which found individuals are more likely to achieve success when they possess confidence in their abilities. Confidence is cultivated through varied experiences and correlates with enhanced performance (Bandura, 1994). Within his model, Bandura (1977) delineated four key sources of efficacy: mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states. Two types of experiences that directly impact preservice teachers engaging in their field experience are performance and vicarious experiences. Performance accomplishments arise from personal experiences and significantly impact one's self-assurance in task performance. Vicarious experiences, acquired through both live and symbolic modeling, allow individuals to formulate expectations based on their past encounters and those of others.

Methodology

This study aimed to explore if the COVID-19 pandemic impacted the opportunities and time spent in agricultural education activities for student teachers succeeding the pandemic. This study was guided by the following research question: When comparing 2017-2019 preservice teachers (pre-pandemic) to 2021-2023 preservice teachers (during the pandemic), what differences occurred in the time spent engaged in student teaching activities? This descriptive study employed a survey design that required student teachers (N= 105) at Texas Tech University to log their daily time spent in activities during their student teaching practicum. Preservice teachers utilized a Qualtrics instrument to self-report their time spent and results were compiled on a spreadsheet. Means and standard deviations were calculated for each activity. Preservice teachers in the 2017-2019 teaching blocks (n= 58) completed a 15-week experience and the 2021-2023 student teaching cohorts (n= 47) completed a 17-week experience.

Results/Findings

Table 1 outlines the average hours spent in activities related to student teaching by preservice teacher cohorts prior to the COVID-19 pandemic (the 2017-2019 cohorts) and during the pandemic (the 2021-2023 cohorts). The largest discrepancies occurred in the time spent engaging in the following activities: preparation for instruction (*M*=82.66, *SD*= 51.70; *M*= 108.59, *SD*= 42.01), classroom/laboratory teaching (*M*=188.49, *SD*= 69.21; *M*= 213.71, *SD*= 82.74), and CDE preparation (*M*=63.92, *SD*= 50.81; *M*= 89.94, *SD*= 65.17). Overall, the 2021-2023 cohorts spent more time engaged in activities (*M*=836.75, *SD*= 210.99) than the 2017-2019 cohorts (*M*=803.54, *SD*= 167.71).

Table 1

A Comparison of the Average Hours Spent Student Teaching Between the 2017-2019 and 2021-2023 Cohorts (N=105)

Time Category	2017-2019 Cohorts (n =58)		2021-2023 Cohorts (n =47)	
	M	*SD*	*M*	*SD*
Observing Coop. Teacher	79.15	54.06	66.06	49.11
Conference with Coop. Teacher	37.90	26.90	27.51	12.85
Preparation for Instruction	82.66	51.70	108.59	42.01
Classroom/Laboratory Teaching	188.49	69.21	213.71	82.74
Laboratory Prep/ Maintenance	22.02	23.89	14.22	8.19
Grading/Scoring Students' Work	33.42	20.75	31.75	14.20
Administrative Duties	10.33	19.70	5.20	12.18
Professional Activities	13.31	12.13	19.59	30.95
SAE Observations and Shows	141.33	125.56	149.49	152.91
Local FFA Activities	41.91	46.31	28.02	39.82
District, Area, State FFA Act.	80.43	75.50	61.06	78.58
CDE Preparation	63.92	50.81	89.94	65.17
Adult Education	8.67	22.41	18.63	32.12
Total Student Teaching Hours	803.54	167.71	836.75	210.99

Conclusions/ Discussions/ Implications

The results of this study found overall the time spent in student teaching activities was affected by the COVID-19 pandemic as only six of the reported 13 activities decreased for the cohorts succeeding the pandemic. This aligns with Salleh, et al., 2022, who found that the pandemic impacted the use of time and resources within schools. Even though time spent in activities was influenced, overall, time increased post the pandemic for categories such as preparation for instruction, classroom/laboratory teaching, and CDE preparation. This increase could lead to performance and vicarious experiences which could increase student teacher efficacy (Bandura, 1997). Differences found between time spent could also be influenced by the increased length of the student teaching experience for the 2021-2023 cohorts. Based on these results, university supervisors need to capitalize on opportunities to increase engagement with activities that decreased during the pandemic, such as local FFA activities and district, area, and state FFA activities. Further research should employ qualitative methods to delve deeper into the experiences of student teachers during the pandemic, particularly regarding the activities that increased or decreased in time. Understanding the underlying reasons for these shifts could inform strategies for future teacher education programs.

References

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84(2), 191–215. https://doi.org/10.1037/0033-295x84.2.191

Bandura, A. (1994). Self-efficacy. In V.S. Ramachaudran (Ed.), Encyclopedia of human behavior (Vol. 4, pp. 71–81). Academic Press.

Coleman, B., Ferand, N., Bunch, J. C., & Israel, G. (2021). Examining preservice teachers' performance during a 14-week student teaching experience: A longitudinal study. Journal of Agricultural Education, 62(3), 258-274.https://doi.org/10.5032/jae.2021.03258

Gates, H. R. (2018). *Preservice Agricultural Education Teachers and Secondary Education Teachers' Self-efficacy and Professional Identity*. University of Arkansas.

Putman, S. M. (2012). Investigating teacher efficacy: Comparing preservice and inservice teachers with different levels of experience. *Action in Teacher Education*, *34*(1), 26-40.

Salleh, F. I. M., Syukri, A., Nordin, L., Raidzuan, S. N. M., & Ahmad, R. (2022). The Covid-19 Pandemic Has Changed the Way of Learning: The Use of Online Learning (OL) for the Teaching of English at Tertiary Level.

Schreurs, J. C. (2020). Teachers' Perceptions of Experiential Learning in the 3-Circle Agricultural Education Model.

An Exploration of Perceptions Related to Farmers' Roles in Climate Change Issues

Sheriden Schuerman
200 Agricultural Administration
2120 Fyffe Road
Columbus, OH 43210
614-292-6909
schuerman.17@osu.edu

Dr. Cara Lawson
200 Agricultural Administration
2120 Fyffe Road
Columbus, OH 43210
614-292-6909
lawson.182@osu.edu

Dr. Laura Fischer
Box 42131
Lubbock, TX 79409
806-834-0630
laura.fischer@ttu.edu

Dr. Joy Rumble
1328 Dover Road
Halterman Hall 119B
Wooster, OH 44691
330-287-1368
rumble.6@osu.edu

Dr. Scott Scheer
200 Agricultural Administration
2120 Fyffe Road
Columbus, OH 43210
614-292-6909
scheer.9@osu.edu

Introduction

Climate change refers to variation in weather events and includes measures such as temperatures, precipitation amounts, and numbers or severity of storms (Dessler, 2021). Awareness and understanding of climate change, along with its causes and influences, has become of greater concern to individuals more recently due to increasing politicization, media coverage, and increased effects on individuals (Whitmarsh, 2018). The agriculture industry plays a role in climate change effects and has been found to contribute to approximately 11% of estimated U.S. greenhouse gas emissions (U.S.D.A., 2023) through practices associated with crop and livestock production (Balogh, 2020). Despite current challenges, it is possible for those involved in agriculture to enact mitigation strategies to address climate change issues (Lenka et al., 2015). Moving forward, it will be important for those in agriculture to make adaptations to reduce emissions (Castellano, 2018).

Some research has explored farmers' perceptions of climate change. Peterson-Rockney (2022) found farmers to perceive risk associated with climate change on various levels, including physical, policy, and social risks. In another study farmers indicated business pressures, like profitability and labor availability, were more critical issues than climate change impacts (Lane et al., 2018). At the same time, little is known about how those not involved in agriculture perceive farmers. In turn, there is also a lack of studies on the perceptions of farmers' roles in climate change impacts. Given the literature gaps, this study's purpose was to determine perceptions of farmers in the context of climate change issues.

Literature Review

Attribution theory guided this study as it allows for the investigation of causal interpretations applied by individuals to explain happenings within their environments (Weiner, 2010). Attribution theory centers on causes and is used to interpret outcomes or results through the justification of factors that may or may not be explainable (Weiner, 2010). However, assigning cause to the same outcomes or consequences tends to vary as individuals determine cause based in part on whether the individual involved with the outcome is a member of an in-group or out-group (Jang, 2013). Individuals are prone to favor the actors with whom they most identify (Jang, 2013). Attribution theory has been used to explore perceptions of climate change. One study found participants were more likely to attribute climate change to natural causes, rather than human causes in some cases, but not others (Jang, 2013). Additionally, Jang (2013) found placing emphasis on energy use in a message led to decreased belief in and attribution of human-made climate change. In another study, Ogunbode et al. (2019) found the attribution of extreme weather events to climate change to be influenced by participants' social and psychological contexts. In this study, attribution theory was used to determine and interpret differences in perceptions of farmers regarding their roles in climate change effects.

Methodology

Data analyzed in this study were collected as part of a larger study that aimed to explore climate risk perceptions of individuals living in the United States. Data were collected from November 7 – December 8, 2023 using a Qualtrics questionnaire. The population for this study was people living in the United States, 18-years and older. Participants were recruited by Qualtrics Research Services following quotas for gender, state, and community type, which were established based upon data from the U.S. Census Bureau. The study yielded 2,191 responses. To determine

participants' perceptions of farmers' roles in climate change a researcher-developed measure, based on a review of literature (Lane et al., 2018; Peterson-Rockney, 2022), was used. The measure was comprised of 22, Likert-type items. Participants rated their levels of disagreement or agreement for each item (*strongly disagree* = 1, *strongly agree* = 5). Reliability for the scale was assessed during the pilot test and found to be acceptable ($\alpha = .91$) and the measure was reviewed by a panel of experts to ensure validity. Data were exported from Qualtrics to SPSS for analysis, where inferential and descriptive statistics were used to address the research purpose. Negative items were reverse-coded.

Results

The first objective was to explore overall perceptions of farmers in regard to climate change. Participants presented mostly neutral responses to the items in the measure ($M = 3.62$, $SD = .62$). The item with the highest mean was "Famers deserve support in navigating the effects of climate change on their farms and ranches" ($M = 3.98$, SD = .98) and the item with the lowest overall mean was "Farmers believe in climate change less than many other groups" ($M = 3.08$, $SD = 1.24$). The second objective was to determine any differences in perceptions of farmers regarding climate change between regions. Assumptions were checked before proceeding with statistical tests. The assumption of homogeneity of variances was violated, as assessed by Levene's test ($p = .02$). As a result, the Welch's ANOVA was used and revealed a small, significant difference by region of perceptions of farmers' roles in climate change, Welch's $F(3, 1193.99) = 3.43$, $p < .05$, $\eta_p^2 = .01$. A Tukey post-hoc test revealed differences between perceptions in the West ($M = 3.70$, *S*D = .59) and Midwest ($M = 3.60$, $SD = .56$) regions.

Discussion

The purpose of this study was to begin to uncover perceptions about farmers' involvement in climate change effects. As those in agriculture seek mitigation strategies to adapt to climate change (Castellano, 2018; Lenka et al., 2015), an understanding of perceptions about farmers in this area will be key. The data suggest U.S. residents appear to hold a largely neutral stance on the issue. Across regions, only one significant, but small, difference in perceptions emerged, suggesting no region was partial to extreme opinion toward farmers' roles in climate change. Participants from the West had more positive perceptions of farmers on the climate change front than those in the Midwest. The variation in agricultural production between these regions may explain the slight difference in perception. Another explanation may lie in attribution differences as participants likely considered other factors related to climate change (Jang, 2013; Ogunbode et al., 2019; Weiner, 2010). As individuals are prone to favor those with whom they identify (Jang, 2013), future studies should seek to identify audience segments within a population and explore commonalities or differences between perceptions of farmers and ranchers. It is also possible that differences may exist between states. As agricultural communicators, the neutral perceptions that emerged from this study may present a unique opportunity to encourage greater understanding of both farmer and rancher roles in climate change to a population in a possible state of open-mindedness and neutrality. Future studies should strive to determine what message frames influence perceptions of and support for agriculturalists as they seek to navigate and mitigate the effects of climate change (Peterson-Rockney, 2022).

References

Balogh, J. M. (2020). The role of agriculture in climate change: a global perspective. *International Journal of Energy Economics and Policy, 10*(2), 401-408. https://www.econjournals.com/index.php/ijeep/article/download/8859/4912.

Castellano, R. L. S., & Moroney, J. (2018). Farming adaptations in the face of climate change. *Renewable Agriculture and Food Systems, 33*(3), 206–211. https://www.jstor.org/stable/26503249

Dessler, A. (2021). *Introduction to Modern Climate Change*. Cambridge University Press.

Jang, S. M. (2013). Framing responsibility in climate change discourse: Ethnocentric attribution bias, perceived causes, and policy attitudes. *Journal of Environmental Psychology, 36*, 27-36. https://doi.org/10.1016/j.jenvp.2013.07.003

Lane, D., Chatrchyan, A., Tobin, D., Thorn, K., Allred, S., & Radhakrishna, R. (2018). Climate change and agriculture in New York and Pennsylvania: Risk perceptions, vulnerability, and adaptation among farmers. *Renewable Food and Agriculture, 33*(3). 197-205. https://doi.org/10.1017/S1742170517000710

Lenka, S., Lenka, N. K., Sejian, V., & Mohanty, M. (2015). Contribution of agriculture sector to climate change. In V. Sejian et al. (Eds.), *Climate change impact on livestock*: *Adaptation and mitigation* (pp. 37-48). Springer.

Ogunbode, C. A., Demski, C., Capstick, S. B., & Sposato, R. G. (2019). Attribution matters: Revisiting the link between extreme weather experience and climate change mitigation responses. *Global Environmental Change, 54*, 31-39. https://doi.org/10.1016/j.gloenvcha.2018.11.005

Peterson-Rockney, M. (2022). Social risk perceptions of climate change: A case study of farmers and agricultural advisors in northern California. *Global Environmental Change, 75*. https://doi.org/10.1016/j.gloenvcha.2022.102557

U.S. Department of Agriculture. (2023). *Climate change*. Economic Research Service. https://www.ers.usda.gov/topics/natural-resources-environment/climate-change/#:~:text=U.S.%20agriculture%20emitted%20an%20estimated,carbon%20dioxide%20(EPA%202023).

Weiner, B. (2010). Attribution theory. *International Encyclopedia of Education*, *6*. 558-563. https://doi.org/10.1002/9780470479216.corpsy0098

Whitmarsh, L., & Capstick, S. (2018). Perceptions of climate change. In S. Clayton & C. Manning (Eds.), *Psychology and Climate Change: Human Perceptions, Impacts, and Responses* (pp. 13-33). Academic Press.

An Interpretive Thematic Synthesis of Literature on the Implementation of Experiential Learning in Agricultural Education

Mathew Smith, ABD
smit4488@purdue.edu

Neil Knobloch, PhD
nknobloc@purdue.edu

Agricultural Sciences Education and Communication
Purdue University
915 West State Street
West Lafayette, Indiana, 47907
(765)494-8423

An Interpretive Thematic Synthesis of Literature on the Implementation of Experiential Learning in Agricultural Education

Introduction

Experiential learning has long been seen as an established and integrated practice in agricultural education. Still, there is an inadequate amount of evidence-based support for using experiential learning within agricultural education, as well as evidence that agricultural educators may not understand the experiential learning cycle (Baker et al., 2014; Baker & Robinson, 2016). Several researchers have studied agricultural educators' program implementation of supervised agricultural experiences (SAE) (Rank & Retallick, 2017), career development events (CDE) (Ewing, 2014), or the use of specific pedagogical strategies and methods (Mazurkewicz et al., 2012) as a focus to study agricultural educators use of experiential learning. Additionally, several authors have discussed models for implementation in agricultural education (Baker et al., 2012; Estepp & Norton, 2023; Knobloch, 2003; Roberts, 2006), but few authors have directly discussed agricultural educators current understanding and implementation of experiential learning (Shoulder & Myers, 2013; Smith & Rayfield, 2019). The purpose of this study was to synthesize current research findings regarding agricultural teachers' understanding and implementation of experiential learning within secondary and post-secondary institutions.

Research Questions

1. What does the literature from 2000-2023 state regarding agricultural educators' knowledge and understanding of the experiential learning model?
2. What does the literature currently state regarding agricultural educators' current implementation of the experiential learning model?

Conceptual Framework

Using a cognitive constructivist theoretical perspective, this study utilized Kolb's (1984) model of experiential learning, which specifically utilized the framework presented by Baker et al. (2012) (Roberts, 2006). The model makes it clear that embedded within each section of the three-circle model (Classroom/Laboratory Instruction, Leadership Development, and SAE) the experiential learning cycle is present and is purposefully planned to align with cognitive constructivist tenets. Kolb's (1984) model of experiential learning contains four distinct components of the experiential process that do not inherently follow a linear process: concrete experience (Direct Interaction: observed or through interaction), reflective observation (grasping information through apprehension), abstract conceptualization (grasping information through comprehension), and active experimentation (testing general rules or hypotheses through interaction with the phenomenon) (Roberts, 2006). Two processes were made clear in Kolb's (1984) model of experiential learning: grasping information via reflection and transforming information through intent and interaction (Roberts, 2006).

Methods

This study utilized a thematic synthesis of literature to gain an understanding of agricultural educators' knowledge of experiential learning and current practices so that recommendations for current and future agricultural educators may be made (Thomas & Harden, 2008). Thematic synthesis consists of three stages: line-by-line coding of the articles, iterative development of codes, and the development of analytical themes. Articles were found using Google Scholar, The Journal of Agricultural Education, The Journal of Agricultural Education and Extension, The Journal of Career and Technical Education, North American Colleges and Teachers of Agriculture (NACTA), conference proceedings from the American Association of Agricultural Educators (AAAE), and articles published within the Agricultural Education

Magazine (AEM). Search terms included experiential learning, reflection, SAE, experience, and hands-on. The inclusion criteria for the articles were a direct connection to school-based agricultural education (SBAE) and that the analysis or commentary must focus on experiential learning within SBAE. This allowed the use of articles focused on secondary or post-secondary samples to be included in the study, as well as incorporating articles that focused on any component of the three-circle model of agricultural education (classroom/laboratory instruction, SAEs, and The National FFA Organization/leadership development).

Results and Conclusions

Of the 29 articles identified in the search, several themes were established to inform researchers of current experiential learning practices found throughout the literature, which include both issues and recommendations. The most prevalent theme throughout the literature review was the fact that agricultural educators may not properly utilize the experiential learning model as defined by Kolb (1984) (Arnold et al., 2006; Shoulder & Myers, 2013). The implication that agricultural education has been seen as inherently hands-on is evident, yet the consistent echo that an activity that is hands-on or experience-based does not equate to experiential learning must be noted (Knobloch, 2003). Second, regarding the experiential learning cycle as defined by Kolb (1984), agriculture teachers' use of reflection seems to be a commonly underused component of the experiential learning cycle (Arnold et al., 2006; Mazurkewicz et al., 2012; Shoulder & Myers, 2013). It is clear from the literature that many agricultural educators use hands-on activities and lessons but do not purposefully design moments for reflection within the lessons (Ewing et al., 2014). This is surprising because much of the literature espouses designing moments of purposeful reflection (Baker et al., 2012; Rank & Retallick, 2017), the need for understanding reflection type (apprehension and comprehension), and its impact on the experiential learning cycle and the students overall understanding (Baker at el., 2014; DiBenedetto, 2017; Smith & Rayfield, 2019). Agricultural educators should understand the necessity to include purposefully designed moments of reflection, abstract conceptualization, and active experimentation in their lessons (Baker et al., 2012; Bradford et al., 2019). Third, the concrete experience stage is the most frequently used stage of the experiential learning cycle (Mazurkewicz et al., 2012; Shoulders and Myers, 2013). This means that agriculture teachers may adhere to the hands-on component of lesson design but are providing fewer opportunities for the other three stages.

Recommendations

In response to the themes developed above, agriculture teachers incorporate experiences into their programs but may not utilize the entire experiential learning cycle as defined by Kolb (1984). Research has shown that agriculture teachers feel high levels of stress regarding experiential learning within their programs and that the inclusion of SAEs in their programs has been declining (Rank & Retallick, 2017). There is a possible connection to a deficit in knowledge regarding experiential learning and its application within agricultural education programs (Arnold et al., 2006; DiBenedetto et al., 2017; Smith & Rayfield, 2019). Instructional practices within teacher-educator programs, experiential learning professional development opportunities that model experiential learning, and curricular materials that model proper experiential learning design should be developed.

References

Arnold, S., Warner, W., & Osborne, E. (2006). Experiential learning in secondary agricultural education classrooms. *Journal of Southern Agricultural Education Research*, *56*(1). http://jsaer.org/pdf/Vol56/56-01-030.pdf

Baker, M. A., Brown, N. R., Blackburn, J. J., & Robinson, J. S. (2014). Determining the effects that the order of abstraction and type of reflection have on content knowledge when teaching experientially: An exploratory experiment. *Journal of Agricultural Education*, *55*(2), 106–119. https://doi.org/10.5032/jae.2014.02106

Baker, M. A., & Robinson, J. S. (2016). The effects of Kolb's experiential learning model on successful intelligence in secondary agriculture students. *Journal of Agricultural Education*, 57(3), 129–144. https://doi.org/10.5032/jae.2016.03129

Baker, M. A., Robinson, J. S., & Kolb, D. A. (2012). Aligning Kolb's experiential learning theory with a comprehensive agricultural education model. *Journal of Agricultural Education*, *53*(4), 1–16. https://doi.org/10.5032/jae.2012.04001

DiBenedatto, C., Blythe, J. M., & Meyers, B. D. (2017). Effects of the order of abstraction and type of reflection on content knowledge when teaching experientially in a high school classroom. *Journal of Agricultural Education*, *58*(2), 67–82. https://doi.org/10.5032/jae.2017.02067

Ewing, J. C., Clark, R. W., & Threeton, M. D. (2014). Career development event preparation and experiential learning strategies employed by Pennsylvania secondary agricultural education teachers. *Career and Technical Education Research*, *39*(1), 37–53. https://doi.org/10.5328/cter39.1.37

Knobloch, N. A. (2003). Is experiential learning authentic? *Journal of Agricultural Education*, *44*(4), 22–34. https://doi.org/10.5032/jae.2003.04022

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall. http://www.learningfromexperience.com/images/uploads/process-of-experiential-learning.pdf

Mazurkewicz, M., Harder, A., & Roberts, T. G. (2012). Evidence for experiential learning in undergraduate teaching farm courses. *Journal of Agricultural Education*, *53*(1), 176–189. https://doi.org/10.5032/jae.2012.01176

Rank, B. D., & Retallick, M. S. (2017). Supervised agricultural experience instruction in agricultural teacher education programs: A national descriptive study. *Journal of Agricultural Education*, *58*(2), 143–169. https://doi.org/10.5032/jae.2017.02143

Roberts, T. G. (2006). A philosophical examination of experiential learning theory for agricultural educators. *Journal of Agricultural Education*, *47*(1), 17–29. https://doi.org/10.5032/jae.2006.01017

Shoulders, C. W., & Myers, B. E. (2013). Teachers' use of experiential learning stages in agricultural laboratories. *Journal of Agricultural Education*, *54*(3), 100–115. https://doi.org/10.5032/jae.2013.03100

Smith, K. L., & Rayfield, J. (2019). STEM knowledge, learning disabilities and experiential learning: Influences of sequencing instruction. *Journal of Agricultural Education*, *60*(2), 222–236. https://doi.org/10.5032/jae.2019.02222

Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, *8*(1). https://doi.org/10.1186/1471-2288-8-45

Artificial Intelligence and the Professional Development Needs of SBAE Teachers

Sidney S. Pehrson
Utah State University
2300 Old Main Hill
Logan, UT, 84322-2300
(801) 440-1136
A02320031@usu.edu

Tyson J. Sorensen
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
(435) 797-5741
Tyson.sorensen@usu.edu

Artificial Intelligence and the Professional Development Needs of SBAE Teachers

Introduction/Need for Research

Agriculture teachers should have the ability to maintain good teaching practices and stay relevant within an ever-evolving education system and society. Artificial Intelligence (AI) has stood out as a groundbreaking and disruptive innovation, revolutionizing various components of society, including education. There is also a veil of uncertainty, concern, and negative perception over the utilization of AI within education but also the potential to improve teaching efficacy and reduce the workload placed upon teachers (Khare et al., 2018). Yet, as with most new technologies, some training is often needed in order for the benefits to be realized. With the newness of AI in education, there is a lack of understanding about the professional development needs of School-Based Agricultural Education (SBAE) teachers regarding AI, which this study aimed to address.

Theoretical Framework and Literature Review

The Technology Acceptance Model (TAM) suggests that when individuals are presented with new technology, several factors influence their decision about using it including perceived usefulness, perceived ease of use, and attitude (Davis et al., 1989). If a teacher believes that AI can help them with their job, then perceived usefulness is increased. Perceived ease of use is related to the ease or difficulty level to use the new technology. Finally, attitude is related to the individual's willingness to learn to utilize and social perceptions of the technology. Each of these factors play a role in the teacher's intentions to utilize AI as well as their willingness and needs for professional development.

Due to the newness and quickness in which AI has infiltrated the education scene, little is known about the professional development needs among teachers, specifically SBAE teachers. Some research shows that teachers lack basic AI knowledge and competency, AI teaching skills, and AI teaching self-efficacy (Sun, 2023) while other research suggests that ethical issues associated with integrating AI in the classroom is a main professional development need among teachers (Lee & Perret, 2022). While some studies exist in education, nothing has been published in SBAE related to SBAE teacher's professional development needs related to AI.

Purpose/Objective

The purpose of this study was to determine the professional development needs of SBAE teachers related to AI. Findings from the study can help state staff and teachers' associations to develop appropriate professional development programs for SBAE teachers.

Methodology

This quantitative descriptive study employed survey research methodology. An online survey was distributed to all SBAE teachers in Utah during the 2023-2024 school year. A response rate of 41.4% (n = 70) was achieved. The survey instrument was largely researcher developed and based on previous research (Chounta et al., 2021; Oh et al., 2019). A panel of

experts reviewed the survey instrument for face and content validity before distribution. As part of a larger study, we asked participants if they would be interested in professional development related to using AI, and what topics they preferred for training. A list of 10 potential topics were provided and participants were asked to check all that applied.

Results/Findings

Among the respondents, 74% indicated that if given the opportunity, they would be interested in participating in AI professional development, whereas 22% said they were unsure, and 4% indicated they would not be interested. The top three topics in which respondents preferred to receive further training was: (1) ways to detect improper AI use by students, (2) ways to use AI to save time on administrative tasks/paperwork, and (3) how to teach students how to use AI responsibly and effectively in academic settings (see Table 1). The topics least preferred for training included, incorporating AI into teaching specific subjects and how to prepare students for AI use in the workforce.

Table 1

Preferred Topics for Professional Development Training among SBAE Teachers

Training Topic	*f*	*%*
Ways to detect improper AI use by students	36	51.4
Ways to use AI to save time on administrative tasks/paperwork	34	48.6
How to teach students to use AI responsibly and effectively in academic settings	31	44.3
A basic introduction to AI	29	41.4
Utilizing AI for FFA and SAE	28	40.0
Specific types of AI platforms available to use in teaching	23	32.9
Maximizing student learning with AI	23	32.9
Instruction on incorporating AI into learning across the curriculum	23	32.9
How to prepare students for AI use in the workforce	22	31.4
Incorporating AI into teaching specific subjects	22	31.4

Conclusions/Recommendations/Impacts

Overall, our findings suggest that the teachers in this study are willing to learn about AI, reflecting some level of perceived usefulness, ease, and positive attitude towards AI. Yet, a proportion of the sample was unsure whether they wanted training in the use of AI. This indicates a possible lack of basic understanding, particularly regarding the perceived usefulness of AI. More research should be conducted to determine why teachers are reluctant to engage in training related to AI. Results of this study also indicate that SBAE teachers are concerned about ethical issues and the potentially negative aspects of AI in education as the top and the third top choice for training related to this. This is consistent with literature from general education studies. SBAE teachers in this study indicated a desire for training related to how AI can help them save time. This finding makes sense given the fact that SBAE teachers work excessive hours and often experience work-family conflict (Sorensen et al 2016). We recommend more research be done related to AI utilization in SBAE. There are many unanswered questions, and this current research study has helped uncover a small piece of our understanding into this topic.

References

Baars, M., Leopold, C., & Paas, F. (2018). Self-explaining steps in problem-solving tasks to improve self-regulation in secondary education. *Journal of Educational Psychology, 110*(4), 578–595. https://doi.org/10.1037/edu0000223

Chounta, I. A., Bardone, E., Raudsep, A., & Pedaste, M. (2022). Exploring teachers' perceptions of artificial intelligence as a tool to support their practices in Estonion K-12 education. *International Journal of Artificial Intelligence in Education, 32*(3), 725-755. https://doi.org/10.1007/s40593-021-00243-5

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982-1003. https://doi.org/10.1287/mnsc.35.8.982

Khare, R., Stewart, B., & Khare, A. (2018). Artificial intelligence and the student experience: An institutional perspective. *IAFOR Journal of Education, 6*(3), 63-78. https://doi.org/0.22492/ije.6.3.04

Lee, I., & Perret, B. (2022). Preparing high school teachers to integrate AI methods into STEM classrooms. *Proceedings of the AAAI Conference on Artificial Intelligence*, 36(11), 12783-12791. https://doi.org/10.1609/aaai.v36i11.21557

Nazaretsky, T., Ariely, M., Cukurova, M., Alexandron, G. (2022). Teachers' trust in AI-powered educational technology and a professional development program to improve it. *British Journal of Educational Technology*, 53(1), 914-931. https://doi.org/10.1111/bjet.13232

Oh, S., Kim, J. H., Choi, S., Lee, H. J., Kwon, S. H. (2019). Physician confidence in artificial intelligence: an online mobile survey. *Journal of Medical Internet Research, 21*(3), e12422. https://doi.org/10.2196/12422

Sorensen, T. J., McKim, A. J., & Velez, J. J. (2016). Why agriculture teachers leave: A national examination of turnover intentions and work-family conflict. *Journal of Agricultural Education*, *57*(4), 186-201. https://doi.org/10.5032/jae.2016.04186

Sun, J., Ma, H., Zeng, Y., Han, D., Jin, Y. (2023). Promoting the AI teaching competency of K-12 computer science teachers: A TPACK-based professional development approach. *Education and Information Technologies*, *28*(2), 1509-1533. https://doi.org/10.1007/s10639-022-11256-5

Assessing Agricultural Study Abroad Impacts on Student's Global Competence

Kameron Rinehart, M.S., & Jason Headrick, PhD

Department of Agricultural Education and Communications

Texas Tech University

2810 15th Street, Lubbock, TX 79409

Javonne Mullins, M.S.

Agricultural Department

Wilmington College

1870 Quaker Way Wilmington, OH 45177

Author Notes:

Kameron Rinehart, M.S., Kameron.Rinehart@ttu.edu, (740) 505-2805.

Javonne Mullins, M.S., Javonne.Mullins@wilmington.edu, (740) 606-7775.

Jason Headrick, Ph.D., Jason.Headrick@ttu.edu, (859) 608-5686.

Assessing Agricultural Study Abroad Impacts on Student's Global Competence

Introduction

U.S. students travel abroad to gain cultural experience and grow in global citizenship (Hoeflinger, 2012). Study abroad (SA) experiences are a high-impact pedagogical tool and have been proven to benefit the participants (Ruth et al., 2019). Students are choosing less traditional, short-term SA options over more extended programs (Institute of International Education, 2019). This quantitative study aims to measure Global Competency (GC) among agricultural students before and after an international experience. The independent variable data will be presented from two universities that traveled abroad in the summer of 2023, while the dependent variable will be derived from the Global Competence Aptitude Assessment (GCAA®). The central research question, "Does a student's GC level increase after an agricultural-focused SA experience?" guided the study.

Conceptual Framework

The GCAA® Model comprises eight dimensions divided into internal and external dimensions (Global Competence, 2023). The internal dimension includes the domains of self-awareness (SA), attentiveness to diversity (AD), risk-taking (RT), and open-mindedness (OM) (Global Competence, 2023). The external dimension is made up of the domains of global awareness (GA), historical perspective (HP), intercultural capability (IC), and collaboration across cultures (CAC) (Global Competence, 2023). The GCAA® assessment is used across education, nonprofits, business, and government sectors.

Methodology

A pre-and post-assessment strategy was implemented to collect data through the GCAA®. The GCAA® consisted of a pre-designed validated measurement tool produced by Global Competence Associates (GCAA® Design, 2023, p. 1). The assessment includes multiple-choice and Likert-scale-type questions. The population included 31 college students ($N = 31$), including 13 students from Texas Tech University who traveled to Greece ($N = 13$) and 18 students from Wilmington College who traveled to Kenya ($N = 18$) in the summer of 2023.

Results & Findings

Thirty-one students ($N = 31$) were in short-term study abroad programs. Because participation in this research was optional, researchers had 22 students ($N = 22$) participate in the pre-assessment. Their group mean for internal readiness (IR) was 70.9 ($M = 70.9$) with a standard deviation of 6.1 ($SD = 6.1$). The group mean for external readiness (ER) was 62.9 ($M = 62.9$), with a standard deviation of 16.9 ($SD = 16.9$). Participation in the post-assessment decreased, with only 18 students completing it ($N = 18$). The post-assessment data showed a group mean of 71.5 ($M = 71.5$) with a standard deviation of 7.9 ($SD = 7.9$) for IR and a group mean of 61.1 ($M = 61.1$) with a standard deviation of 15.1 ($SD = 15.1$) for ER. Following the pre- and post-assessment, there was an increase in group means for RT, AD, and CAC, while

there was a decrease in group means for SA, OM, HP, GA, and IC, as displayed in the tables above. Tables 1 and 2 represent the group means and standard deviations (SD) for the pre- and post-assessments completed by students.

Table 1

Overview of Global Competence Score Pre-Assessment (N = 22)

	IR	SA	RT	OM	AD	ER	HP	GA	IC	CAC
Mean	70.9	76.0	70.8	74.7	64.0	63.9	50.8	54.9	72.3	70.6
SD	6.1	6.9	8.7	9.4	9.3	16.9	22.4	20.4	15.8	23.9

Table 2

Overview of Global Competence Score Post-Assessment (N = 18)

	IR	SA	RT	OM	AD	ER	HP	GA	IC	CAC
Mean	71.5	73.6	71.5	73.1	68.5	61.1	47.5	52.5	69.7	73.3
SD	7.9	12.7	11.3	9.1	7.9	15.1	32.1	12.6	18.9	18.3

Conclusions

It can be concluded that while there was a slight increase in IR and ER overall, there was not an increase in the majority of the eight domains that make up the GCAA® model. However, this data reflects what is expected by the GCAA® because of the short time that students spent abroad and the experience they have had or have not had in their individual lives thus far, which impacts their scores in the eight domains of the GCAA®. The pre-assessment totals ($N = 22$) and post-assessment totals ($N = 18$) indicate to the team that lower participation rates increase SD in the study.

Implications & Recommendations

The implications of this study show that SA programs have the ability to impact a student's GC. While the results of this study did not show significant growth in a student's GC, it gives scholars and practitioners an outlook on the possibility of the impact that SA programs have on an individual's life. It provides an outlook for future program development ideas, research, and innovation. Researchers recommend that SA programs continue to use the GCAA® to measure students' global competence before and after an SA experience. Programs should align with the eight dimensions of the GCAA® model. Based on the results, researchers recommend using this assessment primarily for programs with extended stays in visiting countries, such as SA programs extending beyond two weeks. Additionally, future research should continue to investigate GC through short-term agricultural-focused SA programs over multiple years to determine how these programs impact a student's GC.

References

GCAA® Design and reporting. Global Competence Associates. (2023a, October 11). https://globallycompetent.com/gcaa-design-and-reporting/

Global competence modelTM. Global Competence Associates. (2023, November 6). https://globallycompetent.com/global-competence-model/

Hoeflinger, D. (2012). Teaching students to be global citizens. *Delta Kappa Gamma Bulletin*, *79*(1), 15.

Institute of International Education. (2019). Open Doors report on international educational exchange. http://www.iie.org/opendoors.

Ruth, A., Brewis, A., Blasco, D., & Wutich, A. (2019). Long-term benefits of short-term research-integrated study abroad. *Journal of Studies in International Education*, *23*(2),\ 265–280.

Assessing the influence of welding sequence training on student performance

Rhett A. Sykora
Texas State University
601 University Dr.
San Marcos, TX. 78666
512-245-2130
ras246@txstate.edu

Ryan G. Anderson
Texas State University
601 University Dr.
San Marcos, TX. 78666
512-245-3325
r_a461@txstate.edu

Bradley D. Borges
Texas State University
601 University Dr.
San Marcos, TX. 78666
512-245-7106
b_b518@txstate.edu

Marshall Swafford
Arkansas Tech University
123C Dean Hall
402 West O St.
Russellville, AR. 72801
479-968-0251
mswafford@atu.edu

Assessing the influence of welding sequence training on student performance

Introduction

The welding process is prevalent and crucial to agricultural mechanics (Stone et al. 2011a). Additionally, welding requires extensive and costly training to reach proficiency. Traditional welding training is limited in its ability to accurately identify areas of unsatisfactory performance, resulting in inaccurate or insufficient feedback, which ultimately hinders the learner progression towards proficiency. (Abrams et al., 1974). In an attempt to mitigate the limitations existing in traditional training methods, recently, simulator technologies have been integrated into several industries including, medicine, safety training, first responder training, and welding (Wells & Miller, 2020). Virtual Reality (VR) and computer-based audio assisted (CBAA) welding training simulations are designed to serve as educational tools for welding students to reach proficiency more efficiently and effectively.

Conceptual Framework

The underlying theoretical framework for this study was constructed using both the cognitive information process learning theory (Andre & Phye, 1986) and the skill acquisition theory (DeKeyser, 2015). The cognitive information processing learning (CIP) theory suggests that learning and behavior prevail as a result of the learner's interaction with their environment as well as previously acquired knowledge and experience (Andre & Phye, 1986). As an individual responds to and acts upon their environment, associations begin to develop relating their actions to desired results. The skill acquisition theory describes how individuals progress through the learning process regarding cognitive and psychomotor skills using three stages: 1) declarative, 2) procedural, and 3) automatic (DeKeyser, 2015).

Purpose and Objectives

The purpose of this study was to determine the most effective sequencing using VR training, CBAA training and traditional welding training when compared to the pass/fail rate of students taking the Certified Welding (CW) test. This study aligns with the American Association for Agricultural Education's National Research Agenda Priority Area 2: New Technologies, Practices and Product Adoption Decisions (Roberts, et al., 2016). The objectives are as follows: (1) Identify the Pass/Fail rate of participants using the sequence of VR, CBAA, and traditional live weld training (2) Identify the Pass/Fail rate of participants using the sequence of CBAA, traditional live weld training and VR (3) Identify the Pass/Fail rate of participants using the sequence of traditional live weld training, VR, and CBAA (4) Determine if there is a difference between the three training sequences, control group, and student performance.

Methods

Our study was conducted three separate times, across three consecutive semesters in the agricultural mechanics laboratory at Texas State University, however each round of data collection lasted four weeks in duration. Participants consisted of undergraduate students enrolled in an introductory agricultural mechanics course (n = 131). Participants were randomly divided into four distinct welding training groups and received training by rotating through each of the three training environments: VR, CBAA, and the traditional live-weld environment, with the exception of Group 4, that served as out control group who only received traditional training. Training Sequence Group 1 started training in the VR environment, rotated to the CBAA

environment, and concluded with the live-weld training environment, Training Sequence Group 2 started training in the CBAA environment, rotated to the live-weld training environment, and concluded with the VR environment, Training Sequence Group 3 started training in the live-weld training environment, rotated to the VR environment, and concluded with CBAA. During the final week of the study, participants trained exclusively in the live-weld environment, submitting their highest quality weld produced within the lab period to the external CWI (Certified Welding Inspector), for quality analysis. The CWI then determined the pass/fail rates reported below.

Results

The passing rates of each of the three training sequences are outlined below in Table 1. Training Sequence Group 1 (n = 37) had 16 participants pass the visual examination resulting in a 43.2% passing rate. Training Sequence Group 2 (n = 35) and Training Sequence Group 3 (n = 31) had 13 participants pass the visual examination resulting in a 37.1 % and 41.9% passing rate respectively. Training Group 4 (n = 28) had 11 participants pass resulting in a 39.3% passing rate. The overall passing rate of the four training sequence groups (N = 131) was 40.46% with a total of 53 participants passing the visual examination.

Table 1

Passing Rates of Each Training Sequence

Training Sequence Group	Number of Participants	# of Participants Passing Inspection	Pass Rate %
1	37	16	43.2
2	35	13	37.1
3	31	13	41.9
4	28	11	39.3
Totals	131	53	40.46

Conclusions, Discussions, Recommendations

Although no statistically significant differences were identified between the sequencing of the three training protocols, when used in conjunction, the VR, CBAA, and traditional training protocols resulted in an overall certification rate of 40.46%. Given the amount of practice time allowed to participants, Stone et al. (2011b) achieved a passing rate of ≈ 30% with 100% traditional training methods While Byrd (2014), who used 50% VR training and 50% traditional training to achieve a 66.7% certification rate, differences in participants' previous experience could have led to higher certification rate than that realized by our study. We recommend further research using more difficult welds to master to determine if the welding sequences differentiate between each other and the control group. We recommend that these training methods be implemented based upon the individual needs of each student. If a student is performing well in live-weld training, VR and CBAA could provide benefit by refining area that are unsatisfactory. Conversely, if students are experiencing anxiety regarding the welding process, the VR and CBAA environment could aid in overcoming these obstacles.

References

Abrams, M. L., Schow, H. B., & Riedel, J. A. (1974). Acquisition of a psychomotor skill using simulated-task, augmented feedback (evaluation of a welding training simulator). NPRDC-TR-75-13

Andre, T., & Phye, G. D. (1986). Cognition, learning, and education. In G. D. Phye & T. Andre (Eds.), *Cognitive classroom learning: Understanding, thinking, and problem solving* (pp. 1-19). Orlando, FL: Academic Press.

Byrd, A. P. (2014). *Identifying the effects of human factors and training methods on a weld training program.* Retrieved from Iowa State University Digital Repository Graduate Theses and Dissertations. (Paper 13991)

DeKeyser, R. (2015). Skill acquisition theory. In B. VanPatten & J. Williams (Eds.), *Theories in second language acquisition: An introduction* (2nd ed., pp. 94-112). Routledge.

Roberts, T. G., Harder, A., & Brashears, M. T. (Eds). (2016). *American Association for Agricultural Education national research agenda: 2016-2020.* Gainesville, FL: Department of Agricultural Education and Communication. 19-28.

Stone, R. T., Watts, K. P., Zhong, P., & Wei, C. (2011a). Physical and cognitive effects of virtual reality integrated training. *Human Factors, 53*(5), 558-572. doi:10.1177/0012720811413389

Stone, R T., McLaurin, E., Zhong, P., & Watts, K. P. (2013). Full virtual reality vs. integrated virtual reality training in welding. *Industrial and Manufacturing Systems Engineering Publications, 92*(6), 167s-174s

Stone, R. T., Watts, K., & Zhong, P. (2011b). Virtual reality integrated welder training. *Welding Journal, 90*(7), 136s-141s

Wells, T. & Miller. G. (2020). The effect of virtual reality technology on welding skill performance. *Journal of Agricultural Education, 61*(1) 152-171. doi:http://10.5032/jae.2020.01152

Research Poster

Assessing University Students' Perceptions of an Interactive Learning Space About Ranching

Cambry Cline
Graduate Student
Department of Agricultural Education & Communications
Texas Tech University
camcline@ttu.edu

Courtney Meyers, Ph.D.
Professor
Department of Agricultural Education & Communications
Texas Tech University
courtney.meyers@ttu.edu

Assessing University Students' Perceptions of an Interactive Learning Space About Ranching

Introduction/Need for Research

Agriculture is an essential cornerstone of human civilization and has undergone profound transformations throughout history (Fitzgerald et al., 2018). One way to preserve, record, and inform others about those changes is through museums (Anderson, 1982). In the dynamic landscape of living history museums, the integration of interactive learning spaces has become pivotal in enhancing visitor understanding and overall experience (Hurt, 1978). An example of an agricultural history museum is Texas Tech University's National Ranching Heritage Center. Located in Lubbock, Texas, the NRHC serves as a 27-acre historical museum dedicated to preserving and interpreting the history of ranching in North America. The newest addition to the NRHC is the Cash Family Ranch Life Learning Center. The CFRLLC is an indoor and outdoor comprehensive experience that provides accurate, adult-level ranching concepts through the children's book character, Hank the Cowdog, created by author John R. Erickson (Ranch Life Learning, n.d.).

Most Americans are now two to three generations removed from farm life, and as a result, the importance of agriculture is often misunderstood and unrecognized (Monk et al., 2016). Agricultural literacy is a current and global issue, and industry knowledge is necessary for building a sustainable future (Kovar & Ball, 2013). With the recognition of agricultural literacy's importance and the need to evaluate these efforts beyond the traditional classroom setting (Kovar & Ball, 2013), the current study sought to address the gap in the literature regarding the impact of agricultural history museum exhibits on agricultural literacy.

Conceptual Framework

Falk and Dierking's (1992) Interactive Experience Model served as the conceptual framework for this study. This model, rooted in museum research, is comprised of three key elements: the personal context, the social context, and the physical context. The personal context refers to the motivations and expectations of visitors and their background of experience, knowledge, interests, and needs. The social context refers to interactions within the museum experience. The physical context is the physical environment of the museum, including exhibited objects, design elements, and interactive activities (Falk & Dierking, 1992). According to Falk and Dierking (1992), a museum visit should be regarded as a comprehensive experience or a multidimensional learning experience. Learning is considered to have occurred when, following a voluntary visit, an individual can express or demonstrate self-perceived heightened knowledge or awareness, exhibit a shift in attitudes or opinions, or show motivation to participate in a specific activity. This model enables visitors to express their perceptions of their experiences and actively indicate whether they have gained any knowledge on museum topics (Rennie & Johnston, 2004).

Methodology

This study employed a descriptive survey research design to assess visitors', specifically college students', perceptions of the CFRLLC. We utilized a convenience sampling method, targeting students at Texas Tech University. Participants were recruited from four agricultural communications courses, which could encompass a diverse range of majors. Fifty-one usable responses to a Qualtrics questionnaire were collected in October 2023. The researchers modeled

instrument questions after Johnston's (1999) study which investigated visitors' experience at a science center. The questions were adapted to elicit their opinions, attitudes, and feedback regarding their experience at the CFRLLC. At the end of the data collection period, the data were exported from Qualtrics into IBM SPSS for additional analysis.

Results

RQ1: What were their self-perceptions of learning after visiting the ranch life exhibits?

Overall, participants had positive impressions of their visit and experience exploring the learning center. Participants provided their responses to these items on a 5-point Likert-type scale where *1 = strongly disagree* and *5 = strongly agree*. Participants indicated their visits were an enjoyable experience ($M = 4.82$, $SD = 0.39$) and would recommend it as a place to visit ($M = 4.80$, $SD = 0.40$). Participants were above the mid-point on the 5-point Likert-type scale in terms of their self-perceptions of ranching knowledge ($M = 3.64$, $SD = 1.16$), but they agreed the "hands-on" activities will help them remember ranching concepts ($M = 4.67$, $SD = 0.48$).

RQ2: What impact did the visit have on their attitudes regarding ranching?

Participants agreed they were more aware of advances in modern ranching practices (M = 4.82, SD = 0.39) and had a better appreciation of ranching in the United States (M = 4.78, SD = 0.43) after visiting the CFRLLC. Participants were also asked about their changes in opinion regarding different aspects of the ranching industry before and after their visit. The data did not meet the assumption of normality; therefore, a Wilcoxon signed-rank test was utilized. The test showed that visiting the CFRLLC only led to a statistically significant change in one opinion item, "Ecological Impact (on land, water, wildlife)" ($Z = -2.801$, $p = 0.005$). The other items all had pre-visit mean scores above 4.6, which only increased slightly in the post-visit.

Conclusions

The findings indicated the CFRLLC is providing an educational and enjoyable learning experience with the potential to positively impact the agricultural literacy of its visitors. The slight (yet statistically significant) positive change in opinions about the ecological impact of ranching after visiting the learning center is noteworthy because this is a topic area often discussed in conversations about agriculture's impact on the environment. According to Falk and Dierking (1992), this shift in opinion is evidence of learning. This result indicates participants were able to learn from the interactive exhibits about ranching's role in land stewardship, range management, and habitat protection. After their time at the CFRLLC, participants reported being more aware of advances in modern ranching practices and had a better appreciation of ranching in the United States. As Reid (2017) noted, how agricultural practices are presented in a museum context can encourage a better understanding of these relevant topics.

Implications/Recommendations/Impact

Future studies should consider measuring time spent in the CFRLLC as an additional variable, and how social context elements influence learning and attitudes is also recommended. As a practical recommendation, the center should continue to emphasize ranching's positive impact on land, water, and wildlife in terms of sustainability and environmental stewardship. Based on this initial research, the CFRLLC provides an engaging and interactive opportunity to improve knowledge about and appreciation of ranching in the United States.

References

Anderson, J. (1982). Living history: Simulating everyday life in living museums. *American Quarterly*, *34(3)*, 290–306. https://doi.org/10.2307/2712780

Dierking, L. D., & Falk, J. H. (1992). Redefining the museum experience: the interactive experience model. *Visitor Studies*, *4(1)*, 173-176.

Fitzgerald, D., Onaga, L., Pawley, E., Phillips, D., Vetter, J. (2018). Roundtable: Agricultural history and the history of science. *Agricultural History*, *92(4)*, 569. https://doi.org/10.3098/ah.2018.092.4.569

Hurt, R. D. (1978). Agricultural museums: a new frontier for the social sciences. *The History Teacher*, *11(3)*, 367–375. https://doi.org/10.2307/491627

Johnston, D. (1999). Assessing the visiting public's perceptions of the outcomes of their visit to interactive science and technology centres. [Doctoral dissertation, Curtin University].

Kovar, K. A., & Ball, A. (2013). Two decades of agricultural literacy research: a synthesis of literature. *Journal of Agricultural Education, 54(1),* 167–178. https://doi.org/10.5032/jae.2013.01167

Monk, K. I., Norwood, J. S., & Guthrie, M. J. (2016). Effectiveness of the Southwest Dairy Denter mobile classroom in promoting agricultural literacy. *Texas Journal of Agriculture and Natural Resources*, *13*, 8–13. https://txjanr.agintexas.org/index.php/txjanr/article/view/177

Ranch Life Learning. (n.d.). *The cash family ranch life learning center*. National Ranching Heritage Center. https://ranchingheritage.org/learn/ranch-life-learning/#ranch-life-learning-center

Reid, D. A. (2017). *Interpreting agriculture at museums and historic sites* (Vol. 12). Rowman & Littlefield.

Rennie, L. J., & Johnston, D. (2004). The nature of learning and its implications for research on learning from museums. *Science Education, 88*(S1), S4–S16. https://doi.org/10.1002/sce.20017

Research

Attitudes of SBAE Teachers Regarding AI utilization

Sidney S. Pehrson
Utah State University
2300 Old Main Hill
Logan, UT, 84322-2300
(801) 440-1136
A02320031@usu.edu

Tyson J. Sorensen
Utah State University
2300 Old Main Hill
Logan, UT 84322-2300
(435) 797-5741
Tyson.sorensen@usu.edu

Attitudes of SBAE Teachers Regarding AI utilization

Introduction/Need for Research

While Artificial Intelligence (AI) has existed for decades, recent breakthroughs in technology have allowed a rapid proliferation of it into every aspect of society, including education (Huang & Smith, 2006). This groundbreaking technology is revolutionizing the workplace as well as the school setting. AI has the potential to continue to improve teaching by reducing teacher workload, but there is also uncertainty and concern as educators, administrators, parents, and students are all navigating how to deal with and utilize AI in education (Tyson & Sauers, 2021). With the novelty of AI in education, a lack of understanding exists about the attitudes of agriculture teachers towards AI, which this study seeks to address.

Theoretical Framework and Literature Review

The Technology Acceptance Model (TAM) suggests that when individuals are presented with new technology, several factors influence their decision about using it including perceived usefulness, perceived ease of use, and attitude (Davis et al., 1989). Perceived usefulness relates to an individual's belief about how useful the new technology is to them. Perceived ease of use is related to the ease or difficulty level to use the new technology. If a technology is easy to use, individuals will have a better attitude towards utilizing it. External variables such as social influence are important factors to determine the attitude of individuals toward new technology. Each of these factors play a role in the teacher's intentions to utilize AI. In this study, we will focus on the attitudes of teachers toward AI utilization.

Because AI is a new and evolving technology, many teachers have not had the opportunity to incorporate it into their teaching practices. Literature suggests that some teachers have negative attitudes towards AI while others have more positive perceptions of it (Butakor, 2023; Kim & Kim, 2022). Overall, most studies claim that there is a general belief that AI can be a valuable resource to teachers (Khare et al., 2018). Despite the positive possibilities of AI in education, many teachers are unsure about using AI (Butakor, 2023). In recent research regarding teacher perceptions of AI, Woodruff et al. (2023) found that teachers' negative perceptions about AI tend to be simple misconceptions based on previous experiences with technology. While some studies exist in education about the attitudes of teachers towards AI, nothing has been published in SBAE.

Purpose/Objective

The purpose of this study was to describe the perceptions of SBAE teachers related to AI utilization. Findings from this study can lead to recommendations for policy, professional development, and procedures within SBAE related to AI utilization.

Methodology

As part of a larger study, this research utilized quantitative descriptive survey methodology. We distributed an online survey to all SBAE teachers in Utah during the 2023-

2024 school year (n = 169). A response rate of 41.4% (n = 70) was achieved. The survey instrument was largely researcher developed and based on previous research (Chounta et al., 2021; Oh et al., 2019). The survey instrument was reviewed by a panel of experts for face and content validity before distribution. The survey instrument consisted of items soliciting information about AI usefulness (14 items) in SBAE programs as well as perceived challenges and benefits of using AI (21 items). Participants were asked to rate their level of agreement on each item (1 = *Strongly Disagree* to 5 = Strongly Agree).

Results/Findings

The topics in which SBAE teachers most strongly agreed with regard to general beliefs about AI included the statements, "AI takes away student creativity and their ability to think critically" followed by "I do not trust AI to carry out tasks without error," "I think that AI can improve the overall success of my program," "I think that AI can improve student learning," and "Teaching my students about AI is important for their future success." Items of strongest disagreement included the statement, "I am too old to learn new things like AI," "I am afraid AI will lead to my job becoming obsolete," "My school district discourages the use of AI among teachers, "I am afraid of AI technology," and "AI is too expensive."

The topics in which SBAE teachers most strongly agreed as the benefits of utilizing AI in SBAE programs were "Creating assignments or rubrics," "Generating ideas for activities or assignments," and "Developing instructional materials." Items in which participants most strongly disagreed included "Managing student behavior," "Completing student or chapter award applications," and "Organizing FFA events."

Conclusions/Recommendations/Impacts

The findings of this study suggest that SBAE teachers have mixed feelings about AI, which is consistent with literature in other disciplines. With the top two beliefs being related to AI taking away students' ability to think critically and an acknowledgement that teachers do not trust AI, there are certainly negative perceptions and attitudes towards the use of AI in SBAE. However, SBAE teachers also seem to realize the potential that exists with using AI by agreeing to statements that AI can improve both the success of the program and student learning. According to the TAM theory, these positive attitudes can lead to adoption of the technology (Davis et al., 1989). The participants indicated that creating assignments and rubrics, generating ideas for activities or assignments, and developing instructional materials were the areas within SBAE where teachers perceive the most benefit from AI. It is interesting to note that all of these are within the classroom component of the three-component model and not with FFA or SAE. The lowest ranked items were related to FFA. We recommend further research into the current use of AI in SBAE as well as exploring SBAE teacher's levels of exposure to AI, the contexts in which it has been used, and past experiences that have influenced general beliefs about it. Additionally, we suggest providing teachers with more exposure to AI to familiarize themselves with it and to facilitate further development of their beliefs and opinions about it.

References

Baars, M., Leopold, C., & Paas, F. (2018). Self-explaining steps in problem-solving tasks to improve self-regulation in secondary education. *Journal of Educational Psychology, 110*(4), 578–595. https://doi.org/10.1037/edu0000223

Butakor, P. K. (2023). Exploring pre-service teacher's beliefs about the role of artificial intelligence in higher education in Ghana. *International Journal of Innovative Technologies in Social Science*, 3(39), 1-15. https://doi.org/10.31435/rsglobal_ijitss/30092023/8057

Chounta, I. A., Bardone, E., Raudsep, A., & Pedaste, M. (2022). Exploring teachers' perceptions of artificial intelligence as a tool to support their practices in Estonion K-12 education. *International Journal of Artificial Intelligence in Education, 32*(3), 725-755. https://doi.org/10.1007/s40593-021-00243-5

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science, 35*(8), 982-1003. https://doi.org/10.1287/mnsc.35.8.982

Khare, R., Stewart, B., & Khare, A. (2018). Artificial intelligence and the student experience: An institutional perspective. *IAFOR Journal of Education, 6*(3), 63-78. https://doi.org/0.22492/ije.6.3.04

Kim, N. & Kim, M. (2022). Teacher's perceptions of using an artificial intelligence-based educational tool for scientific writing. *Frontiers in Education, 7.* https://doi.org/10.3389/feduc.2022.755914

Oh, S., Kim, J. H., Choi, S., Lee, H. J., Kwon, S. H. (2019). Physician confidence in artificial intelligence: an online mobile survey. *Journal of Medical Internet Research, 21*(3), e12422. https://doi.org/10.2196/12422

Sun, J., Ma, H., Zeng, Y., Han, D., Jin, Y. (2023). Promoting the AI teaching competency of K-12 computer science teachers: A TPACK-based professional development approach. *Education and Information Technologies*, *28*(2), 1509-1533. https://doi.org/10.1007/s10639-022-11256-5

Tyson, M.M. and Sauers, N.J. (2021). School leaders' adoption and implementation of artificial intelligence. *Journal of Educational Administration*, *59*(3), 271-285. https://doi.org/10.1108/JEA-10-2020-0221

Woodruff, K., Hutson, J., & Arnone, K. (2023). Perceptions and barriers to adopting artificial intelligence in K-12 education: A survey of educators in fifty states. *IntechOpen*. https://doi.org/10.5772/intechopen.1002741

Research Poster

Beneath the Surface: Self-Perceived Professionalism in Agriculture Education

Erin Gorter, Assistant Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
ekthomps@calpoly.edu

Nicole Ray, Assistant Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
nray04@calpoly.edu

Lauren Giannone, Teacher in Residence
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
lggianno@calpoly.edu

Ann De Lay, Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
ekthomps@calpoly.edu

Isaac Lopez, Undergraduate Student
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
Ilopez51@calpoly.edu

Daniela Rodriguez-Ruiz, Undergraduate Student
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
drodr165@calpoly.edu

Ashlee Crabtree, Undergraduate Student
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
amcrabtr@calpoly.edu

Beneath the Surface: Self-Perceived Professionalism in Agriculture Education

Introduction/Need for Research

California agricultural education leadership deemed professionalism a topic of interest within their own teacher learning and support systems (M. Patton, personal communication, May 6, 2023). Professionalism is important to the role of the teacher and in school-based agricultural education (SBAE) (Coleman et al., 2021; Hillison, 1981; Radhakrishna & Xu, 1997; Roberts & Dyer, 2004; Shoulders & Smith, 2018). Research has shown teachers of SBAE are viewed less than what has been deemed classically professional (Blezek, 1986). While the United States Department of Labor (n.d.) indicated professionalism is represented visually and via characteristics and skills, there is no recent SBAE literature on how professionalism is defined or how it may differ across the three programmatic components of classroom, leadership and supervised agricultural education (SAE). To help bridge this gap, this research focused on exploring the perceived professionalism across the three circles of SBAE, among California SBAE teachers who have been identified as exhibiting professionalism by California agricultural education leadership. Understanding more about what SBAE teachers value in being a professional may help create a definition of what professionalism is in SBAE and aid in the advancement of teacher learning in California.

Conceptual/Theoretical Framework

Bandura's (1991, 2001) Social Cognitive Theory (SCT) framed this study as professionalism involves personal, behavioral, and environmental factors, which are constantly interacting with one another. Human agency influences SCT as individuals have autonomy over their own behavior (Bandura, 2001). In this study, SBAE teachers exert their own agency in identifying examples of what professionalism looks like within the profession of teaching SBAE, thus SCT provides a space to scaffold meaning for their own perceived professionalism.

Methodology

This qualitative study used photovoice for participants to express their perceived professionalism via photographs (Wang & Burris, 1997). Participants (n = 60) were nominated by California agricultural education leadership as those who exemplify professionalism. Thirty participants were invited, using purposive sampling for age, gender, and geographic location (Richie & Lewis, 2003). Six participants opted to participate in the study. Participants were asked to each submit 9 photos, 3 from each program component of SBAE (Classroom, Leadership, and Supervised Agricultural Experience) and include 250-word reflections per photo, to provide context. Participants submitted 17 photos and 16 reflections for classroom and 15 photos and reflections each for leadership and SAE. Participant names were replaced with pseudonyms and photos and reflections were kept together during analysis. Photos and reflections were thematically evaluated, based on the program component they represented (classroom, leadership, and SAE) using values coding. Saldaña (2016) recommended values coding as a first cycle coding method for identifying values and attitudes contributing to beliefs. These themes were then compared across programmatic components to look for differences and commonalities.

Results/Findings

Thirteen values were deduced across the 3 programmatic components, with 2 found commonly across all 3 elements (Figure 1). Classroom and SAE shared the value of organization, while classroom and leadership shared relationships. Public perception was considered a shared value for leadership and SAE. Quotations and photographs will be included with the poster as evidence supporting the themes which surfaced.

Figure 1

Perceived Values of Professionalism in SBAE Teachers by Programmatic Component

Conclusions

Professionalism appeared to differ across the programmatic foundations of SBAE. It can be deduced, across all three programmatic components, SBAE teachers, deemed as having professionalism, believed appropriate modeling and dress make them professionals in SBAE. The human agency expressed, via the intentional selection of photos and reflective words, provides insight into how SCT (Bandura, 1991, 2001) informs perceived values of professionalism among SBAE teachers in California.

Implications/Recommendations/Impact on Profession

This research provides a starting point for defining what professionalism is in California SBAE. The values expressed by the participants in this study are only indicative of the individuals they came from. Further studies should seek to replicate this process in their own states and with their own teachers. Also, those who were not deemed as professional in California should be scrutinized for differences or similarities. Understanding what factors influenced agricultural education leadership to identify SBAE teachers as those who are professional would also be of interest. Additional exploration of why certain themes did not surface in some components (e.g., public perception was not a theme concerning the classroom) could shed light on needs for pre-service and in-service teacher learning. Teacher educators in California should consider these findings when addressing professionalism in learning spaces.

References

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*, 248-287. http://doi.org/10.1016/0749-5978(91)90022-L

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Reviews Psychology, 52*, 1-20. http://doi.org/10.1146/annurev.psych.52.1.1

Blezek, A. G. (1986). Professionalism of vocational agriculture instructors as perceived by vocational agriculture instructors and superintendents in Nebraska public secondary schools. *Journal of Agricultural Education*, *27*(3), 46-49. https://doi.org/https://doi.org/10.5032/jaatea.1986.03046

Coleman, B. M., Ferand, N. K., Bunch, J. C., & Israel, G. D. (2021). Examining preservice teachers' performance during a 14-week student teaching experience: A longitudinal study. *Journal of Agricultural Education*, *62*(3), 258–274. https://doi.org/10.5032/jae.2021.03258

Hillison, J. (1981). Professionalism: The thread that runs through. *The Agricultural Education Magazine*. *54*(1). 4. https://www.naae.org/profdevelopment/magazine/archive_issues/Volume53/v53i1.pdf

Radhakrishna, R. B., & Xu, W. (1997). A review of subject matter topics researched in agricultural and extension education. *Journal of Agricultural Education*, *38*(3), 59-69. https://jae-online.org/index.php/jae/article/view/1555/1400

Richie, J., & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers.* Sage Publications.

Roberts, G. T., & Dyer, J. E. (2004). Characteristics of effective agriculture teachers. *Journal of Agricultural Education*, *45*(4), 82-95. https://doi.org/https://doi.org/10.5032/jae.2004.04082

Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed). Sage Publications.

Shoulders, C. W., & Smith, L. (2018). Impact of teacher attire on students' views of teacher credibility, attitude homophily, and background homophily within school-based agricultural education programs. *Journal of Agricultural Education*, *59*(2), 275-288. https://doi.org/https://doi.org/10.5032/jae.2018.02275

Wang, C. & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior, 24*(3), 369-387. https://doi.org/10.1177/109019819702400309

United States Department of Labor. (n.d.). *Soft skills to pay bills.* https://www.dol.gov/agencies/odep/program-areas/individuals/youth/transition/soft-skills

Capacity Building of Leadership Competencies for Extension Personnel: A Case Study of the University of Georgia Extend Advanced Leadership Development Program

Joel Burnsed

1258 Criswell Rd SE
Monroe, GA. 30655

912-657-2975

Jburnse1@uga.edu
Jcanderson@uga.edu

Introduction

Cooperative Extension is tasked with performing the outreach component of the land-grant university's tripartite mission (USDA, 2011b). Extension organizations have been faced with challenges that range from reinventing programmatic efforts to competing for continued funding. These challenges have generated the need for Extension organizations to build their leadership capacity through leadership development programs (Lamm et al., 2016). These programs aim to develop effective leaders who can navigate the complex challenges facing Extension organizations in the 21st century.

A two-tier leadership development program was developed to respond to the leadership gap in the Extension employee base. The first program, Extension Academy for Professional Excellence (EAPE), was designed to teach early and mid-career Extension agents leadership skills. EAPE focuses on the participants' understanding of the "self" as a leader. Once participants successfully complete EAPE, the next phase is the 2-year Extend Advanced Leadership Development program. This phase, building on the EAPE program, focuses on understanding and leading the organization. More specifically, the Extend program is designed based on Robert Katz's Model of Primary Leadership Skills. This model represents the nine leadership competencies, including technical competence, managing resources, managing people, social perceptiveness, emotional intelligence, managing interpersonal conflict, creating visions, strategic planning, and problem-solving. The two-tiered leadership development program aims to engage employees and further their understanding of leader development to bridge the leadership gap.

Conceptual Framework

Robert Katz's (1955) Three-Skill Approach to Leadership is the conceptual framework that guided this study. The approach is based on the idea that a leader's effectiveness is congruent with their ability to solve complex organizational problems (Northouse, 2021). Katz proposed that effective leadership is contingent on three basic personal skills: *technical, human,* and *conceptual,* which was changed to *administrative (showing technical competence, managing resources,* and *managing people), interpersonal (being socially perceptive, showing emotional intelligence,* and *managing interpersonal conflict),* and *conceptual* (*creating visions, strategic planning,* and *problem-solving*) skills and included three competencies in each area.

Methodology

The study incorporated a mixed methods approach focusing on evaluating the impact of the Extend program on developing the nine leadership competencies. More specifically, using the first two levels of Kirkpatrick's Four-Level Training Evaluation Model (1959; 1975; 1993) to guide data collection. Kirkpatrick's model consists of four levels that aid training and development professionals in evaluating the impacts and demonstrating the value of their programs. The four levels of the Kirkpatrick Model are reaction (level 1), learning (level 2), behavior (level 3), and results (level 4) (Kirkpatrick, 1959; 1975; 1993). For this study, participants were asked at the end of each institute to complete a questionnaire that had both Likert-type questions about what they learned related to the nine competencies (level 2) and their satisfaction with the training structure and content (level 1). The questionnaires consisted of 11 Likert-typed questions and seven open-response questions. A content specialist and an evaluation specialist for validity reviewed the questionnaire. The quantitative data were analyzed for measures of central tendencies, and the open-response text was analyzed using a deductive

analysis approach for learning about the nine leadership competencies and an inductive approach for emergent themes about their responses to the program.

Results

Since the early 2000s, EAPE and Extend have produced more than 170 alums; however, in 2015, the leadership curriculum was reorganized based on Katz's Theory of Leadership. A cohort of 20 Extension faculty that participated and graduated from both EAPE and Extend programs in 2022. After completing the program, a cohort of 20 members were given the opportunity to participate in the study that measured knowledge and behavior changes. Most participants confirmed that the leadership competencies of interpersonal skills, communication skills, and team dynamics were most meaningfully impacted because of their participation in the program. All program participants reported implementing a learned leadership competency in their current role. Additionally, most participants reported noticing a positive colleague response because of their implemented behavior changes. Overall, all participants reported that the program benefited their professional growth.

Impact on Profession/Recommendations

The findings from this study will contribute to scholarly literature and the advancement of research specific to Extension faculty and leadership development programs. There is an overabundance of literature specific to the development of extension programming. However, there remains a gap in the research that addresses the need for Extension organizations to develop the next generation of leaders. Extension budgets are becoming more strained, and resource competition is increasing. Extension organizations must make informed decisions on the investments into leadership programs; however, the potential long-term impacts of these programs must be extensively evaluated.

Furthermore, there is limited empirical evidence on the connections between leadership development program participant learning and organizational outcomes (Collins & Holton, 2004; Dinh et al., 2014; Gardner et al. , 2010). Effective evaluation has been shown to document program achievements, but more importantly, it has been shown to inform facilitators with the intention of a continuous improvement process by adjusting different aspects of the program (Frechtling, 2010; Patton, 2008).

Future recommendations are to continue to evaluate the program and make appropriate changes to the curriculum and expand the focus of the study to the other two levels of the Kirkpatrick model. The aim of the study is to identify the long-term organizational impact resulting from this leadership development program.

References

Collins, D. B., & Holton III, E. F. (2004). The effectiveness of managerial leadership development programs: A meta-analysis of studies from 1982 to 2001. *Human Resource Development Quarterly*, *15*(2), 217–248. https://doi.org/10.1002/hrdq.1099

Dinh, J. E., Lord, R. G., Gardner, W. L., Meuser, J. D., Liden, R. C., & Hu, J. (2014). Leadership theory and research in the new millennium: Current theoretical trends and changing perspectives. *The Leadership Quarterly*, *25*(1), 36–62. https://doi.org/10.1016/j.leaqua.2013.11.005

Frechtling, J. A. (2010). *The 2010 User-friendly Handbook of Project Evaluation*. National Science Foundation, Directorate for Education and Human Resources, Division of Research and Learning in Formal and Informal Settings.

Gardner, W. L., Lowe, K. B., Moss, T. W., Mahoney, K. T., & Cogliser, C. C. (2010). Scholarly leadership of the study of leadership: A review of *The Leadership Quarterly's* second decade, 2000–2009. *The Leadership Quarterly*, *21*(6), 922–958. https://doi.org/10.1016/j.leaqua.2010.10.003

Katz, R. (1955). Skill of an effective administrator. *Harvard Business Review*, *33*, 33–42. https://cir.nii.ac.jp/crid/1570009749789195520

Lamm, K. W., Carter, H. S., & Lamm, A. J. (2016). Evaluating Extension Based Leadership Development Programs in the Southern United States. *Journal of Agricultural Education*, *57*(1), 121–136. https://doi.org/10.5032/jae.2016.01121

L, K. D. (1959, 1975, 1993). Techniques for evaluation training programs. *Journal of the American Society of Training Directors*, *13*, 21–26. https://cir.nii.ac.jp/crid/1573950399055987328

Northouse, P. G. (2021). *Leadership: Theory and Practice*. SAGE Publications.

Patton, M. Q. (2008). *Utilization-Focused Evaluation*. SAGE Publications.

United States Department of Agriculture. (2011b). Abraham Lincoln and agriculture - Morrill land-grant college act. *History, Art, and Biography*. Retrieved from: http://riley.nal.usda.gov/nal_display/index.php?info_center=8&tax_level=4&tax_subject=3&topic_id=1030&level3_id=6723&level4_id=11088

Career and Technical Education Teachers' Opinions on Virtual Reality

Jackson Horton
Mississippi State University
Box 9745
Mississippi State, MS 39762
jch1182@msstate.edu

OP McCubbins
Mississippi State University
Box 9745
Mississippi State, MS 39762
am4942@msstate.edu

Career and Technical Education Teachers' Opinions on Virtual Reality

Introduction

The technology available in schools has evolved tremendously in the last few decades (Blascovich & Bailenson, 2011; Wells & Miller, 2020). One such technology that has advanced considerably in recent years is Virtual Reality (VR). Various forms of VR (e.g., stereoscopic viewers) have been around since the early 1900's (Virtual Reality Society, 2019). The Virtual Reality Society (2017) noted that various industries have invested in VR for simulation exercises (military and healthcare), employee onboarding (business), and rapid prototyping (engineering). Career and Technical Education (CTE) prepares individuals for college and/or careers across a variety of industries (What is Career and Technical Education, 2024). It stands to reason that technology should be an integral component of CTE programs. Researchers have documented increased performance across a variety of tasks from VR trainings versus traditional training methods (Kavanagh et al., 2017; Patel et al., 2006). Skill development is a cornerstone of CTE programs. Aligned with the goals of CTE, the application of VR plays a useful role in teaching and learning across career areas (Wells & Miller, 2020). The integration of VR offers significant potential for enhancing instructional practices in CTE programs. Wells and Miller (2020) explored agricultural educators' opinions of VR, but a dearth of literature exists about the broader discipline of CTE educators' opinions on this futuristic technology. What are CTE teacher's opinions of VR technology?

Purpose and Objectives

The purpose of our study was to describe CTE teachers' opinions of VR technology in CTE settings. We developed two objectives to guide this research.

1. Describe CTE teachers' experience with VR.
2. Describe CTE teachers' opinions of VR.

Theoretical Framework

The Technology Acceptance Model served as the theoretical framework that undergirded our study. Specific attention was placed on the concepts of perceived usefulness and ease of use.

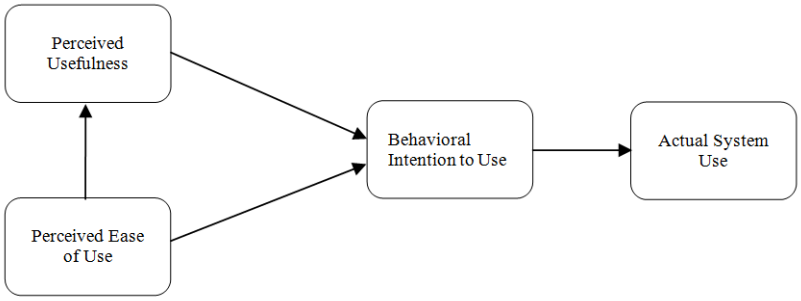


Figure 1. Technology Acceptance Model (Davis, 1989)

In the context of this study, we conceptualize behavior as the utilization of VR technology within CTE settings for instructional purposes. Aligned with Wells and Miller (2020), we posited that individual factors, such as attitudes toward VR technology, past encounters with VR, educational background, and professional experiences, could shape CTE instructors' decisions regarding the adoption and utilization of VR technology. Furthermore, perceptions and realities regarding colleagues' use of VR technology may influence one's inclination to incorporate VR into their

own instructional practices. Additionally, instructors' beliefs and attitudes toward VR within their specific CTE programs can affect their intentions and actions. Notably, perceptions of control over the learning environment, as well as actual environmental constraints such as space availability, funding, curriculum requirements, student needs, and administrative support, were identified as factors influencing perceived behavioral control and subsequent behaviors (Wells & Miller, 2020).

Methodology

This descriptive study sought to examine CTE teachers' opinions about VR technology. To accomplish this purpose, we modified the VR Technology in School-Based Agricultural Education Settings questionnaire (Wells & Miller, 2020) to reflect broader CTE applications. Based on these slight modifications, we determined the original instruments Cronbach's alpha reliability coefficient ($\alpha = .940$) to be sufficient for this study. Paper surveys were administered to 26 CTE educators participating in a "VR in CTE" professional development program developed by the authors. All 26 educators completed the instrument for a response rate of 100%. Eleven distinct CTE clusters were represented in the sample. The typical respondent was female ($f = 16$; 61.5%), was 43.62 years of age ($SD = 8.81$), had taught for an average of 12.42 academic years ($SD = 6.44$), and had a bachelor's degree ($f = 10$; 38.5%) as the highest degree earned.

Results/Findings/Conclusions

Regarding teachers' prior experiences with VR, 57.7% (f = 15) reported having used VR themselves. Teachers reported their experience using VR as fairly positive (f = 11; 42.3%) or very positive (f = 10; 38.5%). Select data regarding teachers' opinions of VR is detailed in the table below.

Table 1

CTE Teachers' Opinions of VR

Item	D	U	A
VR is useful for developing psychomotor skills	0 (0%)	8(30.8%)	18(69.3%)
There is great value in trying to learn a new skill in VR	0 (0%)	1 (3.8%)	25(96.2%)
I am comfortable trying to learn a new skill using VR	0(0%)	1(3.8%)	25(96.2%)

Note. D = Strongly Disagree or Disagree; U = Unsure; A = Agree or Strongly Agree

Teachers' opinions toward VR was overwhelmingly positive. Many teachers believed VR would improve their teaching and be useful for skill development.

Implications/Recommendations/Impact on Profession

We recommend a follow-up study to explore if and how the teacher's implemented VR in their CTE programs. This could reveal potential barriers to integrating VR into course content across CTE programs. The resulting data could inform future professional development to promote VR usage. This study could also be replicated on a regional and national level to gain additional insight into how VR technology is used in the teaching and learning process. Use of this innovative technology can foster many collaborative relationships between industry stakeholders and classroom teachers. Professional development for preservice and in-service teachers should focus on effective implementation of VR technology into the educational process.

References

Blascovich, J., & & Bailenson, J. N. (2005). Immersive Virtual Environments. In S. Cohen, K. E. Portney, D. Rehberger, & C. Thorsen (Eds.), *Virtual Decisions: Digital Simulations for Teaching Reasoning in the Social Sciences and Humanities.* (pp. 229–253). Lawrence Earlbaum Associates, Inc.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008

Kavanagh, S., Luxton-Reilly, A., Wuensche, B., & Plimmer, B. (2017). A systematic review of Virtual Reality in education. *Themes in Science and Technology Education, 10*(2), 85- 119. https://files.eric.ed.gov/fulltext/EJ1165633.pdf

Patel, K., Bailenson, J. N., Hack-Jung, S., Diankov, R., & Bajcsy, R. (2006). The effects of fully immersive virtual reality on the learning of physical tasks. Proceedings of the 9th Annual International Workshop on Presence, Ohio, USA, 87–94. https://vhil.stanford.edu/mm/2006/patel-physical-tasks.pdf

Virtual Reality Society. (2019). History of Virtual Reality. Virtual Reality Society. https://www.vrs.org.uk/virtual-reality/history.html

Virtual Reality Society. (2017, May 5). Applications of Virtual Reality. Virtual Reality Society. https://www.vrs.org.uk/virtual-reality-applications/

Wells, T., & Miller, G. (2020). Teachers' Opinions About Virtual Reality Technology in School-based Agricultural Education. Journal of Agricultural Education, 61(1), 92-109. doi: 10.5032/jae.2020.01092

What is Career and Technical Education? (2024) [Infographic]. Association for Career and Technical Education. https://www.acteonline.org/wp content/uploads/2024/02/ACTE_WhatIsCTE_Infographic_Feb2024.pdf

Comparing the Classroom Needs of School-Based Agricultural Education Teachers in Minnesota by Years of Teaching Experience

Lavyne L. Rada
University of Minnesota
218 Ruttan Hall
1994 Buford Ave
St. Paul MN 55118
rada@umn.edu
605-695-1861

Scott Smalley
Iowa State University
217 Curtiss Hall
Ames IA 50011
Smalle16@iastate.edu
515-294-0047

Introduction and Need for Research

A desire to retain competent School-Based Agricultural Education (SBAE) teachers is vital to agricultural success and growth. Psychological needs of Minnesota SBAE instructors' turnover intention is impacted by autonomy, competence, and relatedness (independently and collectively) (Rada, 2023), especially competence perception (Palmer, 2020; Rada, 2023). The relationship between SBAE teacher perceived competence and professional commitment highlights the necessity to study classroom teacher competence as an effort to address teacher retention.

Theoretical Framework

Self-determination theory (Deci & Ryan, 1985, 2000) examines how motivation and personality approach competence, autonomy, and relatedness and how perceptions of psychological needs satisfaction motivate people (Deci & Ryan, 2000). Specifically, competence is mastery and the belief that one can succeed and grow (Ryan & Deci, 2020). Perceived competence affects teachers' psychological needs at work (Palmer, 2020). Teachers' perceived competence satisfaction and years of service are statistically related (Collie et al., 2016; Hobson & Maxwell, 2017; Palmer, 2020) and validated with Minnesota SBAE teachers (Rada, 2023).

Needs assessments have identified SBAE teachers' abilities and deficiencies, considering the competencies desired to manage discipline-specific expectations (Clemons et al., 2018; Coleman et al., 2020; Smalley et al., 2019; Smalley & Smith, 2017; Sorensen & McKim, 2014), but these perceptions had not been assessed in Minnesota considering teachers' years of experience. SBAE research includes discipline-specific teacher expectations (McKim et al., 2017; Roberts & Dyer, 2004). SBAE teachers with stronger discipline-specific teacher competency indicated higher teaching commitment (McKim et al., 2017; Rada, 2023). A needs assessment of the Minnesota's SBAE teachers' perceived competence was needed.

Methodology

The purpose of this study was to evaluate the perception of Minnesota SBAE teachers in the areas of program design and management, teaching, and classroom management. The following research objectives served as a guide for this needs assessment study:

1. Determine the perceptions of competence of Minnesota SBAE teachers with fewer than five years of teaching experience compared to those with five or more years of experience related to program design and management, teaching, and classroom management.
2. Assess Minnesota SBAE teachers' professional development needs with fewer than five years of teaching experience compared to those with five or more years of experience related to program design and management, teaching, and classroom management.

Researchers evaluated active SBAE teachers' professional development needs in Minnesota using a modified Borich requirements Assessment Model. The model quantifies the gap between "behaviors, skills, and competencies" and what should be to determine training goals (Borich, 1980, p. 39). An instrument created and validated by Smalley et al. (2019) examined Minnesota SBAE teachers' perceptions. Each needs assessment item had two Likert scales. One measure examined teachers' perceived importance associated with topics (1 = No Importance, 2 = Below Average, 3 = Average, 4 = Above Average, 5 = Essential). The other scale evaluated their perceived ability to perform the skill within their classroom (1 = No Ability, 2 = Below Average, 3 = Average, 4 = Above Average, 5 = Exceptional).

Results and Findings

According to McKim et al. (2017) and Rada (2023), SBAE teachers who perceive higher competence within the discipline-specific teacher competence areas also reported a higher perceived commitment to teaching. When professional development needs related to program design and management, teaching, and classroom management were compared for those SBAE teachers with fewer than five years to those with five years or more of teaching experience, the need for professional development was typically higher for teachers with fewer years of experience. Overall when combining all the competencies, the top five identified needs for professional development for teachers with fewer years of experience were: (a) managing student behaviors (*MWDS* = 4.82); (b) organizing a local alumni/agricultural booster program (*MWDS* = 4.70); (c) repairing and maintaining laboratory equipment (*MWDS* = 4.55);); (d) proper implementation of IEPs for students with disabilities (*MWDS* = 4.35); and (e) utilizing an advisory committee to promote the local agricultural education program (*MWDS* = 4.07). The top five identified needs for professional development for teachers with five or more years of experience were: (a) (a) managing student behaviors (*MWDS* = 43.53); (b) motivating students to learn (*MWDS* = 3.50); (c) repairing and maintaining laboratory equipment (*MWDS* = 3.18); (d) proper implementation of IEPs for students with disabilities (*MWDS* = 3.18); and (e) organizing a local alumni/agricultural booster program (*MWDS* = 3.52). Many of the same professional development needs were identified regardless of years of teaching experience.

Conclusions and Recommendations

Teachers perceived ability related to program design and management, teaching, and classroom management were related to perceived competence within the SDT (Deci & Ryan, 2000). Teachers emphasized controlling student behavior, engaging students in the classroom, teaching problem-solving and decision-making skills, and implementing IEPs for students with disabilities. Overall, the need for professional development was higher for each topic for teachers with fewer years of experience. However, there was little variation in professional development topics needed when comparing the identified needs of each group by experience.

As professional development is offered within the state, coordinators within the state department of education, state FFA association, and agricultural teachers' association need to make sure they take into consideration the needs of the teachers. Being able to differentiate professional development sessions for early career and experienced teachers will allow teachers to select the type of workshop which may fit their needs. The specific subcomponents of each topic were not explored in this needs assessment. Professional development is a continuous process and by being able to learn the knowledge and skills over time, it will allow SBAE teachers to be successful in their roles and responsibilities. By being able to provide all teachers with the necessary professional development to assist in reducing challenges for teachers and assist in retaining high quality educators. Future research needs to focus on breaking down the needs of teachers even further by their teacher life cycle stage and pathway to licensure. In addition, future research needs to occur on the implementation and impact of professional development topics within the teacher's program.

References

Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of teacher education*, *31*(3), 39-42.

Clemons, C. A., Heidenrich, A. E., & Linder, J. R. (2018). Assessing the technical expertise and content needs of Alabama agriscience teachers. *Journal of Agricultural Education, 59*(3), 87-99 https://doi.org/10.5032/jae.2018.03087

Coleman, B., Bunch, J., & Thoron, A. (2020). Identifying agriscience teachers' instructional practice professional development needs by certification type. *Journal of Agricultural Education, 61*(3), 86-100. https://doi.org/10.5032/jae.2020.03086

Collie, R. J., Shapka, J. D., Perry, N. E., & Martin, A. J. (2016). Teachers' psychological functioning in the workplace: Exploring the roles of contextual beliefs, need satisfaction, and personal characteristics. *Journal of Educational Psychology, 108*, 788-799. https://doi.org/10.1037/edu0000088.

Deci, E. L., & Ryan, R. M. (1985). Intrinsic motivation and self-determination in human behavior. New York: Plenum Press Publishing Co.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268. https://doi.org/10.1207/s15327965pli1104_01

McKim, A. J., Sorensen, T. J., Velez, J. J., & Henderson, T. M. (2017). Analyzing the relationship between four teacher competence areas and commitment to teaching. *Journal of Agricultural Education*, *58*(4), 1-14. https://doi.org/10.5032/jae.2017.04001

Palmer, C. B. (2020). *The relationship between autonomy, competence, and relatedness and teachers' length of service* (Order No. 27996038). Available from ProQuest Dissertations & Theses Global. (2416832992).

Rada, L. L. (2023). *The Relationship Between Psychological Needs Satisfaction and Professional Commitment of Minnesota School-Based Agricultural Education Teachers* (Order No. 30311056) [Doctoral dissertation, University of Minnesota]. ProQuest Dissertations Publishing.

Roberts, T. G., & Dyer, J. E. (2004). Characteristics of effective agriculture teachers. *Journal of Agricultural Education*, *45*(4), 82-95. https://doi.org/10.5032/jae.2004.04082

Ryan, R. M., & Deci, E. L. (2020). Intrinsic and extrinsic motivation from a self-determination theory perspective: Definitions, theory, practices, and future directions. *Contemporary Educational Psychology*. https://doi.org/10.1016/j.cedpsych.2020.101860

Smalley, S., Hainline, M. S., & Sands, K. (2019). School-based agricultural education teachers' perceived professional development needs associated with teaching, classroom management, and technical agriculture. *Journal of Agricultural Education, 60*(2), 85-98. doi: 10.5032/jae.2019.02085

Smalley, S. W., & Smith, A. R. (2017). Professional Development Needs of Mid-Career Agriculture Teachers. *Journal of Agricultural Education*, *58*(4), 282-290.

Sorensen, T. J., & McKim, A. J. (2014). Perceived work-life balance ability, job satisfaction, and professional commitment among agriculture teachers. *Journal of Agricultural Education, 55*(4), 116-132. https://doi.org/10.5032/jae.2014.04116

Research Poster

Cross-Cultural Collaboration and Transformative Learning: A Photovoice Exploring the Impact of Educational Partnerships on Personal Growth and Global Understanding

Introduction & Purpose

From a global standpoint, there exists an increasing need for the enhancement of agricultural educators essential skills repertoire (Barrick et al., 2009; Foster et al., 2014; Kabasa et al., 2015; Lindner et al., 2003; McCormick & Whittington, 2000). One approach to enhance essential skills development (e.g., communication, social and emotional intelligence, critical thinking, etc.) in agricultural educators is to deliver quality international education experiences (Dado et al., 2023; Serin, 2017; Wright, 2020). In July 2023, a group of 10 multidisciplinary educators participated in a USDE funded, month-long immersive trip to Uganda. US educators partnered with Ugandan agricultural educators to catalyze project-based learning agricultural experiences in poultry science and aquaculture at secondary schools in the Northern region of the country. To describe the personal impact of this experience, US participants engaged in a modified photovoice; therefore, the purpose of this study was to examine how an immersive international experience impacted US educators.

Method

Researchers employed a modified photovoice. Photovoice is a type of participatory action research (Wang & Burris, 1997). Participants engaged in self-observation, capturing images of themselves, their surroundings, and their experience over the month-long trip (Spence et al., 2023). These self-taken photographs served as documentation of their experiences, while observations were made through the naturalistic interpretation of these images and a subsequent focus group discussion (Spence et al, 2023; Wang & Burris, 1997). To analyze the data, researchers paired each speaker with their corresponding photographs and redacted any identifiable details to uphold confidentiality protocols (Jurkowski & Paul-Ward, 2007). Subsequently, researchers applied systematic coding techniques (Jurkowski, 2008) to analyze the transcribed interviews, adhering to the Constant Comparative Method (CCM; Glaser & Strauss, 1967). Researchers established trustworthiness and credibility during the investigation by engaging in reflexive journaling, prolonged engagement, audio recordings, verbatim transcriptions of focus group sessions, and the incorporation of photographs and accompanying focus group descriptions and discussions (Lincoln & Guba, 1985).

Results

This research resulted in 3 themes: (1) Focus on enriching US students' education; (2) Relation to Ugandan Educators through the care for student education; and (3) Increased cultural competencies and understanding. An emergent theme resulting from this research was a (1) *focus on enriching US students' education*. Throughout the focus group, participants expressed how they kept their US students at the forefront of their minds during the experience. Participants articulated bringing lessons learned and experiences back to their US classrooms to enrich their American students' education. One participant explained, "I think that for me, this project will be an example for my students. So the story behind this project is definitely going to be forefront on the bulletin board in my classroom for students to see that the experience itself, a portion of the components for this will be to carry that forward." This quote reflects on the transformative impact of the experience and the participant's intention to share lessons learned with their students. Throughout the photovoice focus group, participants expressed (2) *relation to Ugandan educators through the mutual care for their students' education*. One participant explained how

their excitement for the students felt mutual with both educators and school administration, stating, “I think that everyone who is at the meeting is completely all in and doing it for the kids” The same participant expressed their excitement for their Ugandan students, stating, “I think in years to come, these gentlemen that are there will look back and remember this moment. So I think it will be perhaps pivotal for some of them, but definitely a moment of pride for them and for the whole school.” Participants expressed the emergent theme (3) *increased cultural competencies and understanding*. This manifested in many forms, including the feeling of having connection through agricultural activities. One participant stated, “so much of my life is where I live, agricultural education. So I thought I would feel more out of my comfort zone, but the day that I got to talk about beekeeping was part of what I do... I think in the United States, I don't always relate the gardening habit that I have... as part of ag business but seeing it on small scale farming here I think has made me realize that I have a lot more in common than I ever realized.” The participant reflected on the cultural exchange and realization of shared experiences between their own agricultural practices and those observed during the trip, highlighting the potential for personal growth, and understanding through exposure to different perspectives.

Conclusions & Recommendations

Analysis of study results led us to conclude that international experiences can enhance educators’ essential skills. The study confirms the potential of international experiences in enhancing the soft skill repertoire of agricultural educators, aligning with existing literature highlighting the benefits of such experiences (Barrick et al., 2009; Foster et al., 2014; Kabasa et al., 2015; Lindner et al., 2003; McCormick & Whittington, 2000). Additionally, we conclude educators participating in an immersive international experience, such as the USDE funded trip to Uganda, resulted in transformative experiences for the US educators involved. These experiences enriched their personal and professional growth as well as having a direct impact on their approach to teaching and engaging with students with potential continuing impact on their US students through the educators’ global experiences. Lastly, it is evident cross-cultural collaboration and understanding increases due to international experiences. Through partnerships with Ugandan educators and engagement in student-focused agricultural projects, the US educators deepened their cultural competencies and developed meaningful relationships with their Ugandan counterparts underscoring the importance of authentic opportunity cross-cultural collaboration in educational initiatives.

Based on these conclusions, we recommend the promotion of international experiences to US educators. Educational institutions and organizations should actively promote and support international experiences for educators, recognizing the value they bring in enhancing teaching effectiveness and fostering global perspectives among faculty members. Additionally, we recommend incorporating experiential learning components, such as international projects and partnerships, into educational curricula. This has the potential to provide teachers and students with valuable cross-cultural experiences and enhance their understanding of global issues. Finally, we recommend further research be conducted to explore the long-term impacts of immersive international experiences on educators, and how it impacts their US students. Longitudinal studies can provide insights into the sustained benefits to the US educational system by supporting educators’ ongoing development through international experiences.

References

Barrick, K. R., Samy, M. M., Gunderson, M. A., & Thoron, A. C. (2009). A model for developing a well-prepared agricultural workforce in an international setting. Journal of International Agricultural and Extension Education, 16(3), 25-31. https://doi.org/10.4148/2831-5960.1088

Dado, M., Spence, J. R., & Elliot, J. (2023). Going the distance: Examining the impact of a long-term international fellowship. *Journal of International Agricultural and Extension Education, 30*(1), 59-73. https://doi.org/10.4148/2831-5960.1088

Foster, D. D., Rice, L. L., Foster, M. J., & Kirby, B. R. (2014). Preparing agricultural educators for the world: describing global competency in agricultural teacher candidates. *Journal of Agricultural Education, 55*(1), 51-65. https://eric.ed.gov/?id=EJ1122305

Glaser, B., & Strauss, A. (1967). The discovery of grounded theory. Adeline.

Jurkowski, J. M. (2008). Photovoice as participatory action research tool for engaging people with intellectual disabilities in research and program development. Intellectual and Developmental Disabilities, 46(1), 1–11. https://doi.org/10.1352/0047-6765(2008)46[1:PAPART]2.0.CO;2

Jurkowski, J. M., & Paul-Ward, A. (2007). Photovoice with vulnerable populations: Addressing disparities in health promotion among people with intellectual disabilities. Health Promotion Practice, 8(4), 358–365. https://doi.org/10.1177/1524839906292181

Kabasa, J. D., Johann, K., & Minde, I. (2015). Implications of changing agri-food system structure for agricultural education and training in Sub-Saharan Africa. *Journal of Agribusiness in Developing and Emerging Economies, 5*(2), 190-199. http://dx.doi.org/10.1108/JADEE-03-2015-0016

Lindner, J. R., Dooley, K. E., & Wingenbach, G. J. (2003). A cross-national study of agricultural and extension education competencies. *Journal of International Agricultural and Extension Education, 10*(1), 51-59. https://www.aiaee.org/attachments/article/219/Vol-10.1.pdf#page=53

McCormick, D.F., & Whittington, M.S. (2000). Assessing academic challenges for their contribution to cognitive development. *Journal of Agricultural Education, 41.*

Spence, J. R., Redwine, T., Rutherford, T., & Dooley, K. (2023). Unanticipated unity and independence: A photovoice of Ugandan gender-based agriculture issues. *Advancements in Agricultural Development, 4*(2), 74–90. https://doi.org/10.37433/aad.v4i2.283

Wang, C., & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior, 24*(3), 369–387. https://doi.org/10.1177/109019819702400309

Determining Early-career Georgia Agriculture Teachers' Agricultural Mechanics Professional Development Needs

Christopher C. Crump, Ed.D.
Banks County High School
Homer, Georgia 30547
christopher.crump@banks.k12.ga.us

Trent Wells, Ph.D.
Murray State University
Hutson School of Agriculture
206 South Oakley Applied Science Building
Murray, KY 42071
kwells23@murraystate.edu

Determining Early-career Georgia Agriculture Teachers' Agricultural Mechanics Professional Development Needs

Introduction and Theoretical Framework

To be considered effective, agriculture teachers need to be skilled and knowledgeable in a variety of agricultural subject matter (Eck et al., 2019), such as agricultural mechanics. Agricultural mechanics is commonly taught in Agricultural Education programs across the United States. Moreover, agricultural mechanics courses are popular with students and are frequently in demand (Valdez & Johnson, 2020). Consequently, agriculture teachers must be adequately prepared to facilitate learning in agricultural mechanics for their students. Agricultural mechanics subject matter is broad and includes, but is not limited to, structures construction, metal fabrication, and power mechanics (Granberry et al., 2023).

Professional development (PD) is an appropriate avenue through which to improve agriculture teachers' confidence and competence in teaching agricultural subject matter (Grieman, 2010). Wells and Hainline (2021) indicated that agriculture teachers across the United States have substantial needs regarding agricultural mechanics-focused PD. PD can be leveraged to help develop individual agriculture teachers' capacities to deliver impactful, effective learning opportunities for their students (Grieman, 2010). In the context of our study, we operationalized human capital theory (Becker, 1993) as our undergirding theoretical framework. Human capital theory (Becker, 1993) indicates that investment in an individual's knowledge and skills, such as agriculture teachers engaging in agricultural mechanics-focused PD sessions, contributes to the ability of an individual to provide greater, beneficial returns on investment, such as improved competence to teach students enrolled in agricultural mechanics courses.

Purpose

In their national study examining agriculture teachers' agricultural mechanics PD needs, Wells and Hainline (2021) sought to provide a detailed, granular investigation of the topic. However, no recent, similarly-scoped studies have been undertaken in Georgia. To help address this gap in the literature, the purpose of our study was to assess early-career Georgia agriculture teachers' agricultural mechanics PD needs. Our study aligns with Research Priority 3 of the American Association for Agricultural Education National Research Agenda: Sufficient Scientific and Professional Workforce that Addresses the Challenges of the 21st Century (Stripling & Ricketts, 2016).

Methods

Our study was a direct replication of Wells and Hainline's (2021) investigation, *Examining Teachers' Agricultural Mechanics Professional Development Needs: A National Study*. We used their valid and reliable instrument to conduct our study during the Fall 2023 semester. Out of 73 items, 65 addressed various agricultural mechanics topics. Similar to Wells and Hainline (2021), our instrument was framed using Borich's (1980) needs assessment model (i.e., an *Importance* scale and a *Competence* scale). After we received Murray State University Institutional Review Board approval, we contacted a Georgia Agricultural Education state staff

member (A. Claxton, personal communication, September 8, 2023) to obtain the school e-mail addresses for all Georgia agriculture teachers with five or fewer years of experience teaching Agricultural Education (N = 253). Afterward, we used five points of contact (Dillman et al., 2014) to electronically invite and remind agriculture teachers to participate in our study. Ten e-mails bounced, reducing our population to 243 agriculture teachers. To incentivize participation, we offered participants the chance to win one of five $20.00 gift cards. Seventy-six teachers provided usable data, yielding a 31.3% response rate. To identify non-response error (Lindner et al., 2001), we used Microsoft Excel to conduct an independent samples *t*-test to compare early and late responders' responses on the *Competence* scale items. We did not identify any statistically significant differences (t(74) = .24, p =.81) between the two groups. We used McKim and Saucier's (2011) Excel-Based MWDS [mean weighted discrepancy score] Calculator to identify and rank our responders' agricultural mechanics PD needs.

Results, Conclusions, and Recommendations

As indicated by their positive MWDS (McKim & Saucier, 2011), early-career Georgia agriculture teachers have PD needs in all 65 agricultural mechanics topics detailed in our instrument. The top five agricultural mechanics topics are presented in Table 1 (below).

Table 1

Early-career Georgia Agriculture Teachers' Agricultural Mechanics Professional Development Needs by MWDS

			Importance		Competence	
Item	*n*	*MWDS*	*M*	*SD*	*M*	*SD*
American Welding Society (AWS) standards for welding procedures	69	1	8.06	4.25	0.85	2.35
Procedures for structural welding	70	2	7.42	4.16	0.85	2.37
Principles of metallurgy (ex. identifying metals, proper use of metals, etc.)	69	3	7.32	4.17	0.82	2.42
Procedures for building metal projects (ex. trailers, barbecue pits, etc.)	70	4	7.29	4.11	0.81	2.34
Procedures for cold metalworking bending	70	5	7.27	3.94	0.85	2.10

Note. Importance Scale: 1 = Not important (NI), 2 = Of little importance (LI), 3 = Somewhat important (SI), 4 = Important (I), 5 = Very important (VI); Competence Scale: 1 = Not competent (NC), 2 = Little competence (LC), 3 = Somewhat competent (SC), 4 = Competent (C), 5 = Very competent (VC); MWDS = Mean weighted discrepancy score; M = Mean; SD = Standard deviation.

In particular, our findings indicate that priority should be given to providing PD in welding and metal fabrication-related topics. We recommend that Georgia Agricultural Education stakeholders explore opportunities to provide agricultural mechanics-focused PD specifically geared toward early-career agriculture teachers. However, agricultural teacher educators in Georgia should also consider exploring mid- and late-career Georgia agriculture teachers' agricultural mechanics PD needs. Doing so would help to expand the profession's knowledge and capacity to directly address agriculture teachers' human capital development needs, thereby helping to impact learning opportunities for students.

References

Becker, G. S. (1993). *Human capital: A theoretical and empirical analysis with special reference to education* (3rd ed.). The University of Chicago Press.

Borich, G. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education, 31*(3), 39-42. doi:10.1177/002248718003100310

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Eck, C. J., Robinson, J. S., Ramsey, J. W., & Cole, K. L. (2019). Identifying the characteristics of an effective agricultural education teacher: A national study. *Journal of Agricultural Education, 60*(4), 1-18. https://doi.org/10.5032/jae.2019.04001

Granberry, T., Blackburn, J. J., & Roberts, R. (2023). The state of agricultural mechanics in the preparation of school-based agricultural education teachers. *Journal of Agricultural Education, 64*(4), 144-158. https://doi.org/10.5032/jae.v64i4.160

Grieman, B. C. (2010). Continuing professional development. In R. M. Torres, T. Kitchel, A. L. Ball (Eds.) *Preparing and advancing teachers in agricultural education* (pp. 180-201). The Ohio State University.

Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education, 42*(4), 43-53. https://doi.org/10.5032/jae.2001.04043

McKim, B. R., & Saucier, P. R. (2011). An Excel-based mean weighted discrepancy score calculator. *The Journal of Extension, 49*(2). https://www.joe.org/joe/2011april/pdf/JOE_v49_2tt8.pdf

Stripling, C. T., & Ricketts, J. C. (2016). Research priority 3: Sufficient scientific and professional workforce that addresses the challenges of the 21st century. In T. G. Roberts, A. Harder, & M. T. Brashears. (Eds.), *American Association for Agricultural Education national research agenda: 2016-2020.* University of Florida Department of Agricultural Education and Communication.

Valdez, E. D., & Johnson, S. (2020). *Mismatch? Aligning secondary career and technical education with regional workforce demand*. Texas Public Policy Foundation. https://files.texaspolicy.com/uploads/2020/05/05112536/Valdez-Johnson-Workforce-Demand.pdf

Wells, T., & Hainline, M. S. (2021). Examining teachers' agricultural mechanics professional development needs: A national study. *Journal of Agricultural Education, 62*(2), 217-238. https://doi.org/10.5032/jae.2021.02217

Developing Cultural Competence Among Students: A Short-Term Study Abroad in Morocco

Joshua Toran III, jt87981@uga.edu, (706) 496-6990

2375 S Lumpkin St, Unit 205, Athens, GA 30606

Department of Agricultural Leadership, Education, and Communication

Dr. James Anderson II, jcanderson@uga.edu, (706) 542-0515

Emanuel Kanchewa, emmanuel.kanchewa@uga.edu, (614) 551-9005

Introduction

The U.S. has experienced growing diversity due to increased immigration rates since 1965. The immigrant population comprises approximately 13.6% of the total population, with most immigrants coming from Latin America and Asia (Cohn & Caumont, 2016; Passel et al., 2022). In recent years, this has led to cultural conflict and tensions between social identity groups (Dimock & Wike, 2020). As foreign-born individuals have also become a more significant part of the U.S. labor force, diversity has become increasingly valuable in organizations for its potential competitive advantages (Patrício & Franco, 2022). Education institutions are now focusing on preparing students to be globally and culturally competent to meet the demands of a diverse workforce (Coleman et al., 2021). Globalization has played a significant role in the growth of diversity, influencing economic, political, and sociocultural dimensions (Walter, 2021). The effects of globalization have been both beneficial, leading to increased global connections and mindsets, and controversial, with criticisms of uneven interdependence and one-way influence.

Additionally, globalization has shifted references for local and global identities, resulting in the development of bicultural identities (Melluish, 2014). Given these influences, institutions must adapt their curriculums, assessments, policies, and personnel to promote cultural competence and inclusivity on campus (Wiersma-Mosley, 2019). Study abroad programs have been used to broaden students' global perspectives and develop cultural competence, offering unique experiences to work with diverse groups. However, cultural immersion alone does not guarantee the development of intercultural competence (Rosch & Haber-Curran, 2013). Students must be challenged to think beyond a Western lens and reflect to integrate their learning from these experiences (Grant et al., 2019). This study aimed to examine the impact of immersive study-abroad experiences in developing intercultural competencies.

Theoretical Framework

The study was based on Brown's (1998; 2004) Processing Value Judgements model, which explores how instructional methods influence resistance to cultural diversity sensitivity training among preservice educators. The model describes students' cognitive process to process new information through deflective and reflective filters to determine if they will accept or reject the new information and form a new worldview. Students come into the learning process with preconceived value judgments and use filters to process new multicultural information based on their past experiences, values, and cultural backgrounds. If the information is processed beyond initial deflective filters, students reevaluate it through intrinsic filters to retain or reject it from long-term memory. Students must resolve conflicts with their current beliefs through reflective filters to integrate the information into their long-term knowledge base.

Methodology

This study was part of a more extensive qualitative study using blogs, observations, and interviews as data sources. Content analysis via MaxQDA, a computer-assisted qualitative data analysis (CAQDA) software, was the primary methodology, and interviews were the data source. The sample consisted of 13 students from a research university in the US who participated in a study abroad in Morocco. Aided by peer mentoring teams facilitating guided reflection and discussions, students were encouraged to dive deeper into the academic content and apply it to their immersive experience. The study focused on reflective and deflective filters when processing information. Data collection involved observations and blog posts during the study abroad, followed by semi-structured interviews after the participants returned. The data was analyzed using Brown's (1998; 2004) Processing Value Judgements model.

Results

The data analysis from observation, blog posts, and interviews revealed insights into the development of cultural competence among the students who participated in the study abroad in Morocco. Students encountered various challenges and opportunities for growth during their immersion experience. The data suggest that many students approached cultural differences with reflective filters, relying on previous experiences, existing beliefs, and personal values. Approximately 312 segments were coded into 11 emerging themes, including prior multicultural experience, limited multicultural experience, program connections, conflict resolution, experiential evaluation, aspirations and motivations, anxiety, value judgments, comfortability acting in multicultural contexts, stored perspectives on cultural diversity, and sustained conflict.

Conclusions, Implications, and Recommendations

The findings of this study underscore the transformative potential of experiential learning in promoting cultural competence. Despite initial resistance and challenges, participants demonstrated their ability to navigate cultural differences and engage meaningfully in culturally diverse environments. These findings also supported the importance of structured reflection and experiential learning programs designed with intention. Students could critically examine their cultural assumptions through guided reflection and engagement with diverse perspectives. In summary, the study highlights the positive impact of immersive experiences on developing cultural competence. The students demonstrated self-awareness and willingness to engage with cultural differences, suggesting the importance of educators in cultivating the skills and attitudes necessary for global citizenship.

Educators and program administrators can leverage the findings to enhance the design and implementation of study abroad programs, integrating structured reflection activities and intercultural competence training to maximize the transformative potential of these experiences. Additionally, employers and organizations seeking to cultivate a diverse and inclusive workforce can benefit from understanding the value of immersive intercultural experiences in developing employees' cross-cultural competencies. Education institutions and corporate entities can collaborate on aligning the development of students as global workforce demands continue to evolve. By prioritizing intercultural learning and fostering environments that encourage open dialogue and empathy, institutions can better prepare individuals to navigate the complexities of an increasingly interconnected global society. The insights gained from this study offer practical guidance for promoting cultural competence and fostering meaningful intercultural interactions in both educational and professional contexts.

References

Brown, E. L. (1998). *The relevance of self-concept and instructional design in transforming Caucasian preservice teachers' monocultured worldviews to multicultural perceptions and behaviors* Available from Dissertations & Theses Europe Full Text: Social Sciences https://search.proquest.com/docview/304409889

Brown, E. L. (2004). *What Precipitates Change in Cultural Diversity Awareness during a Multicultural Course*. SAGE Publications. 10.1177/0022487104266746

Cohn, D., & Caumont, A. (2016). 10 demographic trends that are shaping the U.S. and the world. Pew Research Center . *Pew Research Center,* https://www.pewresearch.org/fact-tank/2016/03/31/10-demographic-trends-that-are-shaping-the-u-s-and-the-world/

Coleman, B. M., Orsini, J., Bunch, J. C., & Greenhaw, L. L. (2021). Students' application of team leadership skills in an undergraduate agricultural leadership course when learning experientially. *Journal of Leadership Education, 20*(2), 28. http://eric.ed.gov/ERICWebPortal/detail?accno=EJ1301147

Dimock, M., & Wike, R. (2020). America is exceptional in the nature of its political divide. *Pew Research Center,* https://www.pewresearch.org/fact-tank/2020/11/13/america-is-exceptional-in-the-nature-of-its-political-divide/

Grant, J. L., York, A. R., & Karcher, E. L. (2019). Evaluating Intercultural Competence in a Combined Learning Community Study Abroad Program. *NACTA Journal, 63*(1a), 173-182. https://www.jstor.org/stable/27128511

Melluish, S. (2014). *Globalization, culture and psychology*. Informa UK Limited. 10.3109/09540261.2014.918873

Passel, J. S., Lopez, M. H., & Cohn, D. (2022). U.S. Hispanic population continued its geographic spread in the 2010s . *Pew Research Center,* https://www.pewresearch.org/fact-tank/2022/02/03/u-s-hispanic-population-continued- its-geographic-spread-in-the-2010s/

Patrício, L., & Franco, M. (2022). *A Systematic Literature Review about Team Diversity and Team Performance: Future Lines of Investigation*. MDPI AG. 10.3390/admsci12010031

Rosch, D. M., & Haber-Curran, P. (2013). Learning Leadership Abroad: An Overview of a Short-Term Leadership-Focused Study Abroad Program in Italy. *Journal of Leadership Education, 12*(2), 148-154. 10.12806/V12/I2/148

Walter, S. (2021). *The Backlash Against Globalization*10.1146/annurev-polisci-041719-

Wiersma-Mosley, J. D. (2019). Developing Intercultural Competence and Ethnic Identity among Undergraduate Students in Agriculture and Human Sciences. *NACTA Journal, 63*(1a), 93-98. https://www.jstor.org/stable/27128501

Digital Agriculture Summer Camp: A Comparative Analysis of the First and Second-Year Camp Participants' Knowledge and Postsecondary STEM Interests

Carly Altman
Middle Tennessee State University
651 Founders Lane
Murfreesboro, TN 37132
ca5i@mtmail.mtsu.edu
(404) 915-6362

Dr. Chaney Mosley
Middle Tennessee State University
651 Founders Lane
Murfreesboro, TN 37132
chaney.mosley@mtsu.edu

Dr. Song Cui
Middle Tennessee State University
651 Founders Lane
Murfreesboro, TN 37132
song.cui@mtsu.edu

Introduction

Science, technology, engineering, and mathematics (STEM) education have provided interdisciplinary connections to agriculture, food, and natural resources (AFNR) education above other content areas or instructional techniques (Stubbs & Myers, 2015; Wang & Knobloch, 2020). Various instructional approaches are possible through the natural combination of STEM and AFNR education, including those in non-formal learning, which encompasses intentional out-of-school education (Manolescu et al., 2018; Sefton-Green, 2012; Stubbs & Myers, 2015). A southeastern university held a three-week interdisciplinary, non-formal digital agriculture summer camp for high school students with three content areas: (a) precision agriculture (PA), (b) drone technology, and (c) data science. The purpose of this study was to investigate if high school students' knowledge and postsecondary interests were impacted by participating in a non-formal digital agriculture summer camp. This study was funded by USDA-NIFA award # 2021-67037-35972 and relates to the AAAE Research Value of creating STEM content connections within AFNR (AAAE, 2023).

Theoretical Framework

This study is grounded in Kolb's Experiential Learning Theory (ELT). In ELT, the learner moves through the cycle beginning with the Concrete Experience, where they are actively engaged (Kolb, 2014); for campers, this includes building drones, gathering data from crop measures, and viewing digital agriculture in animal production. The learner then moves to Reflective Observation and interpretation, where they may still build on their experience (Kolb, 2014); for campers, this includes morning reflections and group sharing. In the third stage, Abstract Conceptualization, the learner makes sense of the information, interprets their experience, and grasps ideas (Kolb, 2014); for campers, this includes flying the drones and inputting the crop data. In the stage of Active Experimentation, the learners apply their knowledge and transform their ideas (Kolb, 2014); for campers, this was problem-solving an agriculture issue and presenting it in our camp closing ceremony. The research questions were:

1. How does participating in a digital agriculture summer camp impact camper knowledge of precision agriculture, drone technology, and data science?
2. How does participating in a digital agriculture summer camp impact camper interest in AFNR, aerospace, and data science postsecondary pursuits?
3. How do camp sessions differ in terms of enhancing camper knowledge and postsecondary interest in precision agriculture, drone technology, and data science?

Methodology

The population for this study was high school students who participated in a three-week summer camp focused on digital agriculture. As the camp occurred for two consecutive summers, there were two cohorts of campers. A convenience sampling approach was used, where participants were selected based on their accessibility rather than random selection methods. In Cohort 1 ($N = 11$), there were nine male participants and two female participants, five sophomores, one junior, and five seniors. In Cohort 2 ($N = 16$), there were ten male participants and six female participants comprised of one freshman, four sophomores, five juniors, and six seniors.

This study used a researcher-designed retrospective pretest strategy; where the pretest is given simultaneously with the posttest, and participants are asked to recall their prior knowledge before experiencing a program (Allen & Nimon, 2007). At the conclusion of camp, participants were asked to complete the survey, which used a five-point Likert scale. The survey was divided into two sections, knowledge and post-secondary interest, with subsections for precision

agriculture, drone technology, and data science. The knowledge section inquired how much campers knew about the subjects before and after attending the camp. The response options were: 1 = Very Little, 2 = Little, 3 = Some, 4 = Much, 5 = Very Much. The post-secondary interest section asked campers to indicate their level of agreement to subject-specific statements. The response options were: 1 = Strongly Disagree, 2 = Disagree, 3 = Uncertain, 4 = Agree, 5 = Strongly Agree.

Results

RQ1: Researchers conducted paired sample *t*-tests to examine the differences between pre- and post-participation camper knowledge. Precision agriculture (PA) knowledge increased $t\ (26) = 14.610$, $\alpha = .05$, $p < 0$. Aerospace knowledge increased, $t\ (26) = 21.649$, $\alpha = .05$, $p < 0$. Data science knowledge increased, $t\ (26) = 13.975$, $\alpha = .05$, $p < 0$.

RQ2: Researchers conducted paired samples *t*-tests to examine the differences in campers' post-secondary interests pre- and post-participation. PA interests increased, $t\ (26) = 4.528$, $\alpha = .05$, $p < 0$. Aerospace interests increased, $t\ (26) = 3.438$, $\alpha = .05$, $p < 0.001$. Data science interests increased, $t\ (26) = 5.409$, $\alpha = .05$, $p < 0$.

RQ3: Researchers conducted an independent samples *t*-test to compare post-participation knowledge of all areas of focus. PA indicated no difference between the two groups ($t\ (25) = .633$, $p = .27$), Year 1 ($N = 11$, $M = 3.39$, $SD = .82$) and Year 2 ($N = 16$, $M = 3.56$, $SD = .43$). Aerospace indicated no difference between the two groups ($t\ (25) = -0.037$, $p = .49$), Year 1 ($N = 11$, $M = 4.14$, $SD = .56$) and Year 2 ($N = 16$, $M = 4.15$, $SD = .54$). Data science indicated there was a difference between the two groups ($t\ (25) = 3.37$, $p = 0.00122$), Year 1 ($N = 11$, $M = 2.89$, $SD = .55$) and Year 2 ($N = 16$, $M = 3.84$, $SD = .81$).

Conclusions

The results of the *t*-tests revealed an increase in camper knowledge and post-secondary interests after participating in the digital agriculture summer camp. In Year 1, there was an increase in camper knowledge (80% in PA, 128% in aerospace, and 96% in data science). In Year 2, there was an increase in camper knowledge (70% in PA, 115% in aerospace, and 47% in data science). In Year 1, camper post-secondary interest increased (9% in PA, 16% in aerospace, and 11% in data science). In Year 2, camper post-secondary interest increased (24% in PA, 23% in aerospace, and 34% in data science).

In our comparison of enhanced knowledge between Year 1 and 2 camp groups, PA and aerospace both revealed there was no significant difference in enhanced knowledge between the two groups. For data science, there was a significant difference of enhanced knowledge about data science between the two groups. We assume this is due to Year 2 campers' prior knowledge.

Implications and Recommendations

The study findings support the value of participation in non-formal learning camps for enhancing knowledge and post-secondary interests. Short-term educational camps and non-formal learning opportunities can have positive impacts on students and benefit their learning achievements (Foster & Shiel-Rolle, 2011; Romi & Schmida, 2009). Future research should investigate differences based on gender and grade level. Also, this study showed an increase in student post-secondary interest, a follow-up study should investigate how students explain their increased post-secondary interest and how students recall their experiences.

References

Allen, J. M., & Nimon, K. (2007). Retrospective pretest: A practical technique for professional development evaluation. *Journal of Industrial Teacher Education*, *44*(3), 27–42. https://www.academia.edu/download/73953177/EJ830483.pdf

American Association for Agriculture Education (AAAE). (2023). *AAAE Research Values*.

Boone Jr., H. N., & Boone, D. A. (2012). Analyzing Likert data. *Journal of Extension*, *50*(2). https://doi.org/10.34068/joe.50.02.48

Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development* (2nd ed.). Upper Saddle River, New Jersey: Pearson Education LTD.

Manolescu T., Florea, N., & Arustei, C. (2018). Forms of learning within higher education. Blending formal, informal and non-formal. *Cross-Cultural Management Journal*, *20*(1), 7–15. https://seaopenresearch.eu/Journals/articles/CMJ2018_I1_1.pdf

Romi, S. & Schmida, M. (2009) Non-formal education: a major educational force in the postmodern era, *Cambridge Journal of Education*, *39*(2), 257-273, DOI: 10.1080/03057640902904472

Sefton-Green, J. (2012). *Learning at not-school: A review of study, theory, and advocacy for education in non-formal settings*. The MIT Press. http://library.oapen.org/handle/20.500.12657/26062

Stubbs, E. A., & Myers, B. E. (2015). Multiple case study of STEM in school-based agricultural education. *Journal of Agricultural Education*, *56*(2), 188-204. https://doi.org/10.5032/jae.2015.02188

Tichenor, M., & Plavchan, J. (2010). Summer camps: a fun way to reinforce math skills. *Journal of Instructional Psychology*, *37*(1). https://link.gale.com/apps/doc/A224405381/AONE?u=tel_middleten&sid=googleScholar&xid=91be730a

van Delden, S., & Yang, K. P. (2014). Robotics summer camps as a recruiting tool: A case study. *Journal of Computing Sciences in Colleges*, *29*(5), 14-22. https://dl.acm.org/doi/abs/10.5555/2600623.2600626

Wang, H. and Knobloch, N. (2020). Preservice educators' beliefs and practices of teaching STEM through agriculture, food, and natural resources. *Journal of Agricultural Education*, *61*(2), 57-76. https://doi.org/10.5032/jae.2020.02057

Wang, H., & Knobloch, N. A. (2018). Levels of stem integration through agriculture, food, and natural resources. *Journal of Agricultural Education*, *59*(3), 258-277 https://doi.org/10.5032/jae.2018.03258

Do You Belong? Stories from Minority FFA Members and Their Feelings Towards the Florida FFA Association

Sophia Jaramillo-Vasconez

Dr. Carla Jagger

Dr. Katrina Alford

Dr. Stacy Vincent

325 Cooper Drive Lexington, KY 40502

(407) 473-1580

sophia.jaramillo@uky.edu

carlajagger@ufl.edu

trini@ufl.edu

stacy.vincent@uky.edu

Introduction

Since the creation of the National FFA Organization in 1928, the organization has become more inclusive over the course of its existence, allowing membership to people of color and women. As the organization has developed, conversations regarding agricultural education have increasingly shifted to focus on the topics of diversity, equity, and inclusion in the years since (Elliot & Lambert, 2018; LaVergne et al., 2012; Vincent et al., 2015). In a 2013 study that assessed FFA chapter demographics in relation to schools and communities, the primary membership demographics across chapters were found to be 55% male, 45% female, 80% reported as white, 19% as other ethnicities. This led to the conclusion that as diversity has increased in schools, that diversity has not been reflected in agricultural education programs, (Lawrence et al., 2013). As agricultural education programs continue to be established in more diverse urban areas, more research must be done to explore how agriculture teachers and programs can overcome barriers to student participation (Martin & Kitchel, 2014). The purpose of this study is to investigate how minority members feel about their sense of belonging during their involvement in the Florida FFA association.

Theoretical Framework

The primary epistemology for this study is based on social constructivism. Social constructivism was originally developed by psychologist Lev Vygotsky, who argued that cognitive functions originate from social interactions and highlighted the importance of the relationships between individuals in forming knowledge (Vygotsky, 1978). Social constructivism outlines that knowledge is the result of active cognizing by individuals; cognition is an adaptive process; cognition organizes and makes sense of an individual's experiences; and that knowledge roots back to biological construction, and social, cultural, and language-based interactions (Doolittle & Camp, 1999). To understand how individuals form knowledge and learn, it is vital to understand the influence of social interaction (Doolittle & Camp, 1999; Young & Collin, 2004). In an educational context, social constructivism can guide thought on how educators' social experiences impact the treatment of students with different backgrounds and experiences (Smagorinsky, 2007). Because thinking is social in origin, individuals often assume that their own knowledge is the accepted norm (Smagorinsky, 2007). Social constructivism accounts for the ways that power, economics, politics, and social factors impact how people build knowledge and learn about the world (Yilmaz, 2008).

Methodology

The methodology for this study utilizes a qualitative multiple case study approach (Yin, 2014). Each participant was treated as a single case and cross-case analysis was utilized with all the cases. The 5 participants (n=5) were recruited through snowball sampling through email and in-person. The participant sample is minorities who have been a member of Florida FFA. For the purpose of this study, minorities are defined as individuals of non-European descent and who do not identify as white. Interviews followed a semi-structured interview guide instrument (Longhurst, 2003) and lasted about 120 minutes. One participant interview was conducted in-person and 4 were conducted online with video conferencing. Participants were asked to create or supply artifacts (drawings, word clouds, photos, and cartoons/memes) with the interview, but not all artifacts were received. Data was analyzed using constant comparative data analysis and coding was based on the four factors outlined in social constructivism: power, economics, politics, and social factors. Field notes were taken during each interview and the researcher kept a reflective journal after each interview.

Results

Findings were organized into four central themes: power, economics, politics, and social factors. The interview responses outlined how the leadership presence held by the state, in the form of state officers and state staff, influenced the perceived power dynamic in the state association. Economics seems to largely impact what participants felt the targeted image of FFA to be, this included how participants felt the "ideal FFA member" looked and acted like. Several artifacts were collected to illustrate this image. Several participants also mentioned the impact that socioeconomic status had on their ability to assimilate and feel a sense of belonging to other members. The influence internal politics had within the Florida FFA Association were also seen in the interviews. Some participants mentioned the impact their advisor's political views regarding the FFA had on them as members. One participant notably discussed an experience at FFA State Convention, and how conventional political figures lessoned his feelings of belonging because of the conservative viewpoints. Lastly, all participants discussed several social factors that led to their involvement and feelings of belonging – or lack thereof. A lack of adequate representation, presence of cliques between members, encountering insidious discrimination, cultural differences, and sense of local community were all prominent social factors.

Conclusions

Overall, the primary conclusion is a need for action by the Florida FFA Association regarding diversity, equity, and inclusion initiatives. All participants in this study recounted experiences of insidious discrimination. This discrimination must be addressed in order to increase diverse student membership's feeling of belonging and to increase involvement. In order to combat the negative impacts of these microaggressions, which include a drop in participation, it is recommended to reframe education to include deeper cultural reflection, prepare educators to respond appropriately to microaggressions, and acknowledge individual biases that educators and students have. The image of Florida FFA also needs to be more reflective of its membership to increase diverse membership. Perceiving connection and feeling a sense of belonging to a group is largely intertwined with social identity (Ashford & Mael, 1989). This leads to the conclusion that more diverse representation is required for students to feel more welcome (Lawson et al., 2021).

Recommendations

The Florida FFA Association can act by creating opportunities for members to explore their identities, revisiting leadership trainings and materials with a critical lens, and increasing transparency and communication regarding actions taken by the board of directors. The researchers of this study recommend that teacher preparation programs work to address concepts surrounding racism, microaggressions, imagery in classrooms, proper verbiage and language, and integrating culture in curriculum. Students should be encouraged to express themselves openly through clothing, music, and hairstyles. More diverse representation is needed in Florida FFA. Images and examples of achievements made by people of color should be shared in curriculum, marketing, and decorations. Speakers from various backgrounds should also be invited to participate at state events and activities. Participants also made explicit recommendations to the researchers which included: providing materials in multiple languages; increasing diversity-based education regarding the agricultural industry; having Florida FFA take a firm stance on the importance of diversity, equity, and inclusion; creating consequences for discriminatory behavior; and the creation of a state staff position that specializes in diversity, equity, and inclusion.

References

Ashforth, B. E., & Mael, F. (1989). Social identity theory and the organization. *Academy of Management Review, 14*(1), 20-39. https://doi.org/10.5465/amr.1989.4278999

Doolittle, P. E., & Camp, W. G. (1999). Constructivism: The career and technical education perspective. *Journal of Vocational and Technical Education, 16*(1), 23-46. https://doi.org/10.21061/jcte.v16i1.706

Elliott, K. M., & Lambert, M. D. (2018). Urban and rural Latino students' experiences in agricultural education: Toward defining rural privilege. *Journal of Agricultural Education*, *59*(3), 198-212. https://doi.org/10.5032/jae.2018.03198

LaVergne, D. D., Jones, W. A., Elbert, C. D., & Larke, A., Jr. (2012). The effect of teacher demographic and personal characteristics on perceptions of diversity inclusion in agricultural education programs. *Journal of Agricultural Education, 53*(3), 84-97. https://doi.org/10.5032/jae.2012.03084

Lawrence, S., Rayfield, J., Moore, L. L., & Outley, C. (2013). An analysis of FFA chapter demographics as compared to schools and communities. *Journal of Agricultural Education*, *54*(1), 207-219. https://doi.org/10.5032/jae.2013.01207

Lawson, C., Doerfert, D., & Filson, C. (2021). State FFA Association Use of Instagram to Promote Membership Diversity. *Journal of Agricultural Education, 62*(2), 97-118. http://doi.org/10.5032/jae.2021.02097

Longhurst, R. (2003). Semi-structured interviews and focus groups. *Key Methods in Geography*, *3*(2), 143-156.

Martin, M. J., & Kitchel, T. (2014). Barriers to participation in the National FFA Organization according to urban agriculture students. *Journal of Agricultural Education, 55*(1), 120-133. https://doi.org/10.5032/jae.2014.01120

Smagorinsky, P. (2007). Vygotsky and the Social Dynamics of Classrooms. *The English Journal*, *97*(2), 61–66. http://www.jstor.org/stable/30046790

Vincent, S. K., & Torres, R. M. (2015). Multicultural competence: A case study of teachers and their student perceptions. *Journal of Agricultural Education, 56*(2), 64-75. https://doi.org/10.5032/jae.2015.02064

Vygotsky, L. S. (1978). *Mind in Society: Development of Higher Psychological Processes* (M. Cole, V. Jolm-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press. https://doi.org/10.2307/j.ctvjf9vz4

Yilmaz, K. (2008). Constructivism: Its theoretical underpinnings, variations, and implications for classroom instruction. *Educational Horizons, 86*(3), 161-172. www.jstor.org/stable/42923724

Yin, R. K. (2014). Case study research: Design and methods. SAGE.

Young, R. A., & Collin, A. (2004). Introduction: Constructivism and social constructionism in the career field. *Journal of Vocational Behavior*, 64, 373-388. https://doi.org/10.1016/j.jvb.2003.12.005

EFFECTS OF IMMERSIVE AND IN-CLASS EXPERIENCES ON KNOWLEDGE AND PERCEPTIONS OF AGRICULTURAL CAREERS

Courtney Coffman
ccoffman@wtamu.edu

Kevin Williams
kwilliams@wtamu.edu

Troy Tarpley
ttarpley@wtamu.edu

Tanner Robertson
trobertson@wtamu.edu

Nate Wolf
nwolf@wtamu.edu

West Texas A&M University
Department of Agricultural Sciences
WT Box 60998
Canyon, TX 79016
806-651-2505

EFFECTS OF IMMERSIVE AND IN-CLASS EXPERIENCES ON KNOWLEDGE AND PERCEPTIONS OF AGRICULTURAL CAREERS

Introduction/Need for Research

The U.S. is facing a labor shortage exacerbated by the COVID-19 pandemic (Ferguson, 2022). Employers and businesses in all industries are rightfully concerned. According to Kassel and Martin (2021), the agricultural industry provides 10.9% of jobs in the United States accounting for 22.2 million different jobs. Employers and college students alike are asking for post-secondary career education to be made a priority (Buford et al., 2023). Educating non-traditional as well as tradtional students about opportunities in the agricultural industry will be paramount to closing the gap between filled and vacant jobs in the agricultural industry. The purpose of this study was to explore student perceptions of agricultural careers after participating in either an immersive experience or an in-class lecture experience. The following research questions guided this study: 1. Does the recall of information differ in students that receive a classroom based lecture experience to students that receive a concrete experience outside of the classroom? 2. Are concrete, hands-on experiences or classroom experiences more effective at helping students retain information?

Theoretical Framework

Mitchell (1990) posited that unique learning experiences form learned behaviors become the foundation of individuals' career decisions and development. This study aimed to understand how Kolb's Experiential Learning Theory could be applied in the context of a career education program at the post-secondary level. This study, like all of agricultural education, is heavily influenced by the idea of hands-on experience being an important practice in agricultural education settings. Agricultural educators across the United States have long stood by Stimson's (1919) idea that skills cannot be learned through reading alone, but through "active participation, during the learning period, in productive farming operations of real economic or commercial importance" (p. 32). Further, post-secondary colleges of agriculture and their faculty have the ability to incorporate similar experiential learning concepts into their courses.

Methodology

This study followed a mixed methods research design to understand the perceptions of students toward agricultural careers and how different educational experiences may impact those perceptions, as well as the retention of information. Data was collected from two treatment groups of post-secondary agricultural students. The two groups participated in separate deliveries of similar career education content over three separate days. The first treatment was an immersive experience where student toured three seperate agricultural businesses. The second treatment included three in-class experiences which utilized lecture-based delivery of similar. Upon completion of the treatments, students answered an active recall question where they listed as many agricultural careers as they could remember from the experience. After both immersive and in-class experiences concluded, one-on-one interviews were scheduled. Qualitative data analysis included bracketing the researcher's experiences, organizing data into themes, and organizing themes into a codebook. Independent sample *t* tests were run to measure the active recall component.

Results/Findings

The number of student participants within the three days of immersive and in class experiences yielded a range of 12 to 18 students and a range of 16 to 19 students respetively. From the total population, most participants were female (48.8%), had at least one parent or grandparent employed in agriculture (64.9%), and were enrolled in an agricultural degree program (87.7%). Independent sample *t* tests were conducted to evaluate the hypothesis that the immersive experience participants would score higher on the active recall prompts. This analysis showed a significant difference between the means of the immersive experience and in-class experience groups towards one of the three days of career education. Table 1 shows *t* test results.

Table 1

Active Recall TTest Results

Educational Topic	Treatment	*M*	*SD*	*t*	*p*
Career Education Day #1	Immersive Experience	4.00	0.74	2.39	*0.024
	In-Class Experience	2.74	1.73		
Career Education Day #2	Immersive Experience	2.92	1.24	1.4	0.17
	In-Class Experience	2.27	1.26		
Career Education Day #3	Immersive Experience	5.06	1.06	1.07	0.29
	In-Class Experience	4.59	1.50		

Note: Range of possible scores for each day, with the higher number being the highest possible score. Possible scores for Day 1 was 0-5, Day 2 was 0-5, and Day 3 was 0-6.

Coding of the reflective journals resulted in eight separate themes while coding of one-on-one interviews produced four themes. From two of the three days of reflective journals, the theme discovery of new information emerged. This theme was defined by the researchers as a statement or reflection of a concept or fact they learned from the career experience. From the first day of journaling, discovery of new information was identified 33 times total, 14 times in discovery of new careers and 17 in discovery of new technologies. This theme included codes specific to careers, technologies, and technical skills and processing. One-on-one interviews generated the the theme, increasing student knowledge. There were 51 occurrences of this theme across its codes: discovery of careers, discovery of technology, discovery of new skills and intentions for the future. Like the themes before, increasing student knowledge was defined as a participant stating something new they learned through the career experiences in this study. In all different sets of data, positivity was an emergent theme or code.

Conclusions/Recommendations/Implications

The future of agriculture is in the hands of this generation of college students, and they must be exposed to their career options in order for them to find their rightful place in this industry. This study explored how career education could be implemented at the post-secondary level: in an immersive experience or in classrooms. The findings suggest that immersive or in-class career experience are valuable to the students although some differences did arise. Research should be continued to determine best ways to incorporate career education into the current structure of existing classes. Research should also be conducted as to how participant demographics play a role into perceptions of agricultural careers. The researchers involved with this study attempted to recreate the immersive experience into a lesson plan, which was challenging to complete with a “hands-on” component. It was by the researcher’s discretion how the information was laid out, so the results could be reflective of those decisions, and could change under different circumstances.

References

Buford, M. V., Sharp, M. J., & Stebleton, M. J. (2023). Mapping the future of undergraduate career education: Equitable career learning, development, and preparation in the new world of work. DOI: 10.4324/9781003213000-1

Ferguson, S. (2022). Understanding Americas labor shortage. U.S. Chamber of Commerce. Retrieved June 15, 2022, from https://www.uschamber.com/workforce/understanding-americas-labor-shortage

Kassel, K., & Martin, A. (2021). Ag and food sectors and the economy. USDA Economic Research Service. https://www.ers.usda.gov/data-products/ag-and-food-statistics charting-the-essentials/ag-and-food-sectors-and-the-economy.

Mitchell, L. K. (1990). Social learning approach to career decision making: Krumboltz's theory. Career choice and development: Applying contemporary theories to practice, 2(1), 145-196.

Stimson, R. W. (1919). Vocational agricultural education by home projects. New York: MacMillan.

Elementary Agricultural Education Teacher Extended Day and Extended Year

Jason Peake, Jessica Boone, Maria Helm, Madison Race

University of Georgia
405 College Station Road,
Athens, GA 30602

229.392.6097

jpeake@uga.edu, jess.boone@uga.edu, maria.helm@uga.edu, madison.race@uga.edu

Introduction

Georgia piloted formalized Elementary Agricultural Education (EAE) in the Georgia Department of Education under Career and Technical Education in 2017 and established a permanent program in 2022 (House Bill 1303, 2022). There are currently 60 EAE programs in the state, following current trends, growth of EAE program is expected in 2024.

One challenge in quantifying the number of EAE Teachers is that it is sometimes difficult to identify which teachers are EAE Teachers, and which non-EAE Teachers who only integrate some agriculture in their elementary education classes. Identifying EAE Teachers is confounded by Georgia's Ag in the Classroom teachers who may or may not self-identify as EAE Teachers. Finally, EAE programs are school based and funded at the school level. Georgia Middle (MS) and High School (HS) Agriculture teachers receive extended day/extended year funds, and a contract is signed between the school and the Georgia DOE that designates who the MS or HS Agriculture Teacher(s) is/are; no such mechanism exist for EAE Teachers. EAE programs have not officially adopted the three-ring model of MS and HS agricultural education described by Croom (2008).

Aside from the difficulty in identifying EAE Teachers there are practical reasons why EAE Teachers have expressed interest in extended day and extended year contracts. Like their MS and HS counterparts many EAE Teachers have animals housed at the school, gardens, greenhouses that require attention, community engagement activities, professional development opportunities, etc. that they would like to perform outside of their 'regular' school year and school day contract.

The purpose of this research is to systematically examine EAE Teachers perceptions regarding extended day and extended year activities.

Framework

The theoretical framework for this study is Herzberg's Two-Factor Theory (Herzberg, 1959). According to this theory, there are certain factors in the workplace that cause job satisfaction (motivators) and other factors that prevent dissatisfaction (hygiene factors). Related to EAE Teachers many of them want to work additional hours however, sustained uncompensated work leads to job dissatisfaction and teacher attrition (Madigan, 2021).

Methodology

The researchers conducted a simple descriptive study utilizing all EAE Teachers in Georgia as the sampling frame. All EAE teachers were contacted using multiple methods, including workshops, email, and phone calls. They were invited to participate in a study by completing a Qualtrics survey. The survey was designed to collect information about: 1. How many days they would prefer to work in the summer, 2. How many hours they spend on work related activities outside of their current teaching contract, 3. Which activities on the Georgia Agriculture Teacher Program of Work EAE Teachers would be willing to perform, 4. Which FFA activities would EAE Teachers be interested in participating in (only FFA activities that aligned with EAE standards were considered).

Results

The first question posed to the participants was "If given the option to have 'extended year' days (additional days in the summer) beyond your 'regular' 9-month contract, how many days would you prefer?" Thirty-three teachers responded with a mean response of 12.82 days (SD 9.70). The Responses ranged from 0 days (minimum, n=5) to 40 days (maximum, n=2). Participants were next asked how many additional hours they need beyond their 'regular' 9-month contract to complete tasks associated with managing an EAE program. Teacher responses are provided in Table 1.

Table 1

Additional Hours EAE Teachers Reported They Need Beyond their Regular Contract Each Year

	n	M	SD	Frequency of Responses in Hours						
				0	1-10	11-20	21-30	31-40	41-50	> 50
Feed/care for animals at school	22	34.7	36.0	1	9	2	3	0	2	6
Feed/care for plants/garden at school	30	25.2	24.9	1	9	10	4	1	2	4
Assist students with leadership/citizenship training	20	16.4	22.2	1	13	2	2	1	0	1

The researcher provided groupings and frequency responses to clarity in interpreting the data that is not captured in the Mean score. There is a wide variance in responses and a dichotomy in the data between teachers who need less than 30 hours and those who need more than 40 hours.

Implications

EAE Teachers reported a desire to have extended day contracts through the summer months. The Mean response was 12.82 days, however the wide range in participant responses indicates that while some teachers would like to work the minimum of zero days each summer, other teachers reported wanting to work 40 days each summer. There was also a wide distribution in participant responses regarding number of hours needed beyond the regular contract each year, with a bimodal distribution indicating some EAE teachers tend to not work beyond their regular contract at all or they work far beyond their regular contract.

The variability in EAE teacher responses may be caused by a multitude of factors. More research is needed to investigate the variability in EAE teacher time commitments, however, anecdotally the researcher proposes the following possible reasons:

1. A significant minority of EAE Teachers are parents who left teaching MS and HS agriculture in pursuit of a career in Agricultural Education that has a lower time commitment. EAE Teachers may have other commitments and desire a lower time commitment at work.
2. EAE programs in Georgia are school based which has resulted in variability in animals, plants, and facilities in each program. Teachers with minimal resources at their school may simply have no need for extended day and extended year contracts.

These findings suggest that an individualized approach to extended day and extended year contracts for EAE Teachers is most appropriate; a one-size fits all approach is not appropriate. Not all EAE Teachers want or need extended day and extended year contracts.

References

Croom, D. (2008) The development of the integrated three-component model of agricultural education. *Journal of Agricultural Education*. 49(1), 110-120.

Georgia House Bill 1303 (2022). https://www.legis.[ST].gov/api/legislation/document/20212022/211744

Herzberg, F, Mausner, B., Snyderman, B (1959) *The Motivation to Work*. New York: Wiley, 1959.

Madigan, D., Kim, L. (2021) Towards an understanding of teacher attrition: A meta-analysis of burnout, job satisfaction, and teachers' intentions to quit. *Teaching and Teacher Education.* 105(1) https://doi.org/10.1016/j.tate.2021.103425

Enhancing Self-efficacy through Problem-Based Learning Intervention across Agricultural Disciplines

Shuai Ma, Texas A&M University, College Station, TX 77843-2116

979-845-6923

shuai_ma2021@tamu.edu

Zhihong Xu*, Texas A&M University, College Station, TX 77843-2116

979-862-3707

xuzhihong@tamu.edu

Wenting Weng, John Hopkins University, Baltimore, MD 212218

410-516-0040

wentingweng@jhu.edu

Zilong Pan, Lehigh University, Bethlehem, PA 18015

601-758-3237

zip322@lehigh.edu

Theresa Murphrey, Texas A&M University, College Station, TX 77843-2116

979-458-2749

Theresa.Murphrey@ag.tamu.edu

*Indicate Corresponding author

Enhancing Self-efficacy through Problem-Based Learning Intervention across Agricultural Disciplines

Introduction

Statistics holds significant importance in agricultural disciplines. Nevertheless, mastering statistics can be challenging, especially for students who have limited exposure before. In this pilot study, we introduce a teaching model for statistics that utilizes Problem-based Learning (PBL) along with specific instructional design strategies. We investigate the processes and outcomes of employing PBL approach in a statistics course offered within a higher education agricultural department. Our research seeks to address two primary questions. Firstly, does the implementation of Problem-based Learning have a positive impact on students' self-efficacy? Secondly, we aim to examine the relationships between motivation, self-efficacy, the influence of PBL, cognitive engagement, teaching support, and academic performance.

Theoretical framework

Bandura (1977) defined self-efficacy as an individual's belief in their ability to successfully accomplish certain tasks. Students' self-efficacy beliefs can impact their learning behavior and outcomes (Hall & Vance, 2010; Jungert & Rosander, 2010). Some studies have suggested a link between self-efficacy and the elements of the Community of Inquiry (CoI) framework which consists of teaching presence, cognitive presence and social presence (Garrison et al., 2001). The framework is grounded in a collaborative constructivist viewpoint of education (Garrison & Archer, 2000, p. 11).

Methodology

The intervention spanned two semesters and involved a total of 23 graduate students, consisting of ten in Spring 2023 and thirteen in Fall 2023, with a wide range of statistical backgrounds. The project utilized instructional design strategies such as problem-based learning, simulation-enhanced project-based learning, and a flipped-classroom approach. To assess the impact of the intervention, surveys and tests were administered before and after the intervention. The pre-survey included motivation (Pintrich & De Groot, 1990) and self-efficacy (Pathirage, 2015). The post survey included self-efficacy and the effects of problem-based learning (PBL) (Lee, 2010), along with cognitive presence, social presence, and teaching presence (Arbaugh et al., 2008).

Findings

As shown in Table 1, the mean score on the self-efficacy pretest was 31.85 (SD=11.00), while the mean score on the posttest was 45.33 (SD=10.42). To assess the normal distribution of the data, the Shapiro-Wilk test was employed, revealing that the data did not significantly deviate from normality ($p>0.05$). A paired sample t-test demonstrated a statistically significant improvement in students' self-efficacy in statistics following the intervention ($t = 6.46$, $p<0.001$).

Table 1. Self-efficacy descriptive statistics.

	Number	Mean	S.D.
Self-efficacy pretest	23	31.85	11.00
Self-efficacy posttest	23	45.33	10.42

The correlation matrix in Table 2 reveals several significant correlations. Specifically, we observe the following statistically significant correlations: Cognitive presence exhibits a strong correlation with teaching presence (r=0.84), impact of PBL (r=0.64), pre self-efficacy (r=0.59), and post self-efficacy (r=0.71). Teaching presence is notably correlated with the impact of PBL

(r=0.76), pre self-efficacy (r=0.55), and post self-efficacy (r=0.80). The impact of PBL demonstrates a significant correlation with post self-efficacy (r=0.80). Pre self-efficacy and post self-efficacy are moderately correlated (r=0.56). These strong correlations among the key components of the community of inquiry, self-efficacy, and the impact of problem-based learning suggest a collective influence on the overall quality of the learning experience for students. Additionally, our findings highlight that academic performance is correlated with pre self-efficacy (r=0.51) and teaching presence (r=0.41), underscoring the importance of enhancing students' self-efficacy and implementing effective instructional design and facilitation to improve academic outcomes.

Table 2. Correlation matrix.

Variables	1	2	3	4	5	6	7	8
1. Cognitive Presence								
2. Social Presence	0.19							
3. Teaching Presence	0.84***	0.34						
4. Impact of PBL	0.64***	0.32	0.76***					
5. Motivation	-0.04	0.21	0.07	-0.04				
6. Self-efficacy(Pre)	0.59**	-0.08	0.55**	0.41	-0.17			
7. Self-efficacy (Post)	0.71***	0.15	0.80***	0.80***	0.03	0.56**		
8. Academic performance	0.24	-0.12	0.41*	0.14	-0.01	0.51*	0.28	

Note: * p < .05, ** p< .01, *** p<.001

Conclusions

This research has demonstrated the effectiveness of a problem-based learning intervention on students' self-efficacy. Moreover, the study has unveiled noteworthy connections, including correlations between the essential elements of the community of inquiry framework, self-efficacy, and the influence of problem-based learning. Additionally, academic achievement has been found to be moderately associated with both pre self-efficacy and teaching presence.

Implications/Recommendations

This study has uncovered two significant findings. Firstly, it has demonstrated the positive impact of problem-based learning interventions on students' self-efficacy in statistics learning. Secondly, through the strong correlations observed between cognitive presence and the impact of PBL, as well as between teaching presence and the impact of PBL, we have gained statistical evidence that highlights the crucial elements for effective instructional strategies. These findings offer valuable insights and guidance for designing effective statistics education in higher education, especially in agricultural disciplines. Furthermore, we have identified a significant correlation between post self-efficacy and the impact of PBL, which aligns with the effectiveness of the PBL intervention. Additionally, significant correlations have been observed between post self-efficacy and cognitive presence, teaching presence, and the impact of PBL. These correlations open avenues for exploring the causal relationship between students' self-efficacy and the components of the community of inquiry in future research. Future studies may delve into how teaching presence and cognitive presence can enhance students' self-efficacy. It is recommended to use larger sample sizes to replicate and validate these findings for future research.

References

Arbaugh, J.B., Cleveland-Innes, M., Diaz, S.R., Garrison, D.R., Ice, P., Richardson, & Swan, K.P. (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *The Internet and higher Education, 11*(3-4), 133-136. https://doi.org/10.1016/j.iheduc.2008.06.003

Bandura, A. (1997). Self-Efficacy: The Exercise of Control. New York: Freeman.

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *American Journal of distance education*, *15*(1), 7-23.

Garrison, D. R., & Arbaugh, J. B. (2007). Researching the community of inquiry framework: Review, issues, and future directions. *The Internet and Higher Education*, *10*(3), 157–172.

Hall, S., & Vance, E. A. (2010). Improving self-efficacy in statistics: Role of self-explanation & feedback. *Journal of Statistics Education*, *18*(3).

Jungert, T., & Rosander, M. (2010). Self-efficacy and strategies to influence the study environment. *Teaching in higher Education*, *15*(6), 647-659.

Lee, P. (2010). The Impacts of a Project-Based Research Course: A Mixed Method Survey of Students, Alumni and Teachers in Li-Shan High School, Taipei, Taiwan. Minnesota State University, Mankato.

Pathirage, N. A. P. D. (2015). The development and validation of the self-efficacy in statistical practices scale (Doctoral dissertation, University of Tennessee, Knoxville).

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of educational psychology, 82*(1), 33.

Examining the Teacher Pipeline

Samuel Rodriguez
California State University, Fresno

Michael Spiess
California State University, Chico

Kenny Saephan
Escalon High School

Telephone: (530) 521-6866
E-mail: mspiess@csuchico.edu

Examining the Teacher Pipeline

Introduction

In California, secondary agriculture programs showcase a demographic spread of 52% Male, 47% Female, 30% White, and 53% Hispanic (AET, 2023). However, the demographics of the current agricultural teacher population contrast sharply, with figures revealing 64% Female, 78% White, and only 18% Hispanic (Foster et al., 2023). Of note is the composition of program completers, who are predominantly 75% Female and 81% White, especially when they fill 85% of new teaching positions. This study aims to descriptively compare the demographic "pipeline" across California's three major agricultural teacher preparation public universities. Collectively, these institutions account for over 85% of the state's program completers. While each adheres to the same state credentialing standards and situates their agricultural education in a college of agriculture, variations exist in their sizes, entry requirements, and campus types. Our primary focus is to present a clear picture of the demographic journey from student enrollment to program completion.

Conceptual Framework

The scarcity of research on demographic disparity in the secondary agriculture teacher pipeline necessitates our study, which is grounded on key existing literature. Cherng and Halpin (2016) advocate for teacher diversity, finding that students across all groups had more favorable perceptions of minority teachers, implying the need for diversity in the teacher pipeline. Egalite, Kisida, and Winters (2015) found benefits, especially in low-performing students, from having a race-congruent teacher. Nonetheless, obstacles persist for underrepresented students. Bullock, Morgan, and Warner (2021) noted challenges like financial burden and feelings of isolation. Creighton (2007) emphasized non-academic factors influencing student attrition, such as community integration and financial support. Walpole (2003) outlined the uphill battle for students from low socioeconomic status (SES) backgrounds to achieve a comparable social or economic standing to high SES peers. These studies offer a lens to scrutinize the need for more diversity within the secondary agriculture teacher pipeline. Our study intends to investigate the current disparity between program enrollment and program completion in underrepresented groups.

Methodology

This study uses a descriptive comparative design to evaluate the demographic composition of agricultural education majors, program completers, and students in secondary agricultural education programs across three key public universities in California. The intent is to examine the teacher pipeline and contrast institutional demographics with state averages.

Institutional data was extracted from a system-wide dashboard (CSU, 2023). Program completer data was extracted from the AAAE National Supply and Demand Study (Foster et al., 2023). Secondary student data was extracted from the Agricultural Experience Tracker (2023). Statewide data was extracted from the National Center for Educational Statistics (NCES) for grades 9-12 (NCES, 2023). Data analysis was conducted in Microsoft Excel, focusing on descriptive statistics and demographic frequency distributions.

Results

Secondary programs continue to become more diverse, and the agriculture programs follow this trend but lag in numbers (Table 1). While the study's focus was race, gender parity is also important. In broad terms, women are overrepresented in all the colleges and preparatory majors (Table 2). The pipeline becomes more female as it moves toward program completers.

At two of the three universities and colleges, Hispanic students exceed White students (Table 3). White students in the majors exceed the number of Hispanic students in two of the three institutions. In all cases, program completers are overwhelmingly White. Significant differences exist between the institutions at all levels along the pipeline until the program completer group.

Table 1 – Secondary Agricultural Programs

	Gender		Race	
	F	M	White	Hispanic
Secondary Ag Programs	44%	49%	26%	46%
Statewide (grades 9-12)	49%	51%	22%	56%

Table 2 – Gender

	Cal Poly SLO		Chico State		Fresno State	
	Female	Male	Female	Male	Female	Male
Ag Ed Major	56%	44%	73%	27%	76%	24%
Program Completers	70%	30%	85%	15%	71%	29%

Table 3 – Race

	Cal Poly SLO		Chico State		Fresno State	
	White	Hispanic	White	Hispanic	White	Hispanic
Ag Ed Major	49%	37%	52%	36%	41%	49%
Program Completers	85%	10%	88%	4%	83%	17%

* Only White and Hispanic are reported for brevity. These are the two largest groups.

Conclusions

Our study illuminates demographic disparities in the secondary agricultural teacher pipeline across three major public universities in California. While secondary agriculture programs and teacher preparation are slowly diversifying, race and gender equity is far from optimal. Program completers are predominantly White and female. Concurrently, Hispanic students show strong enrollments, yet their presence markedly declines among program completers. The data underscore the necessity for a more diversified secondary agricultural teacher pipeline, particularly as current figures indicate disparities in accessibility and representation.

Implications

Enhancing Equity: The prominent representation of female and White program completers contrasted against the underrepresentation of Hispanic and male students indicates potential barriers in their academic journey. These institutional, financial, or socio-cultural barriers need identification and mitigation. Effective interventions may encompass financial aid, community integration, and academic support. Recruitment and Role Models: As suggested by Cherng and Halpin (2016), a diverse educator cohort can foster positive learning environments by providing varied perspectives, serving as inclusive role models, and enriching the learning environment. Strategic Initiatives: Universities and California policymakers must devise strategies promoting equity in enrollment and completion rates. Addressing these challenges ensures that agricultural education becomes more inclusive, representative, and equitable, fostering a richer learning environment for all students.

References

Agricultural Experience Tracker (AET). (2023). Student Profile/Demographics Data [data set]. Retrieved from: https://www.theaet.com/

Bullock, J. H., Morgan, J. E., & Warner, W. J. (2021, September 30). Motivations and Challenges of Underrepresented Students Enrolled in Post-Secondary Agricultural Education Program: Community through Diversity. Journal of Agricultural Education, 62(3), 185-201. https://doi.org/10.5032/jae.2021.03185

Cherng, H.-Y. S., & Halpin, P. F. (2016, October 6). The Importance of Minority Teachers: Student Perceptions of Minority Versus White Teachers. Educational Researcher, 45(7), 407-420. https://doi.org/10.3102/0013189X16671718

Creighton, L. M. (2007, January 1). Factors Affecting the Graduation Rates of University Students from Underrepresented Populations. International Electronic Journal for Leadership in Learning, 11(7). https://eric.ed.gov/?id=EJ987305

Egalite, A. J., Kisida, B., & Winters, M. A. (2015, April). Representation in the classroom: The effect of own-race teachers on student achievement. Economics of Education Review, 45, Pages 44-52. https://doi.org/10.1016/j.econedurev.2015.01.007.

Foster, D. D., Smith, A. R., Lawver, R. G., & Spiess, M., (2023). National Agricultural Education Supply and Demand Project [data set]. American Association for Agricultural Education. Retrieved from: http://aaae.agedweb.org/nsd.

National Center for Educational Statistics (NCES). (2023). Common Core of Data [data set]. Retrieved from: https://nces.ed.gov/ccd/districtsearch/

Spiess, M. (2008). FFA Diversity – Establishing Benchmarks and Tracking Developing Trends. Proceedings of the 2008 American Association for Agricultural Education Research Conference, Reno, Nevada. 35. 1014-1016.

The California State University (CSU). (2023). Student Success Dashboards [data set]. Retrieved from: https://csusuccess.dashboards.calstate.edu/

Walpole, M. (2003, September). Socioeconomic Status and College: How SES Affects College Experiences and Outcomes. The Review of Higher Education, 27(1), 45-73. 10.1353/rhe.2003.0044

Examining the Use and Frequency of Competition-Based Instruction in SBAE Classrooms

Mr. Joe Ramstad
513 Farm House Ln
Ames, IA 50011
ramstad@iastate.edu

Dr. Tre Easterly
307C Rolfs Hall
PO Box 110540
Gainesville, FL 32611
tre.easterly@ufl.edu

Dr. J. C. Bunch
307A Rolfs Hall
PO Box 110540
Gainesville, FL 32611
bunchj@ufl.edu

Dr. Jamie Loizzo
121D Bryant Hall
PO Box 112060
Gainesville, FL 32611
jloizzo@ufl.edu

Examining the Use and Frequency of Competition-Based Instruction in SBAE Classrooms

Introduction and Need for Research

Research has shown that healthy competition in the classroom is a way to engage learners in exciting ways while advancing their learning (Kowalski & Christensen, 2019; Shindler, 2009). When examining the three-component model of school-based agricultural education (SBAE), competition has also been a popular point of interest within many programs in the areas of FFA and SAE (Bolton, et al., 2018; Bowling & Ball, 2020; Goodwin & McKim, 2020). With all of the digital and non-digital platforms and resources available, introducing some of these competitive elements in the classroom is a strategy SBAE teachers can utilize to potentially streamline workload while also providing engaging learning strategies for learners (Goodwin & McKim, 2020). For example, a teacher can utilize the identification lists for the Nursery and Landscape Career Development Event (CDE) as the basis for the list of plants they expect students to learn in a horticulture class, and host competitions on platforms such as Kahoot!, Quizizz or escape rooms to help students learn these items. This practice ideally recruits and prepares students for CDEs, and saves the teacher practice time since students are studying in their class, while also preparing all students for industry-specific careers and not just a few FFA members. While there has been research focused on competition and pedagogical design capacity, there has been little work integrating these areas. Since there is a national deficit of over 600 SBAE teachers (Foster, et al., 2022), this research could preserve teachers' longevity in the profession, as competition-based instruction is a teaching strategy that could save them time and energy. The purpose of this study was to examine how teachers are able to implement different types of competition within their classrooms by designing or modifying curricular resources. The objectives were to 1) determine SBAE teachers' pedagogical design capacity for their implementation of competition and 2) determine the types of competition teachers facilitate.

Conceptual Framework

Brown's (2002) pedagogical design capacity (PDC) model was the study's guiding framework. Brown concluded that PDC is a complex relationship intertwining two key areas: instructional resources (professional development and curriculum) along with teachers' resources (beliefs, command of the subject area, and their pedagogical content knowledge (PCK)) (Brown, 2002; Brown & Edelson, 2003; Knight-Bardsley & McNeill, 2016). Teachers with a higher PDC can take existing resources and make them more relevant and engaging for learners, while teachers with a lower PDC tend to offload resources and just use existing resources as is—this generally correlates with subject areas where a teacher has a lower comfort level and PCK (Brown, 2002).

Methodology

To fulfill the research objectives, a non-probability convenience sample of 83 participants was achieved via a mass email sent to agricultural educators across the nation and recruitment via the Agricultural Education Discussion Lab on Facebook. Participants indicated they were all current SBAE teachers in grades 7 through 12. Participants accessed the survey via Qualtrics, and the instrument consisted of a series of demographic items, along with Likert-type, multiple-choice, and short answer items. Since there is not currently a scale that measures the data we were reviewing, items within the instrument were examined independently. Data was collected in June 2022 and processed in SPSS. Frequencies were calculated to identify potential missing gaps within the data and to inform future research (Creswell & Creswell, 2018).

Results and Findings

A total of 83 respondents participated in the study. Results from items relating to teachers' beliefs resources (Table 1) and the frequency of their use of competition as a teaching method

(Table 2) are below. We see that not all teachers have the resources to implement competition but those that do utilize many tools to do so; most frequently digital games and team competitions.

Table 1: *Beliefs about resources utilized by SBAE teachers in implementing competition (Obj. 1).*

	n	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have access to the teaching materials I need to implement competition in the classroom	83	1 (1.2%)	18 (21.7%)	15 (18.1%)	39 (47.0%)	10 (12.0%)
The resources I use to teach can be used for competition	83	0 (0.0%)	3 (3.6%)	12 (14.5%)	59 (71.1%)	9 (10.8%)
I have the physical items I need to implement competition in the classroom	83	1 (1.2%)	16 (19.3%)	25 (30.1%)	33 (39.8%)	8 (9.6%)

Table 2: *Frequency of competition tools SBAE teachers implement within classrooms (Obj. 2).*

	n	Never	1-2 Times/Yr.	Monthly	Weekly	Daily
Digital games	83	4 (4.8%)	9 (10.8%)	37 (44.6%)	30 (36.1%)	3 (3.6%)
Team competitions	83	9 (10.8%)	24 (28.9%)	42 (50.6%)	8 (9.6%)	0 (0.0%)
Non-digital games	83	9 (10.8%)	33 (39.8%)	33 (39.8%)	7 (8.4%)	1 (1.2%)
Mock FFA CDEs	83	15 (18.1%)	44 (53.0%)	21 (25.3%)	3 (3.6%)	0 (0.0%)

Results pertaining to Objective 1 indicated many believe they lack the resources to implement competition in the classroom, with 41.0% (n = 34) indicating they may not have access to the teaching materials needed, but recognize a connection between the resources they use to teach lending themselves to competition as a teaching strategy, with 81.9% (n = 68) of respondents agreeing or strongly agreeing. When examining Objective 2, when they do utilize competition in the classroom, teachers frequently rely on digital games, with 39.4% (n = 33) of respondents using these on at least a weekly basis, as opposed to non-digital games, such as escape rooms, with only 9.6% (n = 8) of respondents reporting using these on at least a weekly basis.

Conclusions

The purpose of this study was to examine teachers' beliefs about resources needed to implement competition in their classrooms along with how often they do so. Results showed while teachers utilize a variety of methods to implement competition-based instruction, especially digital games such as Quizizz and Kahoot to engage learners, there is a need for developing additional, ready-to-use resources for teachers to utilize to implement competition-based instruction, and these findings are supported by the literature (Aldana, 2020; Kowalski & Christensen, 2019).

Recommendations

Additional research is essential to better uncover the needs of teachers, and ideally from a probability sample of SBAE teachers. To further advance these findings, potential areas of research might include looking at how teachers go about selecting one form of competition over another, and additionally, determining what resources teachers desire to use in their classroom that they are lacking. Then, we can use those findings to develop resources that help teachers embed competition within their classrooms. These include professional development relating to using competition as a teaching method, providing teacher preparation programs with training on how to model competition as a teaching method, the development of competitive materials for teachers to use or modify provided from the National FFA Organization, or "competition kits" with resources for teachers to loan to try out different competition activities in their classrooms.

References

Aldana, I. (2020, May). *The effects of review games using Kahoot! on students' quiz scores* [Published master's thesis]. University of Guam.

Bolton, A., Edgar, D. W., & Carter, V. (2018). Successful secondary agricultural programs outside the classroom: A view of champions. *Journal of Agricultural Education, 59(*2), 255–274. 10.5032/jae.2018.02255

Bowling, A. M., & Ball, A. L. (2020). More than winning: A mixed methods grounded theory investigation of the career development event preparation process. *Journal of Agricultural Education, 61*(4), 1–14. 10.5032/jae.2020.04001

Brown, M., & Edelson, D. C. (2003). *Teaching as design: Can we better understand the ways in which teachers use materials so we can better design materials to support their changes in practice?* [Unpublished doctoral dissertation]. University of Illinois at Chicago.

Brown, M. W. (2002). *Teaching by Design: Understanding the intersection of teacher practice and the design of curricular innovations* [Unpublished doctoral dissertation]. Northwestern University.

Creswell, J. D., & Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage Publications, Inc.

Foster, D. D., Smith, A. R., Lawver, R. G., & Spiess, M. (2023). *National agricultural education supply and demand project* [data set]. American Association of Agricultural Education. http://aaae.agedweb.org/nsd.

Goodwin, C., & McKim, A. (2020). Teacher philosophies of career development events: Implications for curriculum in agriculture, food, and natural resources education. *Journal of Agricultural Education, 61*(2), 193–205. 10.5032/jae.2020.02193

Knight-Bardsley, A., & McNeill, K. L. (2016, July). Teachers' pedagogical design capacity for scientific argumentation. *Science Education, 100*(4), 645–672. Wiley Online Library. 10.1002/sce.21222

Kowalski, M., & Christensen, A. (2019). No one wants to be a loser: High school students' perceptions of academic competition. *Mid-Western Educational Researcher, 31*(4), 389–406. ERIC.

Shindler, J. (2009). Examining the use of competition in the classroom. In *Transformative classroom management: Positive strategies to engage all students and promote a psychology of success*. Wiley.

Exploring Consumers' Intent to Purchase Sustainable Cotton Products Using the Theory of Planned Behavior

Kylie Farmer Kitten
Texas Tech University

Laura Fischer
Texas tech University

Donna McCallister
Texas Tech University

Qi Kang
Texas Tech University

Gao Long
Texas Tech University

Kylie Farmer Kitten
Box 42131
Lubbock, TX 79409-2131
(806) 742-2816
Kylie.farmer@ttu.edu

Exploring Consumers' Intent to Purchase Sustainable Cotton Products Using the Theory of Planned Behavior

Introduction & Need for Research

Since the COVID-19 pandemic, demand for products with environmental or sustainable claims have surpassed the growth of similar products without these claims (Frey et al., 2023). These claims include agricultural topics such as organic, environmental sustainability, and animal welfare (Frey et al., 2023), which all fall under the USDA's three pillars of sustainability: environmental, economic, and social sustainability (USDA, n.d.a). Demand for sustainable products is also being fueled within agriculture with the $3.1 billion in USDA funding for Partnerships for Climate-Smart Commodities (USDA, n.d.b). These programs focus on providing agricultural producers with financial and technical support, testing field data reporting processes, and developing the market and revenue streams for sustainable agricultural products (USDA, n.d.b). Now, with the increased push for sustainability in agriculture, cotton growers have expressed a need for their sustainability efforts to be communicated with consumers (Kitten et al., 2024). Based on previous scholars, with increased communication about agriculture and its associated products, consumers tend to have more favorable attitudes (Rumble & Irani, 2016), which presents an opportunity for agricultural communicators to develop effective communication about sustainable agricultural products. Previous literature in agricultural communications has investigated consumer purchasing behaviors for agricultural products (Holt et al., 2018; Stollar et al., 2022), but very little research has investigated consumer preferences when buying sustainable cotton products.

Theoretical Framework

Consumer purchasing behavior has often been described using the Theory of Planned Behavior (TPB) (Holt et al., 2018; Stollar et al., 2022). TPB states attitude, subjective norms, and perceived behavioral control influence one's intent to adopt or change a behavior (Ajzen, 1991). Attitude includes an individual's behavioral beliefs, subjective norms encompass perceived social expectations, and perceived behavioral control is the degree to which an individual has the ability and power to implement a behavior (Ajzen, 1991). Previous studies guided by TPB also introduce moral norms as a way to better understand the impact of perceived external and societal pressures (e.g., moral obligation, responsibility to perform) on an individual's behavior (Liu et al., 2020); whereas subjective norms pertain to the external pressures from those closest to the individual (Ajzen, 1991). Studies in environmental communications also include moral norms when investigating sustainability due to its societal impacts (Filieri et al., 2021).

Methods

The purpose of this study was to explore the relationships between attitude, subjective norms, moral norms, perceived behavioral control, and intent when consumers buy sustainable cotton products. Qualtrics was used to create the questionnaire, deliver the survey, and recruit respondents for the online questionnaire. All 1,589 respondents in the non-probability sample were 18 years or older and the primary shopper for their household. Additionally, we set quotas for the respondents' income to be representative of the U.S. Census data. Respondents answered

a series of questions about specific TPB variables (Ajzen, 1991) adapted from previous literature: their attitude, subjective norms, moral norms, perceived behavioral control, and intent when buying sustainable cotton products. All scales met the minimum criteria for α = .75 as suggested by Wimmer & Dominick (2014). Attitude (α = .89) was measured using 5-point semantic differential scales (*bad/good, useless/useful, trivial/fundamental, insignificant/significant, unappealing/appealing, foolish/wise*) responding to the statement, "I believe sustainable cotton production is…" (Bearden et al., 2011). Respondents rated their level of agreement on a 5-point Likert Scale (1 = *Strongly Disagree*; 5 = *Strongly Agree*) for the remaining variables: subjective norms (α = .87; Borges et al., 2016; Liu et al., 2020), moral norms (α = .92; Liu et al., 2020), perceived behavioral control (α = .78; Borges et al., 2016; Liu et al., 2020), and intent (α = .88; Carfora et al., 2019). For example, to measure subjective norms, respondents rated statements such as, "people who are important to me want me to buy sustainable cotton products." Data were analyzed in SPSS Version 29 using Field's (2017) correlation procedures.

Results

A series of Pearson Correlation Coefficients were used to understand the relationships between the TPB variables and intent to purchase sustainable cotton products (Table 1). Each TPB variable was found to be *significant* and *positively* correlated to intent. According to Davis (1971), attitude was moderately associated (r = .47), subjective norms were substantially associated (r = .67), moral norms were very strongly associated (r = .71), and perceived behavioral control was substantially associated (r = .65).

Table 1

Pearson Correlation Coefficients Between TPB Variables and Intent to Purchase (N = 1,589)

	Attitude	Subjective Norms	Moral Norms	Perceived Behavioral Control
Intent	.47**	.67**	.71**	.65**

Note: ** Correlation is significant at the .01 level

Conclusions & Recommendations

These findings confirm prior literature that attitude, subjective norms, and perceived behavioral control, as outlined in TPB, impact consumers' decisions to buy agricultural goods (Holt et al., 2018; Stollar et al., 2022). However, the external factors, subjective norms and moral norms, tend to have the strongest relationship. This implies an individual's societal obligation and personal pressures have the most impact on their intent to buy sustainable cotton products. As previously found, moral norms are an important addition in environmental communications (Filieri et al., 2021), and the results of this study suggest agricultural communicators and educators should measure moral norms in future TPB research. Communicators should utilize message frames focused on increasing salience and connection to a consumer's subjective norms and moral norms in sustainability messaging. Future research in this area should focus on continued expansion of the TPB model to include moral norms.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179–211. https://doi.org/https://doi.org/10.1016/0749-5978(91)90020-T

Bearden, W. O., Netemeyer, R. G., Haws, K. L. (Eds.) (2011). Handbook of marketing scales: Multi-item measures for marketing and consumer behavior research (3rd ed.). Sage.

Borges, J. A. R., Tauer, L. W., & Lansink, A. G. J. M. O. (2016). Using the theory of planned behavior to identify key beliefs underlying Brazilian cattle farmers' intention to use improved natural grassland: A MIMIC modelling approach. *Land Use Policy*, *55*, 193–203. https://doi.org/10.1016/j.landusepol.2016.04.004

Carfora, V., Cavallo, C., Caso, D., Del Giudice, T., De Devitiis, B., Viscecchia, R., Nardone, G., & Cicia, G. (2019). Explaining consumer purchase behavior for organic milk: Including trust and green self-identity within the theory of planned behavior. *Food Quality and Preference*, *76*, 1–9. https://doi.org/10.1016/j.foodqual.2019.03.006

Davis, J. A. (1971). Elementary survey analysis. Englewood Cliffs, NJ: Prentice–Hall.

Field, A. (2017). Discovering statistics using IBM SPSS statistics (5th ed.). SAGE Publications.

Filieri, R., Javornik, A., Hang, H., & Niceta, A. (2021). Environmentally framed eWOM messages of different valence: The role of environmental concerns, moral norms, and product environmental impact. *Psychology and Marketing*, *38*(3), 431–454. https://doi.org/10.1002/mar.21440

Frey, S., Bar Am, J., Doshi, V., Malik, A., & Noble, S. (2023). *Consumers care about sustainability-and back it up with their wallets*. https://nielseniq.com/global/en/insights/report/2023/consumers-care-about-sustainability-and-back-it-up-with-their-wallets/

Holt, J., Rumble, J. N., Telg, R., & Lamm, A. (2018). Understanding consumer intent to buy local food: Adding consumer past experience and moral obligation toward buying local blueberries in Florida within the theory of planned behavior. *Journal of Applied Communications*, *102*(2). https://doi.org/10.4148/1051-0834.2203

Kitten, K.F., Fischer, L.M., & McCallister, D. (2024). "I don't even know what sustainability is": Describing West Texas cotton farmer communication preferences for learning about voluntary sustainability programs. Proceedings of the 2024 National Agricultural Communications Symposium: Atlanta, Georgia.

Liu, M. T., Liu, Y., & Mo, Z. (2020). Moral norm is the key: An extension of the theory of planned behaviour (TPB) on Chinese consumers' green purchase intention. *Asia Pacific Journal of Marketing and Logistics*, *32*(8), 1823–1841. https://doi.org/10.1108/APJML-05-

Rumble, J. N., & Irani, T. (2016). Opening the doors to agriculture: The effect of transparent communication on attitude. *Journal of Applied Communications*, *100*(2). https://doi.org/10.4148/1051-0834.1030

Stollar, M., Rumble, J. N., Buck, E. B., Specht, A. R., Hu, W., & Knipe, C. L. (2022). Consumers' purchasing intent regarding conventional, plant-based, and cultured meats. *Journal of Applied Communications*, *106*(1). https://doi.org/10.4148/1051-0834.2407

United States Department of Agriculture. (n.d.a). Definitions: Sustainability and Food Systems. https://www.usda.gov/oce/sustainability/definitions

United States Department of Agriculture. (n.d.b). Partnerships for Climate Smart Commodities. https://www.usda.gov/climate-solutions/climate-smart-commodities

Wimmer, R. D., & Dominick, J. R. (2014). *Mass Media Research: An Introduction* (3rd ed.). Cengage.

Exploring Preservice Teacher Food Practices in the Context of Teaching Food Science Topics

Lisa Shepherd, M.S.
Lisa.shepherd@mtsu.edu
615-494-7949
Middle Tennessee State University
Box 86
Murfreesboro, TN 37132

Chaney Mosley, Ph.D.
Chaney.mosley@mtsu.edu
615-904-8037
Middle Tennessee State University
Box 5
Murfreesboro, TN 37132

Exploring Preservice Teacher Food Practices in the Context of Teaching Food Science Topics

Introduction

Teacher beliefs and practices are pivotal in shaping classroom practices (Gess-Newsome, 2015). Teacher beliefs affect science teaching in general (Alt, 2018; Lotter et al., 2018), and beliefs coupled with personal food practices may affect food science teaching specifically because beliefs surrounding food manifest in daily practices and food choices (Clark et al., 2022). Because food practices tend to elicit defensive behaviors (Hinrichs et al., 2022), the inclusion of food practices represents the unique beliefs and values of an individual teacher of food science. It is important to examine this aspect of food science teachers to determine how agriculture teacher preparation programs might enhance preservice teachers' (PSTs) content knowledge and self-efficacy in food science to ensure effective teaching. Tennessee's (TN) introduction of the Food Science program of study within the Agriculture, Food, & Natural Resources (AFNR) career cluster created a pathway to food science education through courses like Food Science and Safety and Advance Food Science (Tennessee Department of Education, 2021). Food science education is critical as the industry grows, necessitating that secondary food science teachers are well-prepared to confidently address a variety of topics. Therefore, this study aims to describe TN agriculture PSTs' food practices as potential factors that might influence classroom instruction, perceived importance and ability to teach food science topics, and differences between importance and ability based on food practices.

Conceptual Framework

The conceptual framework for this study adopts Gess-Newsome's (2015) model of teacher professional knowledge and skill, inclusive of Pedagogical Content Knowledge (PCK), to explain the processes through which teacher beliefs and practices influence classroom instruction. Central to this model is the notion of amplifiers and filters – personal attributes unique to each teacher – that mediate the impact of professional development on classroom practices. The researchers characterize perceived importance of food science topics, perceived ability to teach those food science topics, and food practices as potential amplifiers or filters that might influence classroom instruction. Because food practices tend to elicit defensive behaviors, (Hinrichs et al., 2022), the inclusion of food practices as an amplifier or filter is based on the understanding that these practices represent the unique beliefs and values of an individual teacher of food science. This recognition underscores the nuanced manner in which individual beliefs and values, particularly those related to food, can serve as significant determinants of the extent to which professional development influences classroom practices.

Methodology

This study employed a researcher-developed survey based on standards from TN AFNR Food Science courses. The survey had three sections: food practices, perception of importance, and perception of teaching ability. The food practices section asked about typical dietary practices. Face and content validity were evaluated by a panel of thirteen experts in food science and agriculture, similar to the approach used by Duncan et al. (2006). The Cronbach's alpha reliability coefficient for perceived importance was 0.85, and for perceived ability was 0.79. The target population consisted of ninety-two undergraduate PSTs enrolled in an agricultural education course across all five universities in TN offering agriculture teacher preparation

programs. Census sampling, where researchers attempt to survey all members of a population (Lodico et al., 2006) was used. University AFNR education faculty distributed the survey to their students; a total of 32 PSTs (35%) completed the survey. Most respondents were upperclassmen (68%), 18-21 years old (90%), White (93%) female (81%), and took agricultural courses in high school (81%). Data were analyzed using standard descriptive statistics. The research questions were: (RQ1) what are the food practices of food science PSTs; (RQ2) what is the perceived importance of food science PSTs teaching food science topics; (RQ3) what is the perceived ability of food science PSTs regarding teaching food science topics; and (RQ4) what differences exist, if any, in perceived importance and perceived ability of PSTs based on dietary restrictions?

Results

RQ1. Of the participants, 90% (n = 29) reported following a typical American diet, 50% (n = 16) reported at least one allergy (or intolerance) to specific foods; dairy accounted for 50% (n = 8) of all reported allergies and 40% (n = 13) reported avoidance of milk. Further, 19% (n = 6) reported avoidance of whole eggs and 25% (n = 8) preferred purchasing organic produce instead of conventionally-grown produce.

RQ2. On a 5-point Likert-type scale (1 = not important; 5 = very important), PSTs perceived *understanding general safety guidelines for meat, poultry, and eggs* as the most important topic (M = 4.57; SD = 0.68) and *understanding chemical processes and interactions of food components in baked goods* as the least important topic (M = 3.90; SD = 0.92). The grand mean for importance was 4.33 (SD = 0.73); on average, PSTs perceived most topics to be important.

RQ3. On a 5-point Likert-type scale (1 = strongly disagree; 5 = strongly agree), PSTs perceived their strongest ability in teaching *general safety guidelines for meat, poultry, and eggs* (M =3.52; SD = 1.18); teaching *chemical processes and interactions of food components in baked goods* was rated lowest (M = 2.83; SD = 1.39). The grand mean ability was 3.29 (SD = 1.28), suggesting, on average, PSTs were not very confident teaching food science topics.

RQ4. PSTs with restrictive food practices reported lower perceived importance on all topics (grand mean = 4.19, SD = 0.21) than those with no restrictions (grand mean = 4.61, SD = 0.23). PSTs with restrictive food practices reported higher perceived ability to teach all topics (grand mean = 3.31, SD = 0.30) compared to those with no restrictions (grand mean = 3.06, SD = 0.31), except the topic regarding baked goods.

Conclusions and Implications

PSTs reported food science topics were important but were not overly confident in their ability to teach food science topics. The study found a high prevalence of restrictive food practices among participants, with 50% reporting food allergies, significantly higher than the general U.S. population. Specifically, 25% claimed dairy allergies, compared to only 1.9% in the general population (Gupta et al., 2019), suggesting potential overestimation. Further research is needed to determine the reasons for such prevalence as dairy-related misconceptions are common (Redding et al., 2021), and such food practices could challenge teaching dairy-related standards. Addressing possible misconceptions and determining the extent to which restrictive practices affect teaching is essential for enhancing knowledge and self-efficacy in food science education. Further research could also focus on in-service teachers to compare results for similarities.

References

Alt, D. (2018). Science teachers' conceptions of teaching and learning, ICT efficacy, ICT professional development and ICT practices enacted in their classrooms. *Teaching and Teacher Education, 73*, 141-150. https://doi.org/10.1016/j.tate.2018.03.020

Clark, B. E., Pope, L., & Belarmino, E. H. (2022). Personal bias in nutrition advice: A survey of health professionals' recommendations regarding dairy and plant-based dairy alternatives. *PEC Innovation*, *1*, 100005. https://doi.org/10.1016/j.pecinn.2021.100005

Duncan, D. W., Ricketts, J. C., Peake, J. B., & Uesseler, J. (2006). Teacher preparation and in-service needs of Georgia agriculture teachers. *Journal of Agricultural Education*, *47*(2), 24-35. https://www.jaeonline.org/attachments/article/232/Duncan%20et%20al._Vol47_2_24-35.pdf

Gess-Newsome, J. (2015). A model of teacher professional knowledge and skill including PCK: Results of the thinking from the PCK Summit. In A. Berry, P. Friedrichsen, & J. Loughran (Eds.), *Re-examining Pedagogical Content Knowledge in Science Education* (pp. 28-42). Routledge.

Gupta, R. S., Warren, C. M., Smith, B. M., Jiang, J., Blumenstock, J. A., Davis, M. M., Schleimer, R. P., & Nadeau, K. C. (2019). Prevalence and Severity of Food Allergies Among US Adults. *JAMA Network Open*, *2*(1), e185630. https://doi.org/10.1001/jamanetworkopen.2018.5630

Hinrichs, K., Hoeks, J., Campos, L., Guedes, D., Godinho, C., Matos, M., & Graça, J. (2022). Why so defensive? Negative affect and gender differences in defensiveness toward plant-based diets. *Food Quality and Preference*, *102*, 104662. https://doi.org/10.1016/j.foodqual.2022.104662

Lodico, M. G., Spaulding, D. T., & Voegtle, K. H. (2006). *Methods in educational research: From theory to practice.* San Francisco: Jossey-Bass.

Lotter, C. R., Thompson, S., Dickenson, T. S., Smiley, W. F., Blue, G., & Rea, M. (2018). The impact of a practice-teaching professional development model on teachers' inquiry instruction and inquiry efficacy beliefs. *International Journal of Science and Mathematics Education, 16*(2), 255-273. https://doi.org/10.1007/s10763-016-9779-x

Redding, L. E., Parsons, B., & Bender, J. S. (2021). Educational interventions to address misconceptions about antibiotic residues in milk can alter consumer perceptions and may affect purchasing habits. *Journal of Dairy Science*, *104*(11), 11474-11485. https://doi.org/10.3168/jds.2021-20595

Tennessee Department of Education (2021). *Agriculture, Food, & Natural Resources*. https://www.tn.gov/education/educators/career-and-technical-education/career-clusters/cte-cluster-agriculture-food-natural-resources.html

Exploring the Impact of Podcast Pedagogy on Agricultural Leadership Education through Quantitative Analysis

Hoyt Nebgen, Clarissa Darby, M.S., Jason Headrick, PhD

Department of Agricultural Education and Communications

Texas Tech University

2810 15th Street, Lubbock, TX 79409

Author Notes:

Hoyt Nebgen, hoyt.nebgen@ttu.edu, (940)-782-7403.

Clarissa Darby, cladarby@ttu.edu, (956)-778-2830.

Jason Headrick, jason.headrick@ttu.edu, (859)-608-5686.

Exploring the Impact of Podcast Pedagogy on Agricultural Leadership Education through Quantitative Analysis

Introduction

Pedagogical strategies in higher education are constantly evolving to help students better understand the material being studied, especially in this age of technological advancement (Moore, 2022). Research has shown an increased use of podcasts in higher education as they offer meaningful ways to deliver content (Araújo & Rodrigues, 2019). In 2021, an estimated 222 million people over the age of 12 said they were familiar with podcasting in the U.S. (Edison Research and Triton Digital, 2021). In higher education, podcasts have been used as learning management resources for lectures, collaborative learning activities, independent studying, and increasing student interest in research (Goundar & Kumar, 2022). Podcasts are described as digitalized audio or video files that can be downloaded for playback over a desktop or portable media player device (McGarr, 2009). Podcasts cover topics across the agricultural industry, including agricultural leadership (Headrick, 2023). This study's purpose was to better understand the use of podcasts and their impact on pedagogy in undergraduate students enrolled in Agricultural Leadership courses.

Theoretical Framework

The framework used to guide this study is based on a modernized Constructivist Learning Theory. Constructivism originated with theorists including Piaget and Vygotsky, creating an approach that emphasizes learning as the byproduct of mental construction (Bada & Olusegun, 2015). Zajda stated that "students, when confronted with new learning tasks, are actively engaged in the meaning-making process, by deciphering and constructing their own interpretation and knowledge of the world," (2021, p. 38). There are three guiding principles of constructivist learning: learners are active participants, learners are self-regulated, and social interactions are essential (Zajda, 2021).

Methods

A quantitative-based approach was used to guide this study. A convenience sample of 20 undergraduate students in an Agricultural Leadership course at Texas Tech University participated in a group collaboration project where they were asked to create a podcast over the content topic presented in the classroom. Identifying variables including names, age, gender, and race were not collected. Upon completion of the assignment, students were administered a 24 question Qualtrics-structured survey consisting of four-point Likert-type scale questions (strongly disagree to strongly agree) to measure attitudes on podcasting as a pedagogical strategy in the classroom. The survey was a subject-constructed, researcher-developed instrument. Data collection occurred in Spring 2022.

Results

The first 15 questions were about the podcast activity as shown in Table 1. The statements with the highest means were "Students enjoyed the assignment," "The assignment helped them understand more about diversity and culture," and "Meetings with their professor

were beneficial to their podcast success" (*M* = 3.70, *SD* = 0.46). The statement with the lowest mean was "Learning podcast terms and technology is impactful for agricultural careers" (*M* = 3.45, *SD* = 0.59). The overall mean was 3.59 and the standard deviation was 0.55.

Table 1

Podcast Pedagogy Student Responses (N = 20)

Statement	*M*	*SD*
I enjoyed the podcast assignment	3.70	0.46
The assignment helped me understand more about diversity and culture	3.70	0.46
The team meeting with my instructor were beneficial to our podcast success	3.70	0.46
The assignment helped me learn and develop new skills	3.65	0.48
The assignment helped me make practical connections to class content	3.65	0.48
The assignment helped me improve my performance in class	3.65	0.48
The provided resources, rubric, and instructions were beneficial	3.65	0.48
The assignment was easy to understand	3.60	0.49
Other agricultural classes could benefit from a podcast activity	3.60	0.49
The assignment challenged me to work outside of my personal comfort zone	3.55	0.67
The assignment helped me learn how to work with a team on a specific project	3.55	0.74
The assignment helped me understand more about inclusion	3.53	0.50
The podcast assignment helped me understand more about equity	3.50	0.59
The podcast assignment helped me understand more about agriculture	3.50	0.67
Learning podcast terms and technology is important for agricultural careers	3.45	0.59

Discussion

None of the respondents disagreed with the statement, "The podcast assignment helped me improve my performance in the class." Moreover, 100% of respondents agreed or strongly agreed that they learned and developed new skills through this assignment. Encouraging students to apply, analyze, and evaluate content in creating podcasts provides outcomes consistent with Moore's research (2022), developing skills relevant inside and outside of the classroom. These results align with the three principles of the Constructivist Learning Theory (Zajda, 2021). Students were actively involved in the podcast project, teams were self-regulating in the podcast content and group dynamics, and social interaction was a key component throughout the project timeline.

Recommendations

Faculty should continue to use innovative ways of incorporating new instructional strategies and forms of pedagogy into their classroom. As demonstrated in the podcast pedagogy study, students respond well to assignments that challenge them to apply knowledge in creative, meaningful ways. The opportunity to explore different learning styles and preferences of students is an inclusive practice to create a challenging classroom space, but also a space where students can develop new skills and try new things. Podcasts are a timely and relevant way to bring in outside voices and empower students to make use of their own knowledge.

References

Araújo, P., & Rodrigues, F. (2019). Podcast learning effectiveness in higher education in europe: A Systematic Review. *European Proceedings of Social and Behavioral Sciences*.

Bada, S. O., & Olusegun, S. (2015). Constructivism learning theory: A paradigm for teaching and learning. *Journal of Research & Method in Education*, *5*(6), 66-70.

Edison Research and Triton Digital. (2021). The Infinite Dial. https://www.edisonresearch.com/wp-content/uploads/2021/03/The-Infinite-Dial-2021.pdf

Goundar, M. S., & Kumar, B. A. (2022). The use of mobile learning applications in higher education institutes. *Education and Information Technologies*, 1-24.

Headrick, J. (2023, May 15-18). Experiential learning through podcasting: Creating opportunity for advanced pedagogy. AAAE National Conference. Raleigh, North Carolina. https://www.agedweb.org/aaae/Proceedings.asp?EventID=92

McGarr, O. (2009). A review of podcasting in higher education: Its influence on the traditional lecture. *Australasian journal of educational technology*, *25*(3).

Moore, T. (2022). Pedagogy, Podcasts, and Politics: What Role Does Podcasting Have in Planning Education?. *Journal of Planning Education and Research*, 0739456X221106327.

Zajda, J. (2021). Constructivist learning theory and creating effective learning environments. *Globalisation and education reforms: Creating effective learning environments*, 35-50.

Farm to Early Care and Education in Utah: Connecting Young Children to Agricultural Education, Gardening, and Local Food

Kyle Whitley
kylejw1100@gmail.com

Kelsey Hall
Utah State University
ASTE
2300 Old Main Hill, Logan, UT 84322
435-797-3289
kelsey.hall@usu.edu

Farm to Early Care and Education in Utah: Connecting Young Children to Agricultural Education, Gardening, and Local Food

Introduction/Need for Research

Farm to early care and education (farm to ECE) offers activities that expand access to healthy, affordable, and local foods; hands-on gardening; and food, nutrition, and agriculture education activities at early care and education sites (ECE; National Farm to School Network, n.d.). Farm to ECE applies three core elements to all types of ECE settings: preschools, child care centers, family child care homes, Head Start/Early Head programs, and preschool programs in K-12 school districts (National Farm to School Network, n.d.). Farm to ECE programs have the potential to benefit multiple stakeholders, including the providers, children, families, caregivers, and local farmers. Limited information exists on farm to ECE programs in specific states, including Utah, to support training, funding, and resource needs. Therefore, this study aimed to establish a baseline for farm to ECE, exploring the involvement in each programming element and the challenges and impacts of farm to ECE. The research objective for this manuscript is to describe ECE providers' participation in farm to ECE programming (education and farm to ECE activities, gardening, and local food procurement).

Conceptual/Theoretical Framework

The Farm to School Network modified the social ecological model to develop an evaluation framework for farm to school and ECE programming (Joshi et al., 2014). The hybrid model includes categories that explain how intrapersonal, interpersonal, organizational environments, community, and public policy factors interact with an individual's behavior related to farm to school and ECE programming. Organizational environments include business practices, philosophy, and factors such as regulations (Joshi et al., 2014). The influence of community within the model includes expectations and availability of resources (Joshi et al., 2014). Local food availability and use of certain food products within ECE sites, availability of farmers willing to sell products to ECE sites, and educational activities contribute to the community component of this model.

Methodology

This study used descriptive explanatory research. We administered an online survey through Qualtrics to gather characteristics of child care programs, incorporation of farm to ECE to curriculum and experiential learning, local food procurement, gardening, and training and resource needs. We developed the questionnaire with questions modeled after Farm to ECE programming studies by the Arkansas Department of Agriculture (2021), Shedd et al. (2018), and Enderton (2020). Of the questions included, one was open ended and 18 were multiple choice. A panel of five experts comprised of researchers and practitioners familiar with farm to ECE or survey design provided feedback to establish the face and content validity of the survey. To recruit participants, the State Board of Education's Community Programs Team emailed 143 Child and Adult Care Food Program (CACFP) and Summer Food Service Program sponsors (i.e., child care centers, family day care home sponsors, centers, and family day care homes), reaching 1,100 providers. We cleaned the data to remove any incomplete surveys and analyzed the data in IBM SPSS Statistics version 28.

Results/Findings

Of the surveys received, 372 were deemed usable, a 33.8% response rate. Usable surveys were from 28 of the 29 counties in Utah. Respondents described their settings as Head Start and Early Head Start centers (*n* = 83, 22.4%), child care centers (*n* = 82, 22.1%), family child care (*n* = 73, 19.7%), private preschools (*n* = 64, 17.3%), preschool through K-12 school districts (*n* = 38, 10.2%), state preschools (*n* = 29, 7.8%), and tribal child care (*n* = 2, 0.5%). The top three frequent program types, accounting for 65% of respondents, were Head Start/Early Head Start centers, childcare centers, and family childcare centers. Respondents indicated if they provide full-time, part-time, or both types of care, with 70% offering full-time care. The ages of children in each program ranged from infant to elementary school-aged, with almost half providing care for toddlers (*n* = 182, 48.9%) and preschoolers (*n* = 212, 57.0%). Regarding agricultural education, respondents incorporated education about eating healthy and nutrition (*n* = 135, 34.4%) and education about local farms, how food grows, and where food comes from in their classroom routines. Seventy-six percent of respondents (*n* = 298) indicated their program grows produce in an edible garden or containers. A total of 254 respondents (68.2%) have implemented at least one farm to ECE activity in the last three years. The most frequently reported activities included cooking activities using locally grown food (*n* = 126, 32.1%), engaging families in health and wellness (*n* = 118, 31.7%), conducting field trips to farms, gardens, farmers' markets, or farm stands (*n* = 115, 29.3%), holding taste tests or cooking demonstrations using locally produced foods (*n* = 89; 23.9%), facilitating children's families access to locally grown foods at home (*n* = 70, 17.9%), hosting a visit with a farmer or chef (*n* = 42, 10.7%), and participating in Utah's Apple Crunch Day (*n* = 24, 6.1%). Local vegetables (*n* = 202, 54.3%) and fruits (*n* = 181, 48.7%) were served most frequently as ingredients, snacks, taste tests, or meals. Respondents purchased local products from intermediaries, such as wholesale retailers (*n* = 169, 43.1%), distributors (*n* = 168, 42.9%), or food service management companies (*n* = 138, 35.2%). Direct sources were farmers or ranchers (*n* = 144, 38.7%), farmers' markets/farm stands (*n* = 135, 36.3%), or community supported agriculture programs (CSA; *n* = 88, 23.7%).

Conclusions/ Recommendations/Implications

Respondents revealed that ECE sites offer farm to ECE activities in all but one county in the state. Thus, young children in Utah are learning about agriculture, food, and nutrition; eating local foods; and participating in various activities. Participation rates are like those in Colorado, Wisconsin, and Arkansas (Arkansas Department of Agriculture, 2021; McCloskey et al., 2020; Rooted, 2020;). Respondents identified that some farmers' markets/farm stands, CSAs, and farmers/ranchers sold to nearby ECE sites. Yet, farm to ECE represents a market outlet for small and beginning farmers seeking scale-appropriate experience or sales of seasonal fruits, vegetables, and herbs when fewer K-12 schools serve meals. Future research should use a mixed-methods approach that explores the logistical considerations, challenges, impacts, and strategies for local procurement and classroom activities by interviewing providers and analyzing lesson plans and local food procurement records. Additional research needs to report the impacts of farm to ECE from the perspectives of the children and ECE practitioners. We are sharing these findings with government agencies, policymakers, farmers, ranchers, and the state's Extension programs to help grow awareness and support for farm to ECE programming. Future efforts should help ECE sites overcome challenges with local food procurement and facilitate partnerships with farmers or ranchers to address the challenges and opportunities for farm to ECE activities and local food.

References

Arkansas Department of Agriculture. (2021). *Arkansas farm to early childhood education 2021 survey results*. https://arfarmtoschool.org/about/statewide-reports/

Enderton, A. (2020). *Iowa farm to early care and education supports child nutrition and health: Results from a statewide survey*. Iowa State University Extension.

Joshi, A., Henderson, T., Ratcliffe, M.M., Feenstra, G. (2014). *Evaluation for transformation: A cross-sectoral evaluation framework for farm to school*. http://www.farmtoschool.org/Resources/Evaluation_Transformation_FINAL-Web.pdf

McCloskey, M. L., Kesterson, H., Mena, N. Z., Dellaport, J., & Bellows, L. L. (2020). Farm to early care and education programming: A descriptive study of challenges and opportunities to promote healthful foods to young children. *International Journal of Environmental Research and Public Health, 17*. https://doi.org/10.3390/ijerph17186857

National Farm to School Network. (n.d.). *Farm to early care and education: Cultivating healthy habits for our littlest eaters*. http://www.farmtoschool.org/our-work/early-care-and-education

Rooted. (2020). Results of the 2020 *Wisconsin farm to early care and education provider survey*. https://rootedwi.org/youth-education/farm-early-care-education/

Shedd, M.K., Stephens, L., Matts, C., & Laney, J. (2018). *Results from the 2018 national farm to early care and education survey*. National Farm to School Network. www.farmtoschool.org/Resources/results-of-the-2018-national-farm-toearly-care-and-education-survey.pdf

Research Poster

Fine Points of Classroom Professionalism: California Ag Teachers' Perceptions

Isaac Lopez, Undergraduate Student
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
Ilopez51@calpoly.edu

Nicole Ray, Assistant Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
nray04@calpoly.edu

Erin Gorter, Assistant Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
ekthomps@calpoly.edu

Lauren Giannone, Teacher in Residence
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
lggianno@calpoly.edu

Ann De Lay, Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
ekthomps@calpoly.edu

Ashlee Crabtree, Undergraduate Student
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
amcrabtr@calpoly.edu

Daniela Rodriguez-Ruiz, Undergraduate Student
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
drodr165@calpoly.edu

Fine Points of Classroom Professionalism: California Ag Teachers' Perceptions

Introduction/Need for Research

School-based agricultural education (SBAE) has emphasized the importance of professionalism (Radhakrishna & Xu, 1997; Hillison, 1987), and others have cited that professionalism embodies good teachers and teaching (Coleman et al., 2021; Eck et al., 2019). While the United States Department of Labor (n.d.) acknowledges professionalism is a combination of visual indicators, competencies and skills, agricultural education literature is dated (Blezek, 1986) and sparse, offering no clear definition of professionalism (Coleman et al., 2021; Radhakrishna & Xu, 1997; Roberts & Dyer, 2004; Shoulders & Smith, 2018).

The study is guided by the following research question: How do California agricultural educators perceive professionalism within their SBAE classrooms? The purpose of this qualitative study is to explore recent examples of current perceived professionalism in SBAE, from those who have been identified as exhibiting professionalism. A clearer understanding of the concept of professionalism in California SBAE may aid in fostering the development of a more refined understanding of professional behaviors and practices among agriculture teachers.

Conceptual/Theoretical Framework

Social Cognitive Theory (SCT) identified personal, behavioral, and environmental factors as perpetually interacting and exerting influence on one another (Bandura, 1991, 2001). While these factors are interacting, individuals still have autonomy over their own behavior and choices (Bandura, 2001). Further, much of what individuals learn is attained via the observations of other persons (Bandura, 1986). SBAE teachers observed in this study were deemed as professional by their State Staff, and using SCT provides a frame to construct how they view themselves as professional in the SBAE classroom.

Methodology

Photovoice is a qualitative method allowing for participants to express their ideas through photographs (Wang & Burris, 1997). Names of SBAE teachers who exemplify professionalism ($n = 60$) were solicited from California agricultural education leaders. Purposive sampling for age, gender, and geographic location (Richie & Lewis, 2003) resulted in 30 invitations sent to participants. Six participants chose to participate in the study. Participants were asked to submit, to a Canvas course shell, photos (3 each) including 250-word or less reflections for context, which they felt exemplified professionalism in the SBAE classroom. Six participants submitted 17 photos and 16 reflections. Participant names were removed from submissions and replaced with pseudonyms to maintain anonymity. Values coding was identified as the first cycle coding method for this qualitative study identifying belief systems (Saldaña, 2016). The inclusion of multiple sources of information, such as photographs and reflection statements, increases trustworthiness of the study (Saldaña, 2016). Values and attitudes aid in the construction of belief systems (Saldaña, 2016), providing the foundation for understanding how SBAE teachers perceive professionalism in their classrooms.

Results/Findings

Eight themes emerged regarding values of professionalism in the SBAE classroom. Each value is identified with a representative quote in Table 1. Supporting example photographs will be included with the poster.

Table 1

Perceived Professional Values of California SBAE Teachers Concerning Classroom

Value	Sample Quote
Modeling	"…the horticulture class is learning to correctly secure a large cactus after it sustained damage from a wind event." (Kristin)
Organization	"…if parents and students know exactly how to find out what students are missing/working on, that shows you have professionalism and respect for those who care about their students and grades." (Danielle)
Safety	"Students are wearing gloves and following safety procedures." (Kristin)
Dress	"I teach my students how to tie a professional looking tie and encourage each of them to wear a tie on test day as well." (Patrick)
Collaboration	"The presence of professionals from various fields allows students to connect understanding of how their academic knowledge translates into practical skills." (Janet)
Content Expertise	"students can learn from the expertise shared…" (Kristin)
Relationships	"…recognizing that education is not just about delivering information…these teachers use humor and enjoyable activities to break down barriers." (Janet)
Learner Engagement	"…that you provide opportunities for them to engage with one another and experience what others may need help with." (Danielle)

Conclusions

SBAE teachers, identified as demonstrating professionalism, saw themselves as role models being organized, following safety practices, and dressing appropriately for the varied needs of their classroom spaces. Being engaging and collaborative educators who remember the importance of relationship building was important to the professional image they portrayed in the classroom. These findings are consistent with SCT and align with Bandura's (2001) notion of human agency, where individuals intentionally selected photos and wrote reflections to illustrate how they value their own professionalism. Photos collected in this study will be shared with the poster as depictions of how SBAE teachers view their own agency in the SBAE classroom.

Implications/Recommendations/Impact on Profession

The purpose of this research was to gain insight into the participating teachers' perceptions of professionalism in their classroom and was part of a larger study that explored all three circles of SBAE. When clearer communication of professional SBAE values is understood, there can be a consistent implementation of professionalism across all states. Practitioners in teacher education should consider how they offer opportunities for candidates to develop values, attitudes, and beliefs about professionalism. As this study focused on California SBAE teachers, researchers should attempt to replicate this study with their own teaching populations.

References

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*, 248-287. http://doi.org/10.1016/0749-5978(91)90022-L

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Reviews Psychology, 52*, 1-20. http://doi.org/10.1146/annurev.psych.52.1.1

Blezek, A. G. (1986). Professionalism of vocational agriculture instructors as perceived by vocational agriculture instructors and superintendents in Nebraska public secondary schools. *Journal of Agricultural Education*, *27*(3), 46-49. https://doi.org/https://doi.org/10.5032/jaatea.1986.03046

Coleman, B., M., Ferand, N. K., Bunch, J. C., & Israel, G. D. (2021). Examining preservice teachers' performance during a 14-week student teaching experience: A longitudinal study. *Journal of Agricultural Education*, *62*(3), 258-274. https://doi.org/https://doi.org/10.5032/jae.2021.03258

Eck, C. J., Robinson, J. S., Ramsey, J. W., & Cole, K. L. (2019). Identifying the characteristics of an effective agricultural education teacher: A national study. *Journal of Agricultural Education*, *60*(4), 1–18. https://doi.org/10.5032/jae.2019.04001

Hillison, J. (1987). Professionalism: The thread that runs through. *The Agricultural Education Magazine*. *54*(1). 4.

https://www.naae.org/profdevelopment/magazine/archive_issues/Volume53/v53i1.pdf

Radhakrishna, R. B., & Xu, W. (1997). A review of subject matter topics researched in agricultural and extension education. *Journal of Agricultural Education*, *38*(3), 59-69. https://jae-online.org/index.php/jae/article/view/1555/1400

Richie, J., & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers.* Sage Publications.

Roberts, G. T., & Dyer, J. E. (2004). Characteristics of effective agriculture teachers. *Journal of Agricultural Education*, *45*(4), 82-95. https://doi.org/https://doi.org/10.5032/jae.2004.04082

Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed). Sage Publications.

Shoulders, C. W., & Smith, L. (2018). Impact of teacher attire on students' views of teacher credibility, attitude homophily, and background homophily within school-based agricultural education programs. *Journal of Agricultural Education*, *59*(2), 275-288. https://doi.org/https://doi.org/10.5032/jae.2018.02275

United States Department of Labor. (n.d.). *Soft skills to pay bills.* https://www.dol.gov/agencies/odep/program-areas/individuals/youth/transition/soft-skills

Wang, C. & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior, 24*(3), 369-387. https://doi.org/10.1177/109019819702400309

Framing Rural Realities: Exploring Youth Perspectives Of Rural Communities Through Photovoice

Jaelyn Sewell
Oklahoma State University
580-370-8500
jaelyn.sewell@okstate.edu

Dr. Audrey E.H. King
Oklahoma State University
620-253-3262
audrey.king@okstate.edu

Linnea Harvey M.S.
Oklahoma State University
262-441-1061
linnea.harvey@okstate.edu

Dr. Shane Robinson
Oklahoma State University
405-744-3094
shane.robinson@okstate.edu

Introduction

Rural America is often plagued with persistent poverty, population decline, and poor education, proving "that rural development is not a major concern in national policy" (Carr & Kefalas, 2011, p. 140; Danbom, 2006). Of Oklahoma's population, 34% is estimated to live in rural areas (U.S. Census Bureau, 2021). As populations continue dropping in these rural communities, thousands of towns are only 20, 10, or even five years away from extinction due to the declining number of taxpayers, consumers, and workforce participants (Carr & Kefalas, 2011). The decision young adults make to stay in their rural hometown or leave has powerful repercussions for rural America's future (Carr & Kefalas, 2011). As rural populations continue to decrease, communities struggle to find replacements for the small-town professionals, such as doctors, business owners, and teachers (Carr & Kefalas, 2011). Therefore, understanding the perspectives of youth in rural Oklahoma is essential in making a positive change within rural development. The research questions asked within this study are as follows: (1) How do rural youth perceive the strengths of their community?; (2) How do rural youth perceive the weaknesses of their community?; (3) What opportunities do rural youth see for their future within their home community?; (4) What threats do rural youth perceive within their community?; (5) What do rural youth find unique about their rural community?

Theoretical and Conceptual Framework

Critical consciousness is the understanding of inequality within a system and taking a positive action within these systems to create change (El-Amin et al., 2017). This theory aims to increase youth understanding of injustice within communities and systems through three components: critical reflection, political efficacy, and critical action (Watts et al., 2011). These components allow youth to gain knowledge and conceptualize of injustice and the concepts of Critical Consciousness (Watts, et al. 2011).

Community capitals framework allows community and economic analyzation and development within a systematic approach, applied to identify capitalistic assets, invested capital, capital interaction, and the overall results of the impact of capital within a community (Emery & Flora, 2006). Community capitals framework can be used to "inform decision making" (Panzarella et al., 2023, para. 10), and "analyze communities and community development efforts from a systems perspective" (Mattos, 2015, para. 2).

Methods

Photovoice engages individuals with overshadowed opinions to deepen the understanding behind a particular issue (Amos et al., 2012). Wang and Burris (1997) used the term "photovoice," combining the word "photo" with the acronym Voicing Our Individual and Collective Experience (VOICE) (p. 381). The goal of a photovoice study is to foster self-empowerment within the participants by giving them an opportunity to share daily life stories through photographs (Amos et al., 2012).

Fifteen Grandfield school based agricultural education students were recruited as co-researchers for the photovoice study. The data collection consisted of a two-month process, with monthly group meetings and debriefing sessions. Within this study, qualitative data analysis was used to interpret and evaluate findings from Grandfield school based agricultural education members. Co-researchers were asked to analyze their community through a modified SWOT analysis

approach. Photographs within photovoice studies are not data, but the co-researcher's interpretations of their photographs serve as data analyzed by the research team. This focus group lasted around four hours. Results were triangulated using data from meeting transcriptions, photo captions, and the P.H.O.T.O forms submitted. The focus group was coded in MAXQDA2024; the codes were then organized into themes using the theoretical framework.

Results

From the five photovoice prompts assigned, themes within the prompts were distinguished during data coding. Results from this study revealed several themes: agricultural and economic opportunities, the desires of community members to serve one another, and the community gathering as one were recognized as strengths within the community. Weaknesses and challenges within the community overlapped in ideas, such as lack of supply and demand in financial capital, human capital resources such as leadership and community hospitality, as well as deteriorating built capital in buildings, roads, and properties. Moreover, co-researchers determined some challenges within their community were manageable, such as vacant buildings being business opportunities, and fixing roads as a community service project. Opportunities within the community were described by co-researchers as connection-based, both external and internal, as their community's social capital will lead them on paths to success through education, agriculture, and themselves being role models for upcoming generations. The uniqueness of Grandfield, Oklahoma was described in a positive way by co-researchers. Co-researchers expressed the uniqueness of cultural differentiation in their community, interesting businesses, and traditions and success stories of their rural community.

Conclusions and Recommendations

Critical consciousness is the ability to understand systems of inequality and acting within these systems to create change (El-Amin et al., 2017). Themes were addressed and created by co-researchers, co-researchers noticed the positives of rural life within each of the five prompts assigned. Moreover, co-researchers voiced components of their rural lifestyle they want changed or can change. These components allow youth to conceptualize and gain knowledge and understanding of injustice and the concepts of critical consciousness (Watts, et al. 2011). Moreover, co-researchers found positives and negatives within their community, coinciding with community capitals. Community capital identification allows for the understanding of community relationships, changes, processes, and outcomes (Watts et al., 2011).

Future research should conduct this same project in other rural Oklahoma communities across the state. This could offer an altered insight of the differentiation between rural community life within Oklahoma's unique regions and economic differences across the state. To thoroughly understand an unbiased perception of rural communities, this study should be conducted with a younger generation of co-researchers. This could allow for an innocent and callow perception, helping policymakers and leaders better understand the upcoming generations perspective of their rural community.

References

Amos , S., Read, K., Cobb, M., & Pabani, N. (2012, October). *Facilitating a Photovoice project: What you need to know!* Facilitating a Photovoice Project: What you need to know! https://foodarc.ca/makefoodmatter/wp-content/uploads/sites/3/VOICES_PhotovoiceManual.pdf.

Carr, P. J., & Kefalas, M. (2011). *Hollowing out the middle: The rural brain drain and what it means for America*. Beacon Press.

Danbom, D. B. (2017). *Born in the country: A history of rural America.* Johns Hopkins University Press.

El-Amin, A., Seider, S., Graves, D., Tamerat, J., Clark, S., Soutter, M., Johannsen, J., & Malhotra, S. (2017). Critical consciousness. *Phi Delta Kappan*, https://doi.org/10.1177/0031721717690360

Emery, M., & Flora, C. (2006). Spiraling-Up: Mapping Community Transformation with Community Capitals Framework. *Community Development*, *37*(1), 19–35. https://doi.org/10.1080/15575330609490152

Mattos, D. (2015, September 2). *Community **Capitals** Framework as a Measurement of Community Development*. Cornhusker Economics. https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1807&context=agecon_cornhusker

Panzarella, F., Turcanu, C., Abelshausen, B., & Cappuyns, V. (2023). Community Capitals and (social) sustainability: Use and misuse of asset-based approaches in Environmental Management. *Journal of Environmental Management*, *329*, 117122. https://doi.org/10.1016/j.jenvman.2022.117122

U. S. Bureau (2021, January). *American Community Survey (ACS)*. Census.gov. https://www.census.gov/programs-surveys/acs

Wang, C., & Burris, M. A. (1997). *Photovoice: Concept, Methodology and Use for Participatory Needs Assessment. Health Education & Behavior*

Watts, R. J., Diemer, M. A., & Voight, A. M. (2011). Critical consciousness: Status and Future Directions. *New Directions for Child and Adolescent Development*, *2011*(134), 43–57. https://doi.org/10.1002/cd.310

Research Poster

Grand Challenges Tennessee: Considering Agriculture Issues Within the Larger Narrative

Shelli D. Rampold
University of Tennessee
321D Morgan Hall
Knoxville, TN 37996
865-974-7371
srampold@utk.edu

Jordan Richardson
University of Tennessee
2621 Morgan Circle Drive,
Knoxville, TN 37996
Jrich114@vols.utk.edu

Christopher Stripling
University of Tennessee
2621 Morgan Circle Drive
Knoxville, TN 37996
cstripli@utk.edu

Grand Challenges Tennessee: Considering Agriculture Issues Within the Larger Narrative

Introduction

There is no shortage of challenges within the agriculture sector. Addressing current and emerging issues requires an assessment of trends or developments that, if left unchecked, could have significant consequences for stakeholders (Jaques, 2014). While agriculture may have once been evaluated solely on the basis of production, contemporary agriculture systems are evaluated on the services or disservices they provide to and receive from humans and the environmental system (Liu et al., 2022; Power, 2010). As such, when seeking to address "agricultural issues," we have to consider both real challenges felt by our producers, as well as issues perceived by public audiences to be related to the agricultural system. In either scenario, leveraging buy-in and fostering desired behavior changes to address contemporary issues can be difficult. Considering issues management from a systems perspective can provide a valuable framework for examining agriculture issues that require public buy-in as they fit within the larger systems of societal challenges (Irlbeck, 2023).

Purpose and Objectives

We conducted this study to examine the primary challenges faced by Tennessee (TN) residents and explore how agriculture and natural resources (ANR) issues fit within that narrative. We collected this data to provide future directions for the University of Tennessee System, but also to identify windows for addressing ANR issues in light of other pressing challenges weighing on our residents. Three research questions guided this study: (1) What are the primary "grand challenges" felt by TN residents? (2) How do TN residents rate issues related to ANR within the bigger scope of challenges? (3) How concerned are TN residents about select issues related to ANR?

Methods

At the beginning of 2022, the University of Tennessee Strategic Plan Working Groups set out to identify the most challenging problems facing residents. Determining these large-scale, complex problems required gathering opinions from key internal and external stakeholders across the state. This led to the development and launch of a statewide "Grand Challenges" survey. We used four sections of this larger instrument for primary data in this study. All items in the instrument were reviewed by a panel of administrators, Extension specialists, researchers, and Deans across the entire University system. We first asked respondents to identify the top two issues they are concerned about as a [State] resident using an open-ended question format. Respondents were then provided a list of 18 broad issue categories (e.g., issues related to agriculture, issues related to healthcare, etc.) and asked to rank them in order of most important (1) to least important (18). We assessed respondents' ANR concerns using 10 items and a 5-point Likert response scale (1 = *very unconcerned;* 5 = *very concerned*). We contracted with Qualtrics to distribute the online survey to residents across the state and collect a non-probability opt-in sample (Baker et al., 2013). Quotas were set for demographic characteristics to encourage a representative sample. Useable responses were collected from 1,575 residents. Open-ended data in research question one were assessed using Glaser's (1965) constant comparative method to sort responses by attributes and conduct frequency counts. Quantitative data analyses included descriptive statistics.

Results

Open-ended responses to the question "what keeps you up at night?" revealed TN residents were largely concerned about crime, inflation, and cost of living. Other notable concerns in the qualitative data included housing availability and affordability, as well as human rights concerns. When asked to rank various issue areas, respondents' average ranked scores revealed issues related to crime (M = 5.63; SD = 3.92); agriculture (M = 7.00; SD = 5.24); civil rights, social justice, and race relations (M = 7.24; SD = 5.51); K-12 education (M = 8.11; SD =4.31), and inflation (M = 8.34; SD = 4.00) as the top concerns across respondents. Regarding issues related to ANR, more than half of respondents indicated being concerned or very concerned about all issues presented (see Table 1). Of the issues listed, relatively more respondents were concerned or very concerned about the cost of food production, the livelihood of farmers, and pollinator health. Comparatively, fewer respondents were concerned about the use of GMOs in products and the accuracy of food labels.

Table 1

Respondents' Degree of Concern about ANR Related Issues

ANR Issue	Response Category				
	VUC *f* (%)	**UC** *f* (%)	**N** *f* (%)	**C** *f* (%)	**VC** *f* (%)
Cost of food production in [State]	37(2.3)	83(5.3)	265(16.8)	719(45.7)	471(29.9)
Livelihood of [State] farmers	34(2.2)	80(5.1)	289(18.3)	727(46.2)	445(28.3)
Pollinators health in [State]	53(3.4)	132(8.4)	377(23.9)	579(36.8)	434(27.6)
Farm labor shortages in [State]	59(3.7)	103(6.5)	374(23.7)	672(42.7)	367(23.3)
Availability of a skilled agricultural workforce	52(3.3)	117(7.4)	414(26.3)	631(40.1)	361(22.9)
Welfare of [State] livestock	61(3.9)	128(8.1)	394(25.0)	642(40.8)	350(22.2)
Impact of pesticide use in [State]	70(4.4)	133(8.4)	415(26.3)	623(39.6)	334(21.2)
Agricultural job loss due to automation	64(4.1)	155(9.8)	502(31.9)	532(33.8)	322(20.4)
Use of GMOs in [State] products	117(7.4)	194(12.3)	481(30.5)	477(30.3)	306(19.4)
Accuracy of food and product labels	94(6.0)	233(14.8)	460(29.2)	539(34.2)	249(15.8)

Note. VUC = very unconcerned, UC = unconcerned, N = neither concerned nor unconcerned, C = concerned, VC = very concerned

Conclusions, Implications, and Recommendations

We used a variety of question formats to gain a holistic view of what is on the hearts and minds of TN residents. Overall, respondents appeared to be concerned about most issues, which indicates they may be simultaneously experiencing multiple crises at one time and reacting based on which poses the most immediate threat. Frameworks pertaining to crisis management and response should be applied when developing a strategic plan moving forward to help determine residents' capacity to care about agriculture issues in light of other pressing challenges (Jaques, 2014). For example, while agriculture issues did not emerge without prompt in the open-ended segment, such issues were ranked high on average as a concern. This finding makes sense when we look at the high concern about food costs as an ANR issue, which fits within the risk perspective framework when considering the personal relevancy and potential consequence of food affordability (Irlbeck, 2023). Conversely, despite the large amount of research on labeling, our results indicate that might not be the highest priority in our work if our goal is to address

grand challenges to improve the livelihood of TN residents. Research like the current study can be used to generate conversations around felt challenges and to drive research and outreach initiatives across our land-grant systems.

References

Baker, R., Brick, J. M., Bates, N. A., Battaglia, M., Couper, M. P., Dever, J. A., Gile, K. J., & Tourangeau, R. (2013). Summary report of the AAPOR task force on non-probability sampling. *Journal of Survey Statistics and Methodology, 1*(2), 90–143. https://doi.org/10.1093/jssam/smt008

Glaser, B. (1965). The constant comparative method of qualitative analysis. *Social Problems, 12*(4), 436–445. https://doi.org/10.2307/798843

Irlbeck, E. (2023). *The crisis communications guide for agriculture, food, and natural resources*. XanEdu.

Jaques, T. (2014). *Issue and crisis management: Exploring issues, crises, risk and reputation*. Oxford University Press.

Power, A. (2010). Ecosystem services and agriculture: Tradeoffs and synergies. *The Royal Society, 365*(1554). https://doi.org/10.10.098/rstb.2010.0143

Liu, Q., Sun, X., Wu, W., Liu, Z., Fang, G., & Yang, P. (2022). Agroecosystem services: A review of concepts, indicators, assessment methods and future research perspectives. *Ecological Indicators, 142*, 109218. https://doi.org/10.1016/j.ecolind.2022.109218

How to Advertise Grass-fed Beef to Consumers: Comparing Use of Communication Channels Across Regions

Beth Crandall, DVM
Heritage Animal Hospital

Kelsey Hall
Utah State University
ASTE
2300 Old Main Hill, Logan, UT 84322
435-797-3289
kelsey.hall@usu.edu

How to Advertise Grass-fed Beef to Consumers: Comparing Use of Communication Channels Across Regions

Introduction/Need for Research

Grass-fed beef producers are tasked with marketing their products to consumers through direct sales and retail sales (Curtis et al., 2008). To reach their desired audience, producers' marketing techniques need to precisely target consumers who are faced with information overload in today's market. Research has identified communication tactics that can target U.S. meat and poultry consumers (Cheung et al., 2017; Dahlen et al., 2014; FMI & FMPRE, 2018; Gillespie et al., 2016; Gwin et al., 2012; Gwin & Lev, 2011). These studies did not consider regional differences in quality cues, beef consumption, meal preparation, and communication channels for marketing and promotion of grass-fed beef. The purpose of the study was to describe what factors influence the intention to purchase grass-fed beef in four U.S. regions: Northeast, Midwest, South, and the West. This manuscript addresses one research objective in a larger study: compare communication channels that consumers use to seek information about grass-fed beef across regions. This research aligns with the AAAE Values Research related to social dynamics in human and life sciences by providing beef producers with information to decide how to market grass-fed beef to consumers.

Conceptual Framework

This study developed a conceptual framework based on communication channels, theory of planned behavior, total food quality model, meat consumption, knowledge, and demographics. Consumers used different communication channels to gather information about beef. The internet was the top source for shoppers looking for guidance on meat preparation, with social media being very popular among the younger generations (FMI & FMPRE, 2018). When questioned as to how respondents in Nebraska, Iowa, and Illinois would access information that would tell them the complete story of their grass-fed beef, they would frequently read product labels and grocery signage (Pirog, 2004). To a lesser extent, the respondents would sometimes use mass media, such as radio or television, and websites. According to Gillespie et al. (2016), beef producers advertised their products by word-of-mouth followed by the internet, email, newspapers or magazines, telephone, direct mail, radio and/or TV.

Methodology

The population was individuals 18 years and older and the primary grocery buyer for their household in the United States. The U.S. population as of December 1, 2017, and the number of variables in the instrument, determined the sample size of 484 (Ary et al., 2010). Centiment, a marketing research company, used a nonprobability opt-in sampling technique. Representative balancing ensured opt-in panel respondents reflected the U.S. census on age, ethnicity, gender, and region. This addressed exclusion, selection, and non-participation bias, all limitations of nonprobability sampling (Baker et al., 2013). Centiment administered the researcher-developed questionnaire created through Qualtrics. Participants answered how frequently they used 12 communication channels to obtain information on grass-fed beef, using a 5-point Likert scale (FMI & FMPRE, 2018; Gillespie et al., 2016). A panel of experts familiar with meat science, agricultural communications, and economics established face and content validity. Data were analyzed using IBM SPSS Statistics 23.0, reporting the means and standard deviations.

Results

All regions showed that consumers often used blogs, radio commercials or stories, magazine articles and ads, print publications, and social media to learn about grass-beef (Table 1). Television commercials or stories were often a source of information for consumers in the Midwest (M = 3.54, SD = 1.21), South (M = 3.55, SD = 1.21), and West (M = 3.51, SD = 1.33). Newspaper advertisements or articles were often a source of information for respondents in the Northeast (M = 3.63, SD = 1.32), Midwest (M = 3.73, SD = 1.18), and South (M = 3.73, SD = 1.24). Midwestern respondents were the only ones who often used websites (M = 3.54, SD = 1.26) to find grass-fed beef information.

Table 1

Frequency of Using Communication Channels by Region

	Northeast		*Midwest*		*South*		*West*	
Communication Channel	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Blogs	3.96	1.26	3.84	1.27	3.90	1.24	3.71	1.32
Radio commercials or stories	3.71	1.27	3.84	1.14	3.99	1.14	3.79	1.31
Magazine ads or articles	3.71	1.27	3.75	1.25	3.71	1.27	3.55	1.29
Print publications (flyers, newsletters, brochures, etc.)	3.64	1.34	3.73	1.26	3.75	1.25	3.56	1.34
Newspaper ads or articles	3.63	1.32	3.73	1.18	3.73	1.24	3.46	1.32
Social media	3.64	1.34	3.69	1.36	3.68	1.34	3.57	1.46
TV commercials or stories	3.42	1.26	3.54	1.21	3.55	1.21	3.51	1.33
Websites/internet	3.29	1.35	3.54	1.26	3.40	1.34	3.21	1.33
Cookbook	3.33	1.28	3.36	1.29	3.21	1.20	3.15	1.24
Menu or posters at restaurants	2.82	1.15	3.04	1.28	2.97	1.30	2.83	1.30
Product signage at grocery	2.57	1.15	2.78	1.27	2.60	1.21	2.59	1.25
Product label	2.40	1.28	2.60	1.27	2.29	1.21	2.20	1.18

Note. Real limits scale was 1.00-1.49 = never, 1.50-2.49 = rarely, 2.50-3.49 = sometimes, 3.50-4.49 = often, and 4.50-5.00 = always.

Conclusions, Implications, and Recommendations/Impact on Profession

Consumers read less traditional print media, watch less traditional television, and listen to less radio programs (Gillespie et al., 2016), so producers have used other low-cost advertising means such as a blog, social media, or website to communicate about grass-fed beef. Yet, this study's participants indicated they often used magazines and radio. Social media platforms, publications, magazine/newspaper articles, and blogs are accessible through the internet too. The use of blogs for grass-fed beef information is not surprising since the internet was a popular communication channel (FMI & FMRPE, 2018; Gillespie et al., 2016). Grass-fed beef is a niche product with some regions in the United States lacking established grass-fed beef markets, so it is important for producers to use multiple channels (Gillespie et al., 2016). Qualitative interviews or online focus group research with consumers in different regions could help get a better understanding for how they use the communication channels and the information that would influence their grass-fed beef purchases. Future survey research should examine producers' and agricultural businesses' efforts to determine the effectiveness of their marketing communication.

References

Ary, D., Jacobs. L. C., & Sorensen, C. (2010). *Introduction to research in education* (8th ed.). Wadsworth.

Baker, R. J., Brick, M., Bates, N. A., Battaglia, M., Couper, M. P., Dever, J. A., Gile, K. J., & Tourangeau, R. (2013). Summary report of the AAPOR Task Force on nonprobability sampling. *Journal of Survey Statistics and Methodology, 1*(2), 90–143. https://doi.org/10.1093/jssam/smt008

Cheung, R., McMahon, P., Norell, E., Kissel, R., & Benz, D. (2017). *Back to grass: The market potential for U.S. grass-fed beef*. https://www.stonebarnscenter.org/wp-content/uploads//2017/10/Grassfed_Full_v2.pdf

Curtis, K. R., Cowee, M. W., Havercamp, M., Morris, R., & Gatzke, H. (2008). Marketing local foods to gourmet restaurants: A multi-method assessment. *Journal of Extension, 46*(6). https://www.joe.org/joe/2008december/rb2.php

Dahlen, C. R., Hadrich, J. C., & Lardy, G. P. (2014). The North Dakota beef industry survey: Implications of extension. *Journal of Extension, 52*(6). https://tigerprints.clemson.edu/joe/vol52/iss6/12/

Food Marketing Institute, Foundation for Meat and Poultry Research and Education [FMI & FMPRE]. (2018). *The power of meat: An in-depth look at meat and poultry through the shoppers' eyes*. http://www.meatconference.com/

Gillespie, J. M., Sitienei, I., Bhandari, B. D., & Scaglia, G. (2016). Grass-fed beef: How is it marketed by U.S. producers? *International Food and Agribusiness Management Review, 19*(2), 171–188. https://www.ifama.org/Volume-19-Issue-2

Gwin, L., Durham, C. A., Miller, J. D., & Colonna, A. (2012). Understanding markets for grass-fed beef: Taste, price, and purchase preferences. *Journal of Food Distribution Research, 43*(2), 91–111. https://ageconsearch.umn.edu/record/145331/files/JFDR 43_2_ 6 Gwin.pdf

Gwin, L., & Lev, L. (2011). Meat and poultry buying at farmers markets: A survey of shoppers at three markets in Oregon. *Journal of Extension, 49*(1). https://www.joe.org/joe/2011february/rb4.php

Pirog, R. (2004). *Consumer perceptions of pasture-raised beef and dairy products: An internet consumer study*. Iowa State University. http://lib.dr.iastate.edu/leopold_pubspapers/132

Identifying hearing-related shortcomings in [State] School-Based Agricultural Education

Introduction/need for research

Safety concerns within School-Based Agricultural Education (SBAE) classrooms and laboratories have been well documented ([Blinded]; Chumbley et al., 2018; Dyer & Andreasen, 1999; Langley et al., 2018; Saucier et al., 2014). While some concerns established by Dyer & Andreasen (1999) have been addressed, hearing-related concerns have not ([Blinded]; Langley et al., 2018). With many of the activities in SBAE exposing students to decibel (dB) levels well above the 85dB recommended exposure limit (NIOSH, 2018a; NIOSH, 2018b) by the National Institute for Occupational Safety and Health (NIOSH), further studies and interventions are needed to determine how large the gap is in hearing-related concerns. [Blinded] determined that there is still a perceived gap in post-secondary agricultural education, and further exploration at the secondary level was recommended. Extending the work of the [Blinded] project, this study aims to determine a need for SBAE hearing-related interventions in [State].

Conceptual or theoretical framework

The theory of planned behavior (Ajzen, 1991) was used as the conceptual frame for this study as it aims to address components within an individual's behavioral control. Ajzen established this theory by focusing on an individual's attitude toward a behavior, subjective norms, and perceived behavioral control. Through the combination of these three aspects, Ajzen aimed to show how an individual's intention can affect their subsequent behavior. In the context of this study, student attitude toward a behavior is being examined in an attempt to establish the connection of their intention to use hearing protection as is should enlighten their subsequent behavior to follow through with that intention.

Methodology

Three SBAE programs were selected to participate in the three-month study. Students enrolled in AFNR courses in these programs participated in a pre-exposure (n = 104) and post-exposure (n = 94) assessment. Between the assessments, informational posters focusing on decibel outputs of six different tools in addition to a NIOSH use of hearing protection recommendation statement (NIOSH, 2018a; NIOSH, 2018b) were posted in high trafficked areas within the classroom and laboratory. SBAE instructors were told not to adapt their instruction nor to directly address the posters during their lessons while participating in this study. Among the two assessments was a section focusing on hearing protection use. Students were first asked binary question about future hearing protection use relating to six different tools. Then, given a scale from 60dB to 120dB with Always and Never bookending the scale, students indicated their decibel threshold for hearing protection use. Taking the respondent's identified threshold, their future use of hearing protection was coded for correctness across each of the different tools.

Results/findings

For each of the tools, future use of hearing protection showed no significant changes for five of the six tools. While the Powered Hand Drill had the lowest response for future use during the pre-exposure (f = 9, 8.65%) and the post-exposure (f = 13, 13.83%) assessment, it showed

the highest percentage increase at 59.81%. All other tools had a use response between 24.04% (f = 25) and 50.00% (f = 52) for the pre-exposure assessment and 22.34% (f = 21) and 51.06% (f = 48) for the post-exposure assessment. When reviewing the thresholds for both assessments, the approximated threshold for both was within 10 dB of the NIOSH recommendation. While there was an increase of the approximate threshold from 92.08dB to 94.04dB, the identified thresholds between 80dB and 90dB remained near 32.69% (f = 34) as it increased slightly to 32.98% (f = 31) for the post-exposure assessment. When using the participant's threshold as the standard for correct identification of future hearing protection use per each tool, the overall correct responses showed an 11.99% percent increase from 47.44% (f = 296) to 53.90% (f = 304). When looking at each individual tool the Handheld Circular Saw was the most correctly identified across both assessments (f = 64, 61.54%; f = 64, 68.09%), and Pneumatic Nail Gun was the least correctly identified (f = 31, 29.81%; f = 30, 31.91%). The correct identification of use of hearing protection at a given decibel threshold when using a Powered Hand Drill had the highest increase at 38.30% between the two assessments. All remaining correct identification of wearing hearing protection use increased between 1.86% and 18.73%.

Conclusions

While the poster intervention did not have significant impacts on the perceived threshold of future use of hearing protection, the overall increase on the correct identification of use to identified threshold is a positive. The low future use of hearing protection for the Powered Hand Drill is concerning as the decibel output has been identified above the NIOSH recommendation. This combined with the variation of future use of hearing protection may point toward a gap in safety instruction that has been identified throughout SBAE research. With the shortcomings starting to be identified, positives from this group must be discussed. A third of the students during the pre-exposure and post-exposure assessments identified a threshold within 5dB of the NIOSH recommendation. This combined with the increase of correct identification of hearing protection use when compared to the participant's identified threshold does show that there is benefit to the exposure as students were better able to perceive the "loudness" of a tool and apply that to their threshold for using hearing protection.

Implications/recommendations/impact

Mere exposure via visual aids proved to have some positive impact; however, the minimal increase in proper indicated future hearing protection use may indicate a need for further exploration of in-depth hearing safety instruction. There is a shown need for exposing SBAE students to the realities of improper hearing protection use and the actual sound levels in an agricultural setting alongside the decibel output of the tools being used by the students. While SBAE and others in the agricultural sector have been successful in implementing other safety related practices, hearing is falling short of the standard. While an argument can be made that students taking these classes are not exposed at a level or length of time to warrant hearing protection, the question that SBAE needs to ask is related to the foundation of instruction: What is the purpose of SBAE? If the answer approaches the topic of preparing students to be the future stewards of agriculture, which many would agree is true, then proper use of all safety related equipment should be paramount regardless of exposure level or length.

References

[Blinded]

Ajzen, I. (1991). The theory of planned behavior. In *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91).90020-T

Chumbley, S. B., Hainline, M. S., & Haynes, J. C. (2018). Agricultural mechanics lab safety practices in south Texas. *Journal of Agricultural Education*, *59*(3), 309-323. https://doi.org/10.5032/jae.2018.03309

Dyer, J. E., & Andreasen, R. J. (1999). Safety issues in agricultural education laboratories: A synthesis of research. *Journal of Agricultural Education*, *40*(2), 46-54. https://doi.org/10.5032/jae.1999.02046

Langley, G. C., Tummons, J. D., Kitchel, T. (2018). Influences on the perceived comfort and training level of personal protective equipment in the Missouri high school agricultural mechanics laboratory. *Journal of Agricultural Education*, *59*(4), 20-35. https://doi.org/10.5032/jae.2018.04020

NIOSH. (2018a). *Noise and Hearing Loss Prevention*. cdc.gov. https://www.cdc.gov/niosh/topics/noise/default.html.

NIOSH. (2018b). *Noise Levels of Power Tools*. cdc.gov https://www.cdc.gov/niosh/topics/noise/noise_levels.html.

Saucier, P. R., Vincent, S. K., & Anderson, R. G. (2014). Laboratory safety needs of Kentucky school based agricultural mechanics teachers. *Journal of Agricultural Education*, *55*(2), 184-200. https://doi.org/10.5032/jae.2014.02184

Innovative Pedagogy for Employability: Design Thinking and the Development of Problem Solving and Teamwork Skills in an Agricultural Course

Summer F. Odom

600 John Kimbrough Blvd.

College Station, TX 77843-2116

979-862-7650

summerodom@tamu.edu

Makayla Waiser

600 John Kimbrough Blvd.

College Station, TX 77843-2116

m.w.012302@tamu.edu

Innovative Pedagogy for Employability: Design Thinking and the Development of Problem Solving and Teamwork Skills in an Agricultural Course

Introduction

College students are seen as lacking the ability to problem solve and work on a team, which are the top two skills employers search for most in employes (National Association of Colleges and Employers, 2020; Wilkie, 2019). If universities want their students to graduate with these desired skills, it is exceedingly important that instructors are concerned with how they can design instruction and activities to fill this gap. Design thinking is a creative problem-solving process for approaching the discovery of solutions to real, wicked problems (Johansson-Sköldberg et al., 2013) and though it has been utilized in other disciplines and beneficial outcomes have been discovered in terms of knowledge, skills, and mindsets (McLaughlin et al., 2022; Wright & Wrigley, 2019), the use of design thinking in other areas like education and agriculture have been slow to adopt.

For this study, researchers gathered data from student reflections about their experience in using the design thinking for engaged learning (DTEL) process in an agricultural leadership course. Students worked in teams to solve wicked problems while being led through the DTEL process by their instructor. The purpose of the course was to give participants practical experience in issues that leaders face, as well as academic grounding for continued leadership skills development.

More research and empirical evidence for this pedagogy is needed to substantiate its benefits for faculty in these disciplines to consider its use in their courses. This study fits the American Association for Agricultural Education (AAAE, 2023) research value of nurturing positive youth development by examining student experiences in using a design thinking structure to identify outcomes related to problem solving and teamwork as a result of working through the DTEL model.

Conceptual Framework

DTEL is a model developed to provide structure for project-based collaborative learning (Donaldson & Smith, 2017). It integrates both a design thinking process and a set of cognitive strategies used by design experts. This model consists of five phases, broken down into ten stages (Jamal et al., 2021). There are ten designerly ways of knowing (cognitive strategies) including: 1) wicked problem framing and reframing, 2) abductive reasoning, 3) divergent and convergent thinking, 4) rapidly changing goals and constraints, 5) working from abstract to concrete, 6) constructing and co-constructing meanings, 7) contextualized thinking, 8) epistemic and relevance exploration, 9) reflection-in-action, and 10) cognitive, affective, and conative empathy (Donaldson & Smith, 2017; Jamal et al., 2021). The DTEL model emphasizes development of problem-solving skills, human-centered design skills, and collaboration skills.

A central focus of this model is the framing and reframing of wicked problems. When engaged learners participate in this process of design thinking it can lead to an increase in elaboration,

flexibility, and formulation of new ideas (Orthel, 2015). It also engages students in abductive reasoning as they continually develop "best guess" frames as they work within the tension between the co-evolving problem and solution.

Methodology

A basic qualitative study (Merriam, 2009) using qualitative content analysis (Bryman, 2012) of 19 student reflections was conducted to examine student experiences in using the DTEL process. Reflections were completed at the end of an agricultural leadership course as part of normal course activities, not for research purposes (Bryman, 2012). There were 23 students enrolled in the course; 19 of them completed the final reflection. Data were analyzed using the ethnographic content analysis approach (Bryman, 2012) where the reflections were reviewed and combined into units, then were compared and categorized into emergent themes used to represent student perceptions of their experience with the DTEL process. Trustworthiness was established through Lincoln and Guba's (1985) transferability, dependability, and confirmability factors.

Results

Two prominent themes that emerged from the analysis pertaining to problem solving and collaboration skills included: changes/outcomes from DTEL, and intentions for future use of design thinking. The theme of changes/outcomes from DTEL included students reflecting about how their mindsets have changed regarding problem solving. Student 1 said "before going through the course, I generally solved problems pretty simply. Fix whatever is causing the problem. However, after the course, I started to ask myself a series of different questions." Some students reflected on how the design thinking process allowed them to experience content from their other courses. This is what Student 4 had to say: "I have gone into depth about the thinking process in my comm classes before, but it was really cool to see it play out as long as it did and allow for us to really dive deep into design processes."

Students' intention for use of design thinking in the future included how they can use the process for problem solving in future careers. Student 4 reflected: "while I might not go through the process of sticky notes and low-fi prototyping for every problem I have, I think this process is a great method for problem solving within whatever job I have one day." Student 14 believed the skill of reflection in action would carry them into their "desired field in the legal career, especially in a courtroom setting."

Conclusions & Implications

The design thinking process is a structured process that helps students develop skills in problem solving and team collaboration. As leadership instructors look for ways to help their students develop skills that employers are searching for, integrating the design thinking process is a great option. Using the design thinking process to help students develop the skills current employers believe they are missing (Wilkie, 2019). From the information gained through this study, it appears that the DTEL model is one that students believe they can utilize in their future careers. Agricultural leadership educators should consider the use of the DTEL model in their courses that utilize teams.

References

American Association for Agricultural Education (AAAE). (2023). AAAE Research Values. https://aaaeonline.org/resources/Documents/FOR%20ONLINE%20(8.5%20x%2011)%20-%20AAAE%20Research%20Values.pdf

Bryman, A. (2012). *Social research methods* (4th ed.). Oxford University Press Inc.

Donaldson, J. P., & Smith, B. K. (2017). Design thinking, designerly ways of knowing, and engaged learning. In M. J. Spector, B. B. Lockee, & M. D. Childress (Eds.), *Learning, Design, and Technology: An International Compendium of Theory, Research, Practice, and Policy* (pp. 1-24). Springer International Publishing.

Jamal, T., Kircher, J., & Donaldson, J. P. (2021). Re-Visiting Design Thinking for Learning and Practice: Critical Pedagogy, Conative Empathy. *Sustainability, 13*(2).

Johansson-Skoldberg, J., & Cetinkaya, M. (2013). Design thinking: Past, present, and possible futures. *Creativity and Innovation Management, 22*, 121-146. https://doi.org/10.1111/caim.12023

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage.

McLaughlin, J. E., Chen, E., Lake, D., Guo, W., Skywark, E. R., Chernik, A., & Liu, T. (2022). Design thinking teaching and learning in higher education: Experiences across four universities. *PLOS ONE*, *17*(3), 1-16. https://doi.org/10.1371/journal.pone.0265902

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. Jossey-Bass.

National Association of Colleges and Employers (NACE). (2020). *Job outlook 2020.* Retrieved from https://www.naceweb.org/talent-acquisition/candidate-selection/key-attributes-employers-want-to-see-on-students-resumes/.

Orthel, B. D. (2015). Implications of design thinking for teaching, learning, and inquiry. *Journal of Interior Design, 40*(3), 1-20.

Wilkie, D. (2019). Employers say students aren't learning soft skills in college. Part 2: College grads are deficient in critical thinking, teamwork, speaking and writing executives say. *Society for Human Resource Management.* Retrieved from https://www.shrm.org/resourcesandtools/hr-topics/employee-relations/pages/employers-say-students-arent-learning-soft-skills-in-college.aspx.

Wright, N., & Wrigley, C. (2019). Broadening design - led education horizons: conceptual insights and future research directions. *International Journal of Technology and Design Education*, *29*, 1 - 23. https://doi.org/10.1007/s10798-017-9429-9

Inspired to Teach: Perceptions of School-based Agricultural Education Teachers

Jessiann Dusenbery, Matthew Vetterly, Kalynn Baldock

Department of Agriculture, Food Science, and Kinesiology, Eastern New Mexico University

1500 S Ave K Station 11, Portales, New Mexico, 88130

(575) 562-2521

jessiann.dusenbery@enmu.edu, matthew.vetterly@enmu.edu, kalynn.baldock@enmu.edu

Inspired to Teach: Perceptions of School-based Agricultural Education Teachers

Introduction

Current data reveals that the United States educational system has been and continues to experience a shortage of qualified teachers across subject areas. Four main factors are a decline in students enrolling in teacher preparation programs, lower student-to-teacher ratios, increasing numbers of students enrolled, and high attrition (Sutcher et al., 2019). These same shortages are occurring for experienced agricultural educators needed for school-based agricultural education (SBAE) programs across the nation (Camp et al., 2002). Unfilled positions have led to individuals entering the profession through alternative routes. In 2020, 13.5% of first-year agricultural teachers were alternatively licensed (Foster et al., 2020).

Inspiration has been described as an individual apprehending something because of an influence beyond the self (Thrash & Elliot, 2004). Further inspiration can be broken into transcendence, evocation, and motivation (Thrash & Elliot, 2004). Ismail and Miller (2021) found that teachers were influenced to join the profession due to encouragement from others and personal reasons. Understanding what inspires individuals to become SBAE teachers can help the profession understand better ways to recruit students into preservice SBAE programs. By increasing the enrollment in SBAE preservice programs, we can begin to combat the shortage of qualified teachers.

Purpose

This study aimed to evaluate the inspirations that led individuals to become school-based agricultural educators in New Mexico. The following objectives were utilized to address this purpose:

1) Identify the demographic characteristics of New Mexico SBAE teachers.
2) Determine New Mexico SBAE teachers' current view of the profession.
3) Determine New Mexico SBAE teachers' motivation factors to enter the profession.
4) Determine New Mexico SBAE teachers' perceptions on inspiring others to enter the profession.

Method

The research design was quantitative and descriptive. An online questionnaire was distributed to 130 New Mexico agriculture teachers. The list of emails was obtained from the New Mexico FFA list server. The questionnaire was conducted through Qualtrics and followed the Tailored Design Method for Internet Surveys (Dillman et al., 2014). The questionnaire consisted of eight multiple-choice questions and 32 Likert-type questions. All Likert-type questions used a four-point scale with 1 = *strongly disagree,* 2 = *disagree,* 3 = *agree, and* 4 = *strongly agree.* Multiple choice questions collected data on teachers' current school population, demographics, and context. The Likert-type questions were divided into three categories: current view of the profession, motivation factors, and inspiring others to teach. Data were analyzed through Qualtrics and SPSS.

Results

A total of 82 usable responses were obtained for a response rate of 63.07%. Respondents SBAE programs were 54.9% rural (population <2,500), 26.8% small town (population between

2,500 and 25,000), 13.4% large town (population above 25,000 outside a metropolitan area), 2.4% suburban (territory outside a principal city and inside urbanized area with a population<100,000), 1.2% small city (population less than 100,000), and 1.2% city (population>100,000). Ninety-eight percent were traditional public schools, with only 1% public charter. The respondents' schools were 46.3% Majority Hispanics, 23.2% majority white/non-Hispanic, 15.9% heterogeneous, and 9.8% American Indian/Alaska Native. The socioeconomic context of the respondents' schools was 41.5% low socioeconomic, 36.6% lower to middle-income, 17.1% middle income, and 4.9% middle to upper income. Respondents represented the early, mid, and late-career professionals with 11% in year 1, 17.1% in years 2-3, 14.6% in years 4-5, 15.9% in years 6-10, 9.8% in years 11-15, and 31.7% in 16 or more years. The majority of respondents, 69.5%, went through traditional undergraduate programs. Meanwhile, 15.9% went through a state alternative licensure program, and 4.9% went through a university alternative licensure program. The highest level of education for respondents was bachelor's degree 56.3%, master's degree 42.6%, and educational specialist 1.3%.

Most respondents agreed agricultural teaching was an honorable profession, 74.7%. Additionally, 94.7% of respondents agreed they were proud of their occupation as an agricultural teacher. Eighty-four percent of the respondents strongly agreed or agreed there is concern over the declining public perceptions of agricultural teaching. Furthermore, 98% felt agricultural teachers should be invested in their students' overall welfare. Seventy percent of respondents were inspired to become a teacher by a teacher, 66% of which were secondary teachers. Cooperating teachers impacted the decision of 56% of the respondents. An overwhelming 72.8% of respondents were inspired to become agricultural educators through their FFA experience. Many respondents see themselves as role models to students for the agricultural teaching profession: 62.2% *strongly agree*, 36.6% *agree,* and 1.2% *strongly disagree.* Only 67% of respondents actively encourage their students to become agricultural teachers. However, 87% initiate positive conversations about the agricultural teaching profession with their students. Only 8.7% discourage their students from becoming agricultural teachers. All respondents believe agricultural teachers play a vital role in shaping our nation's future.

Conclusion and Recommendations

In New Mexico, SBAE teachers have a positive view of the profession but believe there is a decline in public perception. It is evident by this data that [state] SBAE teachers are inspired by their secondary teachers to enter the profession. While Cooperating teachers were stated as inspiring over half of the individuals to enter the profession, Kasperbauer and Roberts (2007) found that this is not predictive of the decision to teach. The data also suggests that FFA programs are crucial in inspiring individuals to become SBAE teachers. This data agrees with the study by Ingram et al. (2018), which found that agricultural teachers and FFA programs are principal factors in influencing individuals to join the profession. As we continue to find ways to recruit more students into SBAE preservice programs, we need to adjust our focus to aiding our current secondary teachers, SBAE, and core classrooms with strategies to inspire their current students. Teachers must know their influence on students choosing teaching as a profession. Furthermore, when selecting school sites for preservice candidates, cooperating teachers must be selected with intention. The FFA programs within each state need to continue implementing career development events and leadership training that will encourage and motivate students to become SBAE teachers.

References

Camp, W.G., Broyles, T., & Skelton, N.S. (2002). A national study of the supply and demand of teachers of agricultural education in 1999-2001. Virginia Polytechnic Institute and State University. http://aaaeonline.org/Teacher-Supply-andDemand/

Dillman, D.A., Smyth, J.D., & Christian, L.M. (2014). *Internet, phone, mail, and mixed mode surveys: The tailored design method*, 4th ed. John Wiley & Sons Inc.

Foster, D.D., Lawver, R.G., & Smith, A.R. (2021). National agricultural education supply and demand study, 2020 Executive Summary. Retrieved from: http://aaaeonline.org/Resources/Documents/NSD2020Summary.pdf.

Ingram, M..L., Sorensen, T.J., Warnick, B.K., & Lawver, R.G. (2018). The influence of school-based agricultural education on preservice agriculture teachers' choice to teach. *Journal of Agricultural Education*, 59(2), 64–78. http://doi.org/10.5032/jae.2018.02064

Ismail, N., & Miller, G. (2021). Factors that motivate high school agriculture teachers to teach. *Journal of Agricultural Education*, 62(1), 331–346. http://doi.org/10.5032/jae.2021.01297

Kasperbauer, H.J., & Roberts, T.G. (2007). Influence of the relationship between the student teacher and cooperating teacher on student teacher's decision to enter teaching. *Journal of Agricultural Education*, 48(1), 8–19. http://doi.org/0.5032/jae.2007.01008

Sutcher, L., Darling-Hammond, L., & Carver-Thomas, D. (2019). Understanding teacher shortages: An analysis of teacher supply and demand in the United States. *Education Policy Analysis Archives*, 27(35). http://dx.doi.org/10.14507/epaa.27.3696.

Thrash, T.M., & Elliot, A.J. (2004). Inspiration: Core characteristics, component processes, antecedents, and function. *Journal of Personality and Social Psychology,* 87(6). 957-973. http://doi.org/10.1037/0022-3514.87.6.957

Intent to Implement CASE Curriculum: Participant Perspectives

Kayla N. Marsh
Oklahoma State University
458 Agricultural Hall
Stillwater, OK 74078
813-997-5125
Kayla.marsh@okstate.edu

Christopher J. Eck, Ph.D.
Oklahoma State University
457 Agricultural Hall
Stillwater, OK 74078
405-744-8027
Chris.eck@okstate.edu

Introduction

Teachers are the greatest value add to a student's future success (Chetty et al., 2014), but quality support in the form of curriculum, resources, professional development, and communities within the profession is essential for supporting teachers in their practice as effective teachers (Eck et al., 2019). Just as high-quality educational standards support the value of courses, providing equity for all learners (Darling-Hammond, 1994; Ravitch, 1995), high-quality curriculum and resources support effective classroom instruction for all learners (Mercier, 2015). Phipps et al. (2008) defined curriculum as activities, experiences, and sequenced coursework that are outlined by educational program standards. Quality curriculum is essential for supporting effective teaching, but not all curriculum sources are able to meet the teachers' needs and support their practice (Brown, 2009). Some resources are aligned with specific content or skill areas but are incomplete, while others offer complete and prescriptive content and scripts, leading materials to feel rigid (Brown, 2009). Others are developed to be educative resources designed to support and develop teacher's self-efficacy through the implementation of curriculum as well as increase the gains of students receiving the instruction (Davis et al., 2017).

These differences in curriculum resources make it essential for school-based agricultural education (SBAE) teachers to connect with the curriculum resources that align with their personal and professional needs (i.e., experience, career tenure, and preferred teaching style), as well as their programmatic needs (Brown, 2009; Moser & McKim, 2021). Previous recommendations surrounding SBAE curriculum research (Barrick et al., 2018; Mercier, 2015), have demonstrated the continued need to better understand, a) what is valued by SBAE teachers in a curriculum resource, b) how SBAE teachers evaluate curriculum resources, and c) what factors impact the modifications and implementation of those resources by teachers. The purpose of this study was to determine SBAE teachers' drive to participate in CASE AFNR professional development and their intentions related to integrating the curriculum in their programs.

Theoretical/Conceptual Framework

Self-determination theory (SDT) describes the physiological needs of individuals as autonomy, competency, and belonging, which can drive individuals' motivation to continue their personal and professional growth by satisfying their needs (Ryan & Deci, 2000). Contrastingly, when individuals' psychological needs for autonomy, competency, and relatedness are not met, the lack of support results in the reduction of capacity, alienation, and the individual's ill-being, impacting their wellness and ability to cope with stress (Ryan & Deci, 2000). The SDT framework allows for the alignment of participants experiences to the three psychological needs (i.e., autonomy, competency, and relatedness) to understand the motivational satisfaction or frustration as a result of CASE AFNR professional development and curriculum training (Ryan & Deci, 2000).

Methods

This study evaluated the impact of a week-long in-person CASE AFNR institute on SBAE teacher participants ($N = 23$). Participants are limited to those who enrolled in the CASE AFNR institute but included first year teachers to those with over 20 years of SBAE experience. Thirteen states were represented by the participants, of which the majority were female ($n = 18$). Data were collected using two questionnaires, which asked open-ended questions to allow participants to explain their interest in CASE training and their intentions related to the implementation of the curriculum. The first questionnaire was distributed prior to the institute,

and the second was distributed two weeks after the institute. All 23 participants responded to the first questionnaire, and 21 of the 23 responded to the follow-up questionnaire. Written responses were evaluated using the constant comparative method to share the participants voice in answering the proposed research questions (Creswell & Poth, 2018).

Findings

SBAE teachers identified the CASE institute as an opportunity "to learn great curriculum and collaborate with other educators from across the country" prior to the in-person institute. They hoped the institute would provide "the necessary knowledge and skills to implement CASE" while "explaining the practical application of the curriculum" and "best practices for implementation." The week after the in-person institute participants expressed the value of "the hands-on learning", "added rigor to ag classes", and the "creative teaching strategies." Participants overarchingly agreed that the CASE curriculum will help them to be better prepared, ultimately "helping with work-life balance." In addition to the personal benefits for the teachers, it was communicated that "our students will benefit, especially considering the engaging content and challenging activities." Three to four weeks into the 2023-2024 school year, CASE participants completed an electronic questionnaire to further consider the value of the in-person institute, which all reported the training being helpful or very helpful. Concluding that "CASE training left me feeling confident in my abilities to teach agriculture and implement the curriculum." Others commented that the impact was even greater for them as they started a new program and transitioned into the ag classroom as an alternatively certified teacher. Participating teachers reported the most beneficial components of the CASE institute were the weeklong in-person training, the expansion of their professional network with other SBAE teachers and university faculty, and the access to a regularly updated curriculum via MyCASE. While many positives were shared, teachers were concerned with the cost associated with CASE implementation, the time associated with set-up and clean-up of labs, and realistic expectations for completing the curriculum in a school year. Sixty-three percent of participants reported that participation in the CASE institute and the curriculum access as having a positive impact on their SBAE career intentions (i.e., they plan to remain in the profession longer).

Conclusions/Implications/Recommendations

SBAE teachers' reflections on their CASE AFNR institute were, at large, a positive experience aligning with the goals of an educative curriculum to develop teacher's self-efficacy regardless of previous experience, training, and skills (Brown, 2009; Moser & McKim, 2021). Effectively satisfying SBAE teacher's basic needs for competency and relatedness (Ryan & Deci, 2000). Competency is expressed in statements related to "creative teaching strategies," "best practices for implementation," and "feeling confident in my ability to teach," representing the level of efficacy SBAE teachers have as a result of the CASE AFNR institutes. Relatedness was positively reflected in statements regarding "…collaborate with other educators," depicting SBAE teachers value toward the expansion of their professional network (Ryan & Deci, 2000). Autonomy was reflected as an area of potential limitation found in statements when considering the curriculum timeline, costs, and preparation needed to facilitate labs (Ryan & Deci, 2000). Future research should further investigate CASE institutes and curricula to better understand its implications as an educative curriculum and the role it plays in teacher autonomy.

References

Barrick, R. K., Heinert, S. B., Myers, B. E., Thoron, A. C. & Stofer, K., (2018). Integrating disciplinary core ideas, the agriculture, food and natural resources career pathway and next generation science standards. *Career and Technical Education Research, 43*(1), 41–56. https://doi.org/10.5328/cter43.1.41

Brown, M. (2009). The teacher tool relationship: Theorizing the design and use of curriculum materials. In J. Remillard, B. Herbel-Eisenmann &G. Lloyd (Eds.), *Mathematics teachers at work: Connecting curriculum materials and classroom instruction* (pp. 17–36). *Routledge.*

Chetty, R., Friedman, J. N., & Rockoff, J. E. (2014). Measuring the impacts of teachers II: Teacher value-added and student outcomes in adulthood. *American Economic Review, 104*(9), 2633–2679. http://dx.doi.org/10.1257/aer.104.9.2633

Creswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches. Sage

Darling-Hammond, L. (1994). National Standards and Assessment: Will they improve education? *American Journal of Education, 102,* 478–510. https://doi/org/01956744/94/0204-0005

Davis, E. A., Palincsar, A. S., Smith, P. S. Arias, A. M & Kademian, S. M. (2017). Educative curriculum materials: Uptake, impact, and implications for research and design. *Educational Researcher, 46*(6), 293–304

Eck, C. J., Robinson, J. S., Ramsey, J. W., & Cole, K. L. (2019). Identifying the characteristics of an effective agricultural education teacher: A national study. *Journal of Agricultural Education, 60*(4), 1–18. https://doi.org/10.5032/jae.2019.04001

Mercier, S. (2015). Food and agricultural education in the United States. AGee Transforming Food & Ag Policy Report. https://studylib.net/doc/18802049/food-and-agricultural-education-in-the-united-states

Moser, E. M., & McKim, A. J. (2021). Exploring Curriculum Congruence and Connectivity within School-Based Agricultural Education. *Journal of Agricultural Education*, *62*(1), 170–183. https://doi.org/10.5032/jae.2021.01170

Phipps, L. J., Osborne, E. W., Dyer, J. E., & Ball, A. (2008). *Handbook on agricultural education in public schools* (6th ed.). Thomas Delmar Learning.

Ravitch, D. (1995). *National standards in American education: A citizen's guide.* Brookings.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Investigating Flint Hills Fire Culture: A Qualitative Analysis

Adrian Sulivant
1612 Claflin Rd
Manhattan, KS 66506
785-532-5804
sulivant@k-state.edu

Katie Starzec
kstarzec@k-state.edu

Nellie Hill-Sullins
nlhill@k-state.edu

Claire Geiger
claireisidore@k-state.edu

Carol Baldwin
carolbaldwin@k-state.edu

Investigating Flint Hills Fire Culture: A Qualitative Analysis

Introduction/need for research

Wildfire risk is increasing globally, placing people's lives, homes, and jobs in danger (Jolly et al., 2015). Humans have had a long history of managing ecosystems through regular fire intervals for hunting, agriculture, and the settlement of areas (Coughlan, 2015). With damages from wildfires annually costing the American economy between $71.1 billion to $347.8 billion, it's important to find better management strategies to mitigate fire danger (Thomas et al., 2017). American fire suppression policy throughout the 20th century allowed for fuel loads to increase substantially, leading to increasingly intense and dangerous fires (Schoennagel et al., 2017). The Flint Hills is a unique area where a community of producers, mostly cattle ranchers, have used prescribed burning as a management practice for increased forage as well as a means to prevent woody invasive encroachment from taking place (Morford et al., 2022; Towne & Craine, 2016). There is plenty of research available on wildfire; however, social science research on prescribed burning is limited (Hiers et al., 2020). A better understanding of pro-fire motivations is invaluable information that can improve current training and education offered by Extension agents, as well as state, federal, and NGO-prescribed burning education.

Questions that guided this study were:

RQ1: What are ranchers' perceptions of risk related to prescribed fire?

RQ2: How does fire culture in Kansas influence decision-making behavior for ranchers?

Theoretical framework

Due to the lack of prior qualitative research on prescribed fire culture, we utilized grounded theory to develop a framework from an inductive approach. This allowed us to build our theory through rigid data analysis (Tie, 2019). We collected data through interviews and built our codes from a basic framework to advanced codes once we reached data saturation. This method of examination allowed us to create and verify concepts as we coded more interviews (Charmaz & Thornberg, 2020).

Methodology

The research questions were addressed using semi-structured interviews conducted within the Flint Hills in 2019 as part of a documentary for the Great Plains Fire Exchange. Participants were producers, primarily ranchers, using prescribed fire as a land management tool. The majority of participants were males ages 65 and older. The interviewer used an IRB-approved list of questions ranging from personal perceptions toward fire to community perceptions of fire. A team of three coders used NVivo software to examine 34 total interview transcripts. Each coder examined 17 interview transcripts from the total pool of 34 interviews, with coding overlap. Coders first used note-taking to examine transcripts and become familiar with the text before moving on to rigorous coding. All three researchers coded the first 7 transcripts to compare their approach, establish initial codes, and to maintain coherence throughout the analysis. After using reflexive iteration and multiple waves of coding, the researchers debriefed multiple times to develop thick descriptions of codes and synthesize major themes from the data.

Findings

Three major themes emerged throughout the coding process, all centralized around the decision of whether or not to apply prescribed burning as a management tool. These themes are risk, culture, and experience. Participants mention many types of *risks*, including fire suppression's

risk to the ecosystem, along with their responsibility to reduce risk by conducting safe prescribed burns. Participants often refer to community norms, which we refer to as *culture*, or the practice of burning as a community and/or because generations before them have done it. Many participants mention passing down knowledge from one generation to another at a young age, which we labeled *experience*, to help reduce risk, enhance learning, and to conduct a burn safely. Example quotes from these themes are displayed in Table 1.

Table 1

Producer Perspectives for Using Prescribed Burning

Theme	Example quotes
Risk	"Our practice is that we believe that there is more risk of not using fire than there is of using too much, use too many years, so I suppose if we're going to make a mistake we'll burn every year rather than trying to take off three or four years as I know some people do." -Anthony "I used fire cautiously and beneficially and I'm learning a lot about the use of fire from current experiments and will anticipate using it…" -Garrett
Culture	"Being a good neighbor, being a good steward of the land kind of goes hand in hand and we notify people who're going to be burning anywhere near or adjacent to their property. And just being a good steward and a good neighbor goes a long way." -Charles "My great-great-grandfather settled about five miles east of where we are in the mid 1880s, and he started using prescribed fire then. And it's just come down one generation to the other." -Robert
Experience	"I've been going along on these burns ever since I was big enough that they let me go. I used to run with my grand-dad a lot and so that was kind of, I just learned it by doing it…" -Will "...usually the most senior person there in age is who makes many of the decisions on. Is it safe to burn? Is it right to burn? How are we going to do it?" -Wyatt

Conclusions

Our results suggest risk, culture, and experience in utilizing fire are major themes that help define their "fire culture" and drive long-term management decisions of prescribed burning. Many producers in the Flint Hills have a multigenerational connection to burning and as a result, have a firm understanding of the risks, benefits, and the understanding to conduct burns safely.

Implications/recommendations/impact

More social science research is needed to better understand the motivations and demotivators of burning for producers in other regions of the country, as well as residents who don't own large tracts of land. As risk for wildfire danger increases in our day to day lives, it is important to understand the motivations private landowners have in protecting their homes, livelihoods, and local ecosystems. We recommend additional research focus on geographically urban people's perceptions of fires – both controlled fires and wildfires – as they are an understudied population (Rosen et al., 2023).

References

Charmaz, K., & Thornberg, R. (2020). The pursuit of quality in grounded theory. *Qualitative Research in Psychology*, *18*(3), 305–327. https://doi.org/10.1080/14780887.2020.1780357

Coughlan, M. R. (2015). Traditional fire-use, landscape transition, and the legacies of Social Theory Past. *Ambio*, *44*(8), 705–717. https://doi.org/10.1007/s13280-015-0643-y

Hiers, J. K., O'Brien, J. J., Varner, J. M., Butler, B. W., Dickinson, M., Furman, J., Gallagher, M., Godwin, D., Goodrick, S. L., Hood, S. M., Hudak, A., Kobziar, L. N., Linn, R., Loudermilk, E. L., McCaffrey, S., Robertson, K., Rowell, E. M., Skowronski, N., Watts, A. C., & Yedinak, K. M. (2020). Prescribed fire science: The case for a refined research agenda. *Fire Ecology*, *16*(1). https://doi.org/10.1186/s42408-020-0070-8

Jolly, W. M., Cochrane, M. A., Freeborn, P. H., Holden, Z. A., Brown, T. J., Williamson, G. J., & Bowman, D. M. (2015). Climate-induced variations in global wildfire danger from 1979 to 2013. *Nature Communications*, *6*(1). https://doi.org/10.1038/ncomms8537

Morford, S. L., Allred, B. W., Twidwell, D., Jones, M. O., Maestas, J. D., Roberts, C. P., & Naugle, D. E. (2022). Herbaceous production lost to tree encroachment in United States rangelands. *Journal of Applied Ecology*, *59*(12), 2971–2982. https://doi.org/10.1111/1365-2664.14288

Rosen, Z., Henery, G., Slater, K. D., Sablan, O., Ford, B., Pierce, J. R., Fischer, E. V., & Magzamen, S. L. (2023). A culture of fire: Identifying community risk perceptions surrounding prescribed burning in the Flint Hills, Kansas. *Journal of Applied Communications*, *106*(4). https://doi.org/10.4148/1051-0834.2455

Schoennagel, T., Balch, J. K., Brenkert-Smith, H., Dennison, P. E., Harvey, B. J., Krawchuk, M. A., Mietkiewicz, N., Morgan, P., Moritz, M. A., Rasker, R., Turner, M. G., & Whitlock, C. (2017). Adapt to more wildfire in western North American forests as climate changes. *Proceedings of the National Academy of Sciences*, *114*(18), 4582–4590. https://doi.org/10.1073/pnas.1617464114

Thomas, D., Butry, D., Gilbert, S., Webb, D., & Fung, J. (2017). The costs and losses of wildfires: A literature survey. *National Institute of Standards and Technology*, 1–64. https://doi.org/10.6028/nist.sp.1215

Tie, Y. C., Birks, M., & Francis, K. (2019). Grounded Theory Research: A design framework for novice researchers. *SAGE Open Medicine*, *7*, 1–8. https://doi.org/10.1177/2050312118822927

Towne, E. G., & Craine, J. M. (2016). A critical examination of timing of burning in the Kansas Flint Hills. *Rangeland Ecology & Management*, *69*(1), 28–34. https://doi.org/10.1016/j.rama.2015.10.008

Is Journaling Write for You? A Qualitative Analysis of Undergraduate Perceptions of Journaling in an Introductory Agricultural Communications Course

Introduction

Students increasingly face various distractions to learning due to an abundance of external media influences (Schunk & DiBenedetto, 2020 and Dontre, 2021). This can affect the engagement and self-efficacy in the classroom if students are focused on things other than the content being presented to them (Dontre, 2021). Journaling can alleviate this issue by enhancing self-awareness, student interest and learning through reflection (Hampton & Morrow, 2003).

The term 'journal' references any personal writing that allows an individual to express perceptions, dreams, experiences, and creativity from the perspective of the self (Hemphill-Pearson, 2008). There are different forms of journaling including computer-based journals, Internet-based journals, hard copy journals and structured workbooks (Hemphill-Pearson, 2008). These all assist with personal growth, synthesis and reflection on new information an individual acquires (Hiemstra, 2001). Journaling is a useful tool to develop positive relationships between teachers and students and build an enhanced learning environment focused on experiences that will help increase student engagement during their learning process (Ali & Hassan, 2018). In agriculture classrooms, enhancing engagement and knowledge retention can help advance public knowledge of agriculture, food, and natural resources (AAAE, 2023).

While research on reflective journaling is abundant in educational settings, it currently lacks in higher education courses within Agriculture. Research on Agricultural Communications and Journalism undergraduate students' perceptions and reactions towards journaling exercises can assist professors to better develop a classroom environment that will generate more engagement. In Agricultural Communications, journaling can be used to increase metacognition and metacognitive awareness of students' experiences, allowing them to contemplate and articulate their skill development (Redwine et al., 2016). The research questions guiding this study include: RQ1) How does journaling impact students' learning experiences and environments. RQ2) What are students' general reactions to reflection through journaling.

Conceptual Framework

This study was guided by the Social Cognitive Theory. The Social Cognitive Theory (SCT) provides a model demonstrating the connection that behaviors and environment have on the motivation and learning of a person (Schunk & DiBenedetto, 2020). Reflection can play a role in this framework, as problem solving mostly arises in thought rather than in action (Bandura, 1977a). A review of more recent SCT literature examines that self-efficacy largely influences the choice of activities, self-regulation and efforts, and in succession is affected by the results of one's achievement efforts (Schunk & DiBenedetto, 2020). The principles of social cognition can be applied in the classroom to foster self-regulatory actions (Schunk, 2013). Reflection in journaling assists students to better understand the abstract concepts needed for learning outcomes (Hampton & Morrow, 2003).

Methods

Students in [Blinded Course] completed a total of nine journal entries over the course of the semester. Students were notified that the journaling assignments would be graded for completion and not content and were welcome to share anything in this space. Students were provided with guiding prompts to facilitate idea generation and reflection. These prompts included questions

such as: How do you feel today? What was your biggest take away from the last two weeks of class? What questions do you still have about agricultural communications?

The research team conducted a qualitative content analysis of 32 student's response comments in their final journal entry. The researchers used in vivo coding for the first cycle of analysis and further categorized and refined responses into categories and themes (Saldaña, 2012).

Findings

Theme	Quotes
1. Positive student journaling experiences include time to think, chance for reflection and renewed interest.	"I really enjoyed journaling in this class too because it helped me review what we learned and comprehend it to another level." "I think the prompts have been a great tool to really reflect on what we have learned and stop and think about where we are at."
2. Past journaling experienced students were more open to journaling again.	"I have journaled before and, I will likely continue to do so moving forward from this class." "I used to journal daily but have fallen out of the routine, having done it this semester I may go back to it."
3. Students who know they will not continue journaling still acknowledge the benefits.	"I feel journaling for me, has allowed me to have kind of a reminder almost and it is definitely something I should continue to do, but it is more than likely I will not." "It was nice to reflect every few weeks and see how far I have came this semester. I don't think I will continue to journal."

Conclusion

While not all students enjoyed the journaling exercise, most had some positive takeaway regarding its contribution to their retention of content or for providing the opportunity for personal or professional reflection. These findings are consistent with principles from Social Cognitive Theory connecting learning to self-direct reflection and retention (Shunk & DiBenedetto, 2020). Understanding this connection between learning and self-directed reflection and retention for education efforts can allow teachers to use reflection activities to aid in retention and learning (AAAE, 2023 and Ali & Hassan, 2018). Metacognitive awareness is an important part of learning and should be further investigated within Agricultural Education and Communications. The activities and findings within this study could be applied in educational settings, and future research can apply this longitudinally across a range of agricultural disciplines and course levels.

References

Ali, M. M., & Hassan, N. (2018). Defining concepts of student engagement and factors contributing to their engagement in schools. *Creative Education*, *09*(14), 2161 -2170. https://doi.org/10.4236/ce.2018.914157

American Association for Agricultural Education (AAAE). (2023). AAAE Research Values.

Bandura, A. (1977a). Social Learning Theory. Englewood Cliffs, NJ: Prentice-Hall. https://doi.org/10.1177/105960117700200317

Dontre, A. J. (2020). The influence of technology on academic distraction: A review. *Human Behavior and Emerging Technologies*, *3*(3), 379-390. https://doi.org/10.1002/hbe2.229

Hampton, S.E., & Morrow, C. (2003). Reflective journaling and assessment – ASCE library. https://ascelibrary.org/doi/full/10.1061/(ASCE)1052-3928(2003)129:4(186)

Hemphill-Pearson, B. J. (Ed.). (2008). Assessments in Occupational Therapy Mental Health An Integrative Approach Second Edition. https://www.ndl.ethernet.edu.et/bitstream/123456789/25263/1/12.pdf

Hiemstra, R. (2001). Uses and benefits of journal writing. In L. M. English & M. A. Gillen, (Eds.), Promoting journal writing in adult education (New Directions for Adult and Continuing Education, No. 90, pp. 19-26). San Francisco: Jossey-Bass.

Redwine, T., Leggette, H. R., & Prather, B. (2017). *A case study of using metacognitive reflections to enhance writing skills and strategies in an agricultural media writing course.* New Prairie Press. https://newprairiepress.org/jac/vol101/iss1/6/

Saldaña, J. (2012). *The coding manual for qualitative researchers*. SAGE.

Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology, 60,* 101832. https://doi.org/10.1016/j.cedpsych.2019.101832

Manifestation of the Three-Circle Model in Rural Missouri High School Agriculture Programs: An Instrumental Case Study

Cord Jenkins
500 Forum Drive Rolla, MO 65401
Cjenkins@rolla31.org
(573) 458-0150

Rebecca Mott
123 Gentry Hall Columbia, MO 65211
Mottr@missouri.edu
(573) 881-0749

Manifestation of the Three-Circle Model in Rural Missouri High School Agriculture Programs: An Instrumental Case Study

Introduction/Need for Research

Agricultural education program structure has long been associated with three integral, intra-curricular components: classroom instruction, SAE, and FFA as a model for agricultural education. (Dyer & Williams, 1997; Dailey et al, 2001; Barrick & Hughes, 1993; National Research Council, 1988; National FFA, 2023b; National Association of Agricultural Educators, 2023; Croom, 2008; SAE For All, n.d.; The Council, 2012). The three components of the three-circle model originated at different times throughout history and no evidence can be found to establish a date or an event that put the components into the current well-known diagram (Croom, 2008). Shoulders and Toland (2017) recommended that further research be conducted on the philosophical beliefs and practices of ag teachers concerning the three-circle model. Croom (2008) suggested more research be conducted to ensure all components are needed and to explore other models for agricultural education programs. The purpose of this instrumental case study was to describe how the three circle model manifests in rural, single-teacher secondary agriculture programs in the state of Missouri.

Theoretical Framework

The theoretical framework for this study is rooted in Symbolic Interactionism Theory, which explains that facts are based on symbols and meanings derived from human interactions. Symbols shape perceptions of the world, and actions are influenced by people's understandings of those symbols. Symbolic Interactionism Theory can trace its origin to the works of theorists such as Dewey, Cooley, Parks, and Mead (Aksan et al., 2009).

Methodology

We utilized an instrumental case study to understand and describe how the three-circle model manifests in rural, single-teacher agriculture programs. This approach can help provide insight into an issue; the case is of secondary interest (Stake, 2005). The method of sampling used for this IRB-approved research was purposeful criterion-based. The case, or bounded system, included Missouri agricultural education teachers who met the following criteria: traditionally certified, trained at the University from 2002 – 2010, single teacher departments, requirement of FFA membership for all students in program, and currently tenured teachers at their current districts. This method of sampling is consistent with the case study approach as outlined in Creswell and Poth (2018) and yielded two participants for this study. We conducted and recorded one-on-one, semi-structured interviews, as defined by Merriam (2009), relying on an interview protocol to help guide the conversation. Interviews lasted between 45 and 60 minutes and were conducted via Zoom following the conclusion of the school day. During the interview process, participants were also asked to draw the three-circle model depicting their personal programs. Finally, participants were invited to share program documents that might provide more insight about how they utilize the three-circle model. Trustworthiness and credibility were achieved using several methods recommended by Merriam (2009), including data source triangulation and rich, thick descriptions.

Findings

The case for this study included two male ag teachers, Mr. Jones, and Mr. Clark, who met the criteria for the case. Both teachers have earned master's degrees and have taught in their current schools for their entire careers. Thematic analysis of interviews, drawings, and documents

resulted in the following themes: a). Assigning grades with heavy reliance on classroom assignments, b). Experiencing ambiguity around SAE, and c). Using the three-circle model to justify agriculture program decisions.

Theme 1: Assigning grades with heavy emphasis on classroom assignments

While both teachers reported using the three-circle model to justify the requirement of FFA membership, the grading scale does not reflect the same interpretation of the model. Mr. Jones reported 60% of his students' grades came from classroom with 15% coming from FFA, 15% from SAE, and 10% from district required testing. Mr. Clark reported 90% of his students' grades came from classroom with less than 5% coming from SAE and only 100 points per semester for FFA. He said, "So percent wise, neither one of those are anywhere close to 33%.".

Theme 2: Experiencing ambiguity around SAE

During the interview process, participants were asked to draw what they perceived their program's three-circle model to look like and to share the drawing with the researchers. Both drew much smaller circles for SAE. Mr. Jones stated, "I just think SAE, as much as I'd love for it to be, is not truly the same size in three circle model." Although both teachers explained that all three circles are critical for the success of an agriculture program, neither requires their students to have an SAE. Both instructors indicated SAE to be the weakest component in their programs and explained that requiring an SAE is difficult due to finances, time, conflicts with sports and other activities, and lack of parent support. Mr. Clark explained that he wants his students to have an SAE but said he would not "run them off" if they did not have one.

Theme 3: Using the three-circle model to justify agriculture program decisions

Mr. Jones and Mr. Clark both use the model for program explanation to their boards of education, stakeholders, and parents/students. Both teachers expressed the model as being a "vital" and "tangible" symbol to share with others to help them understand an agricultural education program. Both participants use the integral relationship of the model to justify the requirement of FFA membership in their school.

Conclusions/Implications/Recommendations/Impact on profession

Although this research is limited by its small number of participants and lack of generalizability, insight from this case study could be transferable to other contexts. Croom (2008) suggested the three-circle model described the philosophy surrounding agricultural education in the early 20th century. Participants in this study attribute meaning to the three-circle model and recognize it as a symbol for the philosophical foundation of agricultural education programing. However, while they use the three-circle model to justify how their agriculture programs operate to school administrators and stakeholders, what occurs in their agriculture programs does not reflect the three equal-sized circles depicted in the model. While classwork receives heavy emphasis by both rural secondary agriculture teacher participants, they struggle to prioritize and integrate SAE into the model for all students. The profession should continue exploring the use of the three-circle model as a philosophical model for agricultural education. This study should be replicated to explore how the three-circle model manifests in larger, multi-teacher agriculture programs. Finally, research needs to be conducted to explore alternative program models as suggested by Croom (2008).

References

Aksan, N., Kısac, B., Aydın, M., & Demirbuken, S. (2009). Symbolic interaction theory. Procedia-Social and Behavioral Sciences, 1(1), 902-904.

Barrick, K., & Hughes, M. (1993). A model for agricultural education in public schools. *Journal of Agricultural Education*, *34*(3), 59-67.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101.

Cresswell, J. W., & Poth, C. N. (2018). Qualitative inquiry and research design: Choosing among five approaches (Fourth Edition). Sage Publications, Inc.

Croom, D. B. (2008). The development of the integrated three-component model of agricultural education. Journal of Agricultural Education, 49(1), 110-120.

Dailey, A. L., Conroy, C. A., & Shelley-Tolbert, C. A. (2001). Using agricultural education as the context to teach life skills. *Journal of Agricultural Education*, *42*(1), 10-19.

Dyer, J. E., Williams, D. L. (1997). Benefits of supervised agricultural experience programs: A synthesis of research. *Journal of Agricultural Education, 38(4), 50-58.*

Merriam, S. B. (2009). Qualitative research: A guide to design and implementation. Jossey-Bass.

National Association of Agricultural Educators. (2023). *What is agricultural education?* https://www.naae.org/whatisaged/index.cfm

National FFA. (2023b). *Agricultural Education.* Retrieved October 11, 2023, from https://www.ffa.org/agricultural-education/

National Research Council. 1988. Understanding Agriculture: New Directions for Education. Washington, DC: The National Academies Press.

SAE For All. (n.d.). *SAE For All Evolving the Essentials.* Retrieved October 11, 2023, from https://saeforall.org/

Shoulders, C. W., & Toland, H. (2017). Millennial and non-millennial agriculture teachers' current and ideal emphasis on the three components of the agricultural education program. *Journal of Agricultural Education*, *58*(1), 85-101.

Stake, R. E. (2005). Qualitative Case Studies. In N. Denzin & Y. Lincoln (Eds.), *The sage handbook of qualitative research* (3rd ed., pp. 443 – 466). Sage Publications.

The Council. (2012). *Agricultural Education.* Retrieved October 11, 2023, from https://thecouncil.ffa.org/ageducation/

Market Segmentation and Performance of Ginger Retail Traders in Kampala, Uganda

Miriam Namata
Master's Student, Agribusiness and Entrepreneurship
Faculty of Agricultural Sciences, Uganda Christian University
Community Innovations Specialist
Iowa State University Uganda Program
namatam9@gmail.com

Reagan Mulungi Mwenyi
Master's Student, Students Affairs in Higher Education
School of Special Education, Leadership, and Professional Studies
Missouri State University
rm642s@MissouriState.edu

Samuel Ikendi, Ph.D.
Academic Coordinator
USDA/NIFA Climate Smart Agriculture Project
University of California Agriculture and Natural Resources
University of California Merced
sikendi@ucanr.edu

Stella Ahimbisibwe
Undergraduate Student, Food Science
Department of Food Technology and Nutrition
School of Food Technology Nutrition and Bioengineering
Makerere University
ahimbisibwe.stella17@gmail.com

Andrew Waaswa, Ph.D.
Agricultural Extension Education
Department of Agricultural and Human Sciences
KIETS Climate Leaders Program Scholar
North Carolina State University
awaaswa@ncsu.edu

Alex Tatwangire, Ph.D.
Lecturer
Department of Agribusiness and Natural Resource Economics
School of Agricultural Sciences, Collage of Agricultural and Environmental Sciences
Makerere University, Kampala – Uganda
a.tatwangire@caes.mak.ac.ug

Market Segmentation and Performance of Ginger Retail Traders in Kampala, Uganda

Introduction/Need for the Study

Ginger is an underground stem that belongs to the Zingiberaceace family and is an herbaceous perennial crop that is dug up when the leaves withers (Nair, 2019). Ginger is widely known as a spice, important for its medicinal purposes (Mao et al., 2019) offering protection against cardiovascular diseases (Akinyemi et al., 2015), respiratory diseases (Townsend et al., 2013), and raw material in the baking, soft drinks and perfume industries (Makarau et al., 2013). Ginger production in Uganda has risen with support from the government (NAADS, 2020). Despite the production and use, little research has been done about marketing ginger at the retail level in terms of segmentation and market performance. This research sought to establish the underlying market segments and market performance of retail ginger traders in Kampala, Uganda to capture the benefits that come from all the market segments. This study is aligned with the seventh priority of the U.S. agriculture education research agenda that addresses complex issues including marketing (Andenoro et al., 2016), and the AAAE research value that emphasizes developing and implementing initiatives at global scale to improve livelihoods (AAAE, 2023).

Theoretical/Conceptual Framework

Market segmentation is the process of dividing a broad market of potential customers into subgroups called segments based on shared priorities and characteristics (McDonald, 2012; Wind & Bell 2007). The target markets for certain products are different in terms of demographics, attitudes, needs, and social affiliations; it is therefore necessary to determine the needs and values of the target customers within each segment. Effective marketing and business strategy require an understanding of the needs of various segments to develop marketing strategies that effectively reach the target segments to maximize the expected profits by following and implementing segmentation strategies (McDonald, 2012; Wind & Bell 2007). The process of segmentation begins with the identification of existing and potential customer bases, understanding the underlying heterogeneity, and the evolving needs of the target segment. Next phase involves understanding the response to segmentation; and lastly, market positioning to provide a foundation for the rest of the marketing processes and strategies (Wind & Bell 2007).

Methods

This study was a cross-sectional survey conducted in summer 2018 in Kampala Capital City, Uganda where most urban markets are located and provide a larger domestic market for ginger. Kampala is divided into five boroughs including Kampala Central, Kawempe, Makindye, Nakawa, and Rubaga. One major market was purposively selected from each borough and 15 ginger retailers from each market were randomly selected during interviews giving a total of 75 retailers. Data was collected data on the socioeconomic characteristics of retailers, procurement, and costs involved to determine the market segmentation of their customers, profitability, and factors affecting their business. Data were analyzed descriptively on characteristics, gross margin function, and regression for factors affecting their business. Gross margin (GM) was calculated by obtaining the difference between total revenue (TR) and the total variable cost (TVC) [GM=TR–TVC]. A regression model was used to determine the factors influencing the profits (dependent variable) obtained against different retail factors (independent). To account for the other factors that affect the profitability but are not included in the model, the error term was included [$GM=\alpha+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+\mu$]; where GM = Gross margin, α=Intercept, X_1=Total costs, X_2=Age, X_3=Education, X_4=Years in trader organization, X_5=Unit price at purchase, X_6=Unit price at sale, X_7=Quantity sold, and μ=Random error. The model was

run at a 0.05 level of significance and the adjusted coefficient of determination R^2 was 0.998 implying the model explains 99.8% of the independent variables.

Results

Ginger retail traders in Kampala had a mean age of 40.15 years and were dominated by women (66.7%, *n*=50). Retailers had an average of 11.03 years of formal education, and 41.3% (*n*=31) belonged to a trade organization and had spent an average of 4.32 years in the organization. The majority obtained their ginger from wholesales (48.0%, *n*=36) and other sources included farmers (24.0%), fellow retailers (18.7%), and middlemen (9.3%). The majority of ginger customers were final consumers (68.0%, *n*=51), others include retailers (22.7%), producers (5.3%), and wholesalers (4.0%). All ginger retailers (100%) sold fresh ginger. The majority of retailers (84.0%, *n*=63) segmented their customers. Of the retailers who segmented, the majority (71.4%, *n*=45) based on the amount of ginger bought. Other segmentation factors included frequency of purchase (25.4%) and customer appearance (3.2%). The average GM was 928,640 UGX per month with a maximum of 1,880,000 UGX [1U.S. Dollar: 3,400 Uganda Shs], 2018.

In the model, the factors that affected the performance of ginger retail, statistically included TC, unit price of ginger at purchase, quantity sold, and unit price of ginger at sale. A unit decrease in the TC led to a 0.279 increase in GM, implying that as the TC decreased, the GM increased. A unit decrease in the unit price of purchasing ginger led to a 0.511 increase in GM because the purchase price reduced the TVC of the trader, increasing the profits earned. A unit increase in the quantity of ginger sold led to a 0.812 increase in GM because sales increased the total revenue, and traders also enjoyed economies of scale. Also, a unit increase in the unit price at sale led to a 0.544 increase in GM of traders, because it increased the amount the traders obtained from sales.

Conclusions

Ginger retail trade is a profitable venture to be invested in especially women (Yiridomoh et al., 2021) which speaks to empowering women traders to sustain their livelihoods. The factors that significantly affected the traders' performance were total costs, the unit price at purchase, the quantity sold, and the unit price at sale. The forms of market segmentation were mainly the amount of ginger bought by the customer and the frequency of purchase by the customer reflecting a need to increase the stocking rates. We see a limited participation of youth in the ginger trade that could require exploring their needs to participate and diversify in ginger trade.

Implications/Recommendations/Impact

Most retail traders were not aware of the advantages of forming and joining trader associations. These associations provide cohesive power for traders of a common goal (Lawton al., 2018), increasing their bargaining power in obtaining loans to increase their stocks and revenue. In the meantime, there is a need to avail loans to ginger retail traders at a reduced interest rate to expand their businesses and livelihood strategies. Nevertheless, for all traders engaged in fresh ginger sales, we see a research potential to assess the impact of value addition on the profitability of ginger traders. Value addition is believed to increase the shelf life of produce and profit (Nair, 2019; Sharma et al., 2023) and can also improve on premium if incorporated with traceable information (Kironde et al., 2024). Retail traders should be helped in the processing of ginger to increase its shelf life and reduce postharvest losses. Efforts should be made to construct improved market infrastructure for the retail traders to provide a proper storage facility to reduce post-harvest losses during storage and maintain the proper quality of ginger. Also, to study the determinants of youth participation in ginger marketing to expand their livelihood strategies.

References

Akinyemi, A. J., Thome, G. R., Morsch, V. M., Stefanello, N., Goularte, J. F., Belló-Klein, A., Oboh, G., & Schetinger, M. R. C. (2015). Effect of dietary supplementation of ginger and turmeric rhizomes on angiotensin-1 converting enzyme (ACE) and arginase activities in L-NAME induced hypertensive rats. https://doi.org/10.1016/j.jff.2015.06.011

American Association for Agricultural Education (AAAE). (2023). *AAAE research values*. https://aaea.wildapricot.org/National-Research-Values

Andenoro, C. A., Baker, M., Nicole L. P., Stedman, L. P. N., & Weeks, P. P. (2016). Research priority 7: Addressing complex problems. In G. Roberts., A. Harder., & T. M. Brashears, (Eds.), *AAAE National Research Agenda:2016-2020* (pp. 57–66). Gainesville, FL.

Kironde, C., Ikendi, S., Lwasa, S., Isoto, E. R., & Somers, R. M. (2024, April 22–25). *Consumer awareness of and willingness to pay for traceable honey in Central Uganda*. AIAEE Conference. Orlando, Florida.

Lawton, T. C., Rajwani, T., & Minto, A. (2018). Why trade associations matter: Exploring function, meaning, and influence. *Journal of Management Inquiry*, *27*(1), 5–9. https://doi.org/10.1177/1056492616688853

Makarau, S. B., Damina, A., Daneji, M. I., & Garba, A. O. (2013). Socio-economic factors influencing the adoption of Ginger farming technologies in Samaru Zone of the Kaduna State. *International Journal of Humanities and Social Science Invention*, *2*(7), 39–44. https://ijhssi.org/papers/v2(7)/Version-2/H0272039044.pdf

Mao, Q. Q., Xu, X. Y., Cao, S. Y., Gan, R. Y., Corke, H., Beta, T., & Li, H. B. (2019). Bioactive compounds and bioactivities of ginger (*Zingiber officinale Roscoe*). *Foods*, *8*(6), 185. https://doi.org/10.3390/foods8060185

McDonald, M. (2012). *Market segmentation: How to do it and how to profit from it*. John Wiley.

Nair, K.P. (2019). *The agronomy and economy of turmeric and ginger*. Springer. https://doi.org/10.1007/978-3-030-29189-1

National Agricultural Advisory Services – (NAADS), (2020). *Ginger production guide*. Accessed at: https://naads.or.ug/ginger-production-guide/

Sharma, D., Upadhyay, S., Manivannan, S., & Bhutia, K. D. (2023). Value addition and product diversification of mango ginger. *Journal of Postharvest Technology*, *11*(1), 66-76. http://jpht.in/MenuscriptFile/3eb7c50f-61e4-40b4-9de7-8dff80d905c4.pdf

Townsend, E. A., Siviski, M. E., Zhang, Y., Xu, C., Hoonjan, B., & Emala, C. W. (2013). Effects of ginger and its constituents on airway smooth muscle relaxation and calcium regulation. *Respiratory Cell and Molecular Biology*, *48*. https://doi.org/10.1165/rcmb.2012-0231OC

Wind, Y. J., & Bell, D. R. (2007). Market segmentation. In M. Baker & S. Hart, (Eds). *The marketing book* (pp. 260–282). Routledge.

Yiridomoh, G. Y., Der Bebelleh, F., Ziem Bonye, S., & Dayour, F. (2021). Women in ginger production and livelihood sustainability in rural Ghana: An explorative study. *Local Environment*, *26*(9), 1051–1069. https://doi.org/10.1080/13549839.2021.1952967

Middle School Teachers' Concerns about Facilitating Student Learning in Supervised Agricultural Experiences

Authors

Jacob Englin, *Louisiana State University*

Richie Roberts, *Louisiana State University*

Kristin S. Stair, *Louisiana State University*

Michael F. Burnett, *Louisiana State University*

Middle School Teachers' Concerns about Facilitating Student Learning in Supervised Agricultural Experiences

Introduction, Review of Literature, and Purpose

Middle school has been described as a time in which a young person between ages 10 to 14 undergoes rapid and profound cognitive, emotional, physical, and social changes (National FFA Organization, 2009). During this time, young people begin making sense of the world by asking questions to adults, reflecting on previous experiences, examining their morals and values, and seeking peer acceptance and belonging (National Middle School Association, 2010). Further, middle school students begin to ponder about their future careers (National FFA Organization, 2009). A middle school is a place of discovery; therefore, everything at this level of education should be exploratory, even though students' school-based explorations may not lead them to a future career (National Middle School Association, 2010)

Historically, agricultural education in middle schools has emphasized hands-on learning, to foster interdisciplinary skills, teamwork, leadership, and personal development (National FFA Organization, 2009). Since 1988, when middle school students gained access to National FFA membership, enrollment has steadily increased, reaching 196,556 students in the 2021-2022 academic year, with 108,853 being FFA members (National FFA Organization, 2023). Despite this growth, challenges have persisted, including struggles with teacher preparedness (Tucker & McHugh, 2022; Jones et al., 2020), the need for middle school curriculum and teacher professional development (Rayfield & Croom, 2010), and more knowledge about assisting students with FFA award applications, SAE data management, motivating students, and community relations (Golden et al., 2014). Further, Rayfield and Croom (2010) advocated for greater recognition of middle school FFA and SAE award programs. As such, it has become necessary to investigate the challenges that exist to facilitating quality learning in middle school agricultural education. Using a constructionism lens (Crotty, 1998), the purpose of this investigation was to understand the concerns of middle school agricultural education teachers regarding facilitating quality learning in middle school SAE programs.

Methodology

This study used an interpretive qualitative design to facilitate data collection and analysis (Merriam, 2009). Through this framing, we made sense of how exemplary middle school teachers facilitated quality student learning through Supervised Agricultural Experience (SAE) programs. The study utilized purposeful and snowball sampling methods to select middle school teachers facilitating exemplary SAE programs. Seven states with the highest middle school enrollment and FFA membership were chosen: Georgia, Virginia, Delaware, Oklahoma, and Wisconsin. State agricultural education leaders nominated teachers they considered exemplary, but Florida and Missouri were excluded due to a lack of response and data on middle school SAEs. Two teachers from each selected state received personalized emails with study details and consent requests. In this study, two methods of first-cycle coding were employed: in vivo coding and values coding (Saldaña, 2021). Axial coding was then used to categorize the first-cycle codes based on similarities (Saldaña, 2021). As a result of this process, findings emerged.

Findings

Despite the benefits of SAE programs, the middle school teachers in this investigation experienced several challenges that they perceived affected their ability to facilitate quality learning for middle school students engaged in SAEs. For example, Participant #4 indicated that "SAEs [were] time-consuming." A significant reason for this was that the middle school agricultural education teachers in this study reported varying instructional time with the students, ranging from nine weeks to a full year. On this note, Participant # 2 indicated: "I don't have a lot of time, considering we are on a marking period schedule… Once [the students] get to high school, and [the students] have the teachers all year round, they can dive deeper into their SAE program." To maximize classroom time, however, Participant # 8 incorporated a group SAE project in which the middle school students read Farm Bureau's *Book of the Year* and created educational activities based on the book to improve elementary students' agricultural literacy. Upon completion of the project, students documented their experiences in the AET.

Because of additional responsibilities assigned to middle school agricultural education teachers, SAEs were another item on their already "full plate." Participant #4 explained: "I'm expected to advise [students' SAEs] …my role has evolved from that, too. But I also have the responsibility of all the other components of the program." Further, the middle school agricultural education teachers struggled to decide when to begin students on their SAE journey. Participant #8 shared: "We really don't even talk about it as a unit until their 8th-grade class. The teachers also noted that middle school students struggled to grasp the conceptual nature of SAEs. As a result, they perceived that middle school students often required heavy teacher guidance because they "lack[ed] the independent skills" (Participant #4) to complete SAEs in ways that high school students would. For example, Participant #8 argued that SAEs were a "very abstract concept for 8th graders." Because middle school has historically been the entry point for students entering the agricultural education program, these students "don't have the skillset" or "ability" to meet the learning demands required for Immersion SAEs (Participant #8).

Conclusions, Implications, and Recommendations

Similar to Eck and Davis (2023), who investigated barriers to the successful implementation of SAE programs at the middle school level, the teachers in this study expressed challenges in facilitating student learning effectively through SAEs. Time emerged as a significant factor influencing the success of SAEs for many middle school teachers, with instructional time varying from nine weeks to a full year and from block schedules to daily engagement over an academic year.

Understanding the challenges teachers face when facilitating learning through SAE programs was crucial to beginning to rethink SAEs at the middle school level. Because of variations in instructional time and scheduling, future research should explore whether a program or project approach to SAEs would be more effective at the middle school level. This shift could allow for students to be exposed to multiple SAE projects while maintaining high-quality instruction. Additionally, future research should investigate diverse SAE project types for middle school students, and efforts should be made by the National FFA Organization to recognize exemplary middle school SAE projects and programs, ensuring equal opportunities for all students to participate.

References

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Sage.

Eck, C. J. & Davis, J. R. (2023, May 15-18). *Identifying the perceptions, barriers, and implementation of middle school supervised agricultural experiences* [Paper presentation]. American Association of Agricultural Educators National Conference, Raleigh, NC, United States. https://aaaeonline.org/resources/Documents/National/2023Meeting/23_AAAE_Proceedings_combined_FINAL.pdf

Golden, E. M., Parr, B. & Peake, J. (2014). An assessment of the needs of middle school agricultural education instructors in Georgia. *Journal of Agricultural Education, 55*(5), 222-234. https://doi.org/10.5032/jae.2014.05222

Jones, S., Doss, W. & Rayfield, J. (2020). Examining the status of middle school agricultural education programs in the United States. *Journal of Agricultural Education, 61*(2), 41-56. https://doi.org/10.5032/jae.2020.02041

Rayfield, J. & Croom, B. (2010). Program needs of middle school agricultural education teachers: A Delphi study. *Journal of Agricultural Education, 51*(40), 131-141. https://doi.org/10.5032/jae.2010.04131

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation.* Jossey - Bass.

National FFA Organization. (2009). *A guide for middle school agricultural science teachers.* Author. https://alabamaffa.org/wp-content/uploads/2019/06/A-Guide-For-Middle-School-Agriculture-Science-Teachers.pdf

National FFA Organization. (2023). *2021-2022 7th and 8th grade agricultural education enrollment*. [Unpublished raw data].

National Middle School Association. (2010). *This we believe: Keys to educating young adolescents.* Author. *https://murraystate.weebly.com/uploads/2/1/9/1/21919036/this_we_believe.pdf*

Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). Sage.

Tucker, A. & McHugh S. (2022). Finding our place: Middle school program concerns. *The Agricultural Education Magazine, 94*(6), 25-26. https://www.naae.org/profdevelopment/magazine/archive_issues/Volume94/2022%2005%20--%20May%20June.pdf

Research poster

Mindfulness as Perceived by Extension Educators in Ohio, Pennsylvania and Indiana

Mariah Awan, M.S.
Lilly Hall of Life Sciences Room 4-401,
915 Mitch Daniels Blvd , West Lafayette IN, 47907
awan3@purdue.edu

Rama Radhakrishna, PhD.
Lilly Hall of Life Sciences Room 3-230
915 Mitch Daniels Blvd , West Lafayette IN, 47907
rbradhak@purdue.edu

Introduction/need for research

Mindfulness involves paying attention to the present moment without judging your experience (Kabat-Zin, 2012). Mindfulness can have many benefits for those who practice it, including stress reduction (Chiesa and Serretti, 2009). There have been studies of mindfulness perceptions among educators in formal educational settings. For example, one study found that not all teacher participants had a complete understanding of the definition of mindfulness, yet most of them viewed mindfulness practices positively and were willing to implement them (Wigelsworth & Quinn, 2020). Another group of elementary teachers indicated that while it can be challenging teaching young children mindfulness in the classroom, they found it to be beneficial (Piotrowski et. al., 2017). Both of these studies were qualitative, and there was a lack of quantitative studies with large sample sizes examining mindfulness perceptions among educators.

Conceptual framework

The search "mindfulness perceptions among Extension educators" yielded no relevant results using the Google Scholar search engine. A search of "mindfulness perceptions" in *The Journal of Youth Development, Journal of Human Sciences and Extension, Journal of Agriculture Education,* and *Journal of Extension* yielded no relevant results. Articles related to Extension mindfulness programming for youth and adults were identified, but no studies assessing Extension educators' perceptions of mindfulness were found. Therefore, a gap in the literature was identified. The present study worked to address this gap. To develop a new instrument to assess mindfulness among Extension educators, we drew from Wigelsworth and Quinn (2020) and Piotrowski and colleagues' (2017) studies of mindfulness perceptions among formal classroom educators. Wigelsworth and Quinn (2020) identified several themes of mindfulness perceptions and mindfulness barriers among formal classroom teachers that informed the development of the instrument, including mindfulness for stress management, mindfulness as it relates to religion, and potential benefits of mindfulness for learning. Piotrowski and colleagues' (2017) identified challenges and benefits of mindfulness also helped inform the instrument.

Purpose and Objectives

The purpose of this study was to explore mindfulness perceptions among Extension educators in three states. Specific objectives were to determine: 1) Extension educators' general perceptions of mindfulness, 2) Extension educators' perceptions of current mindfulness practices in Extension programming in their state, and 3) Extension educators' perceptions of integrating mindfulness practices in Extension programming.

Methodology

The study used a descriptive design. The target audience included Extension educators in 3 states (blinded for review purposes). Census was used; the survey was sent to all Extension educators in each state. Dillman et. al.'s (2014) contact and follow-up method was used to recruit study participants. To address research objective one, a Qualtrics survey instrument with both Likert-scale and open-ended questions was used. Fourteen (14) items to assess general perceptions of mindfulness were created. A faculty member and graduate student in Extension education survey design reviewed the instrument to help establish face validity. The instrument had a Cronbach's alpha level of .867. To address objective 2, we asked an open-ended question: "*To your knowledge, what mindfulness programs or efforts is your state Extension program involved in? Please list them here. If you do not know of any, you can write "none."*". To address objective 3,

we asked: "*Do you think the concept of mindfulness could be applied to Extension programs like 4-H youth STEM education programs or ANR Master Gardeners, or others? Please share up to 3 thoughts below*." Quantitative items were entered into SPSS 29 and analyzed using descriptive statistics. Open ended questions were entered into NVivo and analyzed for common themes among responses.

Results/findings

Educators' general perceptions of mindfulness (*n*=363) indicated that educators generally understand what mindfulness is (*M*=4.02, *SD*=.482). The top 5 items for mindfulness perceptions included, *Can help people manage stress* (*M*=4.46, *SD*=.739), *Is only for people who are calm (reverse coded*; *M*=4.36, *SD*=.749), *Can be therapeutic* (*M*=4.31, *SD*=.772), *Can help people focus* (*M*=4.31, *SD*=.675), and *Can make people healthier* (*M*=4.29, *SD*=.793). The lowest 5 items included, *Is related to religion* (*M*=2.33; *SD*=.975), *Is a state of being* (*M*=3.67; *SD*=.844) *Must involve an activity such as meditation (reverse coded*; *M*=3.71, *SD*=.930), *Can help people learn* (*M*=4.04, *SD*=.767), and *Involves managing though*ts (*M*= 4.08; *SD*=.739). Overall, 10 out of fourteen items had an *M*>4.00.

Overall, most educators (*n*=134) were not aware of Extension mindfulness programs in their state. However, educators with program responsibilities in 4-H and Family and Consumer sciences had more awareness of mindfulness programming. When examined by state, most Extension educators in Indiana indicated 4-H youth development was the type of mindfulness program they knew about (*n*=41). In Ohio, Family and Consumer Sciences programming was the top answer (*n*=41). In Pennsylvania, the Calm app subscription funded by Extension administration was most mentioned (*n*=38). In all 3 states, many educators mentioned they were not aware of Extension mindfulness programs in their state at all (Indiana *n*=61 ; Ohio *n*=49; Pennsylvania *n*=24).

In Indiana, 88% of respondents thought mindfulness could be applied in Extension programming like Master Gardeners and 4-H STEM. In Ohio, 81% agreed. And in Pennsylvania, 93% of educators said they were interested in integrating mindfulness into programming.

Conclusions

Overall, Extension educators understand what mindfulness means (Overall *M*=4.02, *SD*=.482). They seem split in their awareness of mindfulness programming, as some are not aware of any at all, though many others shared examples. The results suggest most educators across all 3 states support integrating mindfulness into Extension programming (Overall Percentage *M*=87%).

Implications/recommendations/impact

Because there was variability across each of the states examined, this study should be replicated in different states to better understand Extension's value of mindfulness. Our instrument could also be adapted and used by state formal agriculture educators' associations. Variability in mindfulness is understandable given the diversity of Extension programs in these states and would be expected in other states. Further study should be conducted to assess the variable perceptions related to mindfulness and also assess factors that are contributing to these differences. We recommend a mindfulness programming awareness campaign within Extension on a state-by-state basis to increase awareness of mindfulness programming.

References

Chiesa, A., & Serretti, A. (2009). Mindfulness-based stress reduction for stress management in healthy people: A review and meta-analysis. *The journal of alternative and complementary medicine, 15*(5), 593-600.

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method.* John Wiley & Sons.

Kabat-Zinn, J. (2012). *Mindfulness for beginners: Reclaiming the present moment—and your life.* Sounds True.

Piotrowski, S. A., Binder, M. J., & Schwind, J. K. (2017). Primary teachers' perceptions of mindfulness practices with young children. *LEARNing Landscapes, 10*(2), 225-240.

Wigelsworth, M., & Quinn, A. (2020). Mindfulness in schools: An exploration of teachers' perceptions of mindfulness-based interventions. *Pastoral Care in Education, 38*(4), 293-310.

Navigating Responsibility and Acceptance: Students' Engagement with GenAI Writing Tools

Introduction/need for research

Generative Artificial Intelligence (GenAI) has revolutionized the writing landscape, offering increased creativity and productivity. Defined as a system's ability to interpret external data, learn from it to achieve specific goals through adaptation (Kaplan & Haenlein, 2019), GenAI like Chat GPT has gained popularity since its launch in 2022. In education, ChatGPT has generated interest due to its potential to enrich the learning experience of students by providing timely, personalized responses and improving the understanding of complex concepts (Montenegro, et al, 2023). Marzuki et al. (2020) reported improvements in English as a Foreign Language (EFL) students' writing quality when AI writing tools were used. Barnett and Pack (2023) found teachers and students disagreed on the acceptable use of GenAI writing tools and indicated a need for explicit usage guidelines. "While AI-based tools can be useful for brainstorming and generating initial drafts, there is concern about the potential for academic dishonesty" (Yeralan & Lee, 2023, p.110). This study aligns with the National AAAE Research Priority Area 4: Meaningful, Engaged Learning in All Environments (Edgar, et al., 2016).

Conceptual or theoretical framework

TAM2, an expanded version of TAM, is grounded in perceived usefulness or the belief a technology will enhance an individual's performance and perceived ease of use or the belief a technology will require low effort. TAM2 acknowledges how external social factors influence perceived usefulness (Venkatesh & Davis, 2000). In this study, social factors may impact students' sense of responsibility for appropriate use of GenAI due to improved work quality. Students may disregard ethical considerations due to the ease of use. Social influence from peers or instructors may shape acceptance and responsibility beliefs. Training, clear guidelines, and institutional policies may further influence students' perceptions (Venkatesh & Davis, 2000).

Methodology

Participants form an upper-level, undergraduate agricultural communications course (N = 149) completed pre- and post-assessments on GenAI awareness and perceptions. The course was selected because students represented 11 of the 14 offered majors and represented freshman to senior classifications. The pre-assessment was administered prior to a class lecture on the use of AI tools in academic and professional settings. Students utilized ChatGPT as a tool to connect communication theory to their academic disciplines. Students were tasked with using the ChatGPT output as an outline for a reflection-based writing assignment. On the assignment due date, students completed the post-assessment. The pre- and post-assessments contained four scenarios describing tools for writing and students determined if AI was involved. The pre-assessment provided statements to collect student perceptions using a 5-point agreement Likert Scale (*strongly agree* to *strongly disagree*). The response rate for the pre-assessment was 86% and the post-assessment response rate was 74%. The study aimed to understand students' awareness and perceptions of GenAI as a writing tool, examining changes in AI identifications (pre-/post-assessments) and describing responsibility based on pre-instruction perceptions.

Results/findings

A comparison of students' ability to correctly identify the use of AI in email and academic writing showed the percentage of correct responses increased for all four scenarios. Each scenario and frequencies of pre- and post-assessment accuracy are reported in Table 1.

Table 1
AI Identification Accuracy Pre-Instruction and Post-Instruction

Scenario	Pre-Accuracy	Post-Accuracy
You used an application to compose an email. It provided suggestions for completing sentences and recommended appropriate greetings and closings.	96 (75%)	91 (82%)
You submitted your academic paper to a platform for review. The platform offered feedback on writing style, grammar, and structure.	94 (73%)	96 (87%)
While working on an academic paper, you used a tool that automatically suggested citations based on the content you wrote.	105 (82%)	95 (86%)
You employed a writing tool to improve the grammar and style of your academic paper. The tool corrected errors and suggested enhancements to improve your writing.	102 (80%)	97 (87%)

When asked if responsibility for ensuring work was not AI tool generated, students 41% (n = 52) neither agreed nor disagreed, 27% (n = 35) somewhat agreed, 16% (n = 20) somewhat disagreed it was the teacher's responsibility. When asked about the responsibility of students to ensure work was not AI generated, 41% (n = 52) somewhat agreed, 31% (n = 40) were neutral, and 23% (n = 29) strongly agreed. Respondents indicated they agreed (395, n = 50) or strongly agreed (23%, n = 30), and 26% (n = 33) were neutral when the statement indicated students had the right to use AI tools when educational institutions did not clearly state policies for use. Only 9% (n = 11) somewhat disagreed and 2% (n = 3) strongly disagreed with the statement.

Conclusions/Implication/Recommendations

The study revealed students' ability to identify writing scenarios involving AI tools improved after receiving instruction and utilizing AI writing tools. This supports perceived usefulness indicating as students become more familiar with AI writing tools, they may perceive those tools to be useful and be more attentive to identifying them (Venkatesh & Davis, 2000). While almost half of students expressed neutrality (40%) and some agreed (27%) it was a teacher's responsibility, the majority (64%) indicated it was a students' responsibility to ensure work was not AI generated. Thirty-one percent of respondents were neutral on responsibility. Through the lens of TAM2, students' perceived feelings of responsibility may be the result of social influence such as the instruction provided during class (Venkatesh & Davis, 2000). While 26% of respondents were neutral, most (62%) indicated agreement, and only 11% disagreed about it being a student's right to use AI tools when policies were unclear. This underscores the necessity of clear campus policies and procedures as TAM2 facilitation conditions indicate guidelines directly influence the technology user. Future research should explore how instructors' varied views on AI tools influence students' acceptance, increasing our understanding of social factors in AI technology acceptance.

References

Barnette, A., & Pack, A. (2023, November). Not quite eye to A.I.: student and teach perspectives on the use of generative artificial intelligence in the writing process. *International Journal of Educational Technology in Higher Education, 20*(59). https://doi.org/10.1186/s41239-023-00427-0

Edgar, D., Retallick, M. S., Jones, D. (2016). Research priority 4: Meaningful, engaged learning in all environments. In Roberts, T. G., Harder, A., & Brashears, M. T. (Eds.). *American Association for Agricultural Education national research agenda: 2016-2020*. Gainesville, FL: Department of Agricultural Education and Communication.

Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, *62*(1), 15–25.

Marzuki, Widiati, U., Rusdin, D., Darwin & Inda Indrawati. (2023). The impact of AI writing tools on the content and organization of students' writing: EFL teachers' perspective, *Cogent Education*, *10*(2). https://doi.org/10.1080/2331186X.2023.2236469

Montenegro-Rueda, M., Fernández-Cerero, J., Fernández-Batanero, J. M., & López-Meneses, E. (2023, July 29). Impact of the implementation of CHATGPT in education: A systematic review. *Computers, 12*(8). https://doi.org/10.3390/computers12080153

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science, 46*(2), p. 186-204. https://www.jstor.org/stable/2634758

Yeralan, S., & Lee, L. A. (2023). Generative AI: Challenges to higher education. *Sustainable Engineering and Innovation*, *5*(2), 107-116. https://doi.org/10.37868/sei.v5i2.id196

Novice High School Agricultural Science Teachers' Viewpoint on Being Equipped for Teaching Laboratory Settings.

Bryce Hamlin
Texas Tech University
806-834-6838
bhamlin@ttu.edu

Krysti Kelley
Texas Tech University
806-834-1946
krystkel@ttu.edu

Department of Agricultural Education & Communications
Box 42131
Lubbock, TX 79409-2131
806.742.2816

Introduction/ Need for Research

Agricultural education is experiential in nature and often uses specialized laboratory settings to offer students learning opportunities (Shoulders & Meyers, 2013). In a study done by Saucier et al. (2008) it was found that some teachers use up to 66% of their allotted instructional time in the laboratory for agricultural mechanics courses. Although agricultural programs are highly favored in high schools, they frequently mandate minimal hours of coursework in agricultural mechanics for preservice teachers to fulfill graduation criteria (Blackburn et al., 2015). McKibben et al. (2022) asserted that teacher preparation programs provide future educators with the essential knowledge and skills required to proficiently engage in the diverse realm of agricultural mechanics. This study aims to investigate the readiness of novice teachers for instructing in laboratory environments by answering the following research question: Are universities adequately equipping future educators with the essential skills and knowledge needed to excel in teaching within laboratory settings?

Theoretical Framework

The conceptual framework selected for this study is the Social Learning Theory for Learning Readiness (Maddox et. al., 2000). Within the broader framework of social learning theory, readiness for learning might exhibit similarities to individual self-efficacy within the learning environment, yet it's important to note that these are distinct concepts. While positive self-expectations and outcome expectancies can enhance the likelihood of success in learning, they are not synonymous with learning readiness. Although generalized and domain-specific expectations may influence learning readiness or serve as cognitive components of it, researchers distinguish between expectancies and readiness for learning. Self-efficacy primarily impacts the cognitive dimension within the social learning theory model, as it often intertwines with individuals' cognitive schemas and reinforces expectancies.

Methodology

This research utilized quantitative methodologies, primarily employing a descriptive survey to gather data. The survey comprised 10 Likert-scale statements ranging from 1 (Strongly Disagree) to 9 (Strongly Agree), along with five demographic inquiries. The statements were created by utilizing the learning readiness aspect of the framework mentioned above. The target demographic consisted of agricultural science teachers in Texas with up to three years of experience, excluding the current academic year. Data collection was conducted through a survey hosted on Qualtrics, distributed to Texas FFA Area Coordinators who then forwarded it to their respective teachers. Forty-one teachers responded to the survey by providing complete responses. The data was analyzed by IBM SPSS. Frequencies and percentages were calculated and reported for demographic data. Likert-scaled questions were reported using means and standard deviations.

Results/Findings

Participants in this study were primarily female (n = 28, 68.3%), attended college in Texas (n = 35; 85.4%) and were first year teachers (n =18, 43.9%). Thirty-five participants (85.4%) currently teach in a laboratory as a part of their contract and the most common types of courses they teach are agricultural mechanics (n =10, 24.4%), plant science (n =8, 19.5%),

animal science (*n*=6, 14.6%) and food science (*n* = 2, 4.9 %). Fifteen participants (36.6%) indicated they teach courses that fall in multiple pathways in a laboratory setting. Table 1 outlines the responses to the Likert scale statements.

Table 1

Novice Teacher Perceptions of Readiness for Laboratory Instruction (N=41)

Statement	*M*	*SD*
The institution I attended prepared me to teach in a lab setting	5.9	2.0
I found creative solutions or strategies to overcome challenges during lab time	5.9	2.2
I am confident in my knowledge/skills to use lab equipment/conduct experiments	5.8	2.2
When applying for jobs, I felt confident in my ability to teach students in the lab	5.7	2.1
I was most excited to teach in the lab right out of college	5.5	2.3
My biggest fear was not being able to properly facilitate the laboratory	4.9	2.5
I have had PD opportunities focused on laboratory teaching strategies	4.8	2.7
I regularly face challenges during lab instruction time	4.7	2.3
I do not have issues in the lab related to student engagement or behavior	4.6	2.5
I am satisfied with the current availability of equipment for my lab	4.1	2.6

When asked about their readiness for laboratory instruction, novice teachers indicated the highest means, which fell between neutral and slight agreement, with the statements "The institution I attended prepared me to teach in a lab setting" (*M* = 5.9, *SD* =2.0) and "I found creative solutions or strategies to overcome challenges during lab time" (*M* = 5.9, *SD* =2.2). The lowest mean, which fell between neutral and slightly disagree, was towards the statement "I am satisfied with the current availability of equipment for my lab" (*M*=4.1, *SD*= 2.6).

Conclusions/ Implications/ Recommendations

Based on the findings of this study, novice teachers only felt neutral to slightly positive about half of the statements related to their readiness. These statements fell within the attitudinal and behavioral readiness domains as discussed by Maddox, et al. (2000). Novice teachers also expressed that they felt neutrally or negatively about half of the statements about their preparation for teaching in a laboratory setting. A few of these statements were directly related to the current availability of professional development and equipment. These slightly negative perceptions could lead to more negative impacts (Maddox, et al, 2000) and these perceptions contradict the level of preparedness found by McKibben, et al. (2022).

Several implications arise from these conclusions. First, more opportunities to build self-efficacy in a laboratory setting need to be incorporated during teacher preparation programming to ensure readiness can be developed before beginning a career in agricultural education. Secondly, support during the novice stage to continue the building of that readiness in terms of professional development and resources for equipment attainment, such as grants, need to be provided to improve self-efficacy. Future research should explore the current preparation efforts for laboratory settings by universities utilizing a needs assessment format to determine opportunities for programing improvement.

References

Blackburn, J. J., Robinson, J. S., Field, H. (2015). Preservice Agriculture Teachers' Perceived Level of Readiness in an Agricultural Mechanics Course. Journal of Agricultural Education, 56(1), 172-188. doi:10.5032/jae.2015.01172

Maddox, N., Forte, M., Boozer, R. (2000). Learning Readiness: An Underappreciated yet Vital Dimension in Experiential Learning. *Developments in Business Simulation & Experiential Learning, 27,* 272-278.

McKibben, J. D., Gilberti, M., Clemons, C. A., Holler, K., Lindner, J. R. (2022). My Ag Teacher Never Made Me Go To The Shop! Pre-Service Teacher's Perceived Self-Efficacy in Mechanics Skills Change Through Experience. *Journal of Agricultural Education, 63*(3), 283-296. https://doi/10.5032/jae.2022.03283

McKim, B. R., & Saucier, P. R. (2011). Agricultural mechanics laboratory management professional development needs of Wyoming secondary agriculture teachers. *Journal of Agricultural Education, 52*(3) 75-86. doi:10.5032/jae.2011.03075

Saucier, P. R., Schumacher, L. G., Funkenbusch, K., Terry, Jr. R., & Johnson, D. M. (2008). *Agricultural mechanics laboratory management competencies: A review of perceptions of Missouri agriculture teachers concerning importance and performance ability.* Paper presented at the 2008 Annual International Meeting of the American Society of Agricultural and Biological Engineers, Providence, RI.

Shoulders, C. W., & Myers, B. E. (2013). Teachers' Use of Experiential Learning Strategies in Agricultural Laboratories. *Journal of Agricultural Education*, *54*(3), 100–115. https://doi.org/10.5032/jae.2013.03100

Pathways to Climate Smart Agriculture in the San Diego Region of California

Samuel Ikendi
Academic Coordinator for Climate Smart Agriculture, sikendi@ucanr.edu
University of California Agriculture and Natural Resources/Cooperative Extension; UC Merced

Vikram Koundinya
Associate Professor of Extension and Evaluation Specialist, vkoundinya@ucdavis.edu
University of California ANR/CE; University of California – Davis

Esther Mosase
Urban Watershed Resilience Advisor, enmosase@ucanr.edu
University of California ANR/CE; South Coast Research and Extension Center

Heidi Holmquist
Community Education Specialist II, hholmquist@ucanr.edu
University of California ANR/Cooperative Extension, San Diego County

Erin Spaniel
Administrative Assistant III, enspaniel@ucanr.edu
University of California ANR/UC Cooperative Extension, San Diego County

Prakash Jha
Assistant Project Scientist, prajha@ucanr.edu
University of California ANR/CE; Sierra Nevada Research Institute; UC Merced

Lauren Parker
Research Program Manager, leparker@ucdavis.edu
USDA California Climate Hub; University of California – Davis

Natalia Pinzon
University of California – Davis; Doctoral Candidate, npinzon@ucdavis.edu

Leslie Roche
Professor of Rangeland Management, lmroche@ucdavis.edu
University of California ANR/Cooperative Extension; University of California – Davis

Mark Cooper
University of California – Davis; Associate Professor, mhcooper@ucdavis.edu

Daniele Zaccaria
Associate Professor in Water Management, dzaccaria@ucdavis.edu
University of California ANR/Cooperative Extension; University of California – Davis

Steven Ostoja
Director, smostoja@ucdavis.edu
USDA California Climate Hub; University of California – Davis

Tapan Pathak
Associate Cooperative Extension Specialist for Climate Adaptation, tpathak@ucmerced.edu
University of California ANR/CE; Sierra Nevada Research Institute; UC Merced

Introduction/Need for the Study

In California, the San Diego region leads in cash receipts from horticultural and third in organic sales receipts (CDFA, 2022). The CDFA statistics show a combined revenue of over $1.8 billion from its products led by horticulture, avocados, oranges, lemons, grapefruits, cattle, and berries. Despite this productivity, the current and projected climate change impacts in California till the end of the century pose significant challenges (Pathak et al., 2018). These challenges include heat waves, high temperatures, droughts, wildfires, floods, variable precipitation and their associated increases in weeds, pests, and diseases pressures. This situation provides a glimpse of a volatile future, requiring multifaceted approaches to address those challenges. The objective of this study was to understand the lived experiences of farmers, ranchers, and extension service providers on a changing climate and identify education and resource needs that can help build their climate resilience practices. Our study aligns with the seventh priority of the national AAAE research agenda on preparing stakeholders to manage complex agriculture issues like climate change (Andenoro et al., 2016).

Conceptual Framework

Climate-smart agriculture is one of the vital approaches to the economic and environmental security of California (Ikendi et al., 2024; Lewis & Rudnick, 2019); guiding actions that transform agrifood systems towards green and climate-resilient practices. Farmers in California have expressed an increased need to have locally relevant and specific information on climate impacts on their farming systems and relevant adaptation resources (Jagannathan et al., 2023). Agricultural educators have supported these farmers; but they also have to deal with emerging trends related to climate change; yet they are often ill-equipped with locally relevant adaptation and mitigation resources to assist farmers (Grantham et al., 2017). A needs assessment concept is a prerequisite to developing adaptation strategies for farmers, ranchers, and technical extension service providers by understanding and documenting their experiences with climate change exposures, impacts, and social vulnerabilities (Ikendi et al., 2024). A needs assessment is also required to know what risk management practices stakeholders currently use, what tools and resources would assist them in making decisions, what types of extension education activities would help them, and where to find necessary resources on climate adaptation (Dilling & Berggren, 2015).

Methods

We founded our inquiry as constructivists seeking knowledge that is socially constructed whose meaning emerges inductively while interpreting the lived experiences of participants (Crotty, 1998). Our team conducted a focus group discussion with 10 participants (pseudo names used) that consisted of four farmers, two ranchers, and four technical extension service providers in a participatory approach, recruited through Qualtrics shared in our extension association networks. The interview guide focused on weather and climate change experiences, adaptations, barriers, and education needs. Four members of our research team participated in the interviews with multiple roles involving leading discussions, probing, audio recording, and taking notes. We followed the rules of a natural setting by welcoming our participants into the conference room at the San Diego County Farm Bureau, introducing the project goals, discussion rules, and seeking consent. Discussions lasted for 105 minutes. Recordings were transcribed, coded, and themes were developed inductively through reading the transcripts, field notes, and analytic memos (Saldaña, 2016). We shared the themes for member checks and are presented with verbatims to account for experiences of stakeholders.

Results

Stakeholders shared 11 themes relating to climate change and non-climate issues notably, wildfire, drought, high temperatures, extreme heat, reduced water availability, flooding, reduced forage, weeds, pests, regulations, and high insurance premium. For instance, Bony who has farmed for 10 years on 50 acres described the impact of high temperature and extreme heat, *in 2018, we got high heat, by 9' O'clock, it was already 100 degrees, and our grapes were drying up*. On adaptation practices, eight themes were identified including applying for government assistance, cover crops, prescribed grazing, changing labor schedules, changing grazing hours, composting, switching crops, and diversification. Mary who farms 17 acres of crops including olives, cacti, and agave said, *we started planting agave for spirits. Agave is such a resilient crop that requires very low input. We started with "tequilana", but the climate did not work, so we decided to move to other varieties. So, we are now planting cacti for the fruits*. Mike, who raises mainly beef cattle on their 12,000-acre ranch, said, *the 2017 wildfire burned all our infrastructure on the farm, but we were able to secure funding through Natural Resources Conservation Service to restore our wells. We also put up a plan for prescribed grazing, we graze along the highway first, where cows cannot graze, we mow*.

On challenges to the future of San Diego regional agriculture, seven themes emerged. In addition to climate stressors, Daniel, an extension service provider mentioned, and the team agreed on major issues like water, labor costs, regulations, price of equipment, and price of land. Kim, who has farmed for 49 years also expressed concerns that *we live in an urban environment. We have a population that does not have a clue what the agricultural community in San Diego region is contributing to their quality of life*. On educational needs, Nelly, an extension provider expressed that *a lot of people are not aware that the University of California partners with the University of Nevada on landscape mulch testing where they showed and demonstrated that the least combustible landscape is composted mulch. This mulch can conserve a lot of moisture, feed that soil, but also is less combustible*, Nelly added.

Conclusions

High temperatures and extreme heat are shortening farmers' seasons with implications on reducing yields, especially the high value specialty crops like grapes. Temperatures are also increasing the invasion and expansion of insect pests (Jha et al., 2024). Farmers, especially limited resources, are grappling with continuous switching of crops, indicating a need for information related to climate and their unique crops (Taku-Forchu et al., 2023). Related education needs were identified on the use of least combustible mulch, adaptive grazing strategy to wildfire and soil conservation. Prescribed grazing strategy is vital to support the regrowth of forage (Roche, 2016), and mowing and grazing along the highway reduces the buildup of dry matter and incidences of wildfire that starts with car accidents and leftover cigars.

Implications/Recommendations/Impact on Profession

Identifying strategic pathways to climate-smart agriculture requires understanding the experiences of stakeholders related to farming in changing climate, adaptations, and education needs. This needs assessment identified most of the common climate stressors categorized as water, temperature, and disaster related. However, non-climate issues were identified as policy and regulation. Sensitization is needed on water and economic value of cover crops (DeVincentis et al., 2022); role of agriculture in a built urban environment; and the need for collaborative efforts in extension education with the urban leadership. All these aspects of climate adaptation are relevant in planning regional and commodity-specific agricultural extension workshops.

References

Andenoro, C. A., Baker, M., Nicole L., Stedman, L. P. N., & Weeks, P. P. (2016). Research priority 7: Addressing complex problems. In G. Roberts., A. Harder., & T. Brashears, (Eds.), *AAAE national research agenda: 2016–2020* (pp. 57–66). Gainesville, Florida.

California Department of Food and Agriculture (CDFA). (2022). *California agricultural statistics review 2021–2022*. Sacramento, California. Accessed at: https://www.cdfa.ca.gov/Statistics/PDFs/2022_Ag_Stats_Review.pdf

Crotty, M. (1998). *The foundations of social research: Meaning and perspective*. Sage.

DeVincentis, A., Solis, S., Rice, S., Zaccaria, D., Snyder, R., & Mitchell, J. (2022). Impacts of winter cover cropping on soil moisture and evapotranspiration in California's specialty crop fields. *Agriculture, 76*(1), 37–45. https://doi.org/10.3733/ca.2022a0001

Dilling, L., & Berggren, J. (2015). What do stakeholders need to manage for climate change and variability? A document-based analysis. *Regional Environmental Change, 15*, 657–667. https://doi.org/10.1007/s10113-014-0668-y

Grantham, T., Kearns, F., Kocher, S., Roche, L., & Pathak, T. (2017). Building climate change resilience in California through UC Cooperative Extension. *California Agriculture, 71*(4), 197–200. https://doi.org/10.3733/ca.2017a0045

Ikendi, S., Koundinya, V., Taku-Forchu, N. C., Pinzon, N., Parker, L., Roche, L., Cooper, M., Zaccaria, D., Ostoja, S., Diaz-Ramirez, J., Brodt, S., Battany, M., Rijal, J., & Pathak, T. (2024, April 22–25). *Experiences, interests, and need for information on climate adaptation practices among stakeholders in California*. AIAEE Conference, Orlando, FL.

Jagannathan, K., Pathak, T. B., & Doll, D. (2023). Are long-term climate projections useful for on-farm adaptation decisions? *Frontiers in Climate, 4*, 1005104. https://doi.org/10.3389/fclim.2022.1005104

Jha, P. K., Zhang, N., Rijal, J. P., Parker, L. E., Ostoja, S., & Pathak, T. B. (2024). Climate change impacts on insect pests for high value specialty crops in California. *Science of The Total Environment*, *906*, 167605. https://doi.org/10.1016/j.scitotenv.2023.167605

Lewis, J., & Rudnick, J. (2019). The policy enabling environment for climate smart agriculture: A case study of California. *Frontiers in Sustainable Food Systems, 3*, 31. https://doi.org/10.3389/fsufs.2019.00031

Pathak, T. B., Maskey, M. L., Dahlberg, J. A., Kearns, F., Bali, K. M., & Zaccaria, D. (2018). Climate change trends and impacts on California agriculture: A detailed review. *Agronomy, 8*(3), 25. https://doi.org/10.3390/agronomy8030025

Roche, L. M. (2016). Adaptive rangeland decision-making and coping with drought. *Sustainability, 8*(12), 1334. https://doi.org/10.3390/su8121334

Saldaña, J. (2016). *The coding manual for qualitative researchers*. Sage.

Taku-Forchu, N., Ikendi, S., Koundinya, V., Dahlquist-Willard, R. M., Thaoxaochay, L., Vong, M., Parker, L., Bergren, C., Pinzon, N., Roche, L., Cooper, M., Zaccaria, D., Ostoja, S., & Pathak, T. (2023, November 28–30). *Climate change related impacts and experiences among Hmong farmers in the San Joaquin valley, California.* NAEPSDP, Salt Lake, UT.

Perceptions and Experiences are Important: Career Choice in Agriculture

Katrina Swinehart Held, Ph.D.

Central State University

1400 Brush Row, Wilberforce, OH 45384

(937) 405-9025

kswinehart@centralstate.edu

Introduction

One industry with growing need for new talent is the agriculture industry. In fact, the labor force participation in the agriculture industry has been decreasing over time, about 20,000 jobs in agriculture are not filled each year, while only 3% of college graduates have or would consider a career in agriculture (Roser, 2013). One of the reasons cited for the disinterest in the industry are the negative perceptions, often misconceptions, that they hold towards careers in the industry. Recent research identified that these misconceptions are present due to the belief all agricultural jobs are physical in nature, that the jobs in the industry provide low incomes, and the belief that the jobs are not challenging (Fatimahwati, 2019). Callan, et al. (2023) emphasize the importance of exposure to agricultural topics through instruction at their school, especially if there are strong connections to their personal interests and their career aspirations.

The issue of student career choice has been at the forefront of the faculty at Central State University in Ohio. Since earning their 1890 Land Grant Status in 2014, recruiting and enrolling students in the agriculture majors have been a concern. Many faculty have this concern due to the large urban student population on campus who are not aware of agricultural careers.

Theoretical Framework

Prior research has utilized the Theory of Planned Behavior (TPB) to explain the rationale for a specific career choice, which indicates that planning played a significant role in their decision making. TPB has been used previously to explore youth engagement in agriculture and their career choices (Roy, 2023). The basis of TPB is that people who hold positive beliefs will take actions based on them; this is one of the most powerful models for predicting human behavior (Ajzen, 1991). TPB also explores aspects of decision making including the perception of authority and control, norms, and attitude toward behavior (Ajzen, 1991).

Research Questions

The purpose of this study was to determine the perceptions students held about selecting to study agriculture and pursue a career in agriculture. The qualitative research question was:

1) What experiences, beliefs, and people were meaningful to your career choice?

Methodology

A grounded theory design was utilized that included a semi-structured interview to understand the processes that occurred for the students to select a future career in agriculture. This study engaged with university students in all stages of seeking their degree.

Purposive sampling was used to identify students majoring in agriculture (n = 52) to participate in the semi-structured interviews. From the invited sample,10 students participated. Their ages ranged from 18–21 years old, and the group was comprised of 6 females and 4 males.

Data was collected through a semi-structured, one-on-one video interview (Zoom) and field notes. The interview questions were developed to gain knowledge about the decision-making process behind seeking a career in agriculture. The following are sample questions from the interview: What experiences with agriculture did you have prior to coming to campus? Can

you tell me the perceptions your support system has about agriculture? All interviews lasted approximately 30 minutes and was transcribed verbatim. During the interviews field notes were used to document participant body language, and necessary prompting or follow up questions. After 8 interviews, data saturation was reached as responses were similar. However, to ensure that saturation was achieved, 2 additional interviews were conducted.

Since this study was coded by a lone researcher, trustworthiness was inherently met. Credibility was built through having experts review the interview questions and member checking (Lincoln & Guba, 1985). Basic coding was used to group interview content into themes.

Results/Findings

The first theme that emerged was students had experience with food security. Students discussed that they lived in or had family or friends impacted by a food desert. Their drive to study agriculture was to address that issue for their family or community. DeMarcus shared "I want to help my community as an agricultural teacher to help students learn about growing food and agriculture so that this generational issue ends." Other students discussed the issues they faced with access to fresh food, even in their school cafeterias and after school programs.

The second theme that emerged was students wanted to give back to their community with their new knowledge and career. Jasmine described her desire to mentor by sharing "I need to give back because people gave me support and that's community." Whether it was through hands-on experiences, starting programs, or being there for their community each student talked about their desire to mentor because they were mentored throughout their life.

The third theme that emerged was the lack of exposure to agriculture prior to coming to campus. Many students talked about seeing the greenhouses, farm equipment, and campus garden being the spark to their interest in agriculture. Advisors and faculty are important to connecting students with knowledge and opportunities because of this. Keke stated "My advisor has spent hours with me looking at internships. Her help has been essential." None of the students knew about 4-H, their schools did not have agricultural education, and their limited school activities were with music or sports. Students expressed a desire to share what they know now about agriculture with children in their home communities.

Conclusions/Implications/Recommendations

The themes that emerged from the data from interviews with the students demonstrated that their experiences leading to college were impactful to their future decisions regarding their career. The students were impacted by knowledge or experiences that they had but also those they lacked. More exposure to agriculture and the careers in the agriculture industry are essential to helping students make earlier decisions about their future career.

While these findings are limited to the sample in this study, useful recommendations can be provided. Agricultural education should continue to broaden offerings to more urban high schools to provide meaningful exposure to the industry. College campuses and employers need to partner to display information about agriculture careers to avoid misconceptions.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes*, *50*(2), 179-211.

Callan, H., Croom, D. B., Anderson, J. C., Yopp, A. M., Golson, A. (2023). Secondary non-traditional urban agriculture students of color and their motivation to stay in agriculture: A study of retention. *Career and technical education research, 48*(1), 2-20. https://doi.org/10.5328/cter48.1.2

Lincoln, Y., & Guba, E. G. (1985). *Naturalistic inquiry* (1st ed.). Sage.

Roser, M. (2013). Employment in Agriculture. *Our World in Data.* https://ourworldindata.org/employment-in-agriculture

Roy, S. K. (2023). Influencing factors for pursuing agriculture as a career for agriculture undergraduates: A two-staged approach. *Research square.* https://doi.org/10.21203/rs.3.rs-2974745/v1

Fatimahwati, S. (2019). A Study on Youth Aspiration and Perception of Agriculture and Its Policy Implications. 441-453. doi: 10.4018/978-1-5225-9837-4.CH022

Perceptions of the Usability of a Virtual Field Trip within a Feed Mill Facility

Allison Chambers
Kansas State University
301 Umberger Hall
Manhattan, KS 66506
785-532-1138
alliso1313@ksu.edu

Dr. Gaea Hock
315 Umberger Hall
Manhattan, KS 66506
785-532-1166
ghock@ksu.edu

Dr. Brandie Disberger
316 Umberger Hall
Manhattan, KS 66506
785-532-1138
bdis@ksu.edu

Dr. Jonathan Ulmer
308 Umberger Hall
Manhattan, KS 66506
785-532-1138
julmer@ksu.edu

Perceptions of the Usability of a Virtual Field Trip within a Feed Mill Facility

Introduction/Need for Research

Field trips play a role in helping bridge formal and informal learning and prepare students for lifelong learning. Field trips are one way of adding variety to instruction, thus optimizing teaching effectiveness while motivating student learning (Hofstein & Rosenfeld, 1996). Depending on the destination, field trips can serve as informal science education events to help students become exposed to STEM subjects (Knapp, 2000).

Despite research confirming enhanced learning, relatively few teachers take students on field trips no matter the age group. Tuthill & Klemm (2002) reported the decline in field trips, confirming that few students have such experiences today. To add to the existing limitations, additional challenges were seen during the COVID-19 pandemic. There were often limitations on both local and international travel, especially to destinations considered high-risk (Zhou et al., 2021). Financial constraints were another factor, as schools and districts faced economic challenges due to the pandemic's impact (Huang & Liu, 2022).

The situation forced teachers to adapt their lesson plans and find alternatives to traditional field trips. One such alternative was the use of VFTs (virtual field trips). A VFTs is a guided exploration through the internet into places and experiences that are pre-screened and thematically based to provide a structured learning experience (Sharma, 2023). Additionally, VFTs offer a cost-effective alternative, eliminating expenses related to transportation, admission fees, and other logistical considerations (Sharma, 2023). The VFTs may include visiting a website and taking a virtual tour, reviewing media posted online, or exploring project websites that incorporate multimedia and provide supporting curriculum (Tuthill & Klemm, 2002).

Theoretical Framework

The Technology Acceptance Model (TAM) posits that users' acceptance of a computer application depends primarily on two critical factors: (1) their perception of its usefulness and (2) their perception of its ease of use (Davis, 1989). The TAM focuses on understanding users' behaviors and attitudes towards adopting technology. This study employs the TAM framework to explore students' perspectives of a specific VFT.

Methodology

This study aimed to assess students' perceptions of the usefulness and ease of use of a particular VFT (Kansas State University O.H. Kruse Feed Technology Innovation Center). The VFT was introduced by a faculty member at a Pacific Northwest university to 36 students during class time in the Summer of 2023. Participants were asked to complete the tour and explore the VFT as they wished. After the tour and exploration portion of the study, students were asked to complete an instrument. The instrument was administered anonymously using the Qualtrics online survey platform. The survey consisted of four introduction questions, nine technology acceptance questions, three intentions to adopt questions, five sense of place questions, five career interest questions, and three open-ended questions. The survey utilized Likert-type questions to gauge respondents' attitudes, perceptions, and levels of agreement regarding various aspects of the subject matter. Each question had a scale attached that displayed the following options for the participants to select from, *1= Strongly disagree, 2= Somewhat disagree, 3=*

Neither agree nor disagree, 4= Somewhat agree, and 5= Strongly agree. Four demographic questions were asked at the end of the instrument.

Results

Of the 36 students who were offered the opportunity to participate, 33 students completed the data collection process. The participants ranged in age between 19 and 35 (M = 22.25, SD = 3.83). The participants included a variety of academic levels: Sophomore (n = 3), Junior (n = 11), Senior (n=17), and Other (n=2). The participants reported their gender as male (n = 3), female (n = 24), and prefer not to say (n = 1). Due to space not all results are included in this abstract. Focus is on the TAM (Davis, 1989) relevant questions.

Students were asked to evaluate the usefulness of the VFT. Out of 33 participants, 91.5% (n= 32) believed that the virtual tour significantly enhanced their knowledge about the subject matter. When assessing the utility of virtual tours in the context of agriculture, food science, and natural resources, 85.7% (n= 30) found them to be a valuable means of experiencing such sites. Regarding convenience, 89.6% (n= 31) of respondents either somewhat agreed or strongly agreed that virtual tours offered a convenient method to explore sites. Students were also asked to evaluate their perceived enjoyment for the VFT. A vast majority (83.90%, n= 29) expressed either a somewhat or strong agreement that they enjoyed the virtual tour.

Regarding participants' perceptions concerning the ease of use associated with the VFT a notable 86.70% (n = 30) found it straightforward to understand how to engage with the virtual tour. Similarly, the flexibility of the virtual tour interface resonated positively among participants (80%, n = 28). In terms of skill acquisition and proficiency while using the virtual tour, 80% (n = 29) of respondents either somewhat or strongly agreed that they could easily become adept at navigating the experience.

Conclusions

Participants reported an overall favorable perception regarding the user-friendliness and adaptability of the virtual tour, highlighting its effectiveness in facilitating a seamless and intuitive user experience. Central to the evaluation of VFTs is the Technology Acceptance Model (TAM) (Davis,1989). This model underscores the critical role of perceived usefulness and perceived ease of use in determining users' acceptance and adoption of technological applications. This study underscores the potential of VFTs in augmenting learning opportunities, especially within specialized fields like agriculture. By leveraging technological advancements and pedagogical insights, VFTs offer a viable alternative to traditional field trips. As educational paradigms continue to evolve in response to global challenges and technological innovations, VFTs are poised to play an increasingly integral role in fostering immersive, equitable, and impactful learning experiences for students across diverse settings and disciplines.

Recommendations

Additional research on the completed Feed Mill VFT as well as the other VFTs in the project is recommended from both the student and instructor perspective. The current VFT was built for use in post-secondary classrooms, but its application in secondary and elementary classrooms should be explored. Training of instructors and the creation of additional support materials are also recommended.

References

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.2307/249008

Hofstein, A., & Rosenfeld, S. (1996). Bridging the gap between formal and informal science learning.

Huang, H. & Liu, G. (2022) Evaluating students' behavioral intention and system usability of augmented reality-aided distance design learning during the COVID-19 pandemic. *Univ Access Inf Soc*. https://doi.org/10.1007/s10209-022-00920-9

Knapp, D. (2000), Memorable Experiences of a Science Field Trip. School Science and Mathematics, 100: 65-72. https://doi.org/10.1111/j.1949-8594.2000.tb17238.x

Sharma, Nitin (2023). How virtual field trips enhance the learning experience. Hurix. https://www.hurix.com/how-virtual-field-trips-enhance-the-learning-experience/

Tuthill, G., & Klemm, E. B. (2002). Virtual field trips: Alternatives to actual field trips. International Journal of Instructional Media, 29(4), 453-468. https://er.lib.k-state.edu/login?url=https://www.proquest.com/scholarly-journals/virtual-field-trips-alternatives-actual/docview/204317859/se-2

Zhou, T., Molfino, T., & Travers, J. (2021). The cost of COVID: Understanding the full financial impact of COVID-19 on districts and schools. https://files.eric.ed.gov/fulltext/ED610771.pdf

Personal Human Capital Needs of School-Based Agricultural Education Teachers in Oklahoma

Kayla N. Marsh
Graduate Teaching and Research Associate
458 Agricultural Hall, Stillwater, OK 74078
Oklahoma State University
405-714-8289
Kayla.marsh@okstate.edu

Christopher J. Eck, Ph.D.
Assistant Professor
457 Agricultural Hall, Stillwater, OK 74078
Oklahoma State University
405-744-8027
Chris.eck@okstate.edu

Bradley Coleman, Ph.D.
Assistant Professor
445 Agricultural Hall, Stillwater, OK 74078
Oklahoma State University
405-744-8025
B.coleman@okstate.edu

Research on the needs of school-based agricultural education (SBAE) teachers has been conducted for more than three decades, driven by historic attrition within the profession (DiBenedetto et al., 2018; Eck & Edwards, 2019). Identified gaps in their ability to integrate curriculum resources, access resources, and develop skills to support students' diverse needs within their everyday instruction, further exacerbating work-life balance and stress teachers face managing a complete program (Marsh et al., 2023$_a$; Shoulders et al., 2021). Identified needs are recurring, making work-life balance and job satisfaction a major focus in SBAE research due to the overwhelming amount of work, dedication, and mental, physical, and emotional stress experienced by teachers (Doss et al., 2023; Phipps et al., 2008; Shoulders et al., 2021). Currently, the ability to provide SBAE teachers with the resources, content, curriculum, social and professional development needed that is currently limiting their personal human capital needs (i.e., managing stress, managing paperwork, and work-life balance) is lacking (Marsh et al., 2023$_b$). Therefore, the need exists to explore the individual human needs of SBAE teachers to mitigate stress, increase job satisfaction, and improve retention. The purpose of this study was to identify the current level of SBAE teachers' personal human capital knowledge and the relevance of their career-specific human capital, ultimately allowing the prioritization of SBAE teacher needs.

Theoretical/Conceptual Framework

To evaluate the perceived needs of SBAE teachers, Maslow's Hierarchy of Needs from the Theory of Human Motivation (1943) was operationalized. Specifically, *Maslow's hierarchy for teacher needs* (Fisher & Royster, 2016) was overlayed on the *Three-Component Model of Agricultural Education*, which develops human capital in students through participation within SBAE programs by providing career experiences, leadership development, and student-centered learning in agricultural content (Eck et al., 2019; FFA, 2022). All of which was undergirded by SBAE teachers' human capital development to help them progress up the hierarchy of teacher needs to become for effective teachers (Eck et al., 2019).

Methods

As part of a larger study, a census approach was employed to reach all Oklahoma SBAE teachers (N = 462). To achieve this goal, data was collected in-person at 25 regional FFA degree checks across the state. In-person data collection was completed at Oklahoma FFA degree checks, in addition 55 mail surveys were sent to address non-respondents. Upon analysis of non-respondents, data was found to be homogeneous to original responses, resulting in a total of 329 completed instruments for data analysis. This study evaluated teacher personal human capital needs among Oklahoma SBAE teachers. Participants were primarily male (n = 230), traditionally certified (78.7%), ranged from early-career (37.08%), mid-career (34.65%), and late career (28.27%), and worked in both single teacher (59.6%) and multi-teacher programs (39.2%).

The questionnaire included one section with five items addressing teacher personal human capital needs. Each of these items used two 5-point Likert-type scales (1 = low agreement, 5 = high agreement). On the first scale, participants were asked to rate their current knowledge level of the item (perceived ability). On the second scale, participants were asked to rate the degree of relevance the item had to their job (perceived importance). The final section of the questionnaire included space for participants to share their personal characteristics. Data were transcribed from the paper instruments to Microsoft Excel© by a single research assistant prior to data being

imported and analyzed using SPSS version 28 and Microsoft Excel©. This study implemented the ranked discrepancy model (RDM) to assess current competencies of SBAE teachers across [State]. This model was selected as an alternative to the Borich (1980) needs assessment model based on the findings of Narine and Harder (2021). Specifically, this method was selected because "instead of positive scores indicating a lack of competence, the RDM provides a negative RDS when training needs are greater (i.e., there are many individuals lacking sufficient ability and few individuals with an abundance of ability), which more clearly conveys that a problem exists that should be corrected" (Narine & Harder, 2021, p. 108). This analysis requires the consideration of positive ranks (PR), negative ranks (NR), and tied ranks (TR) to fully understand the needs of the participants, ranging from those deemed experts to others who are novices, resulting in a ranked discrepancy score (RDS) for each item (Narine & Harder, 2021).

Findings

Mean scores for each of the teacher personal human capital items identified a greater relevance to participants careers than their current knowledge level (see Table 1). RDS scores determined the greatest need to be managing stress (RDS = -31.91), followed by managing paperwork (RDS = -23.10), balancing work and personal life (RDS = -22.80), managing time (RDS = -22.80), and financial planning (-19.76) for SBAE teacher development.

Table 1

SBAE Teacher Personal Human Capital Needs

Item	Current Mean	Relevance Mean	RDS
Managing stress	3.58	4.26	-31.91
Managing paperwork	3.71	4.10	-23.10
Balancing work and personal life	3.60	4.04	-22.80
Managing time	3.71	4.07	-22.80
Financial planning	3.61	4.00	-19.76

Conclusions/Implications/Recommendations

All five of the personal human capital resulted in a negative RDS, suggesting that SBAE teachers lack the knowledge required to meet their own personal needs. Managing stress represents the greatest need by RDS score, aligning with current research suggesting that SBAE teachers have existing needs gaps related to handling stress and lack healthy coping mechanisms that would otherwise support their well-being and personal human capital development (Marsh et al., 2023$_a$; Marsh et al., 2023$_b$). The five items are found at the *Subsistence* level of *Maslow's hierarchy of needs for teachers* (Fisher & Royster, 2016), suggesting the need to further investigate the depth of SBAE teachers' personal human capital, including the supports, resources, and tools that can impact their reported levels of stress, wellness, and work-life balance. Considering the hierarchical level at which these items are found (i.e., subsistence), the need for professional development and preservice teacher training exists, as these needs left unsupported impact SBAE teacher's practice and reduce their overall effectiveness (Marsh et al., 2023$_a$; Marsh et al., 2023$_b$). This becomes increasingly important as we consider the ongoing needs of SBAE teachers (DiBenedetto et al., 2018), as Maslow (1943) identified the necessity to meet needs on a basic/personal level before an individual can progress on to higher order needs, ultimately impact teacher effectiveness and career attrition.

References

Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education, 31*(3), 39. https://doi.org/10.1177/002248718003100310

DiBenedetto, C. A., Willis, V. C., & Barrick, R. K. (2018). Needs Assessments for School-based Agricultural Education Teachers: A Review of Literature. *Journal of Agricultural Education*, *59*(4), 52–71. https://doi.org/10.5032/jae.2018.04052

Doss, W., Rayfield, J., & Lawver, D. (2023). A national study assessing the influence of perceived challenges faced by school-based agricultural education teachers on their ability to do their job. *Journal of Agricultural Education*, *64*(3), 184–202. https://doi.org/10.5032/jae.v64i3.2476

Eck, C. J., & Edwards, M. C. (2019). Teacher Shortage in School-Based, Agricultural Education (SBAE): A Historical Review. *Journal of Agricultural Education*, *60*(4), 223–239. https://doi.org/10.5032/jae.2019.04223

Eck, C. J., Robinson, J. S., Ramsey, J. W., & Cole, K. L. (2019). Identifying the Characteristics of an Effective Agricultural Education Teacher: A National Study. *Journal of Agricultural Education*, *60*(4), 1–18. https://doi.org/10.5032/jae.2019.04001

Fisher, M. H., & Royster, D. (2016). Mathematics teachers' support and retention: Using Maslow's hierarchy to understand teachers' needs. *International Journal of Mathematical Education in Science and Technology*, *47*(7), 993–1008. https://doi.org/10.1080/0020739X.2016.1162333

Marsh, K. N., Eck, C. J., Layfield, K. D., & Donaldson, J. L. (2023_a). Identifying school-based agricultural education teacher needs and support gaps. *Advancements in Agricultural Development*, *4*(3), 117–130. https://doi.org/10.37433/aad.v4i3.347

Marsh, K. N., Eck, C. J., Layfield, K. D. & Donaldson, J. L. (2023_b, February 13–15). Exploring the self-perceived needs of school-based agricultural education teachers [Paper presentation]. *Southern Region AAAE Conference, Oklahoma City, OK.* https://aaea.wildapricot.org/resources/Documents/Southern%20Region/2023Southern%20Conference/Proceedings.pdf

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50*(4), 370–396. https://doi.org/10.1037/h0054346

Narine, L. K., & Harder, A. (2021). Comparing the Borich model with the ranked discrepancy model for competency assessment: A novel approach. *Advancements in Agricultural Development, 2*(3), 96–111. https://doi.org/10.37433/aad.v2i3.169

Phipps, L. J., Osborne, E. W., Dyer, J. E, & Ball, A. L. (2008). *Handbook on agricultural education in public schools* (6th Edition). Thomson Delmar Learning.

Shoulders, C. W., Estepp, C. M., & Johnson, D. M. (2021). Teachers' stress, coping strategies, and job satisfaction in COVID-induced teaching environments. *Journal of Agricultural Education, 62*(4), 67–80. https://doi.org/10.5032/jae.2021.04064

Preparing to Podcast: How Undergraduate Students Meet Outcomes Through Project-Based Learning Opportunities

Dr. Jacqueline Aenlle
Kansas State University
785-532-0991
jaenlle@ksu.edu

Lauren Raley
Kansas State University
785-532-5804
lraley@ksu.edu

Preparing to Podcast: How Undergraduate Students Meet Outcomes Through Project-Based Learning Opportunities

Introduction

Agricultural podcasts are becoming an increasingly popular medium to share educational content, communicate with public audiences, and transform learning experiences (Xie & Gu, 2007; Bruce & Lin, 2009; Strickland et al., 2021). Podcasts can be used to explore new topics, learn something new, or for entertainment (Edison Research & Triton Digital, 2021; omitted citation). As the presence of student created podcasts continues to grow (Nie et al., 2008; Hall & Jones, 2021), it is beneficial to explore methods and best practices for introducing students to this technology. This study aimed to explore students' reactions to participating in a project-based, agricultural podcasting course project. This study aligns with AAAE research value one, "Advancing Public Knowledge of AFNR Systems," by better preparing students to create engaging informal learning digital programs for public outreach (AAAE, 2023). The study was guided by the following research questions: 1) What were students' confidence levels with podcasting equipment and skills before and after the course? 2) How did students' knowledge and perceptions of grain science change after the project-based learning course? 3) What were students' reactions to a project-based learning course?

Conceptual Framework

This study was guided by Social Cognitive Theory (SCT) and self-efficacy. Self-efficacy is defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1999, p. 3). An individual's academic self-efficacy refers to their confidence in their ability to succeed in academic or learning situations (Hodges et al., 2008). SCT is a, "learning theory which posits that both social and psychosocial or personal factors determine user behavior, it seeks to analyze how thoughts, feelings, and social interactions shape user behavior" (Ifinedo, 2017, para. 14). Cognitive styles can be used "to understand the varying ways that learners perceive and interact with instructional settings, methods, and media" (DeTure, 2004, p. 22). SCT will be applied to capture student general learning reactions and preferences to the project-based learning style, and self-efficacy will be used to frame students' confidence using the podcasting hardware and software.

Methods

This poster will review the structure of a project-based course, the hardware and software used, and share key findings from the analysis of student discussions. Approval was obtained from the [University Name] Institutional Review Board before beginning this study. Undergraduate students (n=17) enrolled in AGCOM 590 New Media Technologies at Kansas State University participated in a project-based learning course that tasked them with producing a podcast episode focused on scientists and researchers from the Grain Science Department. At the beginning of the semester, students were placed in three groups and asked to conduct self-guided discussions (approximately 25-30 minutes in length) using a provided list of questions. This included questions about their existing knowledge of podcasting and podcast equipment, existing knowledge of the scientific topic of focus, and thoughts on the course/project objectives. Students worked in groups of three to produce the podcast track, social media posts to advertise the podcast track, and an article to complement the podcast. At the conclusion of the semester,

students were again asked to return to their initial groups and revisit some of the initial topics and questions. These discussions were recorded and transcribed. The research team, comprised of the lead researcher (also the instructor of the course) and a graduate assistant (teaching assistant of the course), then used qualitative methods to inductively code the transcripts first by using structural coding to find major categories, then pattern coding to further categorize the coded data (Saldana, 2009).

Findings

Results of the discussions showed several emerging themes including: a). students were excited by and acknowledged the importance of the Grain Science Department at Kansas State University even though they had no formal experience or knowledge of grain science, b). even though students had previous experiences with audio, interviewing, and editing software, they were not confident in how these skills prepared them for podcasting and c.) students' concerns largely focused on being prepared for leading a podcast interview. Student 12 said: "I'm not familiar with [podcasting equipment] at all...I'm scared I'm going to break it." This sentiment was shared by several other students, but many followed up these statements by indicating that the ability to edit the interview alleviated some of their initial reservations (RQ1). During the post-discussions, students discussed having positive experiences working as a group and completing a multi-faceted project for the course: "I think it was a good learning opportunity... I liked having the additional [social media posts and blog posts] to go along with [the podcast]," said Student 7 (RQ3). Students also mentioned gaining increased awareness of the scientific process, and the Grain Science Program. Student 1 said, "It was cool to hear how they connected on the research project and how the whole process happens. It was really interesting to hear about the research side of it," (RQ2). Finally, and potentially most noteworthy for aspiring podcasters, were the challenges students found with the interview process, structure, scheduling, and live interview experience. One reoccurring issue was scheduling with the scientists (RQ3).

Conclusions and Recommendations

Prior to producing the podcasts, students had little to no podcasting experience, but had other skills (e.g., video editing, interviewing, etc.) that could be transferred. Practicing post-production editing alleviated some nervousness and increased student comfort (Self-Efficacy; Bandura, 1999). Results showed that students gained the technical skills necessary to produce a podcast and appreciated approaching podcast production with a more holistic view (i.e., the creation of supporting marketing materials). These findings can not only inform higher-education curricula that utilize project-based learning for multimedia creation, but will also have implications for other novice podcasters. When creating trainings for new podcasters, specific attention should be paid to interview preparation, practice, and relationship building with scientists.

References

American Association for Agricultural Education (AAAE). (2023). AAAE Research Values.

Almendingen, K., Torbjørnsen, A., Sparboe-Nilsen, B., Kvarme, L. G., & Benth, J. Š. (2021). Small Group Student-Produced Podcasts Were Favoured as Assignment Tool for Large-Scale Interprofessional Learning: An Exploratory Study Among Health, Social Care, and Teacher Education Program. *Frontiers in Education, 6*. https://doi.org/10.3389/feduc.2021.622716

Bandura, A. (1999). Self-Efficacy: The Exercise of Control. *Journal of Cognitive Psychotherapy*, *13*(2), 158–166. https://doi.org/10.1891/0889-8391.13.2.158

Bruce, B., & Lin, C. (2009). Voices of youth: Podcasting as a means for inquiry-based community engagement. *E-Learning and Digital Media*, *6*(2), 230-241. https://doi.org/10.2304/elea.2009.6.2.230

DeTure, M. (2004). Cognitive Style and Self-Efficacy: Predicting Student Success in Online Distance Education. *American Journal of Distance Education*, *18*(1), 21–38. https://doi.org/10.1207/s15389286ajde1801_3

Edison Research and Triton Digital. (2021). The Infinite Dial. https://www.edisonresearch.com/wp-content/uploads/2021/03/The-Infinite-Dial-2021.pdf

Hall, N. M., & Jones, J. M. (2021). Student-Produced Podcasts as a Teaching and Learning Tool. *American Journal of Distance Education*, *37*(1), 53–65.

Hodges, C. B., Stackpole-Hodges, C. L., & Cox, K. M. (2008). Self-Efficacy, Self-Regulation, and Cognitive Style as Predictors of Achievement with Podcast Instruction. *Journal of Educational Computing Research*, *38*(2), 139–153. https://doi.org/10.2190/ec.38.2.b

Ifinedo, P. (2017). Examining students' intention to continue using blogs for learning: Perspectives from technology acceptance, motivational, and social-cognitive frameworks. *Computers in Human Behavior*, *72*, 189–199. https://doi.org/10.1016/j.chb.2016.12.049

Kokotsaki, D., Menzies, V., & Wiggins, A. (2016). Project-based learning: A review of the literature. *Improving Schools*, *19*(3), 267–277. https://doi.org/10.1177/1365480216659733

Saldaña, J. (2009). The coding manual for qualitative researchers. Sage Publications.

Torres, J. (2011). The Use of Podcasts in Higher Education: Communication, Innovation, Education and Knowledge Management. *International Journal of Educational Technology in Higher Education*. https://doi.org/10.7238/rusc.v8i2.1047

Xie, K. & Gu, M. (2007). Advancing cooperative extension with podcast technology. Journal of Extension. 45(5). https://archives.joe.org/joe/2007october/tt2.php

Reaching All People: An Examination of Felt Community Representation in Tennessee Extension Programming

Victoria Jessie
320 Morgan Hall
2621 Morgan Circle Drive
Knoxville, TN 37996
615-917-8302
vjessie@vols.utk.edu

Shelli D. Rampold
321B Morgan Hall
2621 Morgan Circle Drive
Knoxville, TN 37996
985-607-4045
srampold@utk.edu

Makenzie Smith
321 Morgan Hall
2621 Morgan Circle Drive
Knoxville, TN 37996
352-535-5538
msmit556@vols.utk.edu

Introduction

The mission of Tennessee Extension is to guide the improvement of its residents' quality of life and solve problems through the application of research and evidence-based knowledge. To accomplish this, Extension needs to reach and represent all communities within its system and demonstrate public value within its programs (Franz, 2015). When groups and individuals are underrepresented or excluded from programs altogether, it diminishes the efficacy of the system (Franz, 2015; Kalambokidis, 2011; Maulu et al., 2021; Settle et al., 2019). This is especially important within Tennessee as more cities urbanize and the population becomes more diverse. Changing population demographics provides a unique opportunity to enhance the visibility and reach of Extension (Campbell et al., 2023). Research has shown that Extension agents believe there is a significant need for program improvement and development for underrepresented populations within their system (Hlatshwayo et al., 2019; Kennedy et al., 2022; Narine et al., 2019). As Tennessee's population becomes further removed from areas represented by Extension, it is important to acknowledge and address change within its practices. The Diversity & Inclusion Theory of Change provides a conceptual perspective to evaluate ways of implementing change within the Extension system related to promoting equity and inclusion for all (Rutherford, 2021).

Purpose and Objectives

We conducted this research as part of a statewide effort to inform the new Extension strategic plan. Specifically, we sought to examine if Tennessee communities feel represented in Extension services and how we can better reach diverse communities with our programming. To do so, we developed four research questions:

1. To what extent do Tennessee residents feel their community is represented by Extension?
2. Do residents' feelings of community representation differ based on whether their community is metro or nonmetro?
3. Do residents' feelings of community representation differ based on income group?
4. Do residents' feelings of community representation differ based on whether they identify as a racial minority?

Methods

We launched an online survey through Qualtrics recruitment panels to obtain a non-probability sample of adult residents across the three primary regions of Tennessee. Non-probability sampling is an approach commonly used to make population estimates when establishing a true sampling frame is not possible (Baker et al., 2013). We developed the survey instrument with the purpose of informing the new Tennessee Extension Strategic Plan. The instrument items were developed in consultation with a panel of twenty Extension experts across the state who represented one of several sub tasks forces on the Strategic Planning Team. One task force included the Engaging Diverse Communities (EDC) group, who was charged with implementing strategic plan items geared toward enhancing representation and inclusion in Extension programming. We worked with those group members to develop five items for inclusion in the questionnaire that would help direct their efforts. We also collected demographic information to help us better examine different community groups' experiences with and perceptions of inclusion in Extension.

Data collection resulted in 1,508 usable responses from Tennessee adult residents, comprising a response rate of 57.6%. Based on the rigor of the demographic quotas associated with the response panels, we deemed the response rate sufficient. The EDC segment of the data collection instrument was only displayed to respondents who indicated they had at least heard of Extension,

which resulted in a revised sample ($N = 338$) for primary data analysis in this study. Data analyses for the remaining research questions included independent samples t-tests (racial minority, metro/nonmetro, high/low income group).

Results

Overall, respondents felt their community was represented by Extension. Specifically, 121 (35.8%) respondents felt very represented, 131(38.8%) felt represented, 67 (19.8%) were neutral in feelings of representation, 16 (5.6%) felt unrepresented, and 3 (0.9%) felt very unrepresented. When we examined differences in respondents' feelings of community representation, we did not find significant differences based on whether respondents were from metro ($n = 274$; $M = 4.04$; $SD = .93$) or nonmetro ($n = 64$; $M = 4.02$; $SD = .83$) communities, $t(336) = .24$, $p = .81$. However, we did observe differences based on their income level, $t(336) = -2.73$, $p = .006$. Respondents in the lower income group of less than $49,999 annual income ($n = 91$; $M = 3.81$, $SD = .88$) felt less represented than respondents in the higher income group of >$49,999 annual income ($n = 247$; $M = 4.12$; $SD = .91$). Lastly, we observed significant differences in felt community representation based on whether respondents identified as white ($n = 281$; $M = 4.10$; $SD = .87$) or a racial minority ($n = 57$; $M = 3.74$; $SD = 1.06$), $t(336) = 2.4$, $p = .018$.

Implications and Recommendations

While our descriptive findings for research question one indicates the majority of respondents felt represented in Extension programming, we have to consider the demographic makeup of our respondents. Only those who indicated having ever heard of Extension participated in this section of the survey. Of those respondents, only 57 identified as non-White. This, along with the significant differences observed in feelings of community representation based on racial association, supports the need to expand the reach and content of Extension programs (Hlatshwayo et al., 2019; Kennedy et al., 2022; Narine et al., 2019). We also observed differences in feelings of representation based on respondents' financial status in that those in the lower income group felt less community representation than those in middle to upper group. This finding holds implications for programming in high-poverty communities in both urban and rural areas and calls for improvement upon current or outdated programming that may not be reaching the population of the state equally (Rutherford, 2021). We did not observe differences based on metro or nonmetro communities, which may warrant further investigation with a larger sample with enough statistical power to compare communities across all rural urban continuum codes rather than only the two groups. Future research in this area may also benefit from setting race quotas for underrepresented groups higher than the state population data to allow for better comparisons across groups. This could help determine a more precise account of the felt representation and inclusion among the different communities or groups affected by limitations in the reach of Tennessee Extension programming.

References

Baker, R., Brick, J. M., Bates, N. A., Battaglia, M., Couper, M. P., Dever, J. A., Gile, K. J., & Tourangeau, R. (2013). Summary report of the AAPOR task force on non-probability sampling. *Journal of Survey Statistics and Methodology, 1*(2), 90–143. https://doi.org/10.1093/jssam/smt008

Campbell, C., Papanek, A., & Diaz, J. M. (2023). Urban agriculture extension in Florida: Barriers, needs, and opportunities. *Journal of Human Sciences and Extension, 11*(1), 7. https://doi.org/10.55533/2325-5226.1394

Franz, N. (2015). Programming for the public good: Ensuring public value through the Cooperative Extension program development model. *Journal of Human Sciences and Extension, 2*(2), 3. https://doi.org/10.54718/YCFQ8890

Hlatshwayo, P., & Worth, S. H. (2019). Agricultural Extension: Criteria to determine its visibility and accountability in resource-poor communities. *Journal of Extension, 47*(2), 13–20. https://dx.doi.org/10.17159/2413-3221/2019/v47n2a499

Kalambokidis, L. (2011). Spreading the word about Extension's public value. *Journal of Extension, 49*(2), Article 2FEA1. https://doi.org/10.34068/joe.49.02.01

Kennedy, L. E., Strayer, T. E. III, & Balis, L. E. (2022). Addressing health inequities: An exploratory assessment of Extension educators' perceptions of program demand for diverse communities. *Family and Community Health, 45*(4), 228–237. https://doi.org/10.1097/FCH.0000000000000332

Narine, L. K., Harder, A., & Zelaya, P. (2019). A qualitative analysis of the challenges and threats facing Cooperative Extension at the county level. *Journal of Southern Agricultural Education, 69*. 1–13.

Maulu, S., Hasimuna, O. J., Mutale,B., Mphande, J., & Siankwilimba, E. (2021). Enhancing the role of rural agricultural extension programs in poverty alleviation: A review. *Cogent Food & Agriculture, 7*(1), 1886663. https://doi.org/10.1080/23311932.2021.1886663

Rutherford, M. (2021). *Diversity & Inclusion's theory of change (TOC).* Diversity Professional. https://diversityprofessional.com/diversity-inclusions-theory-of-change-toc/

Settle, Q., Brubaker, M., Hardman, A., & Downey, L. (2019). Mississippi residents' perceptions of Extension. *Journal of Extension, 57*(5). https://doi.org/10.34068/joe.57.05.14

Representation Matters: The 1890 Land Grant Institutions Role in School-Based Agricultural Education Supply and Demand

Mia Sullivan
The Pennsylvania State University Sullivan
mcs6395@psu.edu

Daniel Foster
The Pennsylvania State University

Amy Smith
University of Minnesota

Becki Lawver
Utah State University

Mike Spiess
California State University, Chico

Ashley Rogers
National Association of Agricultural Educators

Representation Matters: The 1890 Land Grant Institutions Role in School-Based Agricultural Education Supply and Demand

Introduction

In the United States, classrooms are grappling with the challenge of providing quality education, particularly in school-based agricultural education (SBAE), where there's a documented shortage of teachers (National Center for Education Statistics, 2023). This challenge is more pressing as the data collected by the American Association of Agricultural Education (AAAE) National Supply and Demand (NSD) project documents an insufficient supply of program completers in agricultural education to meet demand for open positions in SBAE (Smith, et al, 2022). The disparity between student and teacher racial composition highlights the need for a more diverse teaching workforce to foster inclusive and effective educational systems. Research suggests that minority students perform better academically when taught by teachers of similar racial or ethnic backgrounds (Lindsay & Blom, 2017; Egalite & Kisida, 2018).

According to the most recent AAAE NSD report (2022), state staff reported that 90% of SBAE teachers in the US (N=13,270) identified as white with 1.5 % (N=268) of SBAE teachers identified as Black/African American. Related, of the 854 SBAE teacher education program completers (PCs) in 2022, 14% were reported as non-white with 2.5% reporting as Black/African American. Land-grant institutions (LGIs) established under the Morrill Act of 1890 could play a crucial role in addressing this issue, as they were historically established to educate Black scholars and produce qualified educators (USDA, 2023). Of the 19 1890 LGIs, the most recent study shows 8 have reported agricultural teacher education programs, positioning them uniquely to produce qualified SBAE teachers of color (Sullivan, et al., 2019). This research aims to examine the contribution of 1890 LGIs to the production of non-white SBAE teachers by analyzing agricultural teacher education program completers' data from the AAAE NSD project from 2014 to 2023.

Conceptual or Framework

As an extension of the current AAAE NSD project, the conceptual framework of the NSD study, as described in the 2014-2016 Status of the US Supply and Demand for Teachers of Agricultural Education report, (Lawver, et al. 2016; Lindsay, et al., 2009) was utilized.

Methods

For this poster, we analyzed secondary data collected by the AAAE NSD project and available in an online national dataset (Foster, et al., 2024). While AAAE NSD data has been collected since 1965, to increase data quality assurance, this study reviewed data collected from 2014 to present.

Results to Date

Figure 1 presents the program completer information for the six reporting 1890 LGIs reported in the 2014-2023 AAAE NSD data set collected by the current project team. The state reported data shows non-white program completers (NWPC) each year from the 2014-2023 reporting range starting with 88% in 2014, none in 2015, 12% in 2016, 43% in 2017, 8% in 2018 and 2019, 24% in 2020, 25% in 2021, 63% in 2022, and 17% in 2023. During the reporting range, the total number of program completers is 36, whereas the total NWPC is 117.

Figure 1

Reported Agricultural Teacher Education Program Completers from 1890 Land Grant Institutions, 2014 to present.

Year of Reporting	Number of Institutions Reporting	Total Program Completers	Non-White Program Completers (NWPC)	% of Total NWPC Completers that Year
2014	6	16	14	88%
2015	5	14	0	0%
2016	8	17	2	12%
2017	5	7	3	43%
2018	5	12	1	8%
2019	5	12	4	33%
2020	6	21	5	24%
2021	5	4	1	25%
2022	4	8	5	63%
2023	4	6	1	17%

Conclusions & Implications

This review of data collected from the AAAE NSD project generates more questions than answers. It presents an interesting discussion topic for our national meeting to address a pressing concern of preparing a teacher workforce prepared to advance an inclusive, equitable, accessible and effective educational system reflective of our multicultural society we live in to provide opportunity for all students to achieve appropriate learning outcomes (Lindsay & Blom, 2017; Egalite & Kisida, 2018). If students of color and other diverse backgrounds are to pursue a career in agriculture, especially agricultural education, positive interactions with agriculture teachers that represent them could increase their interest. Future research should be conducted to explore the challenges that the 1890 LGIs have in recruiting, retaining, and producing minority SBAE teachers. To address a limitation of this research of only having data reported for 6 of the 8 1890 LGIs with agricultural teacher education programs from 2014-2023, research methods that allow for a richer description of the phenomena with key informants from all 19 1890 LGIs are recommended. We recommend that further inquiry into which 1890 LGIs currently have agricultural teacher education programs available also be conducted. We acknowledge that the 1890 LGIs are only one of many potential avenues for pre-service agriculture teachers of color to go through. The rich history of the 1890s has of providing the Black community with teaching professionals that are representative of their communities is an opportunity for great influence today. Similar work should be done in describing programs and a resources comparison of the Primarily White Institutions (PWI), Hispanic Serving Institutions (HSI) and Tribal Colleges.

References

Egalite, A., & Kisida, B. (2018). The effects of teacher match on students' academic perceptions and attitudes. *Educational Evaluation and Policy Analysis, 40*(1), 59–81. https://doi.org/10.3102/0162373717714056

Foster, D. D., Smith, A. R., Lawver, R. G., & Spiess, M., (2024). *National Agricultural Education Supply and Demand Project [data set]*. American Association for Agricultural Education. Retrieved from: http://aaae.agedweb.org/nsd.

Lawver, R. G., Foster, D. D, & Smith, A. R. (2018). *Status of the U. S. Supply and Demand for Teachers of Agricultural Education, 2014-2016.* http://aaaeonline.org/Teacher-Supplyand-Demand

Lindsay, J. J., Wan, Y., & Gossin-Wilson, W. (2009). *Methodologies used by Midwest Region states for studying teacher supply and demand* (Issues & Answers Report, REL 2008–No. 080). 47 Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Midwest. http://www.eric.ed.gov/?id=ED506631

National Center for Education Statistics. (2023). *Characteristics of Traditional Public, Public Charter, and Private School Teachers*. U.S. Department of Education, Institute of Education Sciences. https://nces.ed.gov/fastfacts/display.asp?id=28

Smith, A. R., Foster, D. D., & Lawver, R. G. (2023). *National Agricultural Education Supply and Demand Study, 2022 Executive Summary*. http://aaaeonline.org/Resources/Documents/NSD2022Summary.pdf

Sullivan, M., Ricketts, J. C., Faulkner, P. E., & Hall, J. (2019). 1890 Land-grant institutions and school-based agricultural education preparation: Past, present, and future insights from institutional opinion leaders. *NACTA Journal*, *63*(2), 258–265. https://www.jstor.org/stable/26769647

United States Census Bureau. (2020). *United States quick facts: race and ethnicity. U.S. Department of Commerce*. https://www.census.gov/quickfacts/fact/table/US/PST045222

United States Department of Agriculture: National Institute of Food and Agriculture. (2023). *1890 Land-grant institutions program*. https://www.nifa.usda.gov/grants/about-programs/program-operational-areas/1890-land-grant-institutions-programs

Retrospective Reflection on School-based Agricultural Education Early Field Experience: Perceptions of Teacher Aspirants

Kayla N. Marsh
Oklahoma State University
458 Agricultural Hall
Stillwater, Ok 74078
(405)744-8036
Kayla.marsh@okstate.edu

Dr. Jon W. Ramsey
Oklahoma State University
466 Agricultural Hall
Stillwater, Ok 74078
(405)744-4260
Jon.ramsey@okstate.edu

Introduction/Theoretical Framework

School-based agricultural education (SBAE) teacher preparation programs are charged with providing teacher candidates with content knowledge and instructional delivery skills needed to facilitate the three-component model of agricultural education (Franklin & Molina, 2012). Students who aspire to become school-based agriculture education instructors come to teacher preparation programs with their own vision of the job. A vision that generally reflects their experience in agricultural education and youth development organizations like FFA or 4-H. Pre-service teachers use their experiences to "selectively shape and delimit expectations, perceptions, cognition, and feelings. Consequently, they have a strong tendency to reject ideas that fail to fit their preconceptions, labeling those ideas as unworthy of consideration" (Mezirow, 1991, p. 5). Thus, creating a challenge for teacher educators intent on teaching best practices related to the implementation of the three-component model of agricultural education.

Early field experiences (EFE) in teacher preparation provide teacher candidates the opportunity to take an active role in developing their knowledge, skills, and attitudes regarding teaching and advising prior to the student teaching internship (Retallick, 2005; Retallick & Miller, 2007). In an effort to transform pre-service teachers' frame of reference as related to SBAE, the course implemented structured critical reflection on students' assumptions, observations, and experiences during the semester. Using Mezirow's subject reframing approach, faculty utilized a retrospective pre- and post-reflection exercise to help students explore their frame of reference and assumptions related to SBAE teaching effectiveness (Mezirow, 1991).

Purpose/Research Question

The study aimed to evaluate the impact of agricultural education teacher aspirants' self-perceived change in school-based agricultural education (SBAE) teaching effectiveness.

1. Was there a change in teacher aspirants' now-and-then assessment scores from the effective teaching instrument?
2. What change was found in teacher aspirants' now-and-then assessment scores from the effective teaching instrument based on personal and pre-profession characteristics?

Methods/Procedures

The now-and-then instrument was chosen to address the self-perceived levels of SBAE teaching effectiveness and measure the change in SBAE teaching effectiveness scores making it more accurate than a traditional pre-post assessment (Lam & Bengo, 2003; Little et al., 2020; Rohs & Langone, 1997). The study population was limited to students enrolled in [Course] (N=41), with 26 (63%) completing the instrument in Qualtrics. The instrument used a 4-point Likert-type scale. Data were converted to an SBAE teaching effectiveness score for analysis with a minimal potential score of 26 and a maximum potential score of 104 (McDonald, 1997). The data set met the assumptions of normality and homogeneity of variance. To address research question two, a paired samples t-test was conducted to compare teacher aspirants' now-and-then scores (Field, 2018).

Results/Findings

A paired t-tested was used to compare the now-and-then score means *(n*=26*)* for ETI to determine if there was a self-reported change in SBAE teacher aspirants' effectiveness at the conclusion of the course (Field, 2018). The Then ETI score had a lower overall effectiveness score (M = 83.96, SE = 1.94, effect size) as compared to the Now ETI score (M = 93.80, SE = 1.66), resulting in a statistically significant paired t-test (t (25) = 6.531, p > .01). The Pearson's correlation coefficient represents the relationship and effect size for our pair t-test as large with a positive trend (r = .672).

Research question 2 sought to determine which personal and pre-professional characteristics have had an impact on SBAE teacher aspirants' self-reported experiences based on participants' change in ETI scores from the now-and-then assessment. A factorial design ANOVA was used to investigate age (F(23,3) = .942, p = .453) and intent to teach after graduation (F(24,2) = 1.107, p = .365) were both found to be statistically insignificant, but years enrolled in agricultural education (F(23,3) = 5.304, p = .017) which was statistically significantly different than other characteristics. Further analysis using a pairwise comparison of the years of enrollment in agricultural education showed that SBAE teacher aspirants who were previously enrolled in six years of agricultural education courses had a statistically significant difference with a change in mean scores of 28.00.

Conclusions/ Discussion/ Implications

SBAE teacher aspirants all had a positive self-reported change from Then, the start of the course, to Now, the conclusion of the course. A practical and statistical significance were found in then-and-now paired t-test results, agreeing with previous research, which suggests that early field experiences (EFE) and reflections had a positive influence on SBAE teacher aspirants' effective SBAE teaching preparedness (Mezirow, 1991; Retallick, 2005; Retallick & Miller, 2007). The comparison of personal and pre-professional characteristics to self-reported change in then-and-now scores found that years of enrollment in agricultural education were significant. Aligning with existing research that suggests previous "Learning to Do" experiences have framed SBAE career and program expectations (Mezirow, 1991). The early field experiences that are part of the [Course] were effective in providing the career-specific experiences needs to help participants view SBAE teacher effectiveness from a new perspective as represented by participants with six years of agricultural education enrollment self-reporting the greatest increase in ETI scores (Mezirow, 1991; Retallick, 2005; Retallick & Miller, 2007).

Regarding recommendations, SBAE researchers should continue to collect qualitative and quantitative data featuring early field experiences and their impact on the three components of School-based agricultural education. In terms of practice, the introduction of structured reflection in clinical teaching courses is encouraged.

Reference

Field, A. (2018). Discovering Statistics Using IBM SPSS Statistics (5th ed.). SAGE.

Franklin, E. A. & Molina, Q. F. (2012). Teacher induction programs in agricultural education: description of the role of AAAE higher education teacher preparation programs. *Journal of Agricultural Education, 53*(1). 123-135. http://doi.org/10.5032/jae.2012.01123

Lam, T. & Bengo, P. (2003). A comparison of three retrospective self-reporting methods of measuring change in instructional practice. *American Journal of Evaluation*, *24*(1), 65–80. https://doi.org/10.1016/S1098-2140(02)00273-4

Little, T. D., Chang, R., Gorrall, B. K., Waggenspack, L., Fukuda, E., Allen, P. J., & Noam, G. G. (2020). The retrospective pretest–posttest design redux: On its validity as an alternative to traditional pretest–posttest measurement. *International Journal of Behavioral Development, 44*(2), 175–183. https://doi.org/10.1177/0165025419877973

McDonald, R. P. (1997). Haldane's lungs: A case study in path analysis. *Multivariate Behavioral Research, 32*(1), 1–38. https://doi.org/10.1207/s15327906mbr3201_1

Mezirow, J. (1991). *Transformative dimensions of adult learning*. Jossey-Bass.

Retallick, M. S. (2005). Early field experiences in agricultural teacher education. Retrospective Theses and Dissertations. 17206. https://lib.dr.iastate.edu/rtd/17206

Retallick, M. S., & Miller, G. (2007). Early field experience documents in agricultural education. *Journal of Agricultural Education*, *48*(4), 20–31. https://doi.org/10.5032/jae.2007.04020.

Rohs, F. R. & Langone, C. A. (1997). Increased accuracy in measuring leadership impacts. *Journal of Leadership & Organizational Studies*, *4*(1), 150–158. https://doi.org/10.1177/107179199700400113

Safety! What is it good for?

Introduction/need for research

School-Based Agricultural Education (SBAE) programs often engage in topics of instruction where safety is of the utmost concern (Dyer & Andreasen, 1999; Langley et al., 2018; Saucier et al., 2014). Within these programs, a focus on active learning often places an increased focus on the proper safe engagement of students with learning materials (Clarke, 2010). While there have been numerous studies that focus on the identification and discussion of safety in agricultural education ([Blinded]; Rudolhpi & Retallick, 2015; Ullrich et al., 2002), the lack of a specific agreed upon SBAE safety culture led to the formation of a pilot study to address such gap. This pilot study sets out to determine the score of differentiation among SBAE programs as it relates to their culture of safety. Echoing themes pulled from related secondary safety practices and post-secondary safety climate studies (Chumbley et al., 2018, 2019; Langley et al., 2018; Ullrich et al., 2002), this study aims to begin the discussion to identify the safety climate of SBAE agricultural mechanics programs and allow for the implementation of best practice development for SBAE instructors and their educators.

Conceptual or theoretical framework

The theory of planned behavior (Ajzen, 1991) was selected to be used as the conceptual frame for this study. Ajzen established this theory by discussing the interactions of an one's attitude toward a behavior, subjective norms, and perceived behavioral control can lead to their intention affecting their subsequent behavior. In the context of this study, SBAE advisors' attitude toward safety climate factors is being examined in an attempt to establish the connection of their intention to establish safety culture in their programs as is should enlighten their subsequent behavior to follow through with the implementation of that culture.

Methodology

A random sampling of SBAE instructors, selected by chapter across four states, were requested to participate in a culture of safety pilot study. Of the 793 chapters selected to participate in the pilot, 125 advisors from 116 chapters responded resulting in a 14.63% response rate. Of these advisors, 90 indicated that they were either currently or had formerly taught agricultural mechanic classes and formed the participant pool for the pilot study. The participants were asked a series of questions regarding safety concerns, practices, and perceptions in SBAE programs. Among the questions participants were asked to rank motivating factors that lead to the promotion of student safety in the SBAE classroom/laboratory (Have students be best prepared for the workforce; Keep aligned with district/state/federal policy; Keep campuses safe; Keep classroom/laboratory safe; Keep equipment safe; Keep students safe; Preserve materials; Promote student awareness of safety). These factors were reviewed and agreed upon by a panel of university experts that focus their research on agricultural mechanics topics.

Results/findings

Participants for this study were in between their first year and 41st year of teaching with an average of 13.13 years (SD = 10.04) of experience. The programs that were represented were

primarily one teacher departments; however, the average department size was 2.67 (*SD* = 1.89) and ranged from one to thirteen. The participants were primarily male (*f* = 55, 61.80%), had at least some level of education post-bachelors (*f* = 67, 75.28%), and taught in a rural (*f* = 36, 40.45%) or small urban population (*f* = 32, 35.96%) location. Reviewing the data, the highest-ranking motivating factor for the promotion of safety in SBAE programs was "Keep students safe" (*M* = 1.31, *SD* = 1.06) where 80 participants (88.89%) ranked it as the number one factor. The next two factors, "Keep classroom/laboratory safe" and "Promote student awareness of safety" both averaged a 3.29 ranking (*SD* = 1.44; 1.51) and was nearly a full rank and a half above "Have students be best prepared for the workforce" (*M* = 4.61, *SD* = 1.77). Three factors, which were "Keep campuses safe" (*M* = 5.16, *SD* = 1.65), "Keep equipment safe" (*M* = 5.27, *SD* = 1.52), and "Keep aligned with district/state/federal policy" (*M* = 5.72, *SD* = 1.92), averaged their rank between 5 and 6. "Preserve materials" (*M* = 7.36, *SD* = 0.95) rounded out the factors where 53 participants (58.89%) rank it as the lowest of the factors.

Conclusions

A key theme of student focused instruction arose from this pilot study, as three of the top four factors related directly students. The promotion of safety, within this group, tended to take the overall influence away from the SBAE program or district and placed it more squarely on the individual student. There is an argument that "Keep classroom/laboratory safe" could have been interpreted with an individual student focus mindset which would help to solidify the notion that SBAE instructors in agricultural mechanics courses place the influence on individual student safety over all other factors. While the next grouping of factors, "Keep campuses safe," "Keep equipment safe," and "Keep aligned with district/state/federal policy," all focus on administration or campus safety, they still had a portion of the participants ranking each in the top three. The only factor that seemed to generally have the lowest impact was "Preserving materials," which would further indicate that there is a clear distinction between individual and object where student wins out in terms of importance.

Implications/recommendations/impact

This pilot shows that there may be a larger theme in the foundation of safety culture within SBAE that focuses on student understanding, perception, and practice. If the influence that has been identified is true, further exploration of the overall current stance of the SBAE safety culture should be pursued. With the factor "Have students be best prepared for the workforce" ranking in the top half and nearly 30% of the respondents indicating it is in their top three factors, discussions surrounding best practices for SBAE instruction should also be approached. With countless SBAE instructors solely focusing on the content that needs to be taught, which should be a key component to any program, there tends to be the fall off of the emphasis of practical application post-graduation. With the clear student-first focus across the factors, safety curriculum should be re-evaluated to determine where potential shortcomings are alongside the implementation of best practices professional development for in-service SBAE instructors. While there may be multiple challenges ahead, beginning the discussion in defining SBAE's culture of safety and identifying where SBAE programs align with that definition should be a step that can be easily agreed upon.

References

[Blinded]

Ajzen, I. (1991). The theory of planned behavior. In *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91).90020-T

Chumbley, S. B., Hainline, M. S., & Haynes, J. C. (2018). Agricultural mechanics lab safety practices in south Texas. *Journal of Agricultural Education*, *59*(3), 309-323. https://doi.org/10.5032/jae.2018.03309

Chumbley, S. B., Hainline, M. S., & Wells, T. (2019). Examining university-level agricultural students' safety climate attitudes in the agricultural mechanics laboratory. *Journal of Agricultural Education*, *60*(2), 54-68. https://doi.org/10.5032/jae.2019.02054

Clarke, S. (2010). An integrative model of safety climate: Linking psychological climate and work attitudes to individual safety outcomes using meta-analysis. *Journal of Occupational and Organizational Psychology*, *83*(3), 553-578. https://doi.org/10.1348/096317909X452122

Dyer, J. E., & Andreasen, R. J. (1999). Safety issues in agricultural education laboratories: A synthesis of research. *Journal of Agricultural Education*, *40*(2), 46-54. https://doi.org/10.5032/jae.1999.02046

Langley, G. C., Tummons, J. D., Kitchel, T. (2018). Influences on the perceived comfort and training level of personal protective equipment in the Missouri high school agricultural mechanics laboratory. *Journal of Agricultural Education*, *59*(4), 20-35. https://doi.org/10.5032/jae.2018.04020

Rudolphi, J., & Retallick, M. S. (2015). Agricultural safety and health education: Practices, attitudes, and needs of Iowa agricultural educators. *NACTA Journal*, *59*(3), 4-9. https://www.jstor.org/stable/nactajournal.59.3.174

Saucier, P. R., Vincent, S. K., & Anderson, R. G. (2014). Laboratory safety needs of Kentucky school based agricultural mechanics teachers. *Journal of Agricultural Education*, *55*(2), 184-200. https://doi.org/10.5032/jae.2014.02184

Ullrich, D. R., Hubert, D. J., Murphy, T. H., & Bagley, C. P. (2002). An analysis of agricultural safety and health education practices among first year agriculture teachers in Texas. *NACTA Journal*, *46*(4), 39-45. https://www.jstor.org/stable/43765703

Scholarly Metrics by Rank in the Agricultural Education Discipline

Marcus Martin, Graduate Assistant, University of Arkansas
1120 W. Maple
Fayetteville, AR 72701
emm016@uark.edu
(479) 575-2035

Christopher M. Estepp, Associate Professor, University of Arkansas
1120 W. Maple
Fayetteville, AR 72701
estepp@uark.edu
(479) 575-2035

Donald M. Johnson, University Professor, University of Arkansas
1120 W. Maple
Fayetteville, AR 72701
dmjohnso@uark.edu
(479) 575-2035

Will Doss, Assistant Professor, University of Arkansas
1120 W. Maple
Fayetteville, AR 72701
wd009@uark.edu
(479) 575-2035

Scholarly Metrics by Rank in the Agricultural Education Discipline

While research productivity and impact have been standard measurements in the hiring, promotion, and tenure of faculty members (Kotrlik et al., 2002; Moher et al., 2018), Schimannski and Alperin (2018) reported that over time, the importance of research in making personnel decisions has increased. Furthermore, research productivity has served as a valuable way to determine the academic prestige of researchers, institutions, and disciplines (Birkenholz & Simonsen, 2011; Burris, 2004). Historically, research productivity was assessed by counting the number of publications by a researcher (Kotrlik et al., 2002); however, many institutions now emphasize impact factor metrics such as h-index and i10 index (Moher et al., 2018). The h-index measures the quality and quantity of research output, defined as "the highest number of publications of a scientist that received h or more citations" (Schreiber, 2008). The i10 index is a Google Scholar-specific metric measuring the number of articles published and cited at least 10 times. These factors are a way of measuring research output; however, interpreting these metrics can be difficult, especially without a baseline for comparison. As such, the purpose of this study was to describe research productivity within the discipline of Agricultural Education by h-index, i10 index, and total citations among the Assistant, Associate, and Professor ranks. Findings from this study have the potential to provide AAAE members with data to assess their own research productivity within the discipline.

Theoretical Framework

The theoretical framework underpinning this study was Vroom's (1964) expectancy theory. According to this theory, there are three influences on motivation: valence, expectancy, and instrumentality; Porter and Lawler (1968) added role perception as a fourth element. Expectancy is a person's judgement that increased effort will result in increased performance; instrumentality is the belief the increased performance will result in the desired outcome; valence is the importance an individual placed on the desired outcome. Lastly, role perception describes the actions one must take to achieve desired outcomes. In the context of this study, the desired outcome is advancement in rank and the comparative data provides the necessary information on role perception across academic ranks.

Methodology

To collect data for this descriptive study, we first identified all AAAE members listed on the online directory with public Google Scholar profiles. Google Scholar profiles were found for 48 Assistant, 42 Associate, and 38 Professors ($N = 128$). Professorial ranks were determined by looking up AAAE members on university websites. Individual member metrics including h-index, i10 index, and total citations were collected from each member's Google Scholar profile and entered into a spreadsheet. Years since first publication was determined by counting years since the individual's dissertation publication to present. Individual citations per year were calculated using total career citations and years since first publication. To minimize variations in cited works, data were collected over two days on October 14 – 15, 2023. For each professorial rank metrics were described by mean, standard deviation, and confidence intervals.

Findings

Table 1 shows the mean, standard deviation, and 95% confidence interval for each scholarly metric by rank. There were distinct, well-defined demarcations and a considerable increase in

research productivity across the ranks. Of note, the 95% confidence intervals for h-index and total citations did not overlap, indicating significant ($p < .05$) differences between ranks. However, there was an overlap with the i10-index and citations per year between assistant to associate and associate to professor.

Table 1

Publication Metrics by Professorial Rank

	Assistant (n = 48)		Associate (n = 42)		Professor (n = 38)	
	M	95% CI	*M*	95% CI	*M*	95% CI
i10 Index	4.23 (6.50)	[2.34, 6.11]	22.12 (54.93)	[5.00 39.24]	34.29 (21.14)	[27.34, 41.24]
h-Index	5.69 (5.02)	[4.23, 7.15]	10.83 (3.99)	[9.59, 12.07]	18.63 (6.40)	[16.53, 20.74]
Total Citations	193.73 (360.37)	[89.09, 298.37]	628.48 (630.33)	[432.05, 824.91]	1,594.97 (1,151.18)	[1,216.59, 1,973.36]
Years Since First Pub.	5.67 (3.08)	[4.77, 6.56]	13.24 (5.97)	[11.36, 15.13]	23.47 (8.13)	[20.81, 26.15]
Citations per Year	28.99 (51.75)	[13.62, 44.37]	51.69 (56.72)	[33.78, 69.59]	72.65 (57.01)	[53.91, 91.39]

Note. Standard deviations are presented in parentheses.

Conclusions/Implications/Recommendations

Every profession has a system to evaluate members, and in higher education, research productivity will continue to play an important role in assessing Agricultural Education faculty members (Birkenholz & Simonsen, 2011). The aim of this study was not to define a "good" researcher but rather to give the discipline information regarding the status of scholarly research metrics. These results provide a baseline for comparison by rank within the discipline. The results of this study should provide members of the profession with clarity concerning expectations informing them of role perceptions necessary to achieve advancement in the profession (Porter & Lawler, 1968; Vroom, 1964).

In discussions of hiring, promotion, and tenure, this study can provide a baseline for personnel decisions and evaluation for awards. Further research providing more robust insight into factors related to scholarly metrics would be beneficial. Such research should consider factors such as Carnegie classification, size of faculty, and percentage research appointments, among others.

References

Birkenholz, R.J., & Simonsen, J.C. (2011). Characteristics of distinguished programs of agricultural education. *Journal of Agricultural Education*, *52*(3), 16–26. https://doi.org/10.5032/jae.2011.03016

Bonn, A., & Bouter, L. (2023). Research assessments should recognize responsible research practices. Narrative review of a lively debate and promising developments. In E. Valdés & J.A. Lecaros (Eds.), *Handbook of Bioethical Decisions, Volume II* (pp. 441-472). Springer, Cham. https://doi.org/10.1007/978-3-031-29455-6_27

Burris, V. (2004). The academic caste system: Prestige hierarchies in PhD exchange networks. *American Sociological Review, 69*(2), 239-264. https://doi.org/10.1177/000312240406900205

Kotrlik, J. W., Bartlett, J. E., Higgins, C. C., & Williams, H. A. (2002). Factors associated with research productivity of agricultural education faculty. *Journal of Agricultural Education*, *43*(3), 1–10. https://doi.org/10.5032/jae.2002.03001

Long, J. S., Allison, P. D., & McGinnis, R. (1979). Entrance into the academic career. *American Sociological Review, 44*(5), 816-830.

Moher, D., Naudet, F., Cristea, I.A., Miedema, F., Ioannidis, J.P.A., & Goodman, S.N. (2018). Assessing scientists for hiring, promotion, and tenure. *PLOS Biology, 16*(3), e2004089. https://doi.org/10.1371/journal.pbio.2004089

Porter, L. W., & Lawler, E. E. (1968). *Managerial attitudes and performance.* Irwin – Dorsey.

Schimanski, L.A., & Alperin, J.P. (2018). The evaluation of scholarship in academic promotion and tenure processes: Past, present, and future. *F1000Research*, *7*, 1605. https://doi.org/10.12688/f1000research.16493.1

Schreiber, M. (2008). An empirical investigation of the g-index for 26 physicists in comparison with the h-index, the A-index, and the R-index. *Journal of the American Society for Information Science and Technology, 59*(9), 1513-1522. https://doi.org/10.1002/asi.20856

Vroom, V. H. (1964). *Work and motivation.* Wiley and Sons.

Seeding the Future: Cultivating a Research Agenda in Elementary Agricultural Education

Jessica Howard Boone
Department of Agricultural Leadership, Education, and Communication
University of Georgia
Jess.boone@uga.edu

Jason Peake
Department of Agricultural Leadership, Education, and Communication
University of Georgia
Jpeake@uga.edu

Seeding the Future: Cultivating a Research Agenda in Elementary Agricultural Education

Introduction

With the recent formalization of Elementary Agricultural Education (EAE) in several states across the southeast (ARK House Bill 1336, 2018; GA House Bill 1303, 2022; TX Senate Bill 801, 2021) and emerging programs in Mississippi, Florida, and Missouri a need for research is critical for the development of sustainable and effective programs. In Georgia, EAE has been widely accepted since the formalization (House Bill 1303, 2022) of the program for schools across the state. With the adoption of recent programs in elementary schools and the necessary training of teachers in content, many questions are left unanswered. While some areas of EAE have been studied, i.e. school gardens, farm to school, etc, there is no established research agenda for EAE.

With the development of EAE there is a danger in selecting a research agenda for EAE simply through the lens of an agricultural education expert, instead imploring ideas from a variety of experts across disciplines provides a systematic approach to developing EAE.

In 2023, the University of Georgia established the Center for Elementary Agricultural Education (CEAE) to meet research needs and gaps in the literature. The center's creation arose from the training needs of existing EAE teachers, undergraduates pursuing a minor and endorsement in EAE, and elementary schools across the state that require direction related to EAE. The CEAE's purpose is to establish a group of transdisciplinary faculty members from a variety of units, departments, and colleges to create a collaborative team that conducts research. The core members of the CEAE are composed of specialists in Elementary Education Psychology, Educational Theory and Practice, Food and Nutrition, Elementary Education Science, Technology, Engineering, and Mathematics (STEM) integration, 4-H Youth Leadership, and Community School Gardens. The primary goals of UGA's CEAE are: (1) To pursue grant funding to support research in EAE and (2) Design, conduct, and disseminate research that works to inform decision-making and promote broader impacts of elementary agricultural education. The purpose of this research is to systematically determine a research agenda EAE.

Framework

The theoretical framework for this study is Durkheim's consensus theory (1892). Through the implementation of Durkheim's (1892) idea of collective consciousness, experts in the CEAE participate in collective thinking through development of a research agenda.

Methodology

The researchers conducted a modified Delphi study to determine an EAE research agenda. By utilizing a modified Delphi, the belief is that contributors will provide honest responses which leads to a systematic path to collective thinking and goals.

The initial survey was dispersed to experts via Qualtrics with the goal of collecting open-ended responses. Results were combined according to similarities and trends that arose. The second round consisted of a four-point Likert scale; inappropriate (1), neutral (2), appropriate (3), and very appropriate (4). Before dissemination of surveys, a minimum score of 3.5 was set *a*

priori for inclusion in proceeding rounds. Due to all topics, with the exception of one, meeting the minimum score of 3.5 in round two the Delphi did not proceed with additional rounds.

Findings

Data collected in the first round about expert's individual ideas of most appropriate research topics for the CEAE were combined or omitted due to replications down to 21 categories to be sent out to experts for ranking through a Likert scale. After round two, the topic of cognitive processing was removed due to not meeting the mean score of 3.5. Due to space limitations the top 10 of 20 accepted research topics by experts are listed in Table 1.

Table 1

CEAE Research Agenda Topics After Round 2

No.	**Topic**	**M**	**SD**
1	Goals of elementary agricultural education	4.86	0.35
2	Determining appropriate interdisciplinary avenues (e.g., nutrition education, childhood wellbeing)	4.86	0.35
3	Developing a model for elementary agricultural education	4.86	0.35
4	Developing programs for training teachers in elementary agricultural education focusing on specific issues not addressed in typical teacher training	4.71	0.45
5	Best practices for experiential learning in elementary agricultural education	4.71	0.45
6	Teacher training in elementary agriculture education	4.57	0.73
7	What is developmentally appropriate agriculture for elementary aged students (curriculum development)	4.57	0.49
8	Developing scalable lessons for elementary agricultural education	4.57	0.49
9	Integration of STEM and agriculture	4.43	0.49
10	Teacher efficacy in elementary agricultural education	4.43	0.73

Conclusions

A priority area of the National Research Agenda for the American Association for Agricultural Education is "advancing public knowledge of AFNR (Agriculture, Food, and Natural Resources) systems" which includes "examining curriculum design, development, delivery, and evaluation in elementary…programs" (AAAE, 2023). This research guides the direction of the UGA's CEAE through the systematic process of a Delphi study. The three highest ranked topics all obtained a mean score of 4.86, goals of elementary agricultural education, determining appropriate interdisciplinary avenues (e.g., nutrition education, childhood wellbeing), and developing a model for school-based elementary agricultural education.

Implications & Recommendations

The results of the study reveal that experts believe there is much research to be conducted in EAE. Future CEAE grant proposals and research endeavors will be guided by the findings. As new knowledge about EAE emerges, it is necessary to revisit this research agenda to incorporate emerging issues. Furthermore, the CEAE plans to collaborate with other states to conduct multi-state studies when feasible, thereby preventing redundant research efforts and providing diverse lenses of knowledge. It is recommended that other studies be conducted to

support the research needed. To foster nationwide acceptance of EAE, research is essential to determine the goals of EAE to create an effective and sustainable model for programs.

References

American Association for Agricultural Education (2023). AAAE research values. https://aaaeonline.org/resources/Documents/FOR%20ONLINE%20(8.5%20x%2011)%20-%20AAAE%20Research%20Values.pdf

Arkansas House Bill 1336 (2023). https://www.arkleg.state.ar.us/Bills/Detail?id=hb1336&ddBienniumSession=2023%2F2023R

Dalkey, N., & Helmer, O. (1963). An experimental application of the delphi method to the use of experts. *Management Science, 9*(3), 458–467. http://www.jstor.org/stable/2627117

Durkheim, E. (1892). *The division of labor in society*. Free Pr.

Georgia House Bill 1303 (2022). https://www.legis.ga.gov/api/legislation/document/20212022/211744

Okoli, C., & Pawlowski, S. (2004). The delphi method as a research tool: An example, design considerations and applications. *Information & Management, 42*(1), 15-29. https://doi.org/10.1016/j.im.2003.11.002

Texas Senate Bill 801 (2021). https://capitol.texas.gov/tlodocs/87R/analysis/html/SB00801H.htm#:~:text=801%20seeks%20to%20expand%20the,education%2C%20to%20develop%20an%20agriculture

Research Poster

Seeds of Professionalism: Unearthing Leadership Perspectives in Agricultural Education

Daniela Rodriguez-Ruiz, Undergraduate Student
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
drodr165@calpoly.edu

Ann De Lay, Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
ekthomps@calpoly.edu

Erin Gorter, Assistant Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
ekthomps@calpoly.edu

Nicole Ray, Assistant Professor
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
nray04@calpoly.edu

Lauren Giannone, Teacher in Residence
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
lggianno@calpoly.edu

Isaac Lopez, Undergraduate Student
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
Ilopez51@calpoly.edu

Ashlee Crabtree, Undergraduate Student
Agricultural Education & Communication
California Polytechnic State University, San Luis Obispo
amcrabtr@calpoly.edu

Seeds of Professionalism: Unearthing Leadership Perspectives in Agricultural Education

Introduction/Need for Research

Good teachers are those who embody professionalism and professionalism influences good teaching (Coleman et al., 2021; Eck et al., 2019). In California, professionalism has been identified as an item of importance for school-based agricultural education (SBAE) teachers (M. Patton, personal communication, May 6, 2023). SBAE is built on three foundational components (classroom, leadership, and Supervised Agricultural Experience (SAE)) and these components play specific roles in SBAE programs. As such, it is crucial to investigate each of these rings separately. This research explores California's SBAE teachers' perspectives of professionalism within the context of leadership.

The United States Department of Labor (n.d.) defines professionalism as more than what is visible and includes a combination of competencies and skills. Within SBAE, there is limited literature citing what professionalism is and professionalism is not addressed as a specific topic of interest after 1986 (Blezek, 1986). Literature which references professionalism, identifies it as a characteristic necessary for being effective, but does not clarify what professionalism looks like (Coleman et al., 2021; Radhakrishna & Xu, 1997; Roberts & Dyer, 2004; Shoulders & Smith, 2018). Exploring perceptions of SBAE teachers and how they view their own professionalism, in the context of leadership development, may provide clues as to what can be done to support the development of professionalism in the leadership circle of SBAE.

Conceptual/Theoretical Framework

Participants in this study were described as *professional* by California agricultural education leaders. However, how they view themselves as professionals within the context of the leadership circle of SBAE is unclear. Social Cognitive Theory (SCT) provides a frame to explore the personal, behavioral, and environmental factors continuously interacting and informing teachers of SBAE in their programs (Bandura, 1991, 2001). Using SCT as a framework for this study acknowledges the idea that learning occurs via the observation of others' behaviors (Bandura, 1986) and those behaviors are enacted via the actions of others (Bandura, 2001).

Methodology

Wang and Burris (1997) identified photovoice as an active participant research strategy used to document concerns, promote dialogue, and reach broader policy decision makers. This qualitative methodology guided the exploration of professionalism in the leadership circle of SBAE. Potential participants (n = 60) were identified by California agricultural education leaders as those who exemplified professionalism in SBAE. Purposive sampling, accounting for representation of age, gender, and geographic location (Richie & Lewis, 2003), was used to generate 30 participant invites; 6 invitees opted to participate. Participants were asked to upload three photos they felt represented teacher professionalism in the leadership development circle of SBAE, to a Canvas course shell. Reflections, no longer than 250 words, were solicited to provide thick description of the photos. Five participants submitted a total of 15 photos and reflections. Participants were assigned pseudonyms to protect confidentiality. Researchers analyzed photos and reflections for thematic values and attitudes, to construct participant beliefs concerning professionalism in the leadership component of SBAE (Saldaña, 2016). The combined use of reflections and photos contributed to the trustworthiness of the themes (Saldaña, 2016).

Results/Findings

Seven values of interest surfaced concerning perceived professionalism in the leadership component of SBAE. Values and sample quotations are provided in Table 1. Supporting photographs will be provided with the poster.

Table 1

Perceived Professional Values of California SBAE Teachers Concerning Leadership

Value	Sample Quote
Modeling	"Our students are watching us." (Danielle)
Dress	"Professionalism is making sure your students are dressed appropriately and that you are dressed appropriately at conferences." (Suzanne)
Public Perception	"The advisors were given a hat from the sponsor and to show our appreciation. I decided to wear their hat for our team photo." (Patrick)
Opportunities	"…were excited about the new experience, what they had learned, and felt fancy attending the dinner at the conclusion of the event." (Kristin)
Sportsmanship	"…never speak poorly about your students, other teams, or other teachers." (Danielle)
Respect	"A strong sense of unity instills a shared commitment to organizational goals, fostering a culture where members support each other..." (Janet)
Relationship	"We are helping students to interact…helping them learn boundaries and building relationships with trusted adults." (Kristin)

Conclusions

Within the leadership facet of Agricultural Education, SBAE teachers saw themselves as professional when they were modeling to students, dressing appropriately, focusing on relationships, providing opportunities to students, and portraying a specific image to the public including being respectful and exhibiting good sportsmanship. Consistent with SCT, the observations of the behaviors of others were important in the perceptions of SBAE teachers' views of their own professionalism. In this exploration, the concept of human agency, where individuals make intentional decisions to enact change (Bandura, 2001), was evident by the photos and reflections participants chose to share as representations of their professionalism. The photographs collected will be shared with this poster to further illustrate how teachers give purpose via their own agency in the leadership circle of SBAE and how they construct the beliefs of what professionalism is.

Implications/Recommendations/Impact on Profession

The results of this exploration are part of a larger study exploring what professionalism looks like to California SBAE teachers identified as being *professional*. The results are only based on California educators and should not be generalized to fit SBAE teachers from other states. Given the minimal literature discussing what professionalism looks like in SBAE, the results of this study support the need to develop a model of what defines *professionalism*. Further, understanding the metrics used by those who identified the participants in this study is important for future research, as well as determining if professionalism in the leadership circle of SBAE differs from its contemporary circles of classroom and SAE. Recommendations for practitioners include focusing on the more inward-facing and reflective side of professionalism, not just what is seen publicly.

References

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*, 248-287. http://doi.org/10.1016/0749-5978(91)90022-L

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Reviews Psychology, 52*, 1-20. http://doi.org/10.1146/annurev.psych.52.1.1

Blezek, A. G. (1986). Professionalism of vocational agriculture instructors as perceived by vocational agriculture instructors and superintendents in Nebraska public secondary schools. *Journal of Agricultural Education*, *27*(3), 46-49. https://doi.org/https://doi.org/10.5032/jaatea.1986.03046

Coleman, B., M., Ferand, N. K., Bunch, J. C., & Israel, G. D. (2021). Examining preservice teachers' performance during a 14-week student teaching experience: A longitudinal study. *Journal of Agricultural Education*, *62*(3), 258-274. https://doi.org/https://doi.org/10.5032/jae.2021.03258

Eck, C. J., Robinson, J. S., Ramsey, J. W., & Cole, K. L. (2019). Identifying the characteristics of an effective agricultural education teacher: A national study. *Journal of Agricultural Education*, *60*(4), 1–18. https://doi.org/10.5032/jae.2019.04001

Radhakrishna, R. B., & Xu, W. (1997). A review of subject matter topics researched in agricultural and extension education. *Journal of Agricultural Education*, *38*(3), 59-69. https://doi.org/https://doi.org/10.5032/jae.1997.03059

Richie, J., & Lewis, J. (2003). *Qualitative research practice: A guide for social science students and researchers.* Sage Publications.

Roberts, G. T., & Dyer, J. E. (2004). Characteristics of effective agriculture teachers. *Journal of Agricultural Education*, *45*(4), 82-95. https://doi.org/https://doi.org/10.5032/jae.2004.04082

Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed). Sage Publications.

Shoulders, C. W., & Smith, L. (2018). Impact of teacher attire on students' views of teacher credibility, attitude homophily, and background homophily within school-based agricultural education programs. *Journal of Agricultural Education*, *59*(2), 275-288. https://doi.org/https://doi.org/10.5032/jae.2018.02275

United States Department of Labor. (n.d.). *Soft skills to pay bills.* https://www.dol.gov/agencies/odep/program-areas/individuals/youth/transition/soft-skills

Wang, C. & Burris, M. A. (1997). Photovoice: Concept, methodology, and use for participatory needs assessment. *Health Education & Behavior, 24*(3), 369-387. https://doi.org/10.1177/109019819702400309

Student-animal interactions in AFNR education: An exploration of students' affective and cognitive responses

Faith Oster
The Ohio State University
200 Agricultural Administration Building
2120 Fyffe Road
Columbus, OH 43210
(614) 292-6909
oster.43@osu.edu

Dr. Joy Rumble
The Ohio State University
Halterman Hall
1328 Dover Road
Wooster, OH 44691
(330) 287-1368
rumble.osu.edu

Dr. Kimberly Cole
The Ohio State University
Animal Science Building
2029 Fyffe Road
Columbus, OH 43210
(614) 292-2625
cole.436@osu.edu

Introduction

Formal, informal, and non-formal educational institutions across the United States collectively operationalize one particular educational resource to facilitate the process of acquiring knowledge and understanding: animals (Gee et al., 2015; George & Cole, 2018). Incorporating animals within agricultural, food, and natural resources (AFNR) educational settings is commonplace. Yet, there is limited research on the effect of student-animal interactions (SAI) on student attitudes, curiosity, empathy (ACE), or perceived knowledge (PK). Additionally, it is undetermined how students' past animal experiences and previous coursework affect these areas, even though they are potential moderators (Gómez-Leal et al., 2021). Research indicates that positive attitudes toward animals are associated with higher levels of humane behavior toward animals; contrariwise, negative attitudes result in lower levels of humane behavior (Serpell, 2004). As empathy and curiosity are considered significant drivers of motivation, they can inadvertently improve attitudes, foster a desire for knowledge, and act as catalysts for pro-environmental behavior change (Skupien et al., 2016; Silva dos Santos et al., 2020).

Therefore, this study aimed to explore SAI, guided by two research objectives focused on exploring the relationships between (1) students' ACE, PK, and enrollment in animal sciences coursework with or without live animals present and (2) PK and previous animal experience. Advancing the knowledge of SAI outcomes can help shape future coursework and materials to prepare school-based agricultural educators and extension educators who regularly integrate animals into educational instruction.

Theoretical Framework

The guiding frameworks for this study are the elaboration likelihood model of persuasion and experiential learning theory. The elaboration likelihood model (ELM) delineates that individuals process information through two routes to induce attitude change (Petty & Cacioppo, 1986). Attitude change through the central route relies on an individual's cognitive motivation and ability to process information. This route utilizes information-based factual approaches such as visual or verbal presentations and direct communications. In contrast, the peripheral route is prompted by environmental associations that require little cognitive processing. For example, positive or negative cues that emerge from biased content delivery. Experiential learning theory (ELT) refers to learning through experience and reflection (Kolb, 1984). Within AFNR education, experiential learning can engage both routes of persuasion. Direct hands-on contact with an animal provides an opportunity for the learner to acquire factual information (i.e., sheep have rectangular eyes) through the central route in addition to forming positive associations (i.e., the educator modeling non-fearful behavior during an animal interaction decreased fear in learners) through the peripheral route.

Methodology

Data analyzed in this study was collected through a pre-course ($N = 172$) and post-course ($N = 79$) online survey to measure changes in attitudes, curiosity, empathy, and perceived knowledge of animal species presented in animal sciences coursework. The surveys were administered to all undergraduate animal science students 18 years or older at The Ohio State University during Autumn Semester 2022. Students were recruited through virtual flyers and department list-serv emails. Individual Likert items measured attitude, curiosity, and perceived knowledge on a 5-point scale, while experience (5-point, 2-item scale) and empathy (3-point, 3-

item scale) were measured on Likert-type scales. Internal reliability for the summated Likert items of empathy and experience achieved Cronbach's alpha's of $\alpha = 0.78$ and $\alpha = 0.85$. These Cronbach's alphas are deemed acceptable for an exploratory study as they surpass the threshold of $\alpha = .60$ (Hair et al., 2010). A panel of experts ($n = 5$) composed of disciplinary fields, including animal sciences, education, and human-animal interactions, was used to establish face and content validity. All inferential and descriptive statistics were conducted through SPSS.

Results

To explore our first objective, independent t-tests were conducted to determine if there was a significant difference in the dependent variable's "attitude," "curiosity," "empathy," and "perceived knowledge" between students who had previous animal science coursework with live animals present versus without. The pre-survey and post-survey were analyzed separately for ease of comparison. Pre-survey results indicate that previous live animal coursework means for "PK" ($M = 2.64$, $SD = 0.717$) and "empathy" ($M = 2.56$, $SD = 0.524$) were statistically significant compared to the previous non-live animal coursework means for "PK" [($M = 2.26$, $SD = 0.633$; t (3.045) = -3.258, $p < 0.001$, $d = 0.547$)] and "empathy" [($M = 2.17$, $SD = 0.777$; t (4.174) = -2.961, $p < 0.004$, $d = 0.621$)]. Additional analyses conducted employing a univariate model found the covariates "attitude" and "previous animal experience" statistically significant ($p < 0.05$) at the 95% CI for both dependent variables "PK" and "empathy." Furthermore, post-survey results indicate that previous live animal coursework means for "curiosity" ($M = 4.66$, $SD = 0.626$) were statistically significant compared to the previous non-live animal coursework [($M = 3.93$, $SD = 1.086$; t (1.869) = -3.780, $p < 0.001$, $d = 0.892$)]. A univariate analysis found the covariates "attitude" and "previous animal experience" statistically significant ($p < 0.05$) at the 95% CI. To evaluate objective two, a Pearson correlation between knowledge and experience revealed a significant, substantial, positive relationship for the pre-survey ($r = .655$) and a significant, very high positive relationship for the post-survey ($r = .709$) (Davis, 1971).

Conclusions/Implications

This study aimed to build a foundation for future research on student-animal interactions. As findings indicated, previous animal science coursework can influence students' perceived knowledge, empathy, and curiosity. Experiential learning through hands-on interactions with animals can prompt information processing through the central and peripheral routes. Incorporating information-based instructional strategies with affective and environmental cues will enhance student development of lifelong skills and knowledge (Skupien et al., 2016; Ryan & Campa, 2000). Thus, with this pedagogical approach, students can acquire long-lasting attitude changes beneficial to pro-environmental behaviors (Silva dos Santos et al., 2020). Furthermore, animal-centric educational communication is an essential part of AFNR education, considering animals collectively appertain to all AFNR areas: agriculture, food, and natural resources.

While animals are used as educational resources in educational settings daily, there is a lack of research-based pedagogical frameworks that provide educators with the tools and structure needed to ensure successful implementation (Gee et al., 2015). Further investigation on integrating the elaboration likelihood model and experiential learning theory within the AFNR educational context could prove highly beneficial for educators and learners alike. The purpose of this research is to facilitate opportunities for constructive discussions with individuals from various disciplinary backgrounds and viewpoints to amalgamate collected knowledge for future SAI research.

References

Davis, J. A. (1971). *Elementary survey analysis*. Prentice-Hall.

Gee, N. R., Fine, A. H., & Schuck, S. (2015). Animals in educational settings: Research and practice. In A. H. Fine (Ed.), *Handbook on animal-assisted therapy: Foundations and guidelines for animal-assisted interventions* (4th ed., pp. 195–210). Elsevier Academic Press. https://doi.org/10.1016/B978-0-12-801292-5.00014-6

Gómez-Leal, R., Costa, A., Megias-Robles, A., Fernandez-Berrocal, P., & Faria, L. (2021). Relationship between emotional intelligence and empathy towards humans and animals. *PeerJ*, *9*. https://doi.org/10.7717/peerj.11274

Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. E. (2010). *Multivariate data analysis: A global perspective* (7th ed.). New Jersey: Pearson Prentice Hall.

Kolb, D.A. (1984). Experiential learning: Experience as the source of learning and development. *Journal of Organizational Behavior, 8*(4), 359–360. https://doi.org/10.1002/job.4030080408

Nordstrom, P. A., Wilson, L. L., Richards, M. J., Coe, B. L., Fivek, M. L., & Brown, M. B. (1999). Student attitudes toward animal-derived products and services and how they affect society and the environment. *Journal of Agricultural Education*, *40*(4), 10–19. https://doi.org/10.5032/jae.1999.04010

Petty, R.E., Cacioppo, J.T. (1986). The elaboration likelihood model of persuasion. In: *Communication and persuasion: Central and peripheral routes to attitude change*. Springer, New York, NY. https://doi.org/10.1007/978-1-4612-4964-1_1

Ryan, M. R., & Campa, H. (2000). Application of learner-based teaching innovations to enhance education in wildlife conservation. *Wildlife Society Bulletin (1973-2006)*, *28*(1), 168–179. http://www.jstor.org/stable/4617300

Serpell, J. (2004). Factors influencing human attitudes to animals and their welfare. *Animal Welfare*, *13*(1), 145–151. https://doi.org/10.1017/S0962728600014500

Silva dos Santos, M., Kelsey, K. D., Fuhrman, N. E., & Irwin, K. (2020). Animals in environmental education: Assessing individuals' emotional reactions to interactions with wildlife. *Journal of Agricultural Education*, *61*(4), 61–77. https://doi.org/10.5032/jae.2020.04061

Skupien, G. M., Andrews, K. M., & Larson, L. R. (2016). Teaching tolerance? Effects of conservation education programs on wildlife acceptance capacity for the American alligator. *Human Dimensions of Wildlife*, *21*(3), 264–279. https://doi.org/10.1080/10871209.2016.1147624

Teacher Perceptions and Planned Behavior Related to Agriscience Externship Experience

Jonathan Moules
Next Generation Agricultural Science

Dr. Nicole Ray
California Polytechnic State University, San Luis Obispo

Cameron Standridge
Next Generation Agricultural Science

Stacy VanScoy
California State University, Fresno

Dr. Avery Culbertson
California State University, Fresno

Dr. Robert Strong
Texas A&M University

Primary Author:
Jonathan Moules
5241 N Maple Ave, Fresno, CA 93740
(209) 648-6838
Jmoules@mail.fresnostate.edu

Introduction

Externship experiences have proven to be valuable in many ways (Hurley et al., 2024). They have been shown to not only increase teachers' knowledge and skills, but also result in significant changes to their teaching (Bowen et al. 2018) found that due to their experience, teachers reported seeing the need for incorporating more workplace readiness skills into their courses. Research to explore school-based agriculture education (SBAE) teachers experience with agriscience related externships is especially timely considering in many SBAE programs across the United States, teachers have been working to implement the Next Generation Science Standards and their Career Technical Education standards in tandem. These standards represent a shift in pedagogical approaches to teaching and learning (National Research Council, 2012), and many SBAE teachers don't feel prepared to teach the science content (Chumbley et al., 2019). To address this need, the USDA NIFA grant funded project Next Generation Agriculture Science NGAS) (Vaughn 2021-2024) developed a teacher externship program that placed a SBAE teacher with a local agriscience industry professional for a 40-hour experience. Teachers who completed the hours and provided a specified deliverable of a lesson plan, were awarded a stipend of $1,000.

Research objectives included: 1) describe SBAE teacher extern attitudes, subject norms, perceived behavioral control, and intentions of employing industry practices experienced during their externship into their classroom, as well as their perception 2) explore the correlation in said constructs.

Theoretical Framework

The Theory of Planned Behavior (TPB) (Azjen, 2002) was utilized as the model framework to describe human behavior. Its three constructs of 1) attitudes towards the behavior, 2) subjective norms, and 3) perceived behavioral controls, are positive predictors of behavioral intentions (Azjen, 2002). While attitude is defined as one's feelings towards a behavior and its associated risks and positive outcomes, social pressure to perform a behavior are the subjective norms (Azjen, 2002). Perceived behavioral control is the perceived ability to perform or regulate a behavior (Azjen, 2002). TPB has been widely used in the context of evaluating professional learning (PL) experiences (Patterson, 2001), implementation of standards (Haney et al., 1996), and intentions to engage with classroom science investigations (Johnson & Crawley, 1991). In this study, TPB is applied to explain how participants implement industry practices from their externship in their classroom instruction.

Methodology

This study utilized a correlational research design. Consideration for Dillman et al. (2014) tailored design in the recruitment of participants and design of the survey instrument. The instrument explored four constructs in relation to TPB: attitudes towards the behavior, subjective norms, perceived behavioral controls, and intentions of agriscience teachers to implement industry practices from their externship into their classroom. Teacher perceptions of the externship experience was the final construct. SBAE teachers who had participated in the NGAS agriscience teacher externship program (N=20) were invited to complete the Qualtrics survey, 10 participants responded (n=10), representing a 50% response rate.

Externship participants implementing industry practices from their externship into their classroom instruction is the study's target behavior. The instrument included several demographic factors in addition to several items for each construct. Items regarding subjective norms (i.e., five-items), perceived behavioral control (i.e., six-items), intentions (i.e., six-items), and perceptions (i.e., five-items), were measured on five-point Likert scales ranging from 1 (*strongly*

disagree) to 5 (*strongly agree*). Measuring attitude consisted of a bipolar semantic differential eight-item, five-point scale between 1 (e.g., *negative adjective*) and 5 (e.g., *positive adjective*). Reliability of all scales surpassed the acceptable value of Cronbach's alpha of .70 or higher (Nunnally, 1967). Responses from the Qualtrics survey were imported into SPSS Version 29 to compute descriptive and non-parametric correlational statistics due to the small sample size (n=10) (Spearman, 1961).

Results

Objective one sought to describe the constructs. Respondents had, on average, a favorable attitude towards the target behavior (M = 4.67, SD = 0.43), confidence to control the behavior (M = 4.33, SD = 0.72), deliberate intentions (M = 4.35, SD = 0.43), and positive perceptions of the externship (M = 4.54, SD = 0.50). Respondents identified subjective norms to be "somewhat agree" (M = 3.96, SD = 0.55). Non-parametric correlations among the five constructs were used in accordance with objective two. Four significant and moderately positive relationships arose between attitudes and intentions (ρ = .66, p < .05, n = 10), subjective norms and perceived behavioral controls (ρ = .65, p < .05, n = 10), subjective norms and perceptions of externship (ρ = .65, p < .5, n = 10), and perceived behavior controls and intentions (ρ = .68, p < .05, n = 10).

Conclusions

Respondents reported positive outlooks and control over the target behavior, with intentions to bring back industry practices to the classroom, supportive of Hurley et al. (2023). While the limited sample of SBAE teacher were not as externally pressured to perform the behavior as compared to similar literature (DiBiase & McDonald, 2015; Harmon et al., 2023), subjective norms remained associated with behavior control and externship perceptions. Intrapersonal feelings had the greatest relationship with behavioral intentions, in which envisioning oneself having the attitude and confidence to implement externship can lead to forthright intentions.

Recommendations

Considering the generally positive responses of the externship program and participants' intentions to implement industry practices into their classroom instruction, it is necessary that such professional learning opportunities continue and be regularly coordinated by the California Agriculture Teachers' Association (Bowen et al. (2018; Chumbley et al. 2019). As NGAS coordinates more externships, and gathers enough data from a larger sample size, a regression analysis is recommended to identify constructs that predict the greatest variances in intentions (Azjen 2002). Further investigation should highlight why these teachers disregarded the subjective norms established by their social and professional circles (Azjen, 2002).

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References

Ajzen, I. (2002). Constructing a TPB questionnaire: Conceptual and methodological considerations. Retrieved from https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=0574b20bd58130dd5a961f1a2db10fd1fcbae95d

Bowen, B., & Shume, T. (2018). Educators in industry: An exploratory study to determine how teacher externships influence K-12 classroom practices. *Journal of Stem Education*, *19*(1). Retrieved from https://vtechworks.lib.vt.edu/bitstream/handle/10919/84310/BowenEducators2018.pdf?sequence=1

Chumbley, S., Hainline, M. S., Russell, M., & Ruppert, D. E. (2019). Teachers' Confidence to Integrate Biology in Agriscience Courses. *Journal of Agricultural Education*, *60*(1), 145-157. doi: https://doi.org/10.5032/jae.2019.01145

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method*. John Wiley & Sons.

DiBiase, W., & McDonald, J. R. (2015). Science teacher attitudes toward inquiry-based teaching and learning. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, *88*(2), 29-38. doi: 10.1080/00098655.2014.987717

Haney, J. J., Czerniak, C. M., & Lumpe, A. T. (1996). Teacher beliefs and intentions regarding the implementation of science education reform strands. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching*, *33*(9), 971-993. https://doi.org/10.1002/(SICI)1098-2736(199611)33:9<971::AID-TEA2>3.0.CO;2-S

Harmon, K., Ruth, T., Reiling, B., Conner, N. W., & Stripling, C. T. (2023). Predicting teachers' intent to use inquiry-based learning in the classroom after a professional development. *Advancements in Agricultural Development*, *4*(3), 90-102. doi: 10.37433/aad.v4i3.345

Hurley, M., Butler, D., & McLoughlin, E. (2024). STEM Teacher Professional Learning Through Immersive STEM Learning Placements in Industry: a Systematic Literature Review. *Journal for STEM Education Research*, *7*(1), 122-152. doi: 10.1007/s41979-023-00089-7

Johnson, B. K., & Crawley III, F. E. (1991). Intentions of Grade 2-8 Science Teachers to Use Science Investigations: Application of the Theory of Planned Behavior. Retrieved from https://files.eric.ed.gov/fulltext/ED306090.pdf

Likert, R. (1932). A technique for the measurement of attitudes. *Archives of psychology*.

Nunnally, J. C. (1967). Assessment of Reliability. *Psychometric theory:* McGraw-Hill [1967].

Patterson, R. (2001). Using the theory of planned behavior as a framework for the evaluation of a professional development workshop. *Microbiology Education*, 2(1), 34-41. doi: 10.1128/jmbe.v2.62

Spearman, C. (1961). The proof and measurement of association between two things. *The American Journal of Psychology,* 15(1). https://doi.org/10.2307/1412159

Vaughn, R. (Principal Investigator). (2021-2024). Next Generation Agricultural Science: Elevating Todays and Tomorrows Teachers (Project No. 2021-67038-36256) [Grant]. USDA National Institute of Food and Agriculture, AFRI Professional Development For Agricultural Literacy Priority Area. https://portal.nifa.usda.gov/web/crisprojectpages/1027745-next-generation-agricultural-science-elevating-todays-and-tomorrows-teachers.html

Teacher-Parent Relationships and Their Role in Agricultural Science Teachers Retention

Clarissa Darby
Texas Tech University
806.834.3286
cladarby@ttu.edu

Rudy Ritz
Texas Tech University
806.834.4807
rritz@ttu.edu

Department of Agricultural Education & Communications
Box 42131
Lubbock, TX 79409-2131
806.742.2816

Introduction

Qualified teachers in agricultural education have been in short supply for the last four decades (Smith et al., 2017; Wolf, 2011). In 2017, it was reported that there were 520 agricultural science teachers leaving the profession before becoming retirement- eligible (Smith et al., 2017). In 2021, Smith et al., (2021) reported 674 positions were open nationally and those who left would not be returning to the classroom. Additionally, there are issues and factors such as self-efficacy, alternative opportunities, time, stress, and burnout that affect agricultural science teachers' decision to stay or leave the profession (Lemons et al., 2015; Harrell, 2022; Solomonson, 2017). According to Skaalvik & Skaalvik (2010), teacher-parent relationships are an important factor that affects teachers' job satisfaction and self-efficacy, which ultimately affects retention. Due to the hands-on nature of the FFA and SAE portions of the three-circle model, agricultural science teachers are in constant communication with parents in their program. However, minimal research has been conducted on teacher-parent relationships at the secondary level and how they may affect teachers' decision to leave the profession. This study aims to determine if teacher-parent relationships may contribute to the shortage of qualified agricultural science teachers.

Theoretical and Conceptual Framework

The conceptual framework was influenced by the Theory of Teacher Attrition (Grissmer & Kirby, 1987) and the Teacher Retention Model (Chapman, 1983). The Theory of Teacher Attrition suggests characteristics and compensation of alternative job opportunities affect teacher retention. The Teacher Retention Model suggests that to understand teachers' decisions to leave the profession, it is necessary to look at personal characteristics, satisfaction teachers derive from their careers, and external environmental influences (Chapman, 1983). The purpose of the study was to analyze teacher-parent relationships and their effect on agriculture teachers' decision to leave or stay in the classroom. The objectives of the study were: (1) Determine how agricultural science teachers perceived parental support and involvement, and (2) Determine if teacher-parent relationships currently affect agricultural science teachers' decisions to stay or leave the profession.

Methods

This study was a phenomenology research study. The target population was agricultural educators who currently teach or formerly taught in Texas. The sample was a purposive sample consisting of agricultural science teachers still in the profession (n=6), and former agricultural science teachers (n=3). Participants were asked to meet for an interview. The interview consisted of standardized open-ended questions in combination with closed fixed-response questions. Participants were assigned a number for confidentiality purposes and identified as male (M1-8) or female (F1). Data was analyzed by using open coding to determine themes of the study.

Results/ Findings

There were four themes that developed throughout the study. **Theme 1- Parental Support**. Five participants believed that parental support was an asset to their program. Four participants stated that they did not believe that parental support was necessary for their program

or student success. **Theme 2- Parental Involvement**. Participants in this study did not indicate that parental involvement was necessary for their programs. One stated "I have always loved for parents to be involved as much as possible but sometimes you have the overbearing parents that expect you to do everything for their child and them" and another stated (M4) "No, it seems that they want to control the program to fit themselves." Four of the participants' programs had booster clubs to aid in scholarships and travel, and five of their programs operated without a parental booster club and perceived their program successful. **Theme 3- Positive Communication**. Agricultural science educators have a positive view on communication with parents. All participants reported that two-way professionalism occurred most of the time. Two participants shared they have had negative experiences on very few occasions where the parents were "screaming and yelling the whole time." However, they followed with, "If you treat them with respect, most of the time, they will treat you with respect." **Theme 4- Passion for the Profession.** Two former teachers stated that they would re-enter the profession for various reasons. One stated (M6), "I would have considered re-entering the profession because new teachers need help," and (M7) said "Parents never influenced my decision to quit teaching. I applied for a CTE Director position and got it." Not all the comments were positive, however, (M3) who has stayed in the profession stated, "There have been situations with parents over the last nine years that make me question whether to stay in the profession…if you love what you do, then you continue through all the stress and problems that parents cause."

Conclusions

These findings somewhat align with Chapman (1984) as they postulate that external influences contribute to the decision to remain or leave the classroom. The participants who left the profession did not report parents as the reason for their departure, and did not see parental involvement or support as a necessity for their program or students to be successful. There was variation in teachers who were still in the classroom about their views on parental support and involvement. The participants expressed that they had great passion for the profession, but not all responded that they would encourage others to join the profession. Overall, teacher-parent relationships were not reported by these participants as a reason for remaining in or leaving the profession. The findings of this study were not consistent with Skaalvik & Skaalvik (2010) who reported teachers' need for positive relationships with parents affects their ability to plan, organize, and execute activities. Their study also found that self-efficacy and depersonalization relating to burnout affected their job satisfaction. Overall, parental support and parental involvement were mostly seen in a positive light.

Implications/Recommendations/Impact on Profession

Recommendations for future research should include larger sample sizes to quantify teachers' and former teachers' relationships with parents. Additionally, investigations from the parents' perspective regarding involvement and relationships with their children's teachers should be explored. The gender of the agricultural science teacher should also be investigated as more than one half of them in Texas are female (Ray Pieniazek, personal communication, July 28, 2023).

References

Chapman, D. W. (1983). A model of the influences on teacher retention. *Journal of teacher education, 34*(5), 43-49.

Harrell, C. M. (2022). Agriculture Teacher Longevity (Publication No. 30381375). [Doctoral Dissertation, Auburn University]. ProQuest LLC.

Kirby, S. N., & Grissmer, D. W. (1993). Teacher attrition: Theory, evidence, and suggested policy options.

Lemons, L. L., Brashears, M. T., Burris, S., Meyers, C., & Price, M. A. (2015). Factors contributing to attrition as reported by leavers of secondary agriculture programs. *Journal of Agricultural Education, 56*(4), 17-30. doi: 10.5032/jae.2015.04017

Skaalvik, E. M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and teacher education, 26*(4), 1059-1069. doi:10.1016/j.tate.2009.11.001

Smith, A. R., Foster D. D., &, Lawver, R. G. (2017). National agricultural education supply and demand study, 2016 executive summary. Retrieved from http://aaaeonline.org/Resources/Documents/NSD2016Summary.pdf

Smith, A. R., Foster, D. D., & Lawver, R. G. (2022). National Agricultural Education Supply and Demand Study, 2021 Executive Summary. Retrieved from:http://aaaeonline.org/Resources/Documents/NSD 2021Summary.pdf

Solomonson, J. (2017). Determining why agricultural educators are leaving the profession and how to increase the retention rate. [Doctoral Dissertation, Iowa State University]. doi.org/10.31274/etd-180810-5847

Sorensen, T. J., McKim, A. J., & Velez, J. J. (2016). A national study of work-family balance and job satisfaction among agriculture teachers. Journal of Agricultural Education, 57(4), 146-159. doi:10.5032/jae.2016.04146

Wolf, K. J. (2011). Agricultural education perceived teacher self-efficacy: A descriptive study of beginning agricultural education teachers. *Journal of Agricultural Education, 52*(2), 163-176. doi: 10.5032/jae.2011.02163

The Evolution of Gender Roles in FFA: An Analysis of the Covers of the FFA New Horizons Magazine from 1955 to 2008

Hayley F. Milliron, MS Student
milliron.48@osu.edu

Kellie Claflin, Assistant Professor
claflin.11@osu.edu

The Ohio State University
Department of Agricultural Communication, Education and Leadership
200 Agricultural Administration
2120 Fyffe Road
Columbus, Ohio 43210
614-292-6909

Introduction/Need for Research

The National FFA Organization, previously known as the Future Farmers of America, was founded in 1928. This organization educates future generations to prepare them to handle the challenges of feeding a growing population (Flatt, 2019). The dispute over who could join immediately followed the creation of the FFA. At the 1930 FFA Convention, it was voted that women were to be excluded from membership by the delegates (Flatt, 2019). However, some local chapters overlooked this and allowed women to participate in FFA activities. In 1949, women could qualify to earn a white FFA jacket by being an FFA "Sweetheart" since they were not allowed to wear the traditional blue corduroy. In 1969, women were allowed to obtain membership in FFA (Flatt, 2019; Moore, 2018). Female membership in FFA has grown and evolved over the past 50 years. What used to be a male-dominated program, the National FFA Organization reported that 43% of its membership is female (Flatt, 2019).

The way of woman is depicted in *FFA New Horizons* can be tied to gender stereotyping due to the roles they are displaying. Gender stereotyping are the roles and attributes assigned to a gender (Lawton, 2009).

The FFA Originally titled, *The National Future Farmer,* the magazine was created by the National FFA Organization in 1952. In 1989, the magazine was renamed *FFA New Horizons*. This magazine documents and presents current activities and events in the agricultural industry for FFA members, their families, and supporters (FFA New Horizons, 2017). The magazine has documented the growth and expansion of the agricultural industry over the past 70 years (*FFA New Horizons*, 2017). By analyzing the covers of FFA *New Horizons* in the past 56 years, we can shed light on the evolution of gender roles in FFA.

Methodology

Interpretive historical research methods (Schrag, 2021) and image analysis (Friel, 2000) were used to analyze the cover photos of the *FFA New Horizons Magazine* from 1952 to 2008. The time frame was selected based on access availability of the magazines online via the IUPUI University Archives Electronic Documents Collection (National FFA Organization, 2023). Data collection began by reviewing the covers of the *FFA New Horizons Magazine.* The initial data collection included 312 covers from volumes 1-55 from 1952-2008. Ninety-three issues contained covers included with at least one female and were selected for analysis. Next, the selected covers were analyzed for the following inclusion criteria: includes at least one woman above the age of 12 and at least one woman who has significant position on the cover. In the end, 83 covers met the inclusion criteria. Each cover was examined using the following four statements which were created and adapted from *Goffman's Frame Analysis* (Jameson, 1976; Lawton, 2009):

1. At least one man is present on the cover with a female,
2. The woman on the cover is doing something related to agriculture,
3. An example of a feminine touch is present on the cover (a feminine touch is defined as a woman using her fingers to caress or holds an object gently (Lawton, 2009),
4. The woman is displayed as an object of beauty.

Results

Table 1

Frequency of Image Analysis Statements Present in FFA New Horizons (n = 83)

Statements	1952 – 1959 (*n = 8)*	1960 – 1969 (*n = 11)*	1970 – 1979 (*n = 8)*	1980 – 1989 (*n = 12)*	1990 – 1999 (*n = 23)*	2000 – 2008 (*n = 23)*	Total
A man is present on the cover	8	11	2	4	13	10	48
The woman on the cover is doing something related to agriculture.	2	2	6	10	15	6	41
An example of a feminine touch is present on the cover.	2	4	0	4	4	0	14
The woman is displayed as an object of beauty	2	6	0	0	0	0	8

Conclusions/Implications/Recommendations

The women on the covers were depicted to hold a variety of roles including: an FFA member, a supportive family member, an instructor, an FFA sweetheart, and a state FFA officer. In the 1950s, women were pictured as objects of beauty, acting dependent and supportive. Until the 1970s, women were only pictured with a man and depicted completing actions or activities with a man's assistance. Before the 1970s, women were never pictured wearing an FFA jacket unless it was the FFA sweetheart jacket. Relatedly, after 1969, when women were allowed to join FFA on the national level (Flatt, 2019), females began to be depicted as FFA members and in more independent roles. Early in the magazine, women were rarely pictured completing agricultural-related tasks, but that changed in the 1970s. The agricultural roles women were depicted doing were working with plants and animals, specifically horses. On the contrary, there was one cover that had women working with machinery. Besides this example, women were not shown with welding or woodworking like men, which relates to the roles and jobs dealing with machinery, welding, or woodworking are depicted as masculine jobs (Donelan, 1992). Overall, the roles of women in FFA have grown over the past 56 years as depicted by the FFA New Horizons. As we have found, gender stereotypes towards the role women play in FFA exist, but the characterization of women have changed from roles of beauty to being involved in agriculture and more independent. Overall, women are still being depicted in more feminine-related roles when it comes to agricultural jobs or activities. Additional historical research on the entirety of the magazine is recommended to provide more context on the role of women in agriculture and FFA throughout the decades.

References

Moore, G. (2018). The FFA Sweetheart. The Friday Footnote, Date November 2018. https://footnote.wordpress.ncsu.edu/2018/11/16/the-ffa-sweetheart-11-16-2018/

Donelan, B. (1992). Gender Role Socialization and the Choice of an Agriculture Curriculum.

FFA New Horizons (2017, March 13). Welcome to the "new" FFA new horizons! *National FFA Organization*. https://www.ffa.org/the-feed/welcome-to-the-new-ffa-new-horizons/

Flatt, B. (2019, February 15). The fight for female membership. *National FFA Organization*. https://www.ffa.org/ffa-history/the-fight-for-female-membership/

Jameson, F. (1976). On Goffman's Frame Analysis. *Theory and Society*, *3*(1), 119–133. http://www.jstor.org/stable/656942

Lawton, E. (2009). Gender advertisements: replication of a classic work examining women, magazines, and facebook photographs.

National FFA Organization (2023). *FFA New Horizons, 1-55.* https://www.ffa.org/news/

Schrag, Z. (2021). *The Princeton Guide to Historical Research*. Princeton: Princeton University Press.

The Importance of Social Capital for Youth Leadership Development in Agriculture: Perspectives from State FFA Officers

Authors

Saralynn Smith, *Louisiana State University*

Richie Roberts, *Louisiana State University*

Kristin S. Stair, *Louisiana State University*

The Importance of Social Capital for Youth Leadership Development in Agriculture: Perspectives from State FFA Officers

Introduction & Literature Review

According to Libby et al. (2006), youth leadership development has been celebrated in the U.S. for many years, even though it has not been labeled as such, but rather described as character development, life preparation, as well as the building of relationships and community. Youth leaders in agricultural education programs have also been found to exhibit a high level of influence, especially in their local communities (Hasting et al., 2011). This study's goal was to understand how social relationships influenced the perspectives of current and former State FFA Officers regarding their leadership development.

Theoretical Framework

The theoretical framework guiding this study was Alder's and Kwon's (2002) social capital theory. Through this lens, social relationships have the power to yield opportunities, motivation, and abilities for individuals (Alder & Kwon, 2002). As such, social capital can be valuable in contributing to the successful personal and professional development of individuals (Alder & Kwon, 2002). In the current study, social capital was used as a lens to describe the relationships that led to the State FFA Officers' initial engagement, continued involvement, and the value they found in their participation in the National FFA Organization.

Statement of Purpose

The purpose of this study was to describe the perspectives of current and former Louisiana State FFA Officers regarding their youth leadership development through the National FFA Organization. The study was guided by the following question: (1) In what ways did the lived experiences of State FFA Officers shape their perspectives on youth leadership development?

Methodology

For this investigation, we employed a phenomenological approach (Moustakas, 1994). To recruit participants, we used a combination of purposeful and snowball sampling to identify 10 current or former Louisiana State FFA Officers (Creswell & Poth, 2018). These participants' state office years ranged from 1984 to 2023. After Institutional Review Board (IRB) approval, we then conducted individual interviews with each participant. These interviews took place through Microsoft Teams or in person, depending on the participants' preference. We facilitated each interview using a semi-structured interview protocol. We also collected pictures as an additional form of data from each participant to triangulate our findings. After data collection, we transcribed each interview verbatim. To analyze the data, we employed Saldaña's (2021) coding procedures. In the first cycle of coding, we used three different coding methods: (1) in vivo, (2) descriptive, and (3) holistic. We then used axial coding for the second cycle of coding. Through this systematic process, themes emerged.

Findings

The findings of this investigation were told through a sequential story using three themes.

Theme #1: Joining FFA

In the first theme, joining FFA, the participants recognized that their youth leadership development through the FFA began when they joined at the local level. Their motivations for joining the FFA were articulated through two major subthemes: (a) relationships and (b) opportunities. For example, seven of the 10 participants reported that they joined their local FFA chapter because they had "family ties" to the organization. For these individuals, their social relationships with their families motivated them to join and increase their social capital through interactions with other members and professionals connected to the organization. Several participants also reported that the opportunities they observed their peers engage in through FFA were another reason why they joined their local chapter. These social relationships, therefore, set the stage for their youth leadership development.

Theme #2: Year of Service

The second theme emerged as the participants spoke about how social relationships formed during their year of service as a State FFA Officer influenced their youth leadership development. During this stage, the participants underwent a variety of professional development. This training was a combination of National FFA and the Louisiana FFA curriculum and experiences. During these professional development opportunities, the State FFA Officers mentioned that they began to form close bonds with others and gain insight into more diverse perspectives about leadership. Through journaling and other forms of reflection, they began to make sense of their own leadership style and seek out more opportunities to grow. For example, nine of the 10 participants reported that the relationships developed through professional development opportunities during their year of service helped them hone their "leadership knowledge and skills positively."

Theme #2: Continued Growth and Development

In the final stage, continued growth and development, the participants explained how their social connections kept them engaged in youth leadership activities and initiatives after leaving the FFA. For example, when asked if they were actively involved in youth leadership development, every participant said "yes." However, after being so involved in FFA for so long, many of the participants showed signs of burnout: "When someone does something for so long, they get really burned out … I was ready to be done" (Participant #8). Despite this, the participants' social connections often kept them engaged and wanting to continue to grow and develop to become leaders in the agricultural industry.

Conclusions/Implications/Recommendations

The findings demonstrated that social capital influenced the State FFA Officers' youth leadership development prior to being involved in FFA and continued after their year of service. As such, we recommend expanding on this study to understand the lived experiences of State FFA Officers beyond [State] and to include more diverse State FFA Officers. We also recommend additional follow-up studies that seek to understand how social capital influences the styles, philosophies, and experiences of State FFA Officers' youth leadership development.

References

Adler, P. S., & Kwon, S. W. (2002). Social capital: Prospects for a new concept. *The Academy of Management Review*, *27*(1), 17–40. https://doi.org/10.2307/4134367

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage.

Hastings, L., Barrett, L., Barbuto, J., & Bell, L. (2011). Developing a paradigm model of youth leadership development and community engagement: A grounded theory. *Journal of Agricultural Education*, *52*(1), 19–29. https://doi.org/10.5032/jae.2011.01019

Libby, M., Sedonaen, M., & Bliss, S. (2006). The mystery of youth leadership development: The path to just communities. *New Directions for Youth Development*, *2006(*109), 13–25. https://doi.org/10.1002/yd.152

Moustakas, C. (1994). *Phenomenological research methods*. Sage.

Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). Sage.

The Livestock Collective: A Case Study of Efforts to Enhance Transparency of the Live Export Industry in Australia

Courtney Meyers, Ph.D.
Professor
Department of Agricultural Education & Communications
Texas Tech University
courtney.meyers@ttu.edu

The Livestock Collective: A Case Study of Efforts to Enhance Transparency of the Live Export Industry in Australia

Introduction & Theoretical Framework

Australia is a global leader in the live export of livestock. In 2021-22, more than one million head of livestock were exported by sea and air, and the annual value of these livestock is more than AUD$1 billion (LiveCorp, 2022). Despite having low mortality rates among the livestock being transported, the practice has been scrutinized and faces consumer criticism. Following a media exposé in 2018, Sinclair et al. (2018) found 60% of respondents had negative views of the live export industry and 42% said the trade should be ended. The authors said more education about the issue is necessary.

Originally called The Sheep Collective, The Livestock Collective is a non-profit organization formed in December 2018 with the mission to use transparent communication "to address public concerns about the livestock export industry" (The Livestock Collective, 2023, para. 5). The initiative shares stories from individuals who work at all points in the live export supply chain – farm, trucking, feedlot, voyage, and market. The organization's purpose statement says its efforts are to provide "visibility and communication to the wider community, thus ensuring an increased understanding of and connection to agriculture" (The Livestock Collective, 2023, para. 6).

Schnackenberg and Tomlinson's (2016) model of organizational transparency served as the framework for this study. This model is comprised of three main constructs: information disclosure, clarity, and accuracy. According to the model, the amount and type of information an organization chooses to share (or not share) will impact the public's perception of transparency.

The purpose of this study was to explore the Livestock Collective's efforts to provide transparency about Australia's live export of livestock. The primary research objective was to describe the organization's communication efforts.

Methods

This study used a case study approach. Case study data can be collected from several sources (Yin, 2014). In the current study, I used newspaper coverage and interviews with two members of the organization. To collect the newspaper coverage, I used the ANZ Newstream to search for newspaper or wire feed content published between 2018-2022 with the following keywords mentioned anywhere in the headline or article: "Livestock Collective" or "Sheep Collective" or "Cattle Collective". Using these parameters resulted in 56 articles. Duplicates and articles with negligible mentions of the keywords were removed, resulting in 28 articles. I conducted a semi-structured interview with two Livestock Collective staff members via Zoom. The interview lasted one hour, and we discussed the beginning stages of the organization, how it has evolved, use of communication platforms, and its future. Data analysis involved reading all the articles and interview transcript to identify the organization's communication efforts.

Results

Shortly after its launch in December 2018, Goodwin (2019) specifically mentioned The Sheep Collective's efforts to provide transparency about the industry and the emphasis on animal care. By mid-February, media representatives were able to tour a live export vessel bound for the Middle East as thousands of animals were loaded at a Western Australia port. This was the first

time the live sheep export industry had invited the media to tour such a ship (AAP General News Wire, 2019). The Sheep Collective's initial website launch had video testimonials from farmers, buyers and exporters (Laurie, 2019). The organization also created videos to demonstrate the supply chain, which agricultural producers could use on social media (Somerville, 2019). Over the next few months, organization leaders were invited to speak to several agricultural meetings about their transparency efforts.

In November 2019, The Cattle Collective initiative was launched to help those in the cattle industry "share accurate information and personal stories about the livestock export industry with the broader community" (*Queensland Country Life*, 2019, para. 2). By October 2020, these groups had joined forced to become The Livestock Collective. This organization began hosting professional development workshops to promote collaboration in the livestock sector with a focus on how to communicate about animal welfare concerns. A May 2021 article mentioned the Livestock Collective's Leaders workshop "empowers young leaders working in the livestock industry to share their stories and to improve their advocacy and leadership skills" (*Queensland Country Life*, 2021). In March 2022, the organization launched a virtual tour of a live export ship, which gives "everyday Aussies" a chance to see into the livestock export industry. Throughout 2022, representatives of the organization are cited in other articles as expert sources regarding topics impacting the livestock export industry.

Responses from the interview with organization representatives reinforced the organization's focus on enhancing transparency and authentic storytelling in the livestock industry. They noted the real success of this initiative has been the leadership program, which has trained over 300 individuals in a variety of agricultural industries to give them confidence and skills to communicate about agriculture.

Conclusions/Implications/Recommendations

The Livestock Collective quickly gained traction, which indicated the communication and training efforts they provided were addressing a need in the Australian agriculture industry. While the organization was initially created to provide transparency about one aspect of live export, it has expanded its mission to advocating for the entire livestock industry supply chain. The organization has used a variety of communication strategies to share information about the industry from in-person training sessions to social media content to virtual tours.

The insights from the case study can be used to inform other transparent communication efforts in agriculture, particularly those that are addressing a socially-sensitive topic such as animal welfare. It is also unique that this organization is focused on telling the live export story at all points in the supply chain. Other animal agriculture organizations can learn from the efforts of the Livestock Collective to create transparent communication efforts that address public concerns through the disclosure of information, providing clarity, and being accurate.

This organization has additional content that should be analyzed, particularly its presence on several social media platforms. Finally, future research should determine what impact these transparency efforts may have on consumers' attitudes regarding live export of livestock.

References

AAP General News Wire. (2019, February 22). Tour a first for WA live export industry. Retrieved from ProQuest https://ezproxy.csu.edu.au/login?url=https://www.proquest.com/wire-feeds/tour-first-wa-live-export-industry/docview/2184345409/se-2?accountid=10344

Goodwin, S. (2019, February 14). Livestock needs social media battle plan. *Stock Journal. Retrieved* from https://ezproxy.csu.edu.au/login?url=https://www.proquest.com/newspapers/livestock-needs-social-media-battle-plan/docview/2179082388/se-2?accountid=10344

Laurie, V. (2019,May 4). Alive & kicking. *The Weekend Australian Magazine.* Retrieved from https://ezproxy.csu.edu.au/login?url=https://www.proquest.com/newspapers/alive-amp-kicking/docview/2219974970/se-2?accountid=10344

LiveCorp. (2022). *Overview.* https://livecorp.com.au/industry

Queensland Country Life. (2019, Nov. 1). Live exporters launch The Cattle Collective. Retrieved from https://ezproxy.csu.edu.au/login?url=https://www.proquest.com/newspapers/live-exporters-launch-cattle-collective/docview/2310747449/se-2?accountid=10344

Queensland Country Life. (2021, May 1). Livestock Leaders bridging the gap between industry and consumer. *https://www.queenslandcountrylife.com.au/story/7233545/livestock-leaders-bridging-the-gap-between-industry-and-consumer/*

Sinclair, M., Derkley, T., Fryer, C., & Phillips, C. J. C. (2018). Australian public opinions regarding the live export trade before and after an animal welfare media expose. *Animals, 8*(106). https://doi.org/10.3390/ani8070106

Schnackenberg, A. K., & Tomlinson, E.C. (2016). Organizational transparency: A new perspective on managing trust in organization-stakeholder relationships. *Journal of Management, 42*(7), 1784-1810. https://doi.org/10.1177/0149206314525202

Somerville, P. (May 29, 2019). Industry fights back on live trade. *The Weekly Times.* Retrieved from https://ezproxy.csu.edu.au/login?url=https://www.proquest.com/newspapers/industry-fights-back-on-live-trade/docview/2230849466/se-2?accountid=10344

The Livestock Collective. (2023). *About us.* https://www.thelivestockcollective.com.au/aboutus

Yin, R. K. (2014). *Case study research design and methods* (5th ed.). Thousand Oaks, CA: Sage

Tracing the Turnover Intentions of SBAE Teachers by Certification Path and Career Stage

Matthew J. Wood

Utah State University

2300 Old Main Hill

Logan, Utah 84322-2300

matthew.wood@usu.edu

Tyson J. Sorensen

Utah State University

2300 Old Main Hill

Logan, Utah 84322-2300

tyson.sorensen@usu.edu

Tracing the Turnover Intentions of SBAE Teachers by Certification Path and Career Stage

Introduction/Need for Research

Teaching, while rewarding, imposes significant challenges on educators, leading to stress and burnout. This is substantiated by studies from Chenevey et al. (2008) and Kitchel et al. (2012), which point to the demanding aspects of the profession, often spilling beyond regular working hours. These factors contribute to a substantial exodus of educators, with Haynes (2014) revealing that nearly half a million U.S. teachers leave or switch roles annually and Ingersoll et al. (2014) finding that 41% depart within the first five years.

In School-based Agricultural Education (SBAE), the attrition issue has been persistent, with a chronic shortage of qualified teachers (Foster et al., 2023). Despite longstanding recognition of the issue, SBAE teacher recruitment and retention remains a critical challenge, as National Supply and Demand figures indicate (Foster et al., 2023). SBAE teachers juggle numerous tasks, including Supervised Agricultural Experience visits, FFA events, awards ceremonies, and conferences (Hainline et al., 2015). These responsibilities, combined with routine stressors such as facility upkeep and chapter management, further exacerbate the attrition problem (Solomonson et al., 2018). As a result, this research aims to identify the turnover intentions of SBAE teachers by path to certification and career stage.

Theoretical Framework and Literature Review

Fessler and Christensen's (1992) teacher career cycle model served as the framework for this study. This model focuses on the career stages of teachers, with personal and organizational ecologies serving as influencers. Similarly, previous literature in the SBAE profession has identified personal and organizational factors that influence teachers' turnover intentions (Tippens et al., 2013). While Sorensen et al. (2016) and Claflin et al. (2020) found that SBAE teachers generally had low intentions to leave the profession, literature cites dissatisfaction among SBAE teachers and factors like burnout and out-of-classroom expectations as reasons for SBAE teachers leaving the profession (Kitchel et al., 2012). While previous studies have explored the turnover intentions of SBAE teachers, there remains a gap in understanding how these intentions vary by career stage and path to certification. Identifying trends among teachers most likely to leave the profession could enable the development of targeted support measures, such as tailored professional development programs. Such interventions are crucial for retaining the existing pool of educators and addressing the ongoing challenge of teacher attrition in agricultural education.

Methodology

The purpose of this study was to describe the turnover intentions of traditionally certified (TC) and alternatively certified (AC) SBAE teachers by career stage. As part of a larger study, this research focused on SBAE teachers across the United Stated teaching SBAE courses during the 2023-2024 academic year. To determine participation, cluster sampling was employed, categorizing teachers by NAAE region. Then, random sampling was used to select states or a series of states within the cluster to sample. All teachers within the selected states received an invitation to participate.

During October 2023, an online survey instrument (i.e., Qualtrics) was administered. Prior to administering, the instrument was piloted with SBAE teachers in three states (n = 74), yielding a

Cronbach alpha value of .93. The survey instrument for this analysis consisted of twenty statements adapted from Sorensen (2015), assessing the turnover intentions of SBAE teachers. Participants ranked each statement using a five-point Likert-type scale. As part of a larger study, 398 teachers participated, with 65.1% (n = 259) identifying as TC and 34.9% (n = 139) identifying as AC, yielding a 16.6% response rate. From the survey, 19.1% (n = 76) of teachers had 1-3 years of teaching experience, 20.6% (n = 82) ofteachers had 4-8 years of teaching experience, 26.4% (n = 105) of teachers had 9-17 years of teaching experience, and 33.9% (n = 135) of teachers had 18 or more years of teaching experience. Based on these ranges and the recommendations of Katz (1972), teachers were put into four categories: Survival, Renewal, Late Phase, and Wind Down.

Results/Findings

Our findings show that TC and AC teachers exhibit a relatively consistent pattern in their turnover intentions. Notably, both cohorts' of early career teachers (Survival stage) have the lowest turnover intentions. In contrast, those in the later stages, particularly AC teachers in the Wind down phase, display greater turnover intentions, likely due to factors related to stress and burnout (Table 1)

Table 1

Turnover Intentions of Traditionally & Alternatively Certified SBAE Teachers by Career Stage

	Traditionally Certified		Alternatively Certified	
Career Stage	*M*	*SD*	*M*	*SD*
Survival (1-3 years)	2.87	0.29	2.78	0.28
Renewal (4-8 years)	2.89	0.31	2.94	0.38
Late Phase (9-17 years)	2.96	0.31	2.87	0.33
Wind Down (18+ years)	2.86	0.50	3.04	0.48

Note: Construct variable scale, 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

Conclusions/Recommendations/Impacts

Our study reveals that SBAE teachers' turnover intentions are intricately linked to their career stage and certification path, resonating with Fessler and Christensen's (1992) model, intertwining teachers' professional development with personal and organizational influences. It is recommended that targeted retention strategies be implemented to address the specific needs and concerns of teachers at different career stages. For early career teachers, the focus should be on providing support systems and professional development opportunities that help them transition effectively into the profession. In contrast, for more experienced teachers, particularly those in the Wind down phase, the strategies should include recognition of their contributions, opportunities for career advancement, and flexible work arrangements. Tailoring retention efforts in this manner acknowledges the evolving professional development needs of SBAE teachers and fosters a more supportive teaching environment, potentially reducing turnover in the long term.

References

Chenevey, J. L., Ewing, J. C., & Whittington, M. S. (2008). Teacher burnout and job satisfaction among agricultural education teachers. *Journal of Agricultural Education*, *49*(3), 12–22. https://doi.org/10.5032/jae.2008.03012

Claflin, K., Lambert, M. D., & Stewart, J. (2020). An investigation of the routes to certification and turnover intentions of Wisconsin agriculture teachers. *Journal of Agricultural Education*, *61*(1), 128–139. https://doi.org/10.5032/jae.2020.01128

Fessler, R., & Christensen, J. (1992). Teacher development as a career-long process. In R. Fessler & J. Christensen (Eds.), The teacher career cycle: Understanding and guiding the professional development of teachers (pp.1-20). Boston, MA: Allyn & Bacon.

Foster, D. D., Smith, A. R., Lawver, R. G., & Spiess, M., (2023). National Agricultural Education Supply and Demand Project [data set]. American Association for Agricultural Education. Retrieved from: http://aaae.agedweb.org/nsd.

Hainline, M. S., Ulmer, J. D., Ritz, R., Burris, S., & Gibson, C. D. (2015). Career and family balance of Texas agricultural science teachers by gender. *Journal of Agricultural Education*, *56*(4), 31–46. https://doi.org/10.5032/jae.2015.04031

Haynes, M. (2014). On the path to equity: Improving the effectiveness of beginning teachers. *Alliance for Excellent Education*. https://eric.ed.gov/?id=ED560250

Ingersoll, R., Merrill, L., & May, H. (2014). What are the effects of teacher education and preparation on beginning teacher attrition. *CPRE Research Reports*. https://doi.org/10.12698/cpre.2014.rr82

Katz, L. G. (1972). Developmental stages of preschool teachers. *Elementary School Journal*, *73*(1), 50–54. https://doi.org/10.1086/460731

Kitchel, T., Smith, A. R., Henry, A. L., Robinson, J. S., Lawver, R. G., Park, T. D., & Schell, A. (2012). Teacher job satisfaction and burnout viewed through social comparisons. *Journal of Agricultural Education*, *53*(1), 31–44. https://doi.org/10.5032/jae.2012.01031

Solomonson, J., Korte, D. S., Thieman, E. B., Retallick, M. S., & Keating, K. (2018). Factors contributing to Illinois School-Based agriculture teachers' final decision to leave the classroom. *Journal of Agricultural Education*, *59*(2), 321–342. https://doi.org/10.5032/jae.2018.02321

Sorensen, T. J. (2015). Agriculture teachers' work and family domain characteristics, work-family conflict, and turnover intentions: A national study [Doctoral dissertation, Oregon State University]. Oregon State University Digital Commons.

Sorensen, T. J., McKim, A. J., & Velez, J. J. (2016). Why agriculture teachers leave: A national examination of turnover intentions and work-family conflict. *Journal of Agricultural Education*, *57*(4), 186–201. https://doi.org/10.5032/jae.2016.04186

Tippens, A. S., Ricketts, J. C., Morgan, A. C., Navarro, M. C., & Flanders, F. B. (2013). Factors related to teachers' intention to leave the classroom early. *Journal of Agricultural Education*, 58–72. https://doi.org/10.5032/jae.2013.04058

Training AGvocates in Secondary Classrooms: Texas Agricultural Science Teachers' Needs for Integrating Agricultural Communications Curriculum into Current Instruction

Tatum Pugh
School of Agricultural Sciences
Sam Houston State University
1019 Bowers Blvd.
Huntsville, TX 77340
903-286-7804
tep018@shsu.edu

Maureen Victoria
School of Agricultural Sciences
Sam Houston State University
1019 Bowers Blvd.
Huntsville, TX 77340
936-294-2369
mxv100@shsu.edu

Jean Parrella
Agricultural, Leadership, and Community Education
Virginia Tech
175 West Campus Dr.
Blacksburg, VA 24061
(530) 219-5642
jparrella@vt.edu

Mark Hainline
School of Agricultural Sciences
Sam Houston State University
1019 Bowers Blvd.
Huntsville, TX 77340
936-294-1186
msh004@shsu.edu

Introduction and Conceptual Framework

Preparing students to become skilled advocates of agriculture begins in the classroom. It is critical to integrate agricultural communications skills training into agricultural science courses and equip school-based agricultural educators (SBAEs) with the resources they need to effectively teach these skills that extend beyond public speaking (Corder & Irlbeck, 2018; Murphrey et al., 2023; Swenson, 2021). Challenges SBAEs face when it comes to teaching agricultural communications skills include time constraints, lack of training, and lack of access to resources (Parrella et al., 2022). To better understand SBAEs' perspectives and experiences in navigating these specific challenges, we framed this study around the concept of subjective experiences. By exploring SBAEs' interests and needs regarding agricultural communications curriculum integration, we sought to identify common viewpoints that can inform targeted interventions and support systems, enabling SBAEs to teach students communication skills.

Methods

We used Q methodology to investigate the subjective experiences of SBAEs and identify common viewpoints regarding the integration of agricultural communications curriculum into their instruction. Using the literature, we developed the study's 16-statement Q set, which represented SBAEs' perceptions of integrating agricultural communications curriculum into their instruction (Brown et al., 1999; Parella et al., 2021). Our P set consisted of 11 SBAEs who attended the Agriculture Teachers Association of Texas summer conference (Watts & Stenner, 2012). To collect data, participants sorted the statements onto a distribution board, with leftmost column indicating *least like me* (-3), the middle column indicating a *neutral* sentiment (0) and the rightmost column indicating *most like me* (+3).

Results

We extracted four factors, each of which represents a common viewpoint of Texas SBAEs. Factor one explained 31% of the variance within six defining variables, a composite reliability of 0.88, and an eigenvalue (EV) of 3.36. Factor two explained 17% of the variance with six defining variables, a composite reliability of 0.92, and an EV of 2.22. Factor three explained 21% of the variance within six defining variables, a composite reliability of 0.92, and an EV of 2.09. Factor four explained 21% of the variance with six defining variables, a composite reliability of 0.88, and an EV of 1.05. Table 1 includes the distinguishing statements for each factor and their associated Q sort values and *z* scores.

Table 1

Distinguishing Statements for Each Factor with their Associated Q Sort Value and Z Score

Statement	Value	*Z* Score
Factor One		
I would be the one purchasing the resources needed to teach agricultural communications in my class.	3	1.43*
I am comfortable teaching agricultural communications curriculum.	2	1.26
I currently teach some form of agricultural communications in my class.	1	0.89
I have time to implement agricultural communication curriculum in my class.	-2	-1.01*
Factor Two		
I would attend agricultural communications workshops if they were offered at the ATAT conference.	2	1.66*

My school district has the resources for me to teach agricultural communications.	2	0.75*
My students have a basic understanding of what agricultural communication skills are.	0	-0.07*
I would like to find time in my daily instruction to implement agricultural communication curriculum.	-1	-0.59*
Factor Three		
I would like to find time in my daily instruction to implement agricultural communication curriculum.	3	1.61
My students have a basic understanding of what agricultural communication skills are.	2	1.04*
I am comfortable teaching students how to disseminate critical information regarding agricultural topics using 21st century methods.	1	0.59*
I currently teach some form of agricultural communications in my class.	-2	1.41*
Factor Four		
I am knowledgeable about the career opportunities that the agricultural communications field provides.	2	1.30*
There is a need for agricultural communications curriculum in my class.	-2	-0.93*

Note. * indicates $p < .01$.

Conclusions and Recommendations

Results revealed four common viewpoints rooted in Texas SBAEs subjective experiences. We used the distinguishing statements to create a label describing each viewpoint. We named SBAEs representing the first factor Resource and Feasibility Educators. These educators are characterized by their motivation to acquire agricultural communications curriculum, their comfortability teaching agricultural communications skills, and the time constraints they face in integrating new curriculum. We named SBAEs representing the second factor Professional Development Motivated Educators. These educators seek opportunities to learn more about teaching agricultural communication skills, but they are somewhat disinterested in finding time to integrate teaching such skills into their instruction. We named SBAEs representing the third factor Aspiring Agricultural Communications Educators. Similar to Resource and Feasibility Educators, they face time constraints, and unlike Professional Development Motivated Educators, they desire strongly to overcome them. We named SBAEs representing the fourth factor Opportunity Aware Educators. Similar to Professional Development Motivated Educators, they are less inclined to integrate agricultural communications curriculum into their current instruction, despite feeling knowledgeable about agricultural communications career opportunities. We recommend professional development opportunities for SBAEs focusing on 1) the importance of integrating agricultural communications skills training into agricultural science education; 2) the development of user-friendly curriculum to develop students' communication skills in applied agricultural contexts; 3) strategies to overcome the time constraints they experience in teaching agricultural communication skills; and 4) experiential learning opportunities for students to practice their agricultural communication skills in real-world scenarios (Murphrey et al., 2023; Parrella et al., 2022; Swenson et al., 2021).

References

Brown, S. R., Durning, D.W. & Selden, S. (1999). Q methodology. *In Handbook of Research Methods in Public Administration*, ed. G. J. Miller and M. L. Whiker, 599–637. Marcel Dekker, Inc.

Calico, C., Edgar, L. D., & Edgar, D. W. (2014). Students' perceptions of an agricultural communication lesson and an experiential learning activity in secondary agricultural education classrooms. *NACTA Journal*, *58*(3), 196–201.

Corder, J., & Irlbeck, E. (2018). Agricultural Communications Skills, abilities and knowledge desired by employers compared to current curriculum: A literary review. *Journal of Agricultural Education, 59*(4), 177–193. https://doi.org/10.5032/jae.2018.04177

Murphrey, T. P., Richburg, A. W., Leggette, H. R., L. Norris-Parish, S., & Parrella, J. A. (2023). Ready, set, communicate: Measuring usability of instructional modules designed to improve communications skills of students studying agricultural sciences. *Journal of Applied Communications, 107*(2), 1d. https://doi-org.ezproxy.shsu.edu/10.4148/1051-0834.2478

Parrella, J., Murphrey, T. P., Leggette, H., Esquivel, C., & Bates, A. (2022, March/April). Help is available: Free curriculum for teaching decision-making and communication skills. *The Agricultural Education Magazine, 94*(5), 34–37. https://www.naae.org/profdevelopment/magazine/archive_issues/Volume94/2022%2003%20--%20March%20April.pdf#page=34

Parrella, J. A., Spence, J.R., Redwine, T., & Leggette, H. R. (2021). Characterizing viewpoints of scholars in agricultural communications as they relate to research themes in the journal of applied communications: A Q methodological study. *Journal of Applied Communications, 105*(3): 1–27. https://doi.org/10.4148/1051-0834.2389

Patton, M. (2002). *Qualitative research and evaluation methods* (3rd ed.). Sage Publications, Inc.

Swenson, R. D., McKay, T. D., & Steede, G. M. (2021). The Agricultural Communication SAE: A qualitative exploration of opportunities and teacher experiences. *Journal of Agricultural Education, 62*(3), 275 – 291.. https://doi.org/10.5032/jae.2021.03275

Watts, S., & Stenner, P. (2012). *Doing Q methodological research: Theory, method, and interpretation*. https://doi.org/10.4135/9781446251911

Understanding Entry and Retention Using FIT Choice: Motivational Factors Among New Agriculture Teachers in Florida

Keziah Crespo
University of Florida
crespok@ufl.edu

Jason Dossett
310 Rolfs Hall
Gainesville, FL 32611
(865) 771-6868
j.dossett@ufl.edu

Brian E. Myers
305 Rolfs Hall
Gainesville, FL 32611
(352) 392-0502
bmyers@ufl.edu

J.C. Bunch
307A Rolfs Hall
Gainesville, FL 32611
(352) 294-2226
bunchj@ufl.edu

Understanding Entry and Retention Using FIT Choice: Motivational Factors Among New Agriculture Teachers in Florida

Introduction

School-based agricultural education (SBAE) in Florida faces a teacher retention crisis. Lambert (2006) estimates that the number of new teachers who leave the classroom each year is around 50%. While this number describes all classroom teachers, SBAE is not immune to teachers leaving for other careers. It is noted that approximately 6.3% of SBAE teachers leave the classroom each year (Kantrovich, 2010). There are currently 545 agriculture teachers in 383 programs across the State. Currently, in Florida, teachers range from zero years of experience to more than 50 years.

Teachers have identified similar reasons for choosing teaching in the last five decades (Watt et al. 2012). Motivations include working with children and adolescents, making a social contribution, making a difference, job security, job benefits, enjoyment of teaching, compatibility with family life, and self-education (McKenzie & Santiago, 2005).

Conceptual/Theoretical Framework

The Factors Influencing Teaching Choice scale (FIT-Choice) was the theoretical framework used for this study. The FIT-Choice scale was created to determine the motivations behind why teachers in the profession teach. It predicts positive and negative career outcomes relating to teacher satisfaction. There are nine top identified intrinsic motivations for teaching: working with children and adolescents, making a social contribution, making a difference, job security, job benefits, enjoyment of teaching, compatibility with other interests and activities, compatibility with family life, and self-education (McKenzie & Santiago, 2005). Extrinsic motivations that are more impactful include salary, job security, and career status. The FIT-Choice was based on the expectancy-value motivational theory, which offers a motivational framework (Watt & Richardson, 2007).

Social utility value factors relate to "pleasing the masses" or benefitting most of the population. Social utility factors stem from prior positive teaching or teacher experiences. Personal utility value factors align more with life practices than teaching. These factors include more time with family, secure income, and opportunities to travel. These are seen to have a higher impact on career outcomes than those that fall in line with the teaching profession. Each year, teachers gain new expectations and responsibilities within the school environment that can affect their decision to continue teaching year to year. These responsibilities and expectations come from school boards, parents, and community members. The expectations are no longer just to teach the students but include so much more that many teachers are not contracted to complete. Many of these align with social/environmental factors that affect an educator's teaching motivation (Bandura, 1986).

For educators with prior teaching experience in other districts or states, administrators play a role in how long educators stay or if they continue teaching at all. Administrator behavior is directly connected to teacher behavior and motivations (Liebowitz & Porter, 2019). In this profession, many educators have a fallback career affected more by salary than job stability in their State.

Methodology

Currently, Florida has 545 agriscience teachers. The target sample for this study was all agriscience teachers (N = 272) registered for the Chapter Officer Leadership Training (COLT) Conferences in Florida. Four of the six areas host individual COLT Conferences, with the

remaining two co-hosting. Therefore, data were collected at five different conferences throughout the State. Data were collected using a hard-copy questionnaire during each conference location's face-to-face teacher professional development session. As a result, 156 teachers completed and returned the questionnaire for a 57% response rate. The agriscience teacher respondents in this study were majority white (*f* = 143; 91.7%), female (*f* = 114; 73.1%), held a bachelor's degree (*f* = 114; 73.1%), and taught an average of 6.15 years (SD = 8.95; Min. = 1; Max. = 37). Regarding teaching career length, 73 (46.7%) had been teaching five years or less.

Data for this study were collected using the FIT-Choice® scale developed and validated by Richardson and Watt (2006) and Watt and Richardson (2007). The FIT-Choice® scale is an instrument that measures the factors that influence individuals' decision to become a teacher and, for this study, an agriculture teacher (Watt & Richardson, 2007). Nine items were used to measure teachers' perception of teaching ability; the FIT-Choice® scale also consists of four constructs: personal utility value (11 items), social utility value (18 items), task demand (six items), and task return (eight items).

Findings

Table 1 reports the overall mean scores for new teacher participants along with standard deviations. The highest reported motivation of teachers for choosing to teach is prior teaching and learning experiences and make a social contribution. The perceptions with the highest reported score were high demand and satisfaction with choice.

Table 1

Mean Scores of FIT Choice Scale for Teachers with 1-5 Years Experience

Motivations	Mean	SD	**Perceptions**	Mean	SD
Prior Teaching and Learning Experiences	6.15	1.25	High Demand	6.56	0.65
Make A Social Contribution	5.85	1.06	Satisfaction With Choice	5.60	1.20
Bludging (easy job)	3.26	1.39	Teacher Morale	3.61	1.04
Fallback Career	2.45	1.23	Good Salary	2.28	1.25

Conclusions

This exploratory study has provided detailed insights into the motivations behind the career choices of agriculture teachers with five or fewer years of experience. The findings reveal that "Prior Teaching & Learning Experiences" emerge as the predominant factor influencing these SBAE teachers' decisions to enter and persist in the teaching profession Additionally, while other motivation categories like personal values and professional aspirations also ranked highly, the "Fallback Career" option was notably less influential, suggesting a genuine commitment among participants to the field of agricultural education.

Recommendations/Implications

This research contributes to our understanding of the factors that encourage entry into and retention within the teaching profession in School-Based Agricultural Education (SBAE), offering valuable insights for curriculum developers, policy makers, and educational trainers aimed at enhancing teacher recruitment and retention strategies. Future research should explore the longitudinal impact of these motivations and how they evolve with increased teaching experience.

References

Bandura, A. (1986). Social foundations of thought and action. Englewood Cliffs, NJ, 1986(23-28).

Kantrovich, A. J. (2010). The 36th Volume of A National Study of the Supply and Demand for Teachers of Agricultural Education. American Association for Agricultural Education.

Lambert, L. (2006). Half of teachers quit in 5 years. *Washington Post*, 9, A07. Retrieved from: https://teaching-point.net/wp-content/uploads/2018/06/Half_5_Years.pdf

Liebowitz, D. D., & Porter, L. (2019). The effect of principal behaviors on student, teacher, and school outcomes: A systematic review and meta-analysis of the empirical literature. *Review of Educational Research*, 89(5), 785-827. https://doi.org/10.3102/0034654319866133

McKenzie, P., & Santiago, P. (Eds.). (2005). *Education and training policy teachers matter: Attracting, developing and retaining effective teachers*. OECD publishing. https://www.oecd.org/edu/school/34990905.pdf

Richardson, P. W., & Watt, H. M. (2006). Who chooses teaching and why? Profiling characteristics and motivations across three Australian universities. *Asia-Pacific Journal of Teacher Education*, 34(1), 27-56. https://doi.org/10.1080/13598660500480290

Watt, H. M., & Richardson, P. W. (2007). Motivational factors influencing teaching as a career choice: Development and validation of the FIT-Choice scale. *The Journal of experimental education*, 75(3), 167-202. https://doi.org/10.3200/jexe.75.3.167-202

Watt, H. M., Richardson, P. W., Klusmann, U., Kunter, M., Beyer, B., Trautwein, U., & Baumert, J. (2012). Motivations for choosing teaching as a career: An international comparison using the FIT-Choice scale. *Teaching and teacher education*, 28(6), 791-805. https://doi.org/10.1016/j.tate.2012.03.003

Research Poster

Understanding the impact of self-determination: A narrative examination of small-scale Black regenerative farmers

Sherifat T. Alabi
The Ohio State University
2120 Fyffe Rd Columbus, OH 43210 (312 Ag Admin BDGL)
alabi.17@osu.edu
+16149615849

Joy N. Rumble
The Ohio State University
1328 Dover Rd Wooster, OH 44691 (119B Halterman Hall)
rumble.6@osu.edu
+14195602045

Introduction/Need for Research

Interest in regenerative agriculture (RA) as an alternative to dominant farming practices has not been limited, despite the lack of a unifying definition (Tittonel et al. 2022). Regenerative systems, as a solution to meeting community food needs, contribute to the growing interest in small-scale urban agriculture and food movements (Mpanga et al., 2021). The USDA economic definition of a small-scale farm does not account for the diversity of small-scale farms and the factors contributing to their growth (Iles et al., 2021). Despite research establishing individuals' motivations behind farming (Inwood et al., 2013), there is a lack of research on the holistic documentation of the small-scale farmer population and a lack of understanding of their motivations, challenges, and needs (Iles et al., 2021). An understanding of the different ecological motivations of small-scale farmers is imperative for formulating better policies, incentives, and support systems around small-scale farms (Gosnell, 2022). Hence, an examination of the heterogeneous motivations of small-scale regenerative farmers needs to be completed. This research need contributes to the advancement of diversity and inclusion in agriculture, food, and natural resources (AAAE, 2023). The purpose of this study is to highlight the voices of small-scale regenerative farmers, understand their motivations behind RA and the psychological needs that they possess.

Theoretical Framework

This study hinges on self-determination theory (SDT). SDT construes human behavior with motivation and personality (Deci & Ryan, 2000). It acknowledges three basic psychological needs: Autonomy (e.g., personal desire enacted by an individual), competence (e.g., skilled knowledge of regenerative practices implemented through action), and connectedness (e.g., awareness of appreciation and support from others). According to SDT, extrinsic motivations (e.g., subsidy, grants) and intrinsic motivations (e.g., healthy food consumption) are important drivers for scalability of regenerative practices by small-scale farmers (Bopp et al., 2019).

Method

Guided by a constructivist ontological worldview, narrative inquiry was used to explore the significance of SDT on the experience of small-scale RA farmers (Clandinin & Connelly, 2000). The population for the study was small-scale African American (Black) farmers in Ohio. A sample of small-scale Black farmers was utilized for their community-building efforts around food (Leslie & White, 2018) and their underrepresentation (< 1%) in Ohio (NASS, USDA, 2017). Using existing contacts along with snowball sampling technique, 8 farmers were recruited based on eligibility criteria of growing on less than 1 to up to 10 acres and implementing at least two regenerative practices identified as NRCS climate-smart/conservative practices (USDA, NRCS, 2023). Data collection included semi-structured, audio-recorded, 90-minute in-depth interviews, and each participant received a $50 gift card. Data transcription was verbatim and analyzed using MaxQDA qualitative software to extract heuristic themes and meanings. Three interrelated themes – autonomy (81), connectedness (66), and competence (64) were represented with a total of 211 coded items. Data were validated through long exposure to the data.

Results

Of the eight participants, the majority were females (n = 7) and new or first-generation farmers (n = 7 years). On average, they grew on less than two acres of land and only three participants owned their land, while others were currently leasing. All the participants engaged in two or

more regenerative practices and produced a combination of vegetables, herbs, spices, pollinators vegetation, and mushrooms. Also, all participants sold their produce at community farmers' markets and provided fresh produce to their local food pantry.

The psychological needs described by SDT were represented in the stories of small-scale Black regenerative farmers. Their autonomy needs were focused on improving their health and empowering their communities. One participant said, “I wanted to be able to feed myself and my community and the understanding that no matter your economic status, you deserve to eat quality food that is nourishing to the body makes sense to me.” Another participant shared, “My family has a long history of lupus and I found that what you eat may help to extend your life, so since 2012, I started growing my food.” Also, the participants had times when their needs associated with connectedness were met as well as times when they were not. On one hand, a farmer said, “I went on social media, primarily, Facebook and I said, we need to have our water line fixed, and it's gonna be $3,500. And I raised that $3,500 in less than a week, just on social media.” On the other hand, a farmer said, “The volunteers that come lack farming education to play useful roles. All I need is labor, and maybe things will change.” The participants’ needs associated with competencies reflected their level of experience and mastery of RA practices. A participant said, “I began taking some different courses in agriculture that gave me skills about farm business planning.” Another participant said, “I have not been really successful with composting, so, we're still looking to understand what you do put in your compost pile and what you don’t put.”

Participants expressed two forms of motivation, extrinsic and intrinsic. Grants, donations, and subsidies including awards and recognition of effort were extrinsic motivations mentioned by the farmers. A farmer said, “We could not produce enough vegetables because we are challenged by infrastructure. But we must prove to be successful with what we have to be considered for funding. It took a while, but we were successful in securing the grants.” Whereas, intrinsically, participants acknowledged personal/community needs as a driving force, hence a sense of responsibility. One participant said, “There wasn't a full-service grocery store that it really began to frustrate me, and I said, what are the skills that I have to influence change.”

Conclusions/Implications/Recommendations

Generally, the findings highlight an understanding of how small-scale Black farmers are pursuing food sovereignty – the considerations of what is likely contributing to the growth of urban farming and interest in RA practices. Self-determination demonstrates how motivation can foster farmers’ well-being as well as promote community food security and resiliency. Also, findings shows that Black farmers needs access to extensive RA knowledge and skills and labor support to effectively implement and scale-up RA.

Small-scale agriculture holds significant potential to contribute to the sustainability of agriculture and Black farmers are playing key roles in this effort. Thus, they are an ideal target for Extension in Ohio due to their conscientiousness to enhance healthy food accessibility within limited available resources in their communities. By acknowledging racial diversity and addressing the needs of small-scale farmers in Ohio, Extension can provide capital-enhancing opportunities such as knowledge and relevant resources that would further support Black community-led food initiatives and sustainability efforts. We recommend that future research should focus on the barriers faced by small-scale regenerative farmers in fulfilling their psychological needs.

References

American Association for Agricultural Education (AAAE). (2023). *AAAE Research Values*.

Bopp, C., Engler, A., Poortvliet, P. M., & Jara-Rojas, R. (2019). The role of farmers' intrinsic motivation in the effectiveness of policy incentives to promote sustainable agricultural practices. *Journal of Environmental Management, 244*, 320–327. https://doi.org/10.1016/j.jenvman.2019.04.107

Clandinin, D. J., & Connelly, F. M. (2000). *Narrative inquiry: Experience and story in qualitative research.* Jossey-Bass.

Gosnell, H., Gill, N., & Voyer, M. (2019). Transformational adaptation on the farm: Processes of change and persistence in transitions to 'climate-smart' regenerative agriculture. *Global Environmental Change, 59*, 101965. https://doi.org/10.1016/j.gloenvcha.2019.101965

Iles, K., Ma, Z., & Nixon, R. (2021). Multi-dimensional motivations and experiences of small-scale farmers. *Society & Natural Resources, 34*(3), 352–372. https://doi.org/10.1080/08941920.2020.1823540

Inwood, S., Clark, J., & Bean, M. (2013). The differing values of multigeneration and first-generation farmers: Their influence on the structure of agriculture at the rural-urban interface. *Rural Sociology, 78*(3), 346–70. https://doi.org/10.1111/ruso.12012.

Leslie, I. S., & White, M. M. (2018). Race and Food: Agricultural Resistance in U.S. History. In P. Batur & J. R. Feagin (Eds.), *Handbook of the Sociology of Racial and Ethnic Relations* (pp. 347–364). Springer International Publishing. https://doi.org/10.1007/978-3-319-76757-4_19

Mpanga, I. K., Schuch, U. K., & Schalau, J. (2021). Adaptation of resilient regenerative agricultural practices by small-scale growers towards sustainable food production in north-central Arizona. *Current Research in Environmental Sustainability*, 3, 100067. https://doi.org/10.1016/j.crsust.2021.100067

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

USDA NASS (2019). 2017 Census of agriculture. Ohio profile. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Ohio/cp99039.pdf039.pdf (usda.gov)

USDA NRCS (2023). Climate-smart agriculture and forestry (CSAF) mitigation activities list (FY23). http://www.nrcs.usda.gov/

Tittonell, P., El Mujtar, V., Felix, G., Kebede, Y., Laborda, L., Luján Soto, R., & de Vente, J. (2022). Regenerative agriculture — agroecology without politics? *Frontiers in Sustainable Food Systems*, 6, 844261. https://doi.org/10.3389/fsufs.2022.844261

Using a Virtual Reality Trainer to Enhance Preservice SBAE Teachers' Welding Self-Efficacy

Ashley Thompson and Justin Pulley
Tarleton State University
Department of Agricultural Education and Communication
College of Agriculture and Natural Resources
1333 W. Washington
Stephenville, Texas 76402
ashley.jenson01@go.tarleton.edu
jpulley@tarleton.edu

Introduction, Literature Review, and Theoretical Framework

School Based Agricultural Education (SBAE) teachers are in a unique position to begin training the welders who will fill the nearly 360,000 positions that will be open by 2027 (AWS, 2023). However, these teachers need help doing so. Despite welding being considered one of the most important and commonly taught subjects within agricultural education (National FFA Organization, 2023; Whitehair et al., 2020; Burris et al., 2005; Lafferty, 2004), their perceived ability to teach the subject is critically low (Clark et al., 2021). For SBAE teachers to feel comfortable and confident with teaching students to weld, they must first be comfortable and confident welders themselves, thus having a high perceived self-efficacy (Bandura, 1994).

One way to increase welding self-efficacy in agriculture students is by using Virtual Reality trainers to supplement instruction (Heibel et al., 2022; Ramos et al., 2022). While previous studies have been done to analyze the benefits of integrating VR welders into postsecondary agricultural mechanics courses (Wells & Miller, 2022; Wells & Miller, 2020), no study has specifically focused on using this technology to evaluate the self-efficacy of preservice SBAE teachers. This study used the Successful Integration of VR into Agricultural Education model (Pulley, 2022) to attempt to accomplish the goal of increasing welding self-efficacy in preservice SBAE teachers. This was done by creating a positive user experience with the virtual welding trainers and allowing participants to address their SMAW process performance through the realistic interpretation of a hands-on activity.

Methodology

The purpose of this study was to determine if using a VRTEX 360 Compact welding trainer increased the self-efficacy of preservice SBAE teachers at Tarleton State University when using the SMAW process. The following objective guided this study:

1. Explore Tarleton State University preservice SBAE teachers' pre- and post-perceptions of self-efficacy in SMAW welding before and after using the VRTEX 360 Compact welding trainer.

Participants (n = 8) were in an agricultural mechanics course designed for preservice teachers. Using a mixed-mode survey, we explored Tarleton State University preservice SBAE teachers' pre- and post-perceptions of self-efficacy of the SMAW process before and after using the VRTEX 360 Compact welding trainer. The trainer scores welds from 0-100 based on criteria such as travel and work angle, arc length, travel speed, and position. At the beginning of the study, participants were given a pre-treatment survey to determine their SMAW process self-efficacy on a scale of 1 to 10. They were then asked to explain their rankings. Participants were then introduced to SMAW welding concepts in a lecture setting and signed up for a two-hour practice period for the following week. At the end of the practice period, participants were given a post-treatment survey to determine their SMAW welding self-efficacy after using the virtual trainer.

The survey instrument was tested for content and face validity based on recommendations from Ary et al. (2010) by a panel of three experts who were chosen based on their expertise as researchers in agricultural mechanics and SBAE teacher self-efficacy. Data was checked for normality through analysis of skewness, kurtosis, and QQ plot diagrams using IBM SPSS© Version 28.0 software.

Findings

The pre-treatment survey data indicated that participants (n = 8) were not confident in any aspect of the SMAW process. After using the VRTEX, they all saw their scores increase. Comments from participants indicated half of the participants (n = 4) had never welded using the SMAW process. The other half had used the SMAW process; however, they did not feel confident due to lack of quality practice. Participant 4 reported having experience with SMAW but did not know how to set up the welder without help. Additionally, Participant 6 felt comfortable enough with SMAW to set it up and use it without help but did not feel confident enough in their own abilities to be able to safely manage a laboratory environment with more than a handful of students. Table 1 shows the increases by question.

Table 1

Pre- and Post-Treatment Self-Efficacy Rankings

Question	*M*		*SD*		Range	
	Pre	Post	Pre	Post	Pre	Post
Confidence performing SMAW welding.	3.5	7.0	2.1	1.7	1-6	4-9
Confidence teaching students to SMAW weld.	1.8	5.5	1.2	1.7	1-4	3-8
Confidence to set up SMAW experiences for students.	2.3	4.2	1.6	1.3	1-5	2-6

All participants indicated in the comments the VRTEX 360 Compact welding trainer helped them increase their skills. Participant 3 was quoted as saying the virtual trainer made them "feel much more confident with performing stick welding" because it allowed them to "work on welding skills, receive instant feedback, and correct issues when running the next bead". They also believe the virtual trainer allowed them to "become more confident, which will in turn help [their] ability to teach welding". Similarly, Participant 5 stated the virtual trainer allowed them to "pinpoint and correct" their welding using visual and audial cues. They also stated they believe they will be better able to correct students because of their own increased welding ability. The one item not seeing a large increase was the ability to set up welding experiences. Participant 8, for example, stated this experience helped increase their confidence in setting a welder to the correct amperage based on type of consumables used, however, they feel like they need to do more research to be able to purchase supplies and set up effective lessons.

Conclusions/Discussion/Recommendations

Preservice SBAE teachers showed increased self-efficacy in three areas: ability to perform the SMAW process; ability to teach students to perform the SMAW process; and ability to perform the necessary steps to set up a SMAW experience for students. Future studies could be done at other institutions to generalize these results. The virtual trainer offers a low risk, less intimidating environment to practice welding in before adding the potential stress and risk of live welding. It also offers instant feedback and training lenses to master the motions and positions needed to weld successfully. Therefore, it is recommended to use the VRTEX 360 Compact to increase preservice SBAE teacher self-efficacy prior to live welding.

References

American Welding Society. (2023). Welding Workforce Data and Projections. https://weldingworkforcedata.com/.

Burris, S., Robinson, J. S., & Terry, R., Jr. (2005). Preparation of preservice teachers in agricultural mechanics. Journal of Agricultural Education, 46(3), 23-34. https://doi.org/10.5032/jae.2005.03023.

Clark, T. K., Anderson, R., & Paulsen, T. H. (2021). Agricultural Mechanics Preparation: How Much Do School Based Agricultural Education Teachers Receive?. *Journal of Agricultural Education*, *62*(1), 17-28. https://eric.ed.gov/?id=EJ1297848.

Heibel, B., Anderson, R., & Swafford, M. (2022). Integrating virtual reality technology into beginning welder training sequences. AAAE Conf. Proceedings.

Lafferty, J. B. (2004). *An analysis of beginning Texas state agricultural science teachers' perceived importance and knowledge of basic agricultural mechanics competencies*. Stephen F. Austin State University.

National FFA Association. (2023). Our Membership fact sheet. https://www.ffa.org/our-membership/#:~:text=More%20than%2013%2C000%20FFA%20advisors,to%20grow%20into%20competent%20leaders.

Pulley, J. (2022). "Is that an Oculus?" An Investigation of Ohio Agriculture Teachers' and Students' User Experience in a Virtual Reality Tractor Safety Experience. (Doctoral dissertation, The Ohio State University).

Ramos, J., Anderson, R., Swafford, M., Borges, B., & Heibel, B. (2022). Identifying the relationship between augmented reality welding instruction and welding performance. AAAE Conf. Proceedings.

Wells, T., & Miller, G. (2022). Students' perspectives on using virtual reality technology in a university-level agricultural mechanics course. Journal of Agricultural Education, 63(2), 17-36. https://doi.org/10.5032/jae.2022.02017.

Wells, T., & Miller, G. (2020). The effect of virtual reality technology on welding skill performance. Journal of Agricultural Education, 61(1), 152-171. https://doi.org/10.5032/jae.2020.01152.

Whitehair, R. L., Schramm, K. R. S., Wells, T., & Hainline, M. S. (2020). Preservice Teachers' Conceptualizations of Agricultural Mechanics. Journal of Agricultural Education, 61(3), 60-74. https://doi.org/10.5032/jae.2020.03060.

Using Generative AI to Solve Technical Problems: Student Results and Perceptions

Grace D. Vehige, Instructor, University of Arkansas
1120 W. Maple
Fayetteville, AR 72701
gdvehige@uark.edu
(479) 575-2035

Will Doss, Assistant Professor, University of Arkansas
1120 W. Maple
Fayetteville, AR 72701
wd009@uark.edu
(479) 575-2035

Christopher M. Estepp, Associate Professor, University of Arkansas
1120 W. Maple
Fayetteville, AR 72701
estepp@uark.edu
(479) 575-2035

Donald M. Johnson, University Professor, University of Arkansas
1120 W. Maple
Fayetteville, AR 72701
dmjohnso@uark.edu
(479) 575-2035

Using Generative AI to Solve Technical Problems: Student Results and Perceptions

ChatGPT is a large language Artificial Intelligence (AI) model developed by OpenAI released for public use in November 2022 (Trust et al., 2023). ChatGPT was pre-trained on large volumes of text and predicts the next word given the previous words in a sequence of text (Ray, 2023). Higher education faculty have mixed feelings about ChatGPT; some are concerned about negative implications for academic integrity and potential disruption of the teaching and learning process, while others are excited about the possibility of incorporating a powerful new tool into teaching and learning (Trust, et al., 2023; Yu, 2023).

Theoretical Framework

To explore students' attitudes toward ChatGPT as a teaching and learning tool, we used the Two-Stage Model of Cognition Change (Bhattacherjee & Premkumar, 2004) and Self-efficacy Theory (Bandura, 1997). The Bhattacherjee & Premkumar model examines technology users' pre- and during usage beliefs and attitudes to determine their satisfaction or disconfirmation and final decision regarding adoption of a technology. In the context of this study, students' expectations regarding ChatGPT should influence their perceived confidence in the technology. Subsequent use of ChatGPT should help them determine whether the technology performs better or worse than initially expected. We were interested to determine if this disconfirmation stage helped students form new perceived attitudes toward ChatGPT (Lankton et al., 2014). Self-efficacy theory (Bandura) also informed this study, as students' confidence should increase resulting from mastery experiences using two methods to analyze hydraulic systems.

Objectives

The objectives of this project were to compare the accuracy of technical problem-solving results generated by ChatGPT and traditional hand calculations, determine students' confidence in the accuracy of ChatGPT and hand calculation results, and determine students' perceived need for development of quantitative problem-solving skills given the availability of ChatGPT.

Methods

The free version of ChatGPT (3.5) was incorporated into a single class meeting of a first-year agricultural systems technology course to analyze the extension and retraction forces (lbs) and total cycle time (seconds) for a 4-in (bore) x 16-in (stroke) x 2-in (rod diameter) hydraulic cylinder operating on a system with a maximum pressure of 2250 psi and a pump flow of 14.5 GPM. Students ($N = 31$) were instructed to write and enter a single ChatGPT query to compute all solutions. Students then copied and pasted their queries into an online assignment form. Students extracted ChatGPT's solutions and entered them into the online form and then rated their level of confidence (1 = extremely unconfident, 5 = extremely confident) in the accuracy of the ChatGPT answers. Next, the instructor guided the class through the process of quantitatively analyzing the hydraulic system via an interactive lecture where the applicable concepts and formulas were introduced where students applied them to analyzing the hydraulic system. Student-generated answers were also entered into the online form and students rated their level of confidence in their accuracy. Next, the students compared the ChatGPT and class generated answers and re-rated their level of confidence in the accuracy of the ChatGPT solution. Finally, students responded in text to the (ungraded) prompt, "With the advent of ChatGPT and other

generative AI programs, is it still important to develop analytical and computational skills? Briefly explain why or why not." Students then submitted the online form for grading.

Data for the first two objectives were analyzed using descriptive statistics. For objective three, a thematic content analysis (Smith, 1992) was performed on the open response prompts. The PI served as an independent reviewer and used inductive coding on the data. Data were pre-coded by highlighting standout phrases regarding student perceptions and attitudes toward their ChatGPT experience. Phrases were reviewed and categorized relating to the general ideas suggested by the data. Next, data were clustered by thematic category and commonality (King Brooks, 2017). After defining the categories, three theoretical constructs were developed, which guided the report summary.

Results

The majority of students (66.7%) reported never using ChatGPT before this exercise. Most students' (63.3%) ChatGPT results for the cylinder's extension force were correct, but only 10.0% and 3.3% generated correct responses for retraction force and cycle time, respectively. Analysis of the student-generated queries indicated 60.7% contained all the specifications and instructions necessary to generate complete and accurate responses. For the student-generated responses, 96.7%, 96.7%, and 93.3% were correct for extension force, retraction force, and cycle time, respectively. Initial confidence in the ChatGPT results (M = 2.57, SD = 1.10) decreased (M = 1.97, SD = 1.03) after comparison with the student-generated responses. This decrease was statistically significant [$t(29) = 2.23$, p - .03] and represented a small (Cohen, 1988) effect. Conversely, students were confident (M = 4.53, SD = 0.97) hand-calculated results were correct.

Three themes were developed from the open-ended responses: (a) distrust of AI, (b) value placed on human factor, and (c) shared concern for human and technological error. Upon analysis, all respondents suggested they believe it is important to develop analytical and computational skills despite the opportunity to utilize ChatGPT and other AI tools. Further, the qualitative evidence suggested a strong observable pattern in the distrust of AI's capability. Students consistently referenced the lack of human behavior and influence in AI, which led them to question ChatGPT's reliability. Rather, students preferred a human element when attempting to solve complex problems. Students indicated a reluctance to use AI, as they distrusted their personal knowledge of the technology's functionality as much as they distrusted the technology itself.

Conclusions/Implications/Recommendations

According to the theoretical model, students' initial attitudes changed after using ChatGPT (Bhattacherjee & Premkumar, 2004). Students lacked initial confidence in ChatGPT, perhaps because of inexperience (Bandura, 1997). Students' confidence was lower after using the technology, suggesting potential dissatisfaction with the technology's performance (Lankton et al., 2014); despite most queries being written correctly, ChatGPT consistently provided wrong answers. Open-ended responses also confirmed students' distrust in ChatGPT. Alternately, students were more confident in their hand calculated results. As AI technologies become more prevalent, instructors should consider the implications for teaching and learning. If instructors choose to use AI in the classroom, instruction should be included on how to conduct appropriate queries. AI can be a powerful teaching tool; however, further research into how ChatGPT can effectively be used in the classroom should be conducted.

References

Bandura, A. (1997). *Self-Efficacy: The exercise of control*. Freeman.

Bhattacherjee, A., & Premkumar, G. (2004). Understanding change in belief and attitude toward information technology usage: A theoretical model and longitudinal test. *MIS Quarterly, 28*(2), 229-254. https://www.jstor.org/stable/25148634

King, N., & Brooks, J.M. (2017). *Template analysis for business and management studies*. Sage.

Lankton, N., McKnight, D.H., & Thatcher, J.B. (2014). Incorporating trust-in-technology into expectation disconfirmation theory. *The Journal of Strategic Information Systems, 23*(2), 128-145. https://doi.org/10.1016/j.jsis.2013.09.001

Ray, P. R., (2023). ChatGPT: A comprehensive review on background, applications, key challenges, bias, ethics, limitations and future scope. *Internet of Things and Cyber-Physical Systems*, *3*: 121-154.

Smith, C.P. (Ed.). (1992). *Motivation and personality: Handbook of thematic content analysis*. Cambridge University Press.

Trust, T., Whalen, J., & Mouza, C. (2023). Editorial: ChatGPT: Challenges, opportunities, and implications for teacher education. *Contemporary Issues in Technology and Teacher Education, 23*(1), 1-23.

Yu, H. (2023). Reflection on whether Chat GPT should be banned by academia from the perspective of education and teaching. *Frontiers in Psychology, 14*:*1181712*. doi: 10.3389/fpsyg.2023.1181712

Utilizing Social Capital and Ego Resiliency Theory to Assess the Influence of Social Support and Spirituality on Ego Resilience of Youth in Haitian Farmworker Communities

INTRODUCTION

The intensification of global migration patterns underscores the urgent need for adapted strategies to meet the needs of migrants working in agriculture, including their youth and families. Research indicates that many newly arrived immigrants often find employment in agricultural labor, particularly those with limited formal education (Farmworker Justice, 2015). In fact, unlike previous trends, the agricultural labor workforce today faces greater stability, often due to limited educational opportunities that hinder transitions to other sectors. Also, with the significant number of migrants of reproductive age and the sequelae of their migration process, host countries must prioritize programs conducive to nurturing the potential of young migrants to contribute to and positively integrate into society. To this effect, the land grant system has traditionally focused on positive youth development (PYD) programs such as 4-H to improve the lives of rural agricultural youth. However, migrant youth, coming from increasingly diverse countries and cultures, lack social capital and access to Extension programs and can face significant barriers to their human developmental process and resilience.

Given the diversity of cultures expected to form the agricultural labor pool from this growing migrant population, it is important to understand how influences on migrant youth affect them. Traditionally, farm economy has been a primary driver when studying agriculture and the agricultural labor pool (Dimitri et al., 2005). For example, the Federal Labor Standard Act of 1938 still upholds the concept of agricultural exceptionalism, which exempts agricultural employers from many labor laws and protection standards regarding protecting workers' health, safety, and interests. Notably, it permits children as young as 12 to engage in nonhazardous farm tasks with parental consent, grants unlimited field work at age 14, and allows children as young as 16 to work in any capacity, even during school hours (NC Farmworker, 2018). This study, based on a youth resilience framework, takes a development lens to examine the association between farmworker youths' subjective socioeconomic status (SSS) and their ego resilience (ER) while considering perceived social support (PSS) and spirituality (SPI) as two potential moderators of this relationship.

THEORETICAL FRAMEWORK

The present study employed Social Capital Theory and Resiliency Theory to examine the relationship between the different factors. Social Capital Theory argues that social relationships are resources generated from social connections that can lead to the development and accumulation of human capital (Hawkins & Maurer, 2010). Specifically, bonding social capital theory emphasizes the importance of connecting people for a better good. On the other hand, ego resiliency theory posits that individuals with higher levels of ego resilience demonstrate greater capacity to adapt to changes in their environment and navigate challenging situations (Taylor et al., 2014). Conversely, individuals with lower levels of ego resilience are more susceptible to experiencing difficulty in coping with shifting environmental circumstances.

RESEARCH DESIGN AND METHODOLOGY

The study followed a mixed method sequential explanatory design with the quantitative preceding the qualitative arm. In the quantitative phase, data were gathered online via Qualtrics and analyzed using SPSS (version 29) and the PROCESS MACRO. Subsequently, in the qualitative phase, semi-structured interviews were conducted via Zoom, and NVIVO was employed for data analysis following Yin' s (2016) five-step approach.

RESULTS/FINDINGS

A total of 191 young adults (18-29), all of Haitian descent, participated in the first phase. However, 8 people were engaged in the second phase with 4 participants carried over from the first phase and 4 new ones who shared similar profiles. SSS was assessed using the 10-rung ladder MacArthur scale (Adler et al., 2000) (α =.749), PSS was measured using the multidimensional scale of perceived social support (Zimet et al., 1988) (α =.888), and SPI was evaluated using the 13-item spiritual support scale (Reinert & Bloomingdale, 2000), (α =.905). Additionally, ego resilience (ER) was gauged using the 11-item version of the ego resiliency scale (Alessandri et al., 2012) (α =.852).

Quantitative results indicated that only PSS (β=.5246, P<.001) and SPI (β=.2973, P<.001), exhibited significant relationships with ER, whereas SSS (β=-.0046, P=.7800) did not show neither a significant main effect nor a significant interaction effect with PSS and SPI. The qualitative phase complemented and supported the quantitative findings. It suggested that the participants' levels of ego resilience were more influenced by the hardships they faced in conjunction with their perceived social support and spirituality, rather than their SSS alone as opposed to literature, which establishes a positive correlation between the two.

CONCLUSION

Assessing SSS, PSS, SPI, and ER, quantitative results showed significant relationships between PSS, SPI, and ER, contrary to existing literature as SSS did not significantly affect ER. Qualitative findings supported this, highlighting the influence of perceived social and spiritual support alongside hardships on participants' ego resilience. This underscores the need to consider social and spiritual factors in fostering resilience among young Haitian adults.

IMPLICATION/RECOMMENDATIONS/IMPACT

These findings carry significant implications for stakeholders in agricultural education and extension, emphasizing the need for more culturally targeted support programs. Specifically, enhancing perceived social support (PSS) and spirituality (SPI) among farmworker children, particularly those of Haitian descent, is crucial. These factors were found to be significantly related to ego resilience (ER), essential for coping with challenges. Culturally sensitive educational materials and support services are essential to maximize effectiveness. Recommendations include integrating social support and spiritual practices into existing PYD and 4-H Extension programs and fostering supportive environments among peers and mentors. Additionally, resilience-building strategies in agricultural education and extension are vital, involving providing resources and training to help young adults cope with adversity in their agricultural pursuits. Implementing these measures can enhance support for farmworker youth, promoting their personal and professional growth in the agricultural industry.

REFERENCES

Adler, N. E., Epel, E. S., Castellazzo, G., Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: preliminary data in healthy white women. *Health Psychol 19*(6):586–592. https://doi: 10.1037//0278-6133.19.6.586.

Alessandri Alessandri G, Vecchione M, Caprara G, Letzring TD (2012). The Ego Resiliency scale revised: A crosscultural study in Italy, Span, and the United States. *Eur J Psychol Assess 28*(2): 139–146. Doi: 10.1027/1015-5759/a000102.

Dimitri, C., Effland, A., & Conklin, N (2005, June). The 20th century transformation of U.S. agriculture and farm policy. *Economic Information Bulletin (3). https://www.ers.usda.gov 13566_eib_3_1_pdf.*

Farmworker justice (2015, July). Farmworkers housing and health in the united states. https://www.farmworkerjustice.org.

Hawkings, R., Maurer, K. (2010). Bonding, Bridging and Linking: How Social Capital Operated in New Orleans Following Hurricane Katrina. *British Journal of Social Work 40*(6), 1777–1793. https://doi:10.1093/bjsw/bcp087.

Mast, N. & Sherer, J. (2023, November 14). Florida legislature proposes dangerous rollback of child labor protections At least 16 states have introduced bills putting children at risk. *Economic Policy Institute*. https://www.epi.org/blog/florida-legislature-proposes-dangerous-roll-back-of-child-labor-protections-at-least-16-states-have-introduced-bills-putting-children-at-risk/

NC farmworker institute (2007). U.S. farmworker factsheet. https://saf-unite.org/content/united-

Reinert, D. F., & Bloomindgale, J. (2000). Spiritual experience, religious orientation, and self-reported behavior. *International Jo rnal for the Psychology of Religion 10*(3):173-180. https: DOI:10.1207/S15327582IJPR1003_03

Taylor, Z. E., Eisenberg, N., Vanschyndel, S. K., Eggum-Wilkens, N. D., Spinrad, T. L. (2014). Children's negative emotions and egoresiliency: Longitudinal relations with social competence. *Emotion, 14*(2), 397–406. https://doi.org/10.1037/a0035079.

Yin, R. K. (2016). *Qualitative Research from start to finish (2nd Ed).* New York, NY: The Guilford Press.

Zimet, G. D., Dahlem, N. W., Zimet, S. G. & Farley, G. K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment, 52*(1), 30-41. https://DOI: 10.1207/s15327752jpa5201_2

What Factors Influence Undergraduate Agricultural Education Students' Perceptions of their Academic Major?

Emma Wiseman
Murray State University
Hutson School of Agriculture
103 South Oakley Applied Science
Murray, Kentucky 42071
ewiseman2@murraystate.edu

Brian Parr, Ph.D.
Murray State University
Hutson School of Agriculture
103 South Oakley Applied Science
Murray, Kentucky 42071
bparr@murraystate.edu

Trent Wells, Ph.D.
Murray State University
Hutson School of Agriculture
206 South Oakley Applied Science
Murray, Kentucky 42071
kwells23@murraystate.edu

What Factors Influence Undergraduate Agricultural Education Students' Perceptions of their Academic Major?

Introduction and Theoretical Framework

The American agriculture teacher shortage is a topic that has been of much concern. Recruitment and retention are key components in mitigating this shortage (Sorensen et al., 2016); thus, plentiful research has been conducted regarding the recruitment and retention of agriculture teachers. There has also been research conducted regarding the practices used to recruit pre-service agriculture teachers (Hur et al., 2023) as well as the struggles they face during their student teaching experiences (Sorenson et al., 2018). Previous research on pre-service teachers shows a big shift in attitudes and concerns during student teaching (Sorenson et al., 2018). Research has indicated that pre-service teachers typically perceive low levels of career barriers and high levels of support (Rocca & Washburn, 2008).

Literature related to retention of college majors is plentiful. In a nationally-representative study conducted with students beginning college during the 2011-2012 academic year, 37% of students majoring in education-related subjects changed their academic major at least once while 40% of students studying natural science-related subjects (including agriculture) changed their major at least once (Leu, 2017). Lower academic performance and lacking a sense of belonging are predictors of academic major change (Denice, 2021). We used a qualitative approach to gain insight into how various factors (e.g., perceptions of familial support, etc.) affect the retention of undergraduate Agricultural Education students at our institution.

Our study was underpinned by the theory of planned behavior (TPB). The TPB indicates that a person's behavioral, normative, and control beliefs determine their intentions and therefore their decisions and actions (Bosnjak et al., 2020), such as electing whether to remain in the Agricultural Education academic major at Murray State University (MSU).

Purpose

The purpose of our study was to describe the factors that influence undergraduate Agricultural Education students' perceptions of their academic major at MSU.

Methods

Our study is an ongoing undergraduate honors thesis research project. Consequently, our data set will expand over time. We used semi-structured interviews to collect our data. Due to their flexibility, semi-structured interviews are excellent for collecting in-depth, qualitative data about research participants (Mashuri et al., 2022). Our interview protocol consisted of 12 questions that addressed: (1) student demographics information, (2) student perceptions of field experiences and instructors, and (3) the struggles that students have faced within the Agricultural Education academic major thus far. After receiving Institutional Review Board (IRB) approval, we solicited our prospective research participants (n = 44) via email. These 44 students were enrolled in the undergraduate Agricultural Education program at MSU during the Spring 2023 semester.

Within the e-mail, we described the purpose of our study and asked our prospective participants to select an interview date and time that best fit their schedule. To help control for any potential power dynamics, the lead author (an undergraduate student) conducted and recorded each one-on-one interview. Five students participated in our study. We recorded all the interviews for transcription. After transcription, we used the data management program QDA Miner Lite to code our data. The lead author manually coded all transcripts to help prevent any errors. The lead author subsequently reviewed each coded transcript one week after the original coding to verify the accuracy of the codes.

Results

Several preliminary results and themes emerged throughout the coding process. Of our five participants, four are still majoring in Agricultural Education while one participant had changed their academic major. The following themes emerged as the lenses through which our participants viewed their academic major: (1) family factors, (2) high school agricultural education experiences, (3) career concerns, (4) university-specific factors, (5) positive outlooks, and (6) academic major change.

Within these larger factors, several distinct sub-themes emerged. The specific factors that our participants most frequently discussed were: (1) college faculty/staff (f = 18), (2) support from other Agricultural Education students (f = 11), (3) family support of student but disapproval of major (f = 8 and f = 2, respectively), (4) former agriculture teacher / FFA advisor (f = 9), (5) early field experiences (f = 8), (6) connection with future students (f = 8), and (7) FFA office / high school agricultural education courses (f = 8). Many participants described the importance of the positivity of staff and faculty, which indicates that students' relationships with their instructors were very important for these students. This importance of relationships also applies to connections with other Agricultural Education students. Each participant mentioned this as a key factor in their confidence in, and perceptions of, their potential future career. Many participants expressed that the support of their peers was a determining factor in their retention. One of our participants said, "And having you know… my peers, … we were all kind of able to keep that together. So, I feel like even though that was a challenge, it wasn't as bad as it could have been."

Conclusion, Implications, and Recommendations

As we continue to explore this topic, we noted the importance of both faculty cultivating relationships with Agricultural Education students and undergraduate students reporting serving as positive influences on their peers. Based on our findings, it is important that these Agricultural Education students find meaningful connections with and support each other to help them remain in the academic program. Under the TPB (Bosnjak et al., 2020), students' belief that they are supported by faculty and peers may determine their intention to retain the Agricultural Education academic major and thus drive their actions. We plan to continue collecting data in the coming semesters to further explore this phenomenon. We recommend the faculty at MSU prioritize relationship-building with Agricultural Education students and create opportunities for them to strengthen their professional bonds. Doing so may very well help students to continue crafting a sense of community within their academic major and their future profession.

References

Bosnjak, M., Ajzen, I., & Schmidt, P. (2020). The theory of planned behavior: Selected recent advances and applications. *Europe's Journal of Psychology, 16*(3), 352-356. https://doi.org/10.5964/ejop.v16i3.3107

Denice, P. A. (2021). Choosing and changing course: Postsecondary students and the process of selecting a major field of study. *Sociological Perspectives, 64*(1), 82-108. https://doi.org/10.1177/0731121420921903

Hur, G., Barry, D., Jagger, C., Alford, K., & Roberts, T. G. (2023). Investigating the impacts of a preservice agriculture teacher recruitment program using Kirkpatrick's program evaluation model. *Journal of Agricultural Education, 64*(1), 184-200. https://doi.org/10.5032/jae.v64i1.37

Leu, K. (2017). *Beginning college students who change their majors within 3 years of enrollment.* Data Point, NCES 2018-434. Washington, DC: National Center for Education Statistics, U.S. Department of Education.

Mashuri, S., Sarib, M., Alhabsyi, F., Syam, H., & Ruslin, R. (2022). Semi-structured interview: A methodological reflection on the development of a qualitative research instrument in educational studies. *IOSR Journal of Research & Method in Education (IOSR-JRME), 12*(1), 22-29. https://www.iosrjournals.org/iosr-jrme/papers/Vol-12%20Issue-1/Ser-5/E1201052229.pdf

Rocca, S., & Washburn, S. (2008). Preservice agriculture teachers' perceptions of career barriers and support. *Journal of Agricultural Education, 49*(2), 38-49. http://dx.doi.org/10.5032/jae.2008.02038

Sorensen, T. J., Lawver, R. G., Jensen, B., Dutton, C., & Warnick, B. K. (2018). Preservice agriculture teachers' development during the early phase of student teaching. *Journal of Agricultural Education, 59*(4), 105-119. https://doi.org/10.5032/jae.2018.04105

Sorensen, T. J., McKim, A. J., & Velez, J. J. (2016). Why agriculture teachers leave: A national examination of turnover intentions and work-family conflict. *Journal of Agricultural Education, 57*(4), 186-201. https://doi.org/10.5032/jae.2016.04186

What is New on the News: A Content Analysis of a TV News Show in Agriculture

Joshue Lewis Mite
15th St, Lubbock, TX 79409
Texas Tech University
(806) 451-7563
joshuele@ttu.edu

Erica Irlbeck, Ed. D.
Professor
Texas Tech University
(806) 281-8606
erica.irlbeck@ttu.edu

Kensie Todd
Graduate Student
Texas Tech University
mdarst@ttu.edu

What is New on the News: A Content Analysis of a TV News Show in Agriculture

Introduction

In the United States, national television news continues to be one of the most seen and reliable sources of updated information about any kind of issue (Greico & Mitchell, 2019). However, this amount of data shared on the screen is only one part of a whole piece about a complex reality (Sucháček et al., 2023). This mass media plays an essential role in taking these aspects of the perceived reality to connect the audience with the context they are living in (Levendusky, 2022). According to Alam and Haque (2014), one of the simplest and easiest ways for producers to satisfy their information needs on current agricultural knowledge is through agricultural television news. News from this industry supports improved communication between agricultural stakeholders such as farmers, agricultural scientists, extension agents, and policy-makers (Sucháček et al., 2023). This study seeks the importance of investigating the U.S. Farm Report's framing shifts to understand how agricultural news prioritizes information for stakeholders and informs media strategy. (Maj & Lewandowsky, 2020). This study aimed to explore and identify frames used by the U.S. Farm Report news and how these frames change from 2022 to 2023.

Theoretical Framework

The theoretical base chosen for this study is the Framing Theory, which is the process of elevating one aspect of a perceived reality or issue to a higher level of importance for the audience (Entman, 1993). According to Brüggemann (2014), frames arrange the world for the benefit of journalists who report on it and for those who depend on their reports. In this media of communications, frames help to portray the nature of the issues, responsible actors, and the tone in which news is presented (Khan et al., 2020). Analyzing how media outlets frame news stories reveals how audiences understand issues and develop their trust towards the media.

Methodology

A descriptive, quantitative content analysis was conducted to explore and identify the frames reporter in an agricultural television news show. Systematic random sampling was used to choose one episode per month from February 2022 to December 2023. U.S Farm Report was chosen because of the availability of the episodes online. A codebook was created using an approach proposed by Ghosh and Sharma (2014) and Matthes and Kohring (2008) to describe the main characteristics of television news, such as topic, airtime of each headline, depth of spread, method of delivery, source and USDA priority area. However, for the framing analysis, elements such as tone of coverage, nature of the issue, actors or stakeholders involved in the news, benefits, and barriers mentioned were based on the approach of Essary et al. (2022). A total of 23 episodes were selected and downloaded for analysis. The headlines, an average of 13 per each episode, were analyzed using descriptive statistics to record the frequencies of the elements detailed in the codebook. This information was used to compare how frames were shown between 2022 and 2023 episodes. The codebook created based on previous framing research was revised by an expert in the area for its validity. Also, three coders were trained to measure reliability in the coding process, analyzing for each coder three episodes. A Krippendorf’s alpha was used to measure intercoder reliability, obtaining an average of .81 for the elements from the codebook.

Findings

According to Table 1, 20.13% of the headlines in 2022 were related to environment and natural resources (n = 30), and 23.17% of 2023 headlines were related to market and economy topics (*n* = 38). However, the headlines with more airtimes were related to the food industry in 2022 (86 minutes) and 2023 (102 minutes). In 2022, the source most used to get the information was from experts (*n* = 40) and in 2023 news were from government sources (*n* = 41).

Table 1

Comparison of Modes in 2022 and 2023 News (N = 313)

Variables	2022 (*n* = 149)	2023 (*n* = 164)
Most mentioned headline	Environment and natural resources [c]	Market and economy [b]
Most airtime headline	Food industry [a]	Food industry [b]
Agricultural priority	Advancing justice, equity, opportunity, and prosperity	Advancing justice, equity, opportunity, and prosperity
Depth of Spread	National	National
Source	Expert	Government
Method of Delivery	Voiceover	Voiceover
Nature of the issue	Economy	Economy
Actor and stakeholder	Producer	Producer
Benefit mentioned	Producer	Producer
Risk mentioned	Producer	Producer

[a] Positive tone; [b] Neutral tone; [c] Negative tone

Conclusions/Implications/Recommendations

The findings revealed a shift in the predominant topics covered, with the market and economy-related headlines gaining prominence in 2023 compared to the environment and natural resources in 2022 due to the extreme weather conditions that occurred that year (NCEI, 2022). However, the focus on the food industry remained consistent across both years. Additionally, there was a notable change in the sources of information, with government sources being utilized more frequently in 2023 compared to experts in 2022. Despite these variations, the agricultural priority, depth of spread, method of delivery, nature of the issue, and key actors/stakeholders remained relatively stable across both years. These findings have several implications for agricultural stakeholders, policymakers, and media practitioners. The change toward market and economy-related topics suggests a potential change in audience interests or media priorities, which could influence decision-making and resource allocation within the agricultural sector (Levendusky, 2022). The consistency in framing elements such as agricultural priorities and method of delivery implies a certain level of continuity in how agricultural news is presented to the public, which can help maintain trust and credibility in the media. Based on the findings, several recommendations can be made to enhance the effectiveness and impact of agricultural television news. This medium of communications should continue diversifying its coverage to reflect the dynamic nature of the agricultural sector while ensuring balanced and accurate reporting on traditional and emerging issues. Future research could explore the influence of framing on audience perceptions and behaviors regarding agricultural issues, providing valuable insights for media strategy and communication practices in the agricultural sector.

References

Alam, M. K., & Haque, M. A. (2014). Contribution of television channels in disseminating agricultural information for the agricultural development of Bangladesh: A case study. *Library philosophy and practice*, 1-18. ISSN 1522-0222

Brüggemann, M. (2014). Between Frame Setting and Frame Sending: How Journalists Contribute to News Frames. *Communication Theory, 24*(1), 6182. https://doi.org/10.1111/comt.12027

Entman, R. M. (1993). Framing: Toward Clarification of a Fractured Paradigm. *Journal of Communication, 43*(4), 51-58. https://doi.org/10.1111/j.1460-2466.1993.tb01304.x

Essary, C., Irlbeck, E., Fischer, L., & Peaslee, R. (2022). A Content Analysis of News Regarding Genetic Modification in Agriculture. (*Doctoral dissertation*).

Grieco, E., & Mitchell, A. (2019). Most Americans—Especially republicans—Say local journalists shouldn't express views on local issues. *Pew Research Center: Fact Tank*. https://pewrsr.ch/355kcct

Khan, R., Limpot, K., & Villanueva, G. (2020). Social Responsibility Theory of the Press and Its Effect on Framing TV News about Children, *Journal of Media Ethics*, 35:3, 152-163, DOI: 10.1080/23736992.2020.1779594

Levendusky, M. S. (2022). How does local TV news change viewers' attitudes? The case of Sinclair broadcasting. *Political Communication, 39*(1), 23-38. https://doi.org/10.1080/10584609.2021.1901807

Maj, K. , & Lewandowsky, S. (2020). Is bad news on TV tickers good news? The effects of voiceover and visual elements in video on viewers' assessment. *PLoSONE 15* (4): e0231313. https:// doi.org/10.1371/journal.pone.0231313

Matthes, J., & Kohring, M. (2008). The Content Analysis of Media Frames: Toward Improving Reliability and Validity. *Journal of Communication, 58*(2), 258279. https://doi.org/10.1111/j.1460-2466.2008.00384.x

National Centers for Environmental Information (2022). Annual 2022 National Climate Report. https://www.ncei.noaa.gov/access/monitoring/monthly-report/national/202213#:~:text=Most%20of%20the%20contiguous%20U.S.,warmest%20January%2DDecember%20on%20record.

Sucháček, J., Konečný, O., Wachowiak-Smolíková, R., & Wachowiak, M. P. (2023). The Image of the Czech Agriculture Based on the National Television News in the Period of Adaptation of Czechia Into the European Union: Regional Perspectives. *European Countryside, 15*(4), 616-632. DOI: 10.2478/euco-2023-0033

What's in a Name? A Case Study of "Section 8" in Illinois FFA

Colby R. Gregg, Visiting Assistant Professor
crgregg2@illinois.edu

Amy M. Leman, Assistant Professor
bunselme@illinois.edu

Josie A. Brockett, Graduate Student
josieab2@illinois.edu

The University of Illinois at Urbana-Champaign
Agricultural Leadership, Education & Communications Program
174 Bevier Hall
905 S. Goodwin Ave
Urbana, IL 61801
217-333-3165

What's in a Name? A Case Study of "Section 8" in Illinois FFA

Introduction

In Illinois FFA, the FFA is divided into five Districts and within those Districts, a number of Sections. The state officer team includes a President elected from each Section. Each is referred to as Section (number) president. The FFA chapters representing the state's largest metropolitan city are located within Section 8. The constitution of the state agricultural education teachers' association requires their Board of Directors to periodically make needed revisions to the boundary lines of Sections and Districts. The voted change must also be approved by the state FFA membership at a meeting held during the state convention.

The United States Department of Housing and Urban Development (HUD) administers a housing choice voucher program to assist with funding for housing targeting families that meet income guidelines, the elderly, and those with a disability (U.S. HUD, n.d.). The vouchers are administered by local public housing authorities. The program is commonly referred to as "Section 8". In fact, the HUD website subtitles the housing choice voucher program as Section 8.

In 2022, an amendment to the agriculture teachers' association Constitution was proposed to change the FFA division name from "section" to "region." The proposal reasoning said that Section 8 was known outside of Illinois agricultural education as related to HUD housing and that this created confusion for external stakeholders when individuals identified themselves as "part of Section 8" (Illinois FFA Board, 2022). In 2022, student delegates voted down the amendment at the state FFA convention. At the following teachers' association meeting, the teachers approved the amendment only if the student membership voted to approve the amendment the following year. In 2023, the amendment was voted down by the student membership at the state convention.

Theoretical Framework and Methodology

Symbolic interactionism (Carter & Fuller, 2015) addresses how society is made and regulated through repetitive interactions. According to the theory, people use language and symbols to communicate ideas and concepts. According to Blumer (1969), there are four main principles of social interaction: 1) individuals act relative to the meaning objects have to them, 2) social and cultural interactions are defined by individuals' own meaning, 3) meanings originate from *outside* of these interactions, and 4) meanings are recreated through interpretations of interactions. West and Zimmerman (1987) used this theory to explain how masculinity and femininity are developed from interactions and socialization, arguing that gender was not an internal state of being, but rather resulted from these interactions. Other examples of symbolic interactionism in the literature include examining how societal influencers impact farmers' exposure to safety hazards (Sorenson et al., 2017), explaining how architecture holds and conveys society's shared symbols (Lawrence & Low, 1990), and how meanings shape thoughts and actions through self-reflection (Smith & Bugni, 2006).

Approximately one month after amendment failed at the 2023 state FFA convention, we sent a Qualtrics XM © online survey to all ag-ed teachers in the Illinois listserv ($N = 655$). This survey asked two open-ended questions, the first asking for the teacher's opinion on the amendment debate, and the second asking them to relay what they understand of their students' opinions. In order to maintain anonymity, "FFA District taught in" was the only demographic collected. Data collection resulted in a 23.5% response rate ($n = 154$). Data was coded in two rounds by three researchers. In the first round, responses were coded as "for," "against," or "neutral" in relation to the amendment. The second round of coding consisted of open coding responses within each of the first-round categories.

Findings

Findings indicated a majority of teacher respondents were "against" the amendment, however most "for" responses came from teachers in Districts 1 and 2. For reference, Section 8 is housed in District 2. However, when teachers were asked their perceptions of *students'* opinions on the issue, they were more likely to perceive their students as "against" the change with only nine teachers stating their students were "for" it. The geographic breakdown of both questions is similar in distribution, with more positive responses in Districts 1 and 2 and more negative in Districts 4 and 5, the two districts furthest geographically from Section 8.

Within the "for" responses, two themes arose: 1) *Inclusivity*, and 2) *Chicago vs. Illinois. Inclusivity* was highlighted with participants reflecting on how the name change could lead to a more inclusive FFA. One participant described that "everyone deserves a fair shake, and if this change to the name can give it, then so be it." Many responses were in reference to *others.* However, some teachers responded with their own students in mind. One teacher stated, "I'm in favor [of the change because] my kids have been racially profiled being assigned 'Section 8.'"

Zooming out from the organization, some participants described the failing of the amendment as a larger cultural issue between the state as a whole and its largest city, located in Section 8. One teacher described this by saying "if I were to generalize…the rest of the state would prefer to see Chicago suffer than succeed." This sentiment was shared by another teacher who felt that "students have been led to believe that it is Chicago against the rest of the state."

Three themes arose from the responses that were coded as *against* the proposed changes: 1) concerns and defense of *Parliamentary Procedure*, 2) change for the *Wrong Reason(s)*, and 3) annoyance with a *Loud Minority*. As it pertains to *Parliamentary Procedure*, participants indicated frustration with the "repeated" nature of this measure. This is seen through two teachers sharing that it was "disrespectful to our students who already voted it down," and "This has been VOTED on!!! MOVE ON!!!" Another teacher felt "even teachers" will "push back…if the board pushes this a 3rd time…this topic should not come up again." A final participant stated absolutely that "as per parliamentary law, [being voted down] should be the end of that debate."

Some teachers felt *Reasons* for the change were negligent or altogether *wrong*. One asked "why change [our traditions] when it doesn't really affect anything?" Another stated changing the term would "end up being more work" for whoever is "rewording everything." Finally, many expressed frustrations with the *Loud Minority* who continued to champion the change. The comments were largely laced with frustration, as one participant who believed that "people are offended by something because they choose to be offended. This has been absolute drama and a waste of time." Another reflected "giving in" would lead to unintended consequences: "imagine the yarn that will start to unravel."

Finally, some participants felt the proposed change was politically motivated. One criticized the expansion of agricultural education into urban schools: "Somehow the idea of pushing for FFA in the city schools and major suburbs has taken root where it really has no place…Liberal America wants to change everything to please the minority."

Conclusions and Implications

Symbolic interactionism provides a lens to view teacher responses to the "section" word change. The themes in favor reflected reactions on the individual level, such as individual students feelings, or alluded to a larger cultural issue of urban and rural spaces. In contrast, the responses against reflected a desire to stick with tradition and frustration against repeated votes. Findings begin to describe the ideological differences between agricultural education teachers as it relates to long standing social symbols. The debate in Illinois may serve as a case study for other proposed policy changes and equity issues within agricultural education institutions.

References

Badger, E. (2015, June 15). How Section 8 became a 'racial slur': A history of public housing in America. *The Washington Post.* https://www.washingtonpost.com/news/wonk/wp/2015/06/15/how-section-8-became-a-racial-slur/

Blumer, H. (1969). *Symbolic interactionism: Perspective and method*. Prentice-Hall, Inc.

Carter, M., & Fuller, C. (2015). Symbolic interactionism. *Sociopedia.isa, 1*(1), 1-17. https://doi.org/0.1177/205684601561

Illinois FFA Board. (2022). Illinois Board and FFA Board Updates and Constitutional Amendments. https://www.ilaged.org/messagedetails.aspx?ID=3803

Lawrence, D., & Low, S. (1990). The build environment and spatial form. *Annual Review of Anthropology, 19*, 453-505. https://www.jstor.org/stable/2155973

Silverman, R.M., Patterson, K.L., & Wang, C. (2020). Questioning stereotypes about US site-based subsidized housing. *International Journal of Housing Markets and Analysis, 14*(3), 613-631. https://doi.org/10.1108IJHMA-05-2020-0057

Smith, R.W., & Bugni, V. (2006). Symbolic interaction theory and architecture. *Journal of Symbolic Interaction, 29*(2), 123-155. https://doi.org/10.1525/si.2006.29.2.123

Sorensen, J. A., Tinc, P. J., Weil, R., & Droullard, D. (2017). Symbolic interactionism: A framework for understanding risk-taking behaviors in farm communities. *Journal of Agromedicine, 22*, 26-35. https://doi.org/10.1080/1059924X.2016.1248306

U.S. Department of Housing and Urban Development (n.d.). *Housing choice vouchers fact sheet.* https://www.hud.gov/topics/housing_choice_voucher_program_section_8

West, C., & Zimmerman, D.H. (1987). Doing gender. *Gender & Society, 1*(2), 125-151. https://www.jstor.org/stable/189945

Who Teaches and Why? Analyzing Why Individuals Choose to Pursue a Career Teaching Secondary Agricultural Education

Josh Odom, Dr. John Rayfield, Chelsea Hatch

Box 42131
Lubbock, Texas 79409
806-834-7198
Jrodom4@gmail.com
John.rayfield@ttu.edu
chhatch@ttu.edu

Introduction

Implementing agricultural education in the secondary school setting is becoming increasingly crucial as our society and environment continue to grow and change rapidly. Agricultural education courses provide hands-on experiences that meet the demands for cross-curricular programming and the needs of students in non-traditional settings (Dailey et al., 2001). Secondary agricultural education teachers are a significant piece of this puzzle as they will be tasked with educating future generations on how to use their resources efficiently and effectively. Agricultural education is an essential part of our society, yet there is a lack of individuals who choose to teach and educate the public about the subject. So, what drives individuals to pursue a career teaching secondary agricultural education? The purpose of this study was to determine why individuals choose to pursue a career teaching secondary agricultural education by analyzing factors that influence an individual's choice to enter the agriculture teaching profession. This study focused on current secondary agricultural education teachers in Texas.

Theoretical Framework

The expectancy-value theory, developed by Jacobs and Eccles (1983), was utilized to guide this study. The expectancy-value theory suggests that achievement-related choices are influenced by two main factors: an individual's expectations for success and subjective task value (Leaper, 2011). According to Eccles et al. (1983), values, ability beliefs and expected success are all factors that contribute to an individual's motivation to make certain academic choices or perform certain behaviors.

Methods/Procedures

The study was administered via an online questionnaire which consisted of a descriptive survey. The survey aimed to gather information about factors influencing individuals to pursue a career teaching secondary agricultural education. The population used in this study consisted of secondary agricultural education teachers in Texas. The accessible population of secondary agricultural education teachers in this study was 2,518. This was the number of contacts listed in the online agricultural education teacher directory utilized for this study. Thus, the sample size used for this study was 333 individuals, based on Krejcie and Morgan's (1970) recommendations. The survey instrument used in this study was adapted and developed from a review of relevant literature and the Ag Ed FIT-Choice scale developed by Lawver (2009). The instrument was split into different sections and asked about demographics, decision to teach, attitude toward teaching, beliefs about teaching and career satisfaction. Dillman's et al. (2008) web survey implementation process was followed during the data collection process, which included using the three-email contact strategy. Data were analyzed using IBM Statistical Package for Social Science Version 28 (SPSS). There were 333 individuals who received the survey, of which 124 individuals started the survey, but only 116 individuals fully completed it, which resulted in a response rate of 34.83%.

Findings/Results

The data describes the level of agreement participants had with factors influencing their decision to teach agricultural education. Participants were asked to rate their level of agreement or disagreement with statements related to their decision to become an agricultural education teacher. A five-point Likert-type scale was utilized for participants to rate their level of agreement/disagreement.

Eight items regarding the participants decision to become a secondary agricultural science teacher fell into the category of agree, which included: "passion" ($M = 4.60$; $SD = 0.66$);

"personal experiences" (*M* = 4.48; *SD* = 0.79); "happy with decision" (*M* = 4.46; *SD* = 0.74); "satisfied with decision" (*M* = 4.36; *SD* = 0.79); "past teachers" (*M* = 4.36; *SD* = 0.89); "carefully thought about decision" (*M* = 4.11, *SD* = 0.87); "personal qualities" (*M* = 4.10; *SD* = 0.81). Seven items regarding the participants decision to become a secondary agricultural science teacher fell into the category of neither agree nor disagree, which included: "pursing other careers" (*M* = 3.79; *SD* = 1.03); "student teaching experience" (*M* = 3.73; *SD* = 1.05); 'teaching abilities" (*M* = 3.70; *SD* = 0.97); "cooperating teacher" (*M* = 3.63; *SD* = 1.10); "job security" (*M* = 3.36; *SD* = 1.10) "others opinions" (*M* = 3.03; *SD* = 1.11); and "family" (*M* = 3.00; *SD* 1.21). Nine items regarding the participants decision to become a secondary agricultural science teacher fell into the category of disagree, which included: "parents' opinion" (*M* = 2.99; *SD* = 1.25); "job location" (*M* = 2.94; *SD* = 1.14); "public perception" (*M* = 2.90; *SD* = 1.12); "job benefits" (*M* = 2.84; *SD* = 1.19); "friends opinions" (*M* = 2.79; *SD* = 1.13); " work hours" (*M* = 2.50; *SD* = 1.03); "children" (*M* = 2.46; *SD* = 1.03); "income" (*M* = 2.38; *SD* = 0.99); and "spouse" (*M* = 2.36; *SD* = 1.01). No statements regarding the participants decision to become a secondary agricultural science teacher fell into the category of strongly disagree.

Conclusions/Recommendations

The findings from this study challenge the suggestion that hours worked by student teachers make an impact on their decision to teach Fives et al. (2007). This brings forth the recommendation that student teachers and young teachers in their first years of teaching should be involved in as much as they possibly can, regardless of the number of hours that would be demanded. From this data, it can be concluded that the student teaching experience plays an important role in the decision to teach. In addition to student teaching, it was apparent that cooperating teachers can have an influence on their student teacher's choice to teach. Cooperating teachers must understand and realize the influence/ impact, whether it be positive or negative, they can have on their student teacher's decision to become a teacher. This supports Kasperbauer and Roberts (2007) who concluded the student-teachers relationship with their cooperating teacher is essential to positive field experiences. Personal experiences were also an area that many of the participants felt as though influenced their decision to teach. The researcher recommends that further analysis be conducted on the participant's personal experiences, what those experiences entail, and how they influenced their decision to teach. Perhaps one of the most interesting results was in relation to income. More than half of the participants either disagreed or strongly disagreed with the statement that income influenced their decision to teach. Job security was identified as a major factor influencing the participant's decision to teach. Agricultural education teacher preparation programs need to make it a point to discuss and use this as a selling point when recruiting potential students into their programs and the profession. Many of the participants noted their personal qualities influenced their decision to teach.

One recommendation is for agricultural education teacher preparation programs to look into different ways they can better recruit students into the programs and advocate for the job. How could the findings of this study regarding the participant's decision to teach be highlighted to help in this recruitment process of younger generations? A second recommendation is to analyze the public's perception of being a secondary agricultural education teacher. This recommendation is suggested due to the finding that individuals are still being encouraged to pursue careers other than teaching agricultural education.

References

Dailey, A. L., Conroy, C. A., & Shelley-Tolbert, C. A. (2001). Using agricultural education as the context to teach life skills. *Journal of Agricultural Education, 42*(1), 11-20. https://doi.org/10.5032/jae.2001.01011

Dillman, D. A., Smyth, J. D., & Christian, L. M. (2008). *Internet, Mail, and Mixed-Mode Surveys: The Tailored Design Method* (3rd ed.). John Wiley.

Eccles, J., Adler, T., Futterman, R., Goff, S., Kaczala, C., Meece, J. L, & Midgley, C. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Achievement and achievement motivation,* 75-146. Freeman.

Fives, H., Hamman, D., & Oliverez, A. (2007). Does burnout begin with student teaching? Analyzing efficacy, burnout, and support during the student-teaching Semester. *Teaching and Teacher Education*, *23*(6), 916-934. https://doi:10.1016/j.tate.2006.03.013

Jacobs, J. E. & Eccles, J. S. (2000). Parents, task values, and real-life achievement-related choices. *Intrinsic and extrinsic motivation: The search for optimal motivation and performance*, 405–439. https://doi.org/10.1016/B978-012619070-0/50036-2

Kasperbauer, H. J., & Roberts, T. G. (2007). Influence of the relationship between the student teacher and cooperating teacher on student teacher's decision to enter teaching. *Journal of Agricultural Education, 48*(1), 8-19. https://doi.org/10.5032/jae.2007/01008

Krejcie, R. V., & Morgan, D. W., (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607-610. https://doi.org/10.1177/001316447003000308

Lawver, R, G. (2009). *Factors influencing agricultural education students' choice to teach.* (Publication No. 3455498) [Doctoral Dissertation, University of Missouri-Columbia]. ProQuest Dissertations and Theses Global.

Leaper, C. (2011). Chapter 9 - More similarities than differences in contemporary theories of social development? A plea for theory bridging. *Advances in Child Development and Behavior, 40*, 337-378. https://doi.org/10.1016/B978-0-12-386491-8.00009-8