**SOUTHERN REGION CONFERENCE**

**OF THE**

# 2023 PROGRAM

**HELD IN CONJUNCTION WITH THE MEETING OF THE SOUTHERN ASSOCIATION OF AGRICULTURAL SCIENTISTS (SAAS)**

**February 5 – February 7, 2023 – Oklahoma City, OK**
**Omni Oklahoma City**

**Hosted by the**
**Department of Agricultural Education,**
**Communications, & Leadership**

**Oklahoma State University**

AGRICULTURE

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**Saturday, February 4 2023**

| | | |
|---|---|---|
| **4:00 – 9:00 p.m.** | **Registration** | **Foyer** |

**Sunday, February 5, 2023**

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|---|---|---|
| **8:00 – 12:00 p.m.** | **Registration**<br>**Breakfast on your own** | **Foyer** |
| **9:00 – 10:00 a.m.** | **Agricultural Education Opening Session** | **Five Moons 5** |
| **10:15 – 11:45 a.m.** | **Concurrent Research Session I** | |

**Session A** — **Five Moons 1**
Discussant: Carla Jagger
Facilitator: Rigo Chapparo

- The Impact of Advice Networks During COVID-19 on Leading Women in Agricultures' Food Waste Behaviors - Karissa Palmer, Dr. Robert Strong, Dr. Meg Patterson, Dr. & Chanda Elbert
- Is agriculture being implemented in private school classrooms? The impact of teacher willingness and availability of resources–Casey M. Moss, Allyson K. Moore, Josey M. Webb, Carley C. Morrison, Stephanie M. Lemley, & Mariah S. Morgan
- Preferred Gregorc Learning Styles of Preservice SBAE Teachers in an Introductory Course–Emily O. Manuel, Ryan W. Best, Kristopher R. L. Rankin, III, Emily A. Sewell, Bradley M. Coleman, Robert Terry, Jr., & Kathryn L. Teixeira
- Evaluating Heterosexism of Post-Secondary Agricultural Education Students Group Norms–Eric M. Moser & Stacy K. Vincent

**Session B** — **Five Moons 2**
Discussant: Jason McKibben
Facilitator: Grace Miller

- The Effect of Message (Mis)Information on Consumers' Attitudes toward Hemp–Dr. Taylor K. Ruth, Abigail Durheim, Dr. Blake C. Colclasure, Dr. Levy G. Randolph, and Dr. Tiffany Rogers-Randolph
- Experts' Views on Poorly Understood Terms used to Market Poultry Eggs: Defining Cage-Free, Free-Range, Pasture-Raised, and Organic Egg Production–Dr. Rexanna Powers Degruy, Dr. Richie Roberts, Dr. Kristin S. Stair
- An Evaluation of U.S. Egg Industry Experts' Perceptions of Alternative Housing Environments: A Hybrid SWOT-Delphi Approach–Dr. Rexanna Powers Degruy, Dr. Richie Roberts, Dr. Kristin S. Stair

- A Comparative Case Study from a Design-Based Research Project to Examine Student Experiences in a Personal Leadership Course–Karly McKenna Anderson, Jewell M. Glover, Ainsley Burns, Jonan Phillip Donaldson, Summer F. Odom

**Session C** **Deep Deuce**
Discussant: Eric Kaufman
Facilitator: Maggie Reaves

- The Civic Engagement Skills Needed by Youth: An Assessment of Community Citizens–Taylor Shackelford, Lauren Cline, & J. Shane Robinson

- Preferred Conflict Styles of Extension Agents by Generation–Megan Cantrell, Dr. Matt Benge, Anne Parrish, & Christy Chiarelli

- Using Poetic Dialogues to Enhance for Community-Based Extension Impact Evaluation– Catherine E. Sanders, Dr. Alexa J. Lamm, Dr. Jori Hall, Dr. Abigail Borron, Dr. Maria Navarro, & Dr. James C. Anderson II

- Psychometric Properties of the Community Viability Indicator–Sarah A. Bush, Rick Rudd, Megan Seibel, & Carrie Baker

**Session D** **Five Moons 5**
Discussant: Jason Peake
Facilitator: Jillian Ford

- Exploring the Self-Perceived Needs of School-Based Agricultural Education Teachers–Kayla N Marsh, Dr. Christopher J. Eck, Dr. K. Dale Layfield, & Dr. Joseph L. Donldson

- Curricular Needs of Oklahoma School-Based Agricultural Education Teachers–Dr. Christopher J. Eck, Nathan A. Smith, Kris Rankin III, & Kayla Marsh

- Identifying School-Based Agricultural Education Teacher Needs and Support Gaps–Kayla N. Marsh, Dr. Christopher J. Eck, Dr. K. Dale Layfield, & Dr. Joseph L. Donaldson

- Impact of a Prolonged Professional Development on Teachers' Confidence in Using Inquiry-Based Learning in the Classroom–Kasey Harmon, Dr. Taylor Ruth, Dr. Bryan Reiling, Dr. Nathan Conner, & Dr. Christopher Stripling

**12:00 – 1:30 p.m.** **Lunch on Your Own**
**Graduate Student Orientation (Abuelo's)**

**1:30 – 3:00** **Research Session II**

**Session E** **Five Moons 1**

Discussant: Boot Chumbley
Facilitator: Sarah Sprayberry

- Preservice Teachers' Factors of Perceived Performance While Student Teaching: Development of a Self-Evaluation Instrument–Margaret Reaves, Carla B. Jagger, Bradley M. Coleman, J. C. Bunch, & Glenn D. Israel

- Understanding the Mentorship Experiences of Cooperating Teachers and Student Teachers During the Student Teaching Internship: A Phenomenological Exploration–Heather Nesbitt, & Dr. Debra Barry

- Understanding Teacher Preparation of the Past: A Historical Narrative of the Student Teaching Block in Agricultural Education–Tyler J. Price, Emily A. Sewell, Bradley M. Coleman, & Natalie K. Ferand

- Perceptions of Pre-service Teachers' Ability to Use AET as a Data Management System–Tyler J. Price, Emily O. Manuel, Emily A. Sewell, & J. Shane Robinson

**Session F** **Five Moons 2**

Discussant: Robert Strong
Facilitator: Jacob Englin

- Investigating the Effects of Cognitive Style on Course Motivation for Students' Enrolled in a Team-Based Learning Formatted Introductory Agricultural Mechanics Course at Louisiana University–Whitney L. Figland, J. Joey Blackburn; Richie Roberts; & Michael

- Improving Agricultural and Environmental Education through Experiential Learning: An Evaluation of a Statewide STEM Initiative for SBAE Teachers–Dr. Kristin Stair, Dr. Richie Roberts, Dr. K.S.U (Jay) Jayaratne, Jennifer Brown, & Abigail Greer

- Teaching Outside of the Margins: School-Based Agricultural Education Teachers' Perspectives on Globally Competent Teaching During an International Experience - Dr. Richie Roberts, Dr. Kristin S. Stair, Whitney F. Figland, & Dr. K.S. U. Jayaratne

- Are There Differences in Teachers' Agricultural Mechanics Professional Development Needs?–Mark S. Hainline, & Trent Wells

**Session G** **Deep Deuce**

Discussant: Chris Eck
Facilitator: Jennifer Brown

- Tell me how you really feel about the AET–Jillian C. Ford & Dr. Misty D. Lambert
- Making it happen: SAE for All implementation in North Carolina–Jillian C. Ford & Dr. Misty D. Lambert
- Examining Level of School Garden Integration among Elementary Agriculture Education Teachers in Georgia - Jade Frederickson & Dr. Jason Peake
- Understanding the Views of Beef Show Cattle Parents and the Reasons Why Their Children Participate–Matthew M. Schiel, J. Joey Blackburn; Richie Roberts, &Michael F. Burnett

**Session H** **Five Moons 5**

Discussant: Nina Crutchfield
Facilitator: Kayla Marsh

- The Emotional Duties of an Agricultural Educator: Evaluating the Confidence Levels of Agricultural Educators to Support Students with Adverse Childhood Experiences - Dr. William Norris & Dr. Shannon Norris-Parrish
- What Challenges Will Arkansas School-based Agricultural Education Face Over the Next Decade? Thoughts from the Front Lines–Christopher M. Estepp, Bryan D. Rank, Alyssa Johnson, & Trent Wells
- Can the State FFA Degree Be Used as a Career Readiness Indicator in Alabama?–Kailee Johnson, Kirk A. Swortzel, & OP McCubbins
- Inclusion for All? Opportunities and Challenges of Including Students with Diverse Needs in FFA Activities–Mary Kate Morgan Lanier, Dr. Joy Morgan, Dr. Wendy Warner, & Dr. Barbara Kirby

**2:45-4:00** **Innovative Poster Session** **Five Moons 4**

**4:00** **SAAS General Business Meeting**

**5:00** **SAAS social event – OMNI**

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**Monday, February 6, 2023**

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**8:00-12:00** **Registration** **Foyer**

**8:00-9:00** **Emerging Research**

**Emerging 1** **Five Moons 1**

Discussant: Kevan Lamm

- Enhancing Learning Through Undisguised Teaching Case Studies: Both Instructor-Facilitated and Student-Written–Dr. Eric Kaufman & Samson Adeoye
- HEARING In Practice–Garrett T. Hancock, Ronald J. Davis, & Dr. Dr. Jason D. McKibben
- The Key Concepts of Agricultural Entrepreneurship: A Scoping Review–Alexis Zickafoose, Matt Baker, & Gary Wingenbach, Ed Price
- Reaching the Indoor Environmentalists: Understanding Generation Z's Perceptions of Hunting and Conservation Efforts in Arkansas–Hannah Chambers Ferguson, Dr. Tobin Redwine, Dr. Deborah Dunsford, & Dr. K. Jill Rucker

**Emerging 2** **Five Moons 2**

Discussant: Tyler Granberry

- Examining the use of social media applications by West Virginia agricultural producers– Mikayla Hargis & Dr. Haley Rosson
- Identifying Barriers to Belonging in School Based Agricultural Education– Logan Layne & Dr. Donna Westfall-Rudd
- Juntos, We Grow: A Culturally-Tailored Youth Program Capitalizing on the Nexus of Agricultural Literacy and Nutrition Education– Sarah Sprayberry & Dr. Robert Strong

**9:15 – 10:45 a.m. Research Session III**

**Session I** **Five Moons 1**

Discussant: Shelli Rampold
Facilitator: Logan Layne

- Examining Sense of Belonging Among Freshmen College of Agriculture Students–Will Doss, Christopher M. Estepp, Sarah James, Lucas M. Simmons, & Donald M. Johnson
- The Effects of Reflection and Transfer on Students' Post-Course Retention While Learning Experientially–Bradley M. Coleman, J.C. Bunch, T. Grady Roberts, Glenn D. Israel, & Allen F. Wysocki
- Evaluating Agricultural Faculty's Virtual Reality Technology Behavioral Intention: Implications for 5G Instructional Technology Adoption–Dr. Robert Strong, John Mark Palmer III, Dr. Jeffrey Wiegert, Dr. Jennifer Zoller, & Dr. Tim Murphy
- Examining Student Retention and Attrition in the College of Agricultural and Environmental Sciences at the University of Georgia–James D. Scott & Dr. Eric D. Rubenstein

**Session J** **Five Moons 2**

Discussant: OP McCubbins
Facilitator: Josey Webb

- Critical Issues Facing the Agriculture, Forestry, and Natural Resources Industries in the State of Georgia: A Delphi Analysis–Dr. Kevan W. Lamm, Lauren Pike, Dr. Lauren Griffeth, Dr. Jiyea Park, & Andrews Idun

- Mind the skills gap: Understanding limitations new hires according to agricultural industry professionals - Madelaine Giebler, K. Jill Rucker, Hannah Chambers Ferguson, Casandra K. Cox, Jefferson D. Miller, & Steven Chumbley

- Meaningful Skills for the Agricultural Workforce: Assessing the Confidence Levels of Agricultural Educators to Integrate STEM into their Curriculum - Dr. William Norris

- Educational Law: How do Superintendents Perceive the Relevance of Educational Law Issues to Agricultural Educators–Dr. William Norris & Dr. Shannon Norris-Parrish

**Session K** **Deep Deuce**

Discussant: Misty Lambert
Facilitator: Mary Kate Morgan Lanier

- Gender Representation and Re-Alignment in Agricultural Education: A Historical Analysis of Structural and Cultural Changes–Alex Tingle, Dr. Rebekah B. Epps, Eric M. Moser

- Experiences of Graduate Students of Color within Colleges of Agriculture at Land-Grant Institutions–Aaron Golson, Catherine Sanders, Dr. James Anderson II

- Efforts to Be Successful: Case Study of LatinX FFA Leaders–Graciela Barajas & Dr. Stacy K. Vincent

- Rural Gay Men's Resiliency and Thriving in Agricultural Education–Caleb M. Hickman & Dr. Stacy K. Vincent

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|---|---|---|
| **11:00-12:00 p.m.** | **AAAE Business Meeting** | **Five Moons 2** |
| **12:00-1:30 p.m.** | **Luncheon and Distinguished Lecture** | **OK Station Ballroom 6** |
| **1:45-3:00 p.m.** | **Professional Development** | **Five Moons 2** |
| **3:15 – 4:30** | **Research Poster Session** | **Five Moons 4** |
| **5:00** | **Explore the City & Social Activity** | **Across OKC** |

## Tuesday, February 7, 2023

| | | |
|---|---|---|
| **8:00-9:00 a.m.** | **AAAE Business Session** | **Five Moons 5** |

**9:15-12:00p.m.** **Distinguished Manuscript Presentations** **OK Station Ballroom 4**
**Brunch**
**Award Ceremony**

Discussant: Brian Myers
Facilitator: Whitney Figland

- Preparing Agricultural Education Majors for Racially Diverse Classrooms: Students' Experiences During a Service-Learning Project for Black Youth–Dr. Richie Roberts, Jacob Englin, & Benita Komungeru

- Leadership Competencies Developed During a Short-term Domestic Study Tour: An Exploration of State FFA Officers' Perceptions–Newlin Humphrey, Dr. Lauren Cline, & Dr. Bradley Coleman

- The State of Agricultural Mechanics in the Preparation of School-Based Agricultural Education Teachers–Tyler Granberry, J. Joey Blackburn, & Richie Roberts

- Concerns about Hen Welfare in Poultry Egg Production: Experts' Views on how Consumer Demands Influence the Marking and Communication of Egg Products–Dr. Rexanna Powers Degruy, Dr. Richie Roberts, & Dr. Kristin S. Stair

- Activity Preferences of Mississippi's Agritourism Clientele–Alexis Turnipseed, Kirk A. Swortzel, Michael E. Newman, & Rebecca Campbell

## Completed Project Abstracts

# The Impact of Advice Networks During COVID-19 on Leading Women in Agricultures' Food Waste Behaviors

Karissa Palmer, Texas A&M University
Robert Strong Jr., Ph.D., Texas A&M University
Meg Patterson, Ph.D., Texas A&M University
Chanda Elbert, Ph.D., Texas A&M University

## Introduction, Purpose and Objectives

Food security, the physical and economic access to safe nutritious food, affects approximately 800 million people who suffer from poverty according to the United Nations Sustainable Development Goals (Baker et al., 2022; Escamilla, 2017). Research indicates that around one-third of food is wasted, meaning those leading in the agricultural industry need to prioritize the implementation of disposal practices in order to achieve food security (Slorach et al., 2019). Individuals' attitudes about food waste become more worried as they grow older, especially for women, who are more disturbed by the negative impacts of wasted food (Cantaragiu, 2019).

COVID-19 has increased poverty and food insecurity levels for marginalized populations which were already vulnerable (Palmer & Strong, 2022; Pereira & Oliveira, 2020), requiring changes to the way people think and react to these issues. Proactivity, critical incident preparation, quick implementation, communication, and both a realistic and optimistic attitude have been cited as critical leadership competencies during COVID-19 (Stoller, 2020). Countries with women as the head of state have reported fewer cases and deaths related to COVID-19, women-led countries have significantly better outcomes possible due to the adoption of proactive policy (Garikipati & Kambhampati, 2021) and women's preferences for public spending on healthcare (Abras et al., 2021).

In more recent years, research has found that women were associated with more successful leadership qualities that led to a higher quality performance compared to male leaders (Eagly, 2007; Gardner, 2017; Offerman et al., 2019). However, the presence of women possessing leadership positions in the agricultural industry is minimal. This disparity in agriculture needs a to change towards supporting women to become primary decision-makers at both the legislative and household-levels (Satyavathi et al., 2010). This support includes women connecting with leadership mentors to strengthen their knowledge and networks, envisioning themselves in both traditional and nontraditional roles, and support each other as they pursue leadership positions in the agricultural industry (Griffeth et al., 2018).

The purpose of this study is to describe the personal advice networks of women committee members in the southern region state Farm Bureau women's leadership programs during COVID-19 that impact their food waste behavior, opinion leadership, and crisis leadership. Two objectives guided this study:

1. Determine the attributes possessed by the network peers.
2. Discover the variables that impact women's food waste behavior.

## Theoretical Framework

Three theories framed this study: crisis leadership, opinion leadership, and trust. A crisis leadership model developed by Brockner and James (2008) was used to determine participants' ability to view crises as an opportunity.

Several crises have occurred over the past few decades increasing the opportunity for researchers to investigate crisis leadership (Wu et al., 2021). According to the literature, a crisis is referred to as a rare public situation that causes unwanted outcomes for many individuals, including firms and their stakeholders, requiring immediate and effective leadership (James & Wooten, 2006). Crises differ among varying individuals and circumstances. Brockner and James (2008) discuss how innovation, change, and reputation enhancement are opportunities to be realized. Crises are predicted to be perceived as opportunities when organization leaders adopt a learning orientation (Wooten & James, 2004). The Farm Bureau supplies its leaders and members with ample opportunity to develop professionally as leaders and become more effective during times of crisis. A leader's ability to reflect and learn is critical for the success of an organization (Brockner & James, 2008).

Rogers' (2003) diffusion of innovations theory was used to determine the effect of women's opinion leadership in promoting food waste and food recovery strategies along with the effect from their personal networks. An opinion leader is a credible and trusted individual within a social system (Rogers, 2003). A role of an opinion leader is to reduce the uncertainty of an innovation in a social system (Rogers, 2003). In order to fulfill this role, an opinion leader must be aware of where the social system is relative to the innovation (Rogers, 2003). Rogers (2003) explains several attributes distinguished by opinion leaders: greater connection to the outside world, greater exposure to diverse media, high social engagement, higher socioeconomic status, more innovation, and greater interaction with change agents.

A trust theory was chosen to determine the trust types between participants and their personal networks. McKnight and Chervany (2001) developed a model discussing five trust types: disposition to trust, institution-based trust, trusting beliefs, trusting intentions, and trust-related behavior. The following terms are related to interpersonal trust. When an individual trusts interpersonally they do so by trusting other people, either personally, as in trusting behavior and trusting intentions, or based on their attributes, meaning trusting beliefs (McKnight & Chervany, 2001). Trusting beliefs mean the extent to which an individual confidently believes the other person has beneficial characteristics (McKnight & Chervany, 2001). This is person-specific, not situation-specific. The willingness to depend on the other party with a sense of relative security, with the lack of control over the party, and the possibility of negative consequences is known as trusting intentions (McKnight & Chervany, 2001). Trusting intentions differ from disposition to trust in that it refers to specific other people rather than general other people (McKnight & Chervany, 2001). An individual who voluntarily depends on another with confidence even with the possibility of negative consequences is trust-related behavior (McKnight & Chervany, 2001).

## Methods

This study used egocentric network analysis to determine the characteristics of women leaders in agriculture's advice networks. Egocentric data, also commonly referred to as local or personal network data, consists of asking questions in which individuals' responses provide relational

information to better understand their personal network characteristics and their influence on behavior (Valente, 2010). Researchers chose to conduct an egocentric network analysis to better understand the social relationships and influences that these women sought advice from since COVID-19 began.

Throughout this paper we refer to participating women as "egos" and the individuals in their social networks as "alters" (Borgatti et al., 2013). Egocentric network research is achieved by asking egos to elicit members of their social system, then collecting information on alter's based on the egos knowledge and perception and investigating the ties between them (Wasserman & Faust, 1994).

Researchers developed an electronic cross-sectional survey to be distributed to a sample comprised of women holding leadership positions within their states' Farm Bureau and who are actively involved in their women's leadership program. A list of all active leadership coordinators was obtained from each of the 12 southern region state's Farm Bureau, and these leadership coordinators were asked to share the survey with their Women's Leadership Committees. In order to assess egocentric networks, egos are asked three types of questions: name generators, name interpreters, and inter-relator questions (Borgatti et al., 2013; Valente, 2010). For the purpose of this study, we focused on egos responses to the name generator, which asked for a list of five people the ego has gone to for advice since COVID-19 began; and the name interpreter questions, which included a series of questions about each alter that was nominated by the ego.

The following alter variables were measured in this study: alter gender (0 = "female," 1 = "man," and 2 = "other"), alter relationship (0 = "family," 1 = "friend," 3 = "neighbor," 4 = "Farm Bureau," 5 = "other," 6 = "rancher", 7 = "pastor", and 8 = "neighbor"), alter communication (0 = "less than once per year," 1 = "1-2 times per year," 2 = "every few months," 3 = "every month," 4 = "every few weeks," 5 = "every week," 6 = "every few days," 7 = "every day"), alter length known (0 = "less than 6 months," 1 = "6 months - 1 year," 2 = "1 to almost 2 years," 3 = "2 to almost 3 years," 4 = "3 to almost 4 years," 5 = "4 to almost 5 years," 6 = "5 or more years"). The next five questions used the same scale (-2 = "never," -1 = "rarely," 0 = "sometimes," 1 = "usually," 2 = "always") alter trust in ego, ego trust in alter, alter opinion leader, ego opinion leader according to alter, and ego food waste leadership. Food waste behavior was measured using a seven-item assessment developed by researchers to determine egos food waste decisions and behaviors during COVID-19. E -Net software was used to compute network level variables (Borgatti, 2006), including: proportion of network composed of Farm Bureau affiliated members, proportion of alters who are always trustworthy, proportion of network that would describe egos as opinion leaders, and proportion of network ego trusts. Researchers used Statistical Package for Social Sciences 27 to run descriptive statistics (i.e., frequencies, percentages, means, and standard deviations) for ego and alter-level data. R was used to conduct a multiple linear regression for the dependent variable, food waste behavior, on the following independent variables: egos crisis leadership assessment sum score, egos duration of involvement in the women's leadership committee, proportion of network composed of Farm Bureau affiliated members, proportion of alters who are always trustworthy, proportion of network that would describe egos as opinion leaders, and proportion of network ego trusts. The survey was reviewed

by a panel of experts to assess validity. Reliability was measured for the food waste behavior assessment ($\alpha = 0.92$).

All participants in this study were female and there was a total of 50 respondents ($n = 50$), all of whom represent committee members involved in the 12 southern region Farm Bureau's Women's Leadership Committee's. There are approximately 159 ($N = 159$) total women among the 12 southern regions state's women's leadership committees, therefore the response rate was 31.45%. Out of the 12 southern region states, 11 state's Farm Bureaus participated in this study. The study's limitations were that the study is composed of self-reported data. There was a limitation regarding ego networks which regards participants' ability to enumerate the most appropriate ties related to the chosen name generator.

## Findings

For objective one, researchers determined the attributes possessed by the alters and how they impact ego networks. The 50 participants ($n = 50$) were able to collectively identify 244 ($n = 244$) alters through the name generator question. There was a total of 154 female alters (63.4%), while the other 36.5% were men ($n = 89$) (see Table 1).

**Table 1**
*Alter Gender* ($N = 243$)

| Alter Gender Variables | *f* | *%* |
|---|---|---|
| Female | 154 | 63.4 |
| Male | 89 | 36.5 |

Table 2 displays the relationships between egos and alters. The major type of relationship between ego and alter was family (43%, $n = 105$), followed by friend (66%, $n = 27$), Farm Bureau member (25%, $n = 61$), professional (7%, $n = 2.9$), rancher (0.4%, $n = 1$), pastor (0.4%, $n = 1$) and neighbor (0.4%, $n = 1$).

**Table 2**
*Alter Relationship* ($N = 242$)

| Alter Relationship Variables | *f* | *%* |
|---|---|---|
| Family | 105 | 43 |
| Friend | 66 | 27 |
| Farm Bureau | 61 | 25 |
| Professional | 7 | 2.9 |
| Rancher | 1 | 0.4 |
| Pastor | 1 | 0.4 |
| Neighbor | 1 | 0.4 |

Table 3 presented the amount of times egos and alters communicated during COVID-19. Most egos communicate with the alters every day (25.9%, *n* = 63), every few days (20.6%, *n* = 50), every week (17.3%, *n* = 42), every few weeks (15.2%, *n* = 37), every few months (11.5%, *n* = 28), or every month (7.4%, *n* = 18). There were 2.1% (*n* = 5) of alters that communicated with ego less than 1-2 times per year.

**Table 3**
*Alter Communication* (*N* = 243)

| Alter Communication Variables | *f* | % |
|---|---|---|
| Every day | 63 | 25.9 |
| Every few days | 50 | 20.6 |
| Every week | 42 | 17.3 |
| Every few weeks | 37 | 15.2 |
| Every few months | 28 | 11.5 |
| Every month | 18 | 7.4 |
| 1 to 2 times per year | 5 | 2.1 |

The length alters and egos have known each other is presented in the table below. Many alters (89.3%, *n* = 216) have known the ego for five or more years. Fewer egos have known alters four to almost five years (3.7%, *n* = 9), three to almost four years (2.9%, *n* = 7), one to almost two years (2.5%, *n* = 6), less than six months (0.8%, *n* = 2), six months to a year (0.4%, *n* = 1), and two to almost three years (0.4%, *n* = 1).

**Table 4**
*Alter Length Known* (*N* = 242)

| Alter Length Known Variables | *f* | % |
|---|---|---|
| 5 or more years | 216 | 89.3 |
| 4 to almost 5 years | 9 | 3.7 |
| 3 to almost 4 years | 7 | 2.9 |
| 1 to almost 2 years | 6 | 2.5 |
| Less than 6 months | 2 | 0.8 |
| 6 months to 1 year | 1 | 0.4 |
| 2 to almost 3 years | 1 | 0.4 |

Table 5 reports the mean scores from Likert-type questions regarding the trust and leadership among egos and alters. Positive scores were associated with the following: if the alter describes the ego as an opinion leader ($M$ = 1.16, $SD$ = .86), if the ego describes the alter as an opinion leader ($M$ = 1.20, $SD$ = .81), if the ego believes the alter is trustworthy ($M$ = 1.74, $SD$ = .70), and if the alter trusts the ego ($M$ = 1.86, $SD$ = .35). There was a negative score when the ego was asked if they lead the alter into making positive food waste decisions ($M$ = -.33, $SD$ = 1.27).

**Table 5**

*Alter Descriptive Results (N* = 243)

| Variables | *M* | *SD* |
|---|---|---|
| Alter Trust Ego | 1.86 | .35 |
| Alter Trustworthy | 1.74 | .70 |
| Alter Opinion Leader | 1.30 | .81 |
| Alter Describe Ego Opinion Leader | 1.16 | .86 |
| Alter Positive Food Waste Behavior | -0.33 | 1.27 |

*Note.* Grand Mean = 1.15. -2 = *Strongly Disagree*, 2 = *Disagree*, 0 = *Neither Agree or Disagree*, 1 = *Agree*, 2 = *Strongly Agree.*

Researchers conducted a multiple linear regression on the dependent variable, food waste behavior. The table below illustrates the multiple linear regression model ($R^2$ = 0.75, $F$ = 5.17, $p$ = <.05) (see Table 5). The model described 75% of variance in egos' food waste behavior scores. Egos food waste behavior was dependent on their crisis leadership assessment scores and their duration of involvement in the women's leadership program; along with a higher proportion of alters who are trustworthy. As one unit increased, the probability of a more positive food waste behavior increased. The predictive model equation was food waste behavior = 1.65 + 1.14 + 9.11 + .15.

**Table 6**

*Regression of Participants Food Waste Behavior Explained by Various Independent Variables*

| Variables | *Beta* | *t* | *p* |
|---|---|---|---|
| Ego Crisis Leadership | 1.65 | 6.90 | .05* |
| Ego Duration of Involvement | 1.14 | 2.95 | .05* |
| Proportion Ego Trust Alter | 9.11 | 2.75 | .01* |
| Proportion Ego Trust Alter Always | .15 | 2.23 | .03* |

*Note.* $p$ = < .05, $R^2$ = 0.75, $F$ = 5.17

## Conclusions/Discussions/Implications/Recommendations

What researchers concluded about the trust between egos and alters according to McKnight and Chervany (2001), is that the majority of an ego's network fall within one of the five trust constructs: disposition to trust, institution-based trust, trusting beliefs, trusting intentions and trust-related behavior. Due to the nature of this study, requiring women to provide the initials of five people they would go to for advice, the type of trust among egos and alters can be referred to

as interpersonal, and fall under the trust-related behavior construct which consists of cooperation, information sharing, informal agreements, decreasing controls, accepting influence, granting autonomy, and transacting business (McKnight & Chervany, 2001). Researchers found, as did Griffeth et al. (2018), that women's network were more likely to consist majorly of women.

The majority of women involved in this study identified as white, indicating a lack of diversity in the southern state's Women's Leadership Committees. In this regard, more inclusiveness would also include access to women of other ethnicities on these types of boards. The Women's Leadership Programs are a great launching pad for women to gain leadership and advocacy competencies. In regard to the large majority of women who are part of the baby boomer generation, with hardly any women who are from more recent generations. This finding may also indicate a pipeline issue with the recruiting and retaining younger women in these types of positions. Women were more likely to have a network that consists majorly of alters they engage with frequently (every day) and seek advice from those they view as opinion leaders, meaning the Farm Bureau needs to encourage new relationships and create more networking opportunities for these women. The typical alter was a family member or friend that the ego has known for more than five years and talks with them at least every few days. This person can be described as an opinion leader and there is mutual trust between the alter and the ego. A clear need exists for more food waste leadership competencies for women agriculture leaders to feel more confident with leading their peers into making positive food waste decisions.

Committee members and leadership coordinators should develop a strategy to recruit more diverse populations, to build a diverse community for women leaders in agriculture to share their story and impact the industry (Seitz et al., 2022). More women are needed to fulfill agricultural leadership positions to make a positive global impact on improving the safety, sustainability, and security of our food system (Griffeth et al., 2018). Leadership change agents from state's Farm Bureaus should consider prioritizing communication, community building, and development of opinion leaders to improve leadership competencies (Rogers, 2003) to achieve food security.

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# Is agriculture being implemented in private school classrooms? The impact of teacher willingness and availability of resources.

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## Abstract

Most agricultural education research has been primarily conducted in public schools rather than private, leaving a large gap in agricultural education research for those in private school education. Four research objectives guided this study: (1) determine private school teachers' perceived importance of incorporating agricultural awareness activities into Mississippi private school classrooms; (2) identify private school teachers' perceptions regarding issues related to agriculture; (3) identify the extent to which agricultural awareness activities are conducted in Mississippi private school classrooms; (4) determine if correlation existed between Mississippi private school teachers' views on incorporating agriculture, their perceptions of agriculture, and the frequency to which they incorporate agricultural activities into their classroom. The population for this study consisted of Mississippi private school teachers. This study employed a descriptive research design using an ANOVA, a bi-variate correlation, and descriptive statistics. The instrument used for this study was an adaptation of Knobloch's (1997) Agricultural Awareness Survey. Currently, Mississippi private school teachers are not currently incorporating agriculture into their curriculum. Many of them lack agricultural experience and instruction but they are willing to increase their agricultural knowledge and experience through professional development. Almost all the teachers had positive perceptions regarding agriculture and its incorporation into the classroom. Finally, none of the schools reported having an agricultural education program.

*Keywords*: agricultural literacy, private schools, agricultural education, teacher willingness

## Review of Literature and Conceptual Framework

Agricultural literacy has been defined numerous times over the last several decades. In 1988, agricultural literacy was defined by the National Research Council as an "understanding of the food and fiber system which includes its history and current economic, social, and environmental significance to all Americans" (National Research Council (NRC), 1988, p. 1). It is recommended that agriculture be offered to all students, not just to those who plan to seek a career within the agricultural industry (National Research Council, 1988). However, Hutcheson (2020) determined that teachers have a hard time incorporating agriculture on a day-to-day basis. It can be argued that the lack of knowledge exhibited by much of the population stems from the lack of agricultural education incorporation into educational systems during formal education

(National Research Council, 1988). Both students and teachers have been the subject of studies regarding agricultural literacy. Many teachers believe that schools play an important role in educating youth about agriculture, food, fiber, and natural resources (Trexler et al., 2000). However, teachers often feel unprepared and less confident to teach agriculture for a variety of reasons (Hutcheson, 2020).

Knobloch and Martin (1997) determined that teachers are receptive to agriculture and believe it should be incorporated into the classroom. Furthermore, several studies have determined that teachers' attitudes, beliefs, and experiences play a role in their willingness to incorporate agriculture into their classroom (Knobloch & Ball, 2003; Knobloch & Martin 2002a; Knobloch & Martin, 2002b; Trexler & Heinze, 2001).

Several factors that are believed to influence teachers' decisions about utilizing AITC materials and incorporating agriculture into their classroom for the sake of this study, factors that are believed to influence teachers' decisions about incorporating agricultural activities into their classroom. These factors include, technology, interest in professional development related to agriculture, activities related to agriculture, teacher feelings about the importance of education about agriculture, their level of experience, grade they teach, ability to use agriculture to teach other subject matter and a willingness to invest time and money. The purpose of this study is to identify and describe teachers' perceptions of the incorporation of agricultural topics and activities into private school classrooms. Objectives include: (1) determine Mississippi private school secondary teachers perceived importance of incorporating agriculture, (2) identifying teachers' perceptions of agriculture issues, (3) the variety of agricultural understanding activities that are incorporated into Mississippi private schools, and the (4) connection of Mississippi private school teachers view on incorporating agriculture, their perceptions, and willingness to include agriculture in their classroom.

## Methods

After IRB approval, this study employed a descriptive research design using an ANOVA, a bi-variate correlation, and descriptive statistics. A cross-sectional descriptive survey research method was used for data collection. The population for this study consisted of private school teachers, kindergarten through 12th grade, throughout Mississippi. Participants were selected using multistage convenience sampling. Overall, there were $N = 130$ private school teachers who participated in the study.

The instrument used for this study was an adaptation of Knobloch's (1997) Agricultural Awareness Survey. This survey instrument was designed to identify teachers' perceptions regarding the incorporation of agricultural topics and activities into the elementary curriculum (Knobloch, 1997). However, the questionnaire was adapted to include questions for elementary through high school teachers. A list of agricultural activities was included in the questionnaire to determine how frequently teachers incorporate these activities into their curriculum. Additionally, professional development questions from Burrows' (2010) Elementary Agricultural Education Needs Survey were included as well.

Data were collected with a self-administered survey using Qualtrics. Headmasters were contacted via email and asked to disseminate the survey to their teachers. Additionally, the solicitation email included information regarding two chances for participants to win $50 gift cards for completing the questionnaire. This study utilized Petrovčič et al. (2016) suggestion that additional contact attempts should be made at approximately 78 and 160 hours after the initial invitation was sent. Due to schools only operating Monday – Friday, weekends were not included in the suggested time for additional contact attempts.

The initial email invitation was emailed to each of the schools on November 9, 2021. A second email was sent on November 15, 2021, 72 hours after the initial email was sent, excluding the weekend. A third email was sent on November 18, 2021, and November 19, 2021, 168 hours after the initial email was sent. Additionally, to increase responses, the research contacted the schools via phone call to encourage participation, answer any questions or concerns, and ensure that the school was receiving the emails. Finally, the last email was sent on December 1, 2021, to collect any additional responses. The IBM Statistical Package for Social Science (SPSS) version 27 was used to perform all statistical analyses in this study. Data analysis for this study consisted of descriptive and inferential statistical procedures.

Descriptive statistics were used to analyze data from the following sections: demographics, views on incorporating agriculture into the classroom, perceptions of agriculture, agricultural activities, professional development, and one question from comments regarding planning and resources. Descriptive statistics were also used to answer the first, second, and third research objectives. Frequencies, means, standard deviations, and percentages were reported. To answer objective five, bi-variate comparisons were used to determine if correlations existed between teachers' views on incorporating agriculture, their perceptions of agriculture, and the frequency to which they incorporate agricultural activities into their classroom. A significance alpha of .05 was used to determine if there was any statistical significance between teachers' views, their perceptions, and the frequency to which they incorporate agricultural activities into their classroom. Additionally, correlation coefficients were interpreted using Davis' (2011) descriptors.

## Results

Out of the 130 responses received, 79% ($n$ = 100) were female and 21% ($n$ = 27) were male. Most participants ($n$ = 37) were between the ages of 41 and 50. Participants were also asked to list their ethnicity when completing the demographic portion of the survey. Ninety nine percent ($n$ = 115) of participants who chose to answer this question identified themselves as Caucasian, and only 1% ($n$ = 1) identified themselves as Hispanic. Most respondents taught science ($n$ = 54) and math ($n$ = 46) with the remaining respondents teaching a variety of other subjects including core subjects, music, religion, and technology. Fifty five percent ($n$ = 69) earned a bachelor's degree, 41% ($n$ = 51) earned a master's degree, 2.4% ($n$ = 3) earned a doctoral degree, and 1.6% ($n$ = 2) earned an associate degree. Fifty one percent ($n$ = 65) identified their community as being rural, 35% ($n$ = 45) as being metropolitan, and 13% ($n$ = 17) as being urban. Thirty-six percent ($n$ = 42) had no experience regarding agriculture.

Additionally, 28% (*n* = 33) described their agricultural experience as either growing up on a farm or currently living on a farm. Furthermore, only 5% (*n* = 6) described their agricultural experience as owning land or farmland or participating in 4-H/FFA type of agricultural Experience (*n* = 122). Fifty-four percent (*n* = 69) stated they had not received instruction regarding agriculture while 46% (*n* = 59) stated they had. Participants who responded yes to this were then asked to describe the type of agricultural instruction they had received.

Thirty-six percent (*n* = 9) stated they had taken agricultural classes while 32% (*n* = 8) had participated in teacher workshops. Additionally, 32% (*n* = 8) reported participating in 4-H/FFA. Fifty-three percent (*n* = 41) characterized agricultural instruction in their school as lacking. Furthermore, 36% (*n* = 36) characterized it as being included at times. Overall, over half of the participants who responded to this question stated that agricultural instruction was lacking. Table 4.8 shows the frequencies and percentages regarding how participants characterize agricultural instruction in their school. Seventy percent (*n* = 89) stated they do not currently use agriculture in their current classroom curriculum while 30% (*n* = 39) stated they do. Forty-seven percent (*n* = 37) said they could use guest speakers to relate agricultural topics to their students' local context. Additionally, 23% (*n* = 18) stated they could tour local farms or museums while only 9% (*n* = 7) stated they could use school gardens or greenhouses.

Seventy four percent (*n* = 86) of participants have attended a professional development program/class before while 26% (*n* = 31) have not. Those who responded yes to this question were then asked to list the professional development opportunities they have participated in. Technology workshops were the most popular answer with 26% (*n* = 8) of participants stating they had participated in this type of professional development. Additionally, 23% (*n* = 7) stated they had attended professional development regarding classroom management. Forty-three percent (*n* = 50) of participants who chose to respond agreed with that statement. Additionally, 41% (*n* = 48) agreed they would be interested in a teacher workshop about incorporating agriculture into their current curriculum.

Of the participants who responded, 51% (*n* = 57) stated time hinders them from researching educational resources. Thirteen percent (*n* = 14) stated knowledge of subject matter hinders them and 12% (*n* = 13) stated money. However, participants were given the option to choose "other" as their answer and then write in a response. Several participants stated all the answers listed hindered them from research educational resources.

Of the teachers who responded, 49% (*n* = 61) agreed that agricultural education is important to students in grades kindergarten through 12th. Additionally, 62% (*n* = 77) strongly agreed is important for students to know where their food comes from, while 53% (*n* = 65) strongly agreed that students need to understand how agriculture fits into the global economy. Furthermore, 32% (*n* = 40) disagreed that there is no time to teach agriculture while 38% (*n* = 47) were neutral. Thirty-three percent (*n* = 40) agreed that there was a lack of agricultural resources available to them, and 52% (*n* = 64) agreed that teachers are not trained to incorporate agriculture in their classrooms. However, 48% (*n* = 59) agreed that agriculture could be taught in any subject matter.

Eighty percent (*n* = 95) of teachers strongly disagreed that there is no future in agriculture. Moreover, 53% (*n* = 63) agreed that agriculture provides career opportunities, and 42% (*n* = 50)

agreed that the agricultural industry has a skilled, educated workforce. Furthermore, 54% ($n$ = 64) agreed that agriculture is a highly technological industry. Finally, 47% ($n$ = 55) agreed that students should be taught agriculture no matter what career they wanted to pursue. In addition, conducting an agricultural themed poster contest at least once a year was by far the most popular activity (82%; $n$ = 97) implemented by the responding teachers.

Lastly, a strong statistically significant relationship did exist between participants' views on incorporating agriculture and their perceptions of agriculture, $r = 0.58$, $p = < .001$. Additionally, a weak statistically significant relationship between participants' views on incorporating agriculture and the frequency to which they incorporate activities did exist, $r = 0.24$, $p = .008$. Finally, participants' perceptions of agriculture displayed a weak statistically significant to the frequency to which they incorporate activities, $r = 0.23$, $p = .012$. Table 4 shows the correlation between participants' views on incorporating agriculture, their perceptions of agriculture, and their willingness to incorporate activities into the classroom.

Table 4

*Correlation between views, perceptions, & activities*

| | *n* | *M* | *SD* | 1 | 2 | 3 |
|---|---|---|---|---|---|---|
| Views on Incorporating Agriculture | 124 | 3.72 | 0.56 | - | | |
| Perceptions of Agriculture | 119 | 4.12 | 0.57 | 0.58** | - | |
| Frequency of Incorporating Activities | 119 | 41.21 | 13.52 | 0.24** | 0.23* | - |

*$p < .05$. **$p < .01$.

## Conclusions and Recommendations

Overall, most teachers ($n$ =42) in this study had no agricultural experience, and those who did ($n$ = 33) either currently live or grew up on a farm. Additionally, several teachers ($n$ = 14) had no previous instruction regarding agriculture. Furthermore, 70% ($n$ = 89) of teachers do not incorporate agriculture into their curriculum. It is possible that because these teachers lack agricultural experience, they are less likely to incorporate agriculture into their lessons. This supports several studies in which teachers who had agricultural experiences were more confident in teaching the material and were more likely to incorporate agriculture into their lessons (Knobloch & Martin, 2002b; Trexler & Heinze, 2001).

Even though many of the teachers ($n$ = 42) who participated in this study currently lack agricultural experience, they are willing to increase their agricultural knowledge and experiences. Over half of the teachers ($n$ = 76) stated they would attend professional development to learn about incorporating agriculture into their classroom. This aligns with Knobloch et al. (2007) findings that teachers need professional development to incorporate agriculture into their classrooms. Additionally, the teachers listed needing resources like lesson plans, agricultural articles and information, monetary support, and professional development. Many of the resources that teachers identified are offered in the state at little to no cost proving teachers are unaware of the resources available to them.

Overall, most teachers ($n$ = 103) held positive views regarding the incorporation of agriculture into their classrooms. Additionally, many of the teachers ($n$ = 90) agreed that agriculture could be incorporated into a variety of subjects which supports Knobloch and Martin's (2002a) findings. Most teachers ($n$ =114) who participated in this study agreed or strongly agreed that agriculture brings learning to life by incorporating real-life topics such as the global economy and society's food, fiber, and fuel. This directly aligns with Knobloch et al. (2007) study in which teachers stated that agricultural education provides students with an authentic learning environment.

Many teachers who participated in this study either never incorporated the activities outlined in the survey or they only incorporated them one time per year. This closely aligns with Hutcheson's (2020) findings in which teachers who participated in her study did not incorporate agriculture regularly into their day-to-day curriculum. Out of the Mississippi private schools represented in this study, none reported having an agricultural education program or teaching agricultural classes specifically. This contradicts the National Research Council's statement that agricultural education typically consists of an agricultural education program offered in a high school setting.

A strong correlation existed between teachers' perceptions of agriculture and their views on incorporating agriculture into their curriculum. Additionally, a weak correlation also existed between participants' perceptions of agriculture and the frequency to which they incorporate activities. This supports Knobloch and Martin's (2002a) findings which state that teachers are more likely to incorporate agriculture into their classroom if they have positive perceptions of the agricultural industry. Finally, a weak correlation did exist between participants' views on incorporating agriculture and the frequency to which they incorporate activities.

Mississippi private school teachers have already stated they need additional resources to be able to incorporate agriculture into their classrooms. These resources have already been created and are available to teachers; however, teachers lack knowledge of these resources. Therefore, it is recommended that agricultural literacy or education professionals create a list of teaching materials and resources to be disseminated to all Mississippi private school teachers. Additionally, teachers are encouraged to research educational resources and materials in Mississippi such as Mississippi Farm Bureau Agriculture in the Classroom curriculum. Programs like the Mississippi Farm Bureau Agriculture in the Classroom curriculum provide teachers with guided lesson plans to incorporate agriculture into their classrooms.

Due to the lack of research conducted regarding agricultural literacy and education in private schools, it is recommended that this study be replicated in private schools across the United States. Furthermore, this study should be replicated in Mississippi to include more diverse areas of the state. This could be done by identifying diverse populations throughout the state such as the Mississippi Band of Choctaw Indians or different religious schools. Additionally, most of the teachers who participated in this study reported incorporating the 60 activities listed in the survey at least one time per year. However, when they were asked if they incorporate agriculture into their classroom, 70% stated they did not. It could be possible teachers are incorporating agriculture through certain activities but are unaware they are doing so. Further research is

needed to determine if and why teachers are not making a connection between the activities and agriculture.

Additionally, there is a lack of information regarding private school students' perceptions, attitudes, and knowledge of agriculture. This is major component in understanding the current state of agricultural education and literacy in private schools. Therefore, research should be conducted to determine students' perceptions, attitudes, and knowledge of agriculture. It is also recommended that teachers be surveyed or interviewed to determine what agricultural related teaching materials and resources would be beneficial in incorporating agriculture into the classroom.

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# Preferred Gregorc Learning Styles of Preservice SBAE Teachers in an Introductory Course

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## Introduction

Teachers can improve instruction when they understand the learning styles of their students (Lohri-Posey, 2003). Gregorc (1979) defines learning styles as consisting of "distinctive behaviors which serve as indicators of how a person learns from and adapts to his environment" (p. 234). Learning styles speak to the individual characteristics of people, particularly their dispositional traits and characteristic adaptations (Hawk & Shah, 2007; McAdams & Pals, 2006). Teaching to the individual characteristics and needs of students bears many names (Tetzlaff et al., 2022) such as individualized instruction, individualization, differentiated instruction, and instructional adaptations to name a few. Despite the varied names, the definitions of each point to a common goal of crafting instructional strategies to better match the individual characteristics of the learner and facilitate more effective learning (Connor et al., 2018; Hachfeld & Lazarides, 2021; Bondie et al., 2019; van Geel et al., 2019; Parsons et al., 2018).

Effective learning strategies can be implemented when the learning styles of individuals are understood by teachers (Lohri-Posey, 2003). Learning styles include characteristics such as likes, dislikes, and behaviors, to characterize students' learning ways and their adaptability to different scenarios. Classroom instruction based upon individuals' learning styles has been recognized through Rosenshine and Furst's (1971) characteristics of effective teaching with variability being identified as one of the five main characteristics of effective teaching.

The Gregorc Style Delineator has been utilized in the Agricultural Education field to inventory the learning styles of preservice and in-service teachers (Friedel & Rudd, 2006; Lambert et al., 2010; Researcher et al., 2021). Additionally, other fields of study have utilized this instrument to categorize student learning styles (Gould & Caswell, 2006; Hawk & Shah, 2007). Teachers are then able to use the results to inform effective teaching methods (Hawk & Shah, 2007; Lohri-Posey, 2003).

## Theoretical/Conceptual Framework/Perspective

Advocates of learning styles maintain that adapting instruction to the learning styles of students allows for more effective teaching (Hawk & Shah, 2007). To support this claim, Hawk and Shah (2007) reviewed six learning style indicators: Kolb, Gregorc, Felder-Silverman, Fleming, Dunn and Dunn, Entwistle, and Tait Revised Approaches to Studying. Each style indicator was evaluated for validity, and the dominant learning style yielded by each was evaluated. It was

concluded that the use of learning styles to inform learning activities was an effective means of increasing learning among students. The authors recommended utilizing learning style instruments to develop instructional activities that are more effective for student learning and matched to individual learning styles (Hawk & Shah, 2007).

Moreover, the use of learning styles to individualize instruction is supported by Rosenshine and Furst's (1971) characteristics of effective teaching. The authors identified variability as a top characteristic of effective teachers. Nevin and Knobloch (2005) maintain variability is essential to creating a learning environment in which teachers are sensitive to the differences in learning characteristics among students. They describe an effective classroom as one in which the teacher knows their students and accommodates their needs (Nevin & Knobloch, 2005). Adapting instruction through the use of learning styles is an effective way to meet the needs of individual learners (Hawk & Shah, 2007).

Teachers tend to instruct students using a combination of their preferred learning style and using strategies they deem effective for their own learning (Hawk & Shah, 2007). With this in mind, pre-service school-based agricultural education (SBAE) teachers at Oklahoma State complete the Gregorc Style Delineator (GSD) as part of the course curriculum for the Foundations and Philosophies of Teaching Agricultural Education course. The purpose of the administration of this instrument is two-fold. First, it models a way for emerging teachers to inventory the learning styles of their students. Second, it offers insight into their own learning style and how this may impact their own teaching. The GSD identifies the learner's tendency to think in a Concrete Sequential (CS), Abstract Sequential (AS), Abstract Random (AR), or Concrete Random (CR) style (Gregorc, 2006). Sidel and England (1999) have identified the most common GSD style as reported by Gregorc is CS (37%). AR (34%), CR (19%), and AS (10%) were also reported (Seidel & England, 1999).

## Purpose and Objectives

The purpose of this study was to identify the dominant Gregorc Learning Styles of preservice SBAE teachers during their first agricultural teacher education course at Oklahoma State University in five different cohort years. This study had two objectives:

1. Identify the overall dominant Gregorc Learning Style of preservice SBAE teachers.
2. Identify the dominant Gregorc Learning Styles of preservice SBAE teachers by cohort year (2018-2022).

## Methods

This descriptive study expanded upon a previous study conducted by Oklahoma State University by incorporating additional years of data (Teixeira et al., 2021).

### Population and Sampling

Purposive sampling was used to collect data from OSU preservice SBAE teachers (Ary et al., 2010). The population of this study included a census of students enrolled in the AGED 3103 Foundations and Philosophy of Agricultural Education during the years 2018–2022 ($N = 232$). However, data from 136 students (41%) were not included due to frame error. In some cases,

especially in earlier years, the pre-existing data were not available. This could be due to a number of reasons. The data were not originally recorded for research purposes, so the instructors and teaching assistants from previous years may not have reported the data from their laboratory sections. It is also possible students were absent on the class day the assessment was administered, or they did not consent to their student assignment data being used for research purposes. Percentages of available data included in this study, by year, are as follows: 2018 (49%), 2019 (43%), 2020 (76%), 2021 (43%), 2022 (88%). The sample included 29% males ($n$ = 39) and 71% females ($n$ = 97). Table 1 includes a descriptive breakdown by cohort year.

**Table 1**

*Preservice Teachers' Sex by Year from 2018 to 2022 (n = 136)*

| Gender | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| **Female** | 17 | 13 | 25 | 14 | 28 |
| **Male** | 5 | 10 | 10 | 6 | 8 |

### Data Collection and Analysis

The Gregorc Style Delineator (Gregorc, 2006) was distributed to preservice teachers in AGED 3103 lab sections to collect each cohorts learning styles over the last five years. Data collection occurred during lab sections for this introductory course, and the assessment was completed as a course assignment. Results were compiled using an online form to collect students' scores in each style during their lab section to contribute to a class discussion on learning styles. Dominant styles were recorded using Gregorc's (1982) score ranges and were described below using frequencies and percentages. These score ranges are: 10 to 15 points in any of the four learning styles indicates a "low" (non-preferred) learning style; 16 to 26 points indicates an "intermediate" (preferred) learning style, and 27 to 40 points is a "dominant" (highly preferred) learning style. Each cohort's results were kept in a Microsoft Excel© spreadsheet in secure university cloud storage. Those results were then compiled to report the style preferences and range of scores for each style within each year.

### Limitations

The limitations of this study were identified to be 1) missing data from students who either missed their respective lab section and were not available to enter their information, or students who did not complete the entire data entry form for the survey, 2) the fall 2020 and 2021 COVID affected semesters, and 3) students accurately entering their information from their Gregorc Learning Styles Delineator into the data collection form.

## Results/Findings

Responses from each year were categorized by preferred learning styles. Dominant learning styles for each cohort year and the total for each style can be seen in Table 2. Some students had

a bimodal highly preferred dominant learning style with only one student reporting no highly preferred dominant style.

**Table 2**

*Distribution of Gregorc Style Delineator Learning Styles Dominance Among Students in AGED 3103 (n = 136)*

| Year | Learning Style | Most Dominant | Highly Preferred *Dominant* | Preferred *Intermediate* | Non-preferred *Low* | Range |
|---|---|---|---|---|---|---|
| 2018 | Concrete Sequential | 9 | 11 | 11 | 0 | 16-37 |
| (*n* = 22) | Abstract Sequential | 3 | 9 | 13 | 0 | 20-32 |
| | Abstract Random | 7 | 7 | 14 | 1 | 14-37 |
| | Concrete Random | 4 | 5 | 16 | 1 | 15-34 |
| 2019 | Concrete Sequential | 16 | 18 | 5 | 0 | 21-38 |
| (*n* = 23) | Abstract Sequential | 1 | 7 | 16 | 0 | 19-31 |
| | Abstract Random | 4 | 5 | 17 | 1 | 15-34 |
| | Concrete Random | 3 | 4 | 18 | 1 | 15-35 |
| 2020 | Concrete Sequential | 17 | 21 | 14 | 0 | 21-40 |
| (*n* = 35) | Abstract Sequential | 6 | 10 | 25 | 0 | 17-36 |
| | Abstract Random | 8 | 7 | 25 | 3 | 13-35 |
| | Concrete Random | 7 | 8 | 27 | 0 | 16-31 |
| 2021 | Concrete Sequential | 6 | 8 | 12 | 0 | 16-34 |
| (*n* = 20) | Abstract Sequential | 4 | 8 | 12 | 0 | 18-33 |
| | Abstract Random | 5 | 6 | 12 | 2 | 12-33 |
| | Concrete Random | 5 | 8 | 12 | 0 | 19-33 |
| 2022 | Concrete Sequential | 22 | 24 | 12 | 0 | 18-36 |

| | | | | | | |
|---|---|---|---|---|---|---|
| ($n$ = 36) | Abstract Sequential | 1 | 6 | 29 | 1 | 15-32 |
| | Abstract Random | 10 | 13 | 22 | 1 | 15-36 |
| | Concrete Random | 8 | 12 | 24 | 0 | 16-35 |
| Total | Concrete Sequential | 70 | 82 | 54 | 0 | 16-40 |
| | Abstract Sequential | 15 | 40 | 95 | 1 | 15-36 |
| | Abstract Random | 34 | 38 | 90 | 8 | 12-37 |
| | Concrete Random | 27 | 37 | 97 | 2 | 15-35 |

*Note.* Of the 136 respondents, 10 had more than one most dominant learning style.

The Concrete Sequential learning style was the most dominant style for respondents each year. Concrete Sequential was the most highly preferred dominant style in 2018 (50.00%), 2019 (78.26%), 2020 (60.00%), and 2022 (66.67%), while it was equally as highly preferred (40.00%) as Abstract Sequential and Concrete Random styles by the 2021 cohort. Overall, 60.30% of respondents chose Concrete Sequential as a highly preferred dominant style.

Abstract Sequential was chosen as a highly preferred style for 29.41% of respondents, while 27.94% and 27.21% chose Abstract Random and Concrete Random respectively. Abstract Sequential was chosen as the most dominant style for 11.03% of respondents. In 2018, the Abstract Sequential style was highly preferred by 40.91% of respondents but was chosen by only 13.64% as their most dominant style. The following year (2019) only 1 respondent chose Abstract Sequential as their most dominant style, however, 30.43% rated Abstract Sequential as a highly preferred style.

As a whole, the Abstract Random style was the second most dominant style (25.00%) and was highly preferred by 27.94% of respondents. In 2018 and 2019 Abstract Random was the third most selected highly preferred style, however, in 2020 and 2021 it was the least preferred style. The Concrete Random style was highly preferred by 27.21% of respondents and was the most dominant style for only 19.85% of respondents.

## Conclusions/Discussion/Implications/Recommendations

Most respondents reported one dominant style (92.75%). As supported by the literature, Concrete Sequential was the most chosen highly preferred style followed by Abstract Sequential, Abstract Random, and Concrete Random (Seidel & England, 1999). More respondents chose Concrete Sequential as their most dominant style (51.47%) which is more than what was suggested by Gregorc (1982) for the general population (37%). This finding aligns with literature which suggests that science-based majors are more likely to prefer the Concrete Sequential style (O'Brien, 1991; Seidel & England, 1999). As such, agricultural teacher educators as well as other science-based fields should consider this style when planning instruction. These

preferences can also assist state staff or those responsible for professional development for teachers in planning programming to aid in recruitment and retention of SBAE teachers.

Implications from this study could imply how pre-service and in-service agricultural education teachers plan for and implement lesson plans into their respective classrooms. An analysis using inferential statistics could also be conducted to measure relationships between learning style and personal characteristics of preservice teachers (i.e., gender, ethnicity, etc.). It is recommended that qualitative studies be conducted with pre-service agricultural education teacher educators to better understand their learning style and how they plan for and implement lesson plans. Trend analysis with these qualitative results may allow for identification of future teaching methods to be implemented into post-secondary teacher education courses.

It is also recommended to conduct additional analysis with learning styles with Myers Briggs Personality Types as well as the McCrae and Costa Big Five Personality Test. Analysis of these tests may allow researchers to better identify and understand pre-service and in-service teachers' methodology and pedagogy as it pertains to classroom instruction, laboratory and student organization program management, as well as indicate strengths within different areas associated with SBAE.

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# Evaluating Heterosexism of Post-Secondary Agricultural Education Students Group Norms

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## Introduction and Literature Review

The ever-changing population of the United States creates challenges for educational institutions to reflect the dynamic of a diversifying population of students. Current public-school enrollment reflects the changing dynamic as students of Color now represent more than half (54%) of school populations (NCES, 2022). Additionally, nearly one in five Generation Z individuals identify as a member of the queer community, representing a shift in school-age youth (Jones, 2022). While more students are identifying as a member of the queer community, they are still existing in educational spaces that inadequately address their unique developmental needs (Kosciw et al., 2014; Myers et al., 2020; Snively et al., 2004; Walters & Hayes, 1998). Until educational institutions are reconstructed, queer students cannot be liberated as societal norms of heterosexism are deeply engrained in the foundations of education (Case et al., 2012; Meyer, 2007; Walters & Hayes, 1998).

Historically, society in the United States depicted homosexuality as inferior to heterosexuality through biased psychological research, religious agendas, and oppressive policies (Meyer, 2007). Heteronormativity, or the belief that heterosexuality is the normal sexual orientation (Forrest, 2006), is closely linked to heterosexism, i.e., the belief that heterosexuality is not only normal, but is superior to homosexual identities (Morrow & Gill, 2003). In cultures driven by heteronormativity, students who identify as or are perceived to be in the queer community are placed at a higher risk of victimization and harassment (Aguirre et al., 2021; Barnett et al., 2018; Meyer, 2008; Myers et al., 2020). This heightened victimization is of great concern, as queer students who experience high levels of victimization report lower self-esteem and higher levels of depression than students who experience little victimization (Kosciw et al., 2022).

Heterosexist beliefs have been reported to be influenced by religious ideologies, rural communities, and gender identity. Individuals who consider themselves as *highly religious* are most likely to hold moral rejections to homosexuality than individuals who do not have strong religious convictions (Forrest, 2006; Herek & McLemore, 2013). Additionally, queer students in rural schools experience increased victimization compared to urban and suburban students (Kosciw et al., 2014) due to highly religious rural communities (Lee, 2019). Finally, it has been found that female students tend to hold more accepting views of homosexuality than male students (Kite & Bryant-Lees, 2016; Meyer, 2007).

School-based agricultural education (SBAE) has also struggled with acceptance, inclusion, and liberation of marginalized students (Barajas, 2021; Barajas et al., 2020; Elliot & Lambert, 2018; Vincent & Austin, 2021). Additional scholarship shows that post-secondary SBAE students show less concern for teaching diverse student populations than other teaching disciplines (Vincent et al., 2012, 2014). As a profession, we must start to address the unique needs of queer youth (Murray et al., 2020). It is imperative that post-secondary SBAE programs and scholars begin to address attitudes of their students that may negatively impact queer students.

## Theoretical Framework

Subjective group dynamics (SGD) theory (Abrams et al., 2003) provides an explanation to the development of homophobic attitudes and challenges to combatting these attitudes. Norms of the in-group are developed through *descriptive* and *prescriptive* norms (Pinto et al., 2010). In-group preference has been found to emerge in early childhood and strengthens as youth reach adolescence (Abrams et al., 2003). Conforming to group norms can lead to prejudiced beliefs and attitudes, "in particular when fair and just reasoning would be in conflict with peer norms" (la Roi, 2020, p. 2230). In-group members face potential social exclusion and isolation when challenging group norms (la Roi, 2020). When in-group attitudes are homophobic, "youth may condone or internalize homophobic attitudes if they perceive this to be an important norm within their peer group, even when they infer this from strategically applied homophobic behavior of their peers" (la Roi, 2020, p. 2231).

This study is also guided through the lens of Queer Theory, given its ability to challenge and disrupt the norms of educational institutions (Meyer, 2007). Queer theory calls into question the way education organizes bodies of knowledge through "masculinity, femininity, sexuality, citizenship, nation, culture, literacy, consent, [and] legality" (Britzman, 1998, p. 212). From a queered perspective, researchers can deconstruct notions of normalcy and hegemony like heteronormativity (Dilley, 1999; Tierney & Dilley, 1998). Further, queer theory questions binary systems like heterosexual-homosexual and male-female (Tierney & Dilley, 1998). Authors operationalize the use of the word "queer" in this manuscript to represent all identities related to queerness, without constricting to prescribed identity labels (Henderson, 2019).

## Purpose and Objectives

This study aims to create knowledge in the profession of post-secondary agricultural education students' views of lesbian and gay individuals. Through learning more about student attitudes toward these identities, our profession can better prepare inclusive and accepting educators. Three research objectives guided the current study:

1. Describe the attitudes of post-secondary agricultural education students toward gay and lesbian individuals by construct
2. Describe how demographic groups of participants responded to each construct
3. Determine trends in attitudes of post-secondary agricultural education students toward gay and lesbian individuals by demographic group.

## Methodology

The analysis of post-secondary agricultural education students' attitudes toward lesbian and gay identities was completed utilizing survey research methods. An online questionnaire developed by Gato et al. (2012; 2014) titled the *Multidimensional Scale of Attitudes Toward Lesbians and Gay Men* (MSATLGM) was utilized to collect data. Permission was obtained from the author to utilize the instrument in August 2021. Post-secondary agricultural education students served as the population for this study. Data collection occurred through convenient sampling. The questionnaire was distributed through a generated listserv at the host institution and with all agricultural education post-secondary institutions during the 2021-2022 academic year. A total of 21 institutions agreed to distribute the questionnaire to their students resulting in a total of 119 responses from 12 states. However, due to incomplete responses from some participants, the total number of responses varied for each construct and demographic questions.

Participants in this study were mostly female (75.9%), came from rural home residences (70.9%), and self-identified as *moderately religious* ($M$ = 3.03, SD = 0.97 on a four-point Likert scale). Additionally, 63.2% of participants reported having post-secondary lessons on the queer community in their program and 15 participants (12.8%) identified as a member of the queer community. Participants' credit standings were as follows: Freshman = 19.7%, Sophomore = 25.6%, Junior = 24.8%, Senior = 26.5%, Graduate = 3.4%.

The MSATLGM questionnaire developed by Gato et al. (2012, 2014) consisted of 27 items and assessed four constructs of attitudes that ranged from five to ten questions each. Permission was obtained to use this instrument in August 2021. Responses for each item on the questionnaire were measured on a six-point scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The first construct, *Rejection of Proximity*, evaluated prejudiced ideologies of rejecting/avoiding lesbians and gay men and consisted of ten statements. The second construct, *Pathologizing of Homosexuality,* assessed views of homosexuality as a mental disorder/disease and consisted of five statements. The third construct, *Modern Heterosexism,* assessed heterosexist ideologies of parenting, marriage, and visibility and consisted of seven statements. The fourth construct, *Support*, measured attitudes that favored equal rights for and acceptance of lesbians and gay men and had five statements. Gato et al. (2012) deemed the questionnaire reliable for each of the four constructs based upon the Cronbach's alpha as follows: *rejection of proximity* ($\alpha$ = 0.91), *support* ($\alpha$ = 0.83), *modern heterosexism* ($\alpha$ = 0.79), *pathologizing of homosexuality* ($\alpha$ = 0.86).

The researchers used IBM SPSS statistics version 28 to address the research objectives. Measures of central tendencies were utilized to solve for research objectives one and two. Per recommendation by Miller (1998), Pearson correlation ($r$) for interval-interval data, point-biserial correlation ($r_{pb}$) for interval-nominal data, and Spearman rank-correlation ($r_s$) for interval-ordinal data were utilized to solve for research question number three. Correlation coefficient strength was interpreted using the scale from Davis (1971) of: negligible = .01-.09, low = .10-.29, moderate = .30-.49, substantial = .50-.69, very high = .70-.99, and perfect = 1.0. The researchers used descriptors developed by Gato et al. (2012, 2014) to express the magnitude of each correlation.

## Findings

Research objective one sought to describe the attitudes of post-secondary agricultural education students toward gay and lesbian individuals by the constructs of the MSATLGM (see Table 1). Participants were found to report overall positive views of lesbian and gay identities given a mean score on the positive end of the scale for the *support* construct ($M$ = 3.92, SD = 1.42). Additionally, participants further showed positive views given mean scores on the negative end of the scale for *rejection of proximity* ($M$ = 2.16, SD = 1.18), *pathologizing of homosexuality* ($M$ = 2.40, SD = 1.32), and *modern heterosexism* ($M$ = 3.12, SD = 1.24). Table 1 (below) contains the representative means from our sample.

**Table 1**
*Student Responses on the MSATLGM*

| Construct | *n* | *M* | SD | Min | Max |
|---|---|---|---|---|---|
| Rejection of Proximity | 117 | 2.16 | 1.18 | 1.00 | 6.00 |
| Pathologizing of Homosexuality | 114 | 2.40 | 1.32 | 1.00 | 5.80 |
| Modern Heterosexism | 117 | 3.12 | 1.24 | 1.14 | 6.00 |
| Support | 116 | 3.92 | 1.42 | 1.00 | 6.00 |

*Note.* Responses were measured on a six-point scale ranging from 1 (*strongly disagree)* to 6 (*strongly agree*).

In research objective two, the researchers sought to describe the attitudes of various demographic groups toward gay and lesbian individuals. Overall, demographic groups shared overall positive attitudes given all scores for the *support* construct on the positive end of the scale. Additionally, mean responses to the *modern heterosexism* construct were the highest among the three negative constructs for each group of participants (i.e., participants agreed with heterosexist statements the most). Further description of responses related to objective two are listed in Table 2.

**Table 2**
*Mean Construct Scores by Demographic Group*

| Demographic Group | Rejection of Proximity | Pathologizing of Homosexuality | Modern Heterosexism | Support |
|---|---|---|---|---|
| | *M* (SD) | | | |
| Credit Standing | | | | |
| Freshman | 2.23 (0.93) | 2.50 (1.18) | 3.35 (1.10) | 3.97 (1.13) |
| Sophomore | 2.17 (1.32) | 2.33 (1.27) | 3.13 (1.42) | 4.04 (1.67) |
| Junior | 2.43 (1.40) | 2.98 (1.59) | 3.29 (1.29) | 3.60 (1.57) |
| Senior | 1.98 (1.09) | 2.10 (1.16) | 2.93 (1.21) | 3.90 (1.31) |
| Graduate | 1.53 (0.78) | 1.55 (0.44) | 2.40 (0.21) | 4.55 (1.02) |
| Gender Identity | | | | |
| Male | 2.44 (1.58) | 2.68 (1.65) | 3.35 (1.39) | 3.46 (1.65) |
| Female | 2.11 (1.05) | 2.39 (1.21) | 3.11 (1.20) | 3.98 (1.34) |
| Non-Binary | 1.17 (0.29) | 1.00 (0.00) | 1.62 (0.16) | 5.40 (0.72) |
| Home Residency | | | | |

| | | | | |
|---|---|---|---|---|
| Rural | 2.32 (1.29) | 2.55 (1.38) | 3.30 (1.29) | 3.78 (1.43) |
| Suburban | 1.84 (0.84) | 2.14 (1.11) | 2.77 (1.04) | 4.14 (1.36) |
| Urban | 1.64 (0.69) | 2.03 (1.22) | 2.55 (1.16) | 4.40 (1.60) |
| Queer Lessons in Post-Secondary Program | | | | |
| Yes | 2.01 (1.01) | 2.32 (1.19) | 3.02 (1.20) | 4.06 (1.32) |
| No | 2.44 (1.43) | 2.60 (1.50) | 3.32 (1.32) | 3.62 (1.57) |
| Queer Identity | | | | |
| Yes | 1.17 (2.32) | 1.15 (0.27) | 1.92 (0.42) | 5.47 (0.52) |
| No | 2.32 (1.20) | 2.62 (1.30) | 3.31 (1.23) | 3.66 (1.37) |
| Religious Ideology | | | | |
| Not Religious | 1.63 (0.89) | 1.81 (0.88) | 2.53 (0.90) | 4.58 (1.30) |
| Slightly Religious | 1.64 (0.72) | 1.89 (1.03) | 2.50 (1.11) | 4.39 (1.21) |
| Moderately Religious | 2.01 (1.14) | 2.21 (1.17) | 2.97 (1.12) | 4.11 (1.26) |
| Very Religious | 2.71 (1.28) | 3.04 (1.43) | 3.73 (1.24) | 3.31 (1.50) |

*Note.* Responses were measured on a six-point scale ranging from 1 (*strongly disagree)* to 6 (*strongly agree*).

Research objective three sought to determine the response trend of each demographic group by construct (Table 3). Pearson correlation tests determined that religion and queer identity had a significant relationship with moderate strength (Davis, 1971) for each construct. Additionally, point-biserial correlation tests found home residence to have a significant relationship to *rejection of proximity* ($r_{pb}$ = -.20, $p < .05$) and *modern heterosexism* ($r_{pb}$ = -.21, $p < .05$) with low strength (Davis, 1971). Finally, there was a positive, point-biserial correlation between gender and *support*, which was statistically significant ($r_{pb}$ = .21, $p < .05$). Further description of correlations is depicted in Table 3.

**Table 3**

*Correlations Between Groups and Constructs*

| | Rejection of Proximity | Pathologizing Homosexuality | Modern Heterosexism | Support |
|---|---|---|---|---|
| Religious Ideology[a] | 0.35* | 0.35* | 0.39* | -0.32* |
| Credit Standing[b] | -0.11 | -0.09 | -0.13 | -0.01 |
| Gender Identity[c] | -0.16 | -0.16 | -0.16 | 0.21* |
| Home Residency[c] | -0.20* | -0.15 | -0.21* | 0.14 |

| | | | | |
|---|---|---|---|---|
| Queer Lessons[c] | 0.17 | 0.10 | 0.12 | -0.15 |
| Queer Identity[c] | 0.33* | 0.38* | 0.38* | -0.43* |

*Note.* [a] = Pearson Correlation ($r$), [b] = Spearman's Correlation ($r_s$), [c] = Point-Biserial Correlation ($r_{pb}$), * = significant at the 0.05 level (2-tailed).

## Conclusions, Implications, and Recommendations

This exploratory queer study in SBAE scholarship sought to describe biases of post-secondary agricultural education students related to homosexuality. Findings from this study provide our profession with a new understanding of attitudes held by current post-secondary agricultural education students toward homosexuality and challenges to overcoming heterosexist attitudes. The first research objective for this work described the overall attitudes post-secondary agricultural education students held toward homosexuality. Researchers determined the participants held positive perceptions of homosexuality given a positive response to the *support* construct. However, there is not a strong alignment of values in the participants given mean scores, standard deviations, and minimum and maximum scores depicted in Table 1.

The *modern heterosexism* mean tells researchers that participants do not want to challenge heterosexist beliefs. The mean score of *slightly agree* along with the maximum score reached suggests that most participants subscribe to heteronormative ideals. Additionally, from a theoretical standpoint (Abrams et al., 2003), *modern heterosexism* shows the largest threat to in-group norms of most participants, given that 87.2% of participants do not identify in the queer community. Future qualitative research should explore the dissonance depicted among these participants, as we do not know the entire story from this survey. A limitation from this work is that the research team did not change the original instrument, as they were focused on depicting how post-secondary agricultural education students' attitudes would impact their ability to work with diverse populations of students. Future scholarship should consider implementing a similar instrument which (a) includes statements related to SBAE to better relate to the population and (b) is inclusive to more sexual orientations and gender identities.

The second and third research objectives for this work described how various groups of participants responded to these constructs and determined trends among each group. Each demographic group in this study reported the least accepting attitudes related to heterosexist beliefs. Researchers attribute this to a mostly heterosexual sample which depicts heteronormative beliefs. This finding also supports the theoretical framework related to perceived social consequences in challenging group norms (Abrams et al., 2003). The rejection of statements related to proximity and pathology points to societal progress of accepting visibility and homosexuality as identity (Kite & Bryant-Lees, 2016), yet still retaining heteronormativity.

Data shows the perception of how convicted the participants evaluated their devotion to faith revealed a significant and moderate strength relationship to each construct. The more religious participants identified themselves, the more likely they were to respond with negative attitudes toward lesbian and gay individuals. Following SGD, authors further attribute this finding to the perceived social consequences to challenging group norms (la Roi, 2020). Researchers recommend providing avenues for students to engage in challenging discussions related to the

intersection of religious beliefs and queerness throughout post-secondary programming. By allowing students to evaluate opposing group norms, in-group members can begin to question the foundation of their norms – which is a fundamental belief of queer theory.

Participants in the queer community scored much higher for acceptance on the scale than those who did not identify in the queer community. In the context of SGD, this is due to the in-group membership of these individuals to the queer community. Although limited to three participants, non-binary individuals' perspectives further support the views of in-group members in the queer community. Female respondents, who represented 75.9% of the sample, reported more accepting beliefs than male students for all constructs. Although only significant in the relationship to the *support* construct, this finding supports previous literature that suggests feminine individuals tend to have more accepting views of the queer community (Forrest, 2006). Home residency also was found to have a significant relationship with *rejection of proximity* and *modern heterosexism*, with low strength. Suburban and urban students were found to hold more accepting views of homosexuality than rural students which supports previous work (Kosciw et al., 2014; Lee, 2019).

Future scholarship should also consider utilizing intersectional frameworks to consider how each of these groups and identities influence an individual's views of queerness. None of these identities of participants exist on their own, each are influenced by other identities of the participant and therefore we cannot explain the overall attitudes present by just one demographic. Conclusions from this study provides an opportunity for our profession to better acknowledge and address these attitudes in our programs and better prepare inclusive and accepting educators.

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# The Effect of Message (Mis)Information on Consumers' Attitudes toward Hemp

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## Introduction

While social media can be used to connect people and facilitate the exchange of ideas and beliefs, it has become a medium that allows misinformation to spread at an alarming rate (Karlova & Fisher, 2013). Misinformation is not always an outright lie, but rather an inaccurate portrayal of the truth (Karlova & Fisher, 2013). Unfortunately, misinformation that comes across as "catchy" can spread rapidly in these online environments (Ratkiewicz et al., 2010). This rapid spread of misinformation is concerning in its relation to science literacy because it can often contradict scientific findings or promote conspiracy theories (Howell & Brossard, 2021).

One area of agriculture and natural resources (ANR) that is surrounded by misunderstanding and misinformation is agricultural hemp. Agricultural hemp has a long history of being associated with the psychoactive drug, marijuana, which has led to damaging impacts on the U.S. hemp industry (Cherney & Small, 2016). Although both hemp and marijuana are described as cannabis, the genetics, chemical composition, and end-products between the two crops are highly distinguishable (Adesina et al., 2020). Once having a flourishing industry during colonial America, hemp was used to produce superior fibers, textiles, and rope. The demise of the U.S. hemp industry occurred, in part, due to the introduction of marijuana during the early 20$^{th}$ century (Jenkins & Orsag, 2021). During the next half-century, America's war on drugs led to the formation of the Controlled Substance Act of 1970. The legislation did not differentiate between hemp and marijuana and outlawed all forms of cannabis as a Schedule 1 Controlled Substance (Duppong, 2009). It was not until the passage of recent Farm Bills where recognition between the two plants were made, with the 2018 bill removing hemp as a federally controlled substance (Johnson, 2018). Despite hemp production and processing currently being legal in every U.S. state, public misunderstanding and confusion between hemp and marijuana remain (Colclasure et al., 2021; Rampold et al., 2021).

The largest sector of the modern hemp industry is the production of floral hemp for cannabinoids, such as cannabidiol (CBD) (United States Department of Agriculture, 2022). A growing public interest in the use of medical cannabis, including non-euphoric and hemp-derived CBD, has been documented by an increase in consumer internet searches on medical cannabis (Leas et al., 2019). The use of the internet as a form of education may further drive the spread of misinformation. In a content analysis of 179 unique medical cannabis websites, Kruger et al. (2020) reported that cannabis was proposed as a treatment to over 150 medical and health conditions, despite empirical, scientific evidence supporting medical cannabis as a treatment for only several of the most mentioned conditions. Conversely, leading politicians in Nebraska have vocally opposed the legalization of hemp and marijuana, stating, "the hemp bill's a Trojan horse bill for marijuana. If you don't want your children or grandchildren getting easy access to drugs…don't vote for this bill" (Young, 2019, para. 6). As this industry continues to grow,

agricultural communicators and Extension educators will need to know how to accurately communicate about the commodity to stakeholders in a media landscape that can spread misinformation quickly. Therefore, the purpose of this study was to examine the effect of message (mis)information on Nebraska residents' attitudes toward growing hemp in Nebraska.

## Theoretical Framework

Elaboration likelihood model (ELM) was used as the theoretical framework for this study. ELM attempts to explain how individuals process persuasive messages. Elaboration can be defined as "the extent to which a person thinks about issue-relevant information" (Petty & Cacioppo, 1986, p.7). The model suggests that individuals can have a high level of elaboration, central processing, or low levels of elaboration, peripheral processing (Petty & Cacioppo, 1986). When an individual processes information via the central-processing route, they use the issue-relevant information only to make their decision. On the contrary, when individuals use the peripheral route to process information, their persuasion is influenced by issue-relevant cues, ideas, and perceptions (Meyers-Levy & Malaviya, 1999).

How an individual processes stimuli can be influenced by how information is presented, prior knowledge of the topic, and social norms in relation to the topic (Petty & Cacioppo, 1986). Changes in attitude that are the result of the central-processing route are often long-lasting and predictive of behavior. However, peripheral changes in attitude can be temporary and not predictive of behaviors (Petty & Cacioppo, 1986). Additionally, prior research has indicated people will pay less attention to information they do not believe, which can also impact attitudes and behaviors (Gaziano, 1988). Message credibility, or perceived quality, accuracy, and believability of the message, will determine to what degree people adopt the viewpoint of the message (Li & Suh, 2015; Metzger et al., 2003).

The general public in the United States do not have a strong understanding of agricultural systems or how their food is produced (Frick et al., 1995; Kovar & Ball, 2013; Meischen & Trexler, 2003). This lack of understanding likely reflects the fact that Americans have fewer ties to agriculture than ever before (Kovar & Ball, 2013). Due to this inherent lack of knowledge, most consumers use the peripheral processing route when exposed to information related to agriculture and natural resources topics (Frewer et al., 1997; Goodwin, 2013; Meyers, 2008; Ruth & Rumble, 2017). When the peripheral route is used, the source of information and the frame of the message can serve as peripheral cues and effect the perception of the information (Lundy, 2006). Additionally, perceived message credibility may influence attitudes in the absence of elaboration. Due to consumers' limited knowledge of agricultural hemp (Colclasure et al., 2021; Rampold et al., 2021), they are likely to use the peripheral processing route when exposed to persuasive messaging about hemp. If consumers are relying on the peripheral route to process hemp information, they may be more susceptible to online misinformation and messaging, which could have damaging implications for producers.

## Purpose and Objectives

The purpose of this study was to test the effect of message (mis)information on consumers' attitudes toward agricultural hemp. The following objectives guided this study:

1. Determine the effect of message (mis)information on Nebraska consumers' level of elaboration and perceived message credibility when considering agricultural hemp communication; and
2. Determine how message (mis)information influences Nebraska consumers' attitudes toward agricultural hemp.

## Methods

Quantitative methods were used to fulfill the purpose of this study, and an online questionnaire was distributed by Qualtrics to an opt-in, non-probability sample of Nebraska residents in February 2022. Quota sampling was used to match the state's demographics for gender, race, and ethnicity. Additionally, quotas were used to ensure the sample was representative of urban and rural county population distribution in the state. There were a total of 369 complete and useable responses in the sample.

This research is part of a larger project, and the current study reports data from the experimental design portion of the project. To test the effects of message (mi)information on attitude toward agricultural hemp, three messages were created to represent neutral (accurate) information, negative misinformation, and positive misinformation. These messages also represented common misconceptions related to hemp (Young, 2019; Kruger et al., 2020). These messages were reviewed by a panel of experts with expertise in hemp cultivation, message testing, and agricultural communications to ensure the messages reflected the intended type of (mis)information. The final messages are below – specific phrases that were edited between messages are in bold.

*Neutral Information*

> In 2019, Nebraska made the decision to legalize the production of hemp, and farmers across the state can now apply for licenses to grow the crop. Despite some financial risk, hemp production offers financial opportunities in rural areas of the state as a high-value specialty crop. Additionally, increased hemp production and processing can lead to new job opportunities across Nebraska. Hemp contains less than 0.3% THC, which is the psychotropic property found in marijuana. However, hemp can be grown for CBD, which can be used in a variety of products including oils, skincare, and supplements. CBD is often used to address anxiety or insomnia, and research has indicated it may also be beneficial in alleviating chronic pain and treating seizure disorders. CBD remains an unregulated supplement, but it may be beneficial to take in consultation with your doctor.

*Negative Misinformation*

> In 2019, Nebraska **made the dangerous decision to legalize** the production of hemp, and farmers across the state can now apply for licenses to grow the crop. Hemp production has **a high financial risk and could be detrimental to rural communities.** Additionally, increased hemp production and processing **could cause people to lose their jobs if they show up to work with a "high" after using the product.** Hemp **contains THC**, which is the psychotropic property found in marijuana, **essentially making them the same plants.** Hemp is also grown for CBD, which can be used in a variety of products including oils, skincare, and supplements. Supporters claim CBD can

alleviate anxiety or insomnia, but **limited research has been done on the effects of CBD due its Schedule 1 Narcotic classification.** CBD **is a dangerous supplement**, and it would be beneficial for you **to avoid it at all costs**.

*Positive Misinformation*

In 2019, Nebraska **made the prosperous decision to legalize** the production of hemp, and farmers across the state can now apply for licenses to grow the crop. Hemp production will **reinvigorate rural economies** in the state as a high-value specialty crop. Additionally, increased hemp production and processing **will lead to the creation of thousands of jobs** across Nebraska. Hemp **does not contain THC**, which is the psychotropic property found in marijuana, **making them completely different plants.** However, hemp can be grown for CBD, which can be used in a variety of products including oils, skincare, and supplements. CBD **can cure** anxiety or insomnia, and **researchers have found it to be a successful treatment** for chronic pain and seizure disorders. CBD **is a 100% safe supplement**, and it would be **beneficial for you to start taking it today.**

After the messages were finalized, they we recorded as voice overs in a 60-second video about hemp. All messages were voiced by the same narrator and presented the same images to ensure the only differences were the messages. Respondents in the study were randomly assigned one of the three videos in the Qualtrics survey and were not permitted to move forward in the survey until the 60-second video had completed. To confirm the video worked and the respondents were paying attention, they were first asked to confirm if their audio worked then asked to select from a multiple-choice question what the topic of the video was – responses were terminated if audio did not work or they did not correctly select "hemp production." Because there was a level of deception with this study related to the misinformation messages, respondents were provided a debrief after concluding the study that provided accurate information about hemp. After incomplete/unusable responses were removed, there were 127 respondents in the neutral group, 111 in the negative group, and 131 in the positive group.

After watching the assigned video, respondents answered questions regarding their elaboration, perceived message credibility, and attitude toward growing hemp in Nebraska. Message elaboration was measured with a 7-item, 5-point Likert-type scale with labels ranging from *1* = strongly disagree to *5* = strongly agree. Respondents were given the prompt, "While viewing the video message, I was..." and provided statements like "not very attentive to ideas" and "not really exerting my mind." Responses were recoded so a five indicated high levels of elaboration and the average of the 7-items were taken to create the construct (Cronbach's □= .81). Perceived message credibility was measured with a 4-item, 5-point Likert-type scale with the same labels as elaboration. This was scale was adapted from König and Jucks (2019) and the average was used to create the scale (Cronbach's □= .90). Attitude toward growing hemp in Nebraska was measured with an 8-item, 5-point bipolar semantic differential scale with adjective pairs like "good/bad," "beneficial/not beneficial," and "acceptable/not acceptable." The scale was recoded so positive adjectives were a five before calculating the average (Cronbach's □= .91). To ensure the instrument was working as expected and all measurements were reliable, it was pilot tested at Doane University prior to being distributed to Nebraska residents. All data

were exported to SPSS Statistics. Means, standard deviations, and ANOVAs were used to fulfill objectives 1 and 2. Gabriel's procedures were used for *post-hoc* tests to account for the unequal sizes between groups (Field, 2013).

## Findings

### Objective 1

The respondents neither agreed nor disagreed they were engaging in elaboration across all three message groups (Table 1), and an ANOVA identified no statistically significant differences in elaboration between the groups ($F(2,366) = .52$, $p = .60$). However, respondents agreed the messages were credible when presented with neutral information ($M = 3.97$, $SD = 0.71$) and positive misinformation ($M = 3.89$, $SD = 0.73$). When presented with negative misinformation messaging, respondents neither agreed nor disagreed about the message credibility ($M = 3.00$, $SD = 1.18$). The differences in perceived message credibility was statistically significant between the message groups ($F(2,366) = 43.32$, $p < .01$), and post-hoc tests (Table 2) demonstrated the perceived message credibility of the negative misinformation message was lower than the neutral information and positive misinformation messages.

**Table 1**
*Elaboration and Perceived Message Credibility Across Message Groups*

| | Message Type | | |
|---|---|---|---|
| | Neutral<br>*M (SD)* | Negative<br>*M (SD)* | Positive<br>*M (SD)* |
| Elaboration | 3.34 (0.80) | 3.42 (0.79) | 3.32 (0.77) |
| Message Credibility | 3.97 (0.71) | 3.00 (1.18) | 3.89 (0.73) |

**Table 2**
*Follow-up Gabriel's Procedures between Groups for Message Credibility*

| J | I | Mean Diff (J-I) | SE | p-value |
|---|---|---|---|---|
| Neutral | Negative | .97 | .11 | .00** |
| | Positive | .08 | .11 | .86 |
| Negative | Neutral | -.97 | .11 | .00** |
| | Positive | -.89 | .11 | .00** |

** $p < .01$

### Objective 2

Respondents in the study possessed favorable attitudes toward growing hemp in Nebraska across all three message groups (Table 3). However, an ANOVA identified there were statistically significant differences in attitude between message groups ($F(2,366) = 4.05$, $p = .02$). *Post-hoc* tests (Table 4) indicated that respondents possessed less favorable attitudes toward growing hemp in Nebraska when exposed to negative misinformation messaging compared to those who were exposed to positive misinformation and neutral information.

**Table 3**

*Attitude toward Growing Hemp Across Message Groups*

| | Message Type | | |
|---|---|---|---|
| | Neutral *M (SD)* | Negative *M (SD)* | Positive *M (SD)* |
| Attitude toward Growing Hemp | 3.92 (0.86) | 3.63 (1.05) | 3.93 (0.88) |

**Table 4**

*Follow-up Gabriel's Procedures between Groups for Attitude*

| J | I | Mean Diff (J-I) | SE | p-value |
|---|---|---|---|---|
| Neutral | Negative | .30 | .12 | .04* |
| | Positive | .00 | .12 | 1.00 |
| Negative | Neutral | -.30 | .12 | .04* |
| | Positive | -.30 | .12 | .04* |

## Discussion and Recommendations

The purpose of this study was to explore the effect of (mis)information on consumers' attitude toward growing agricultural hemp in Nebraska. Regardless of the type of (mis)information presented, respondents neither agreed nor disagreed they were highly engaging in elaboration while viewing the video message. This lack of elaboration indicates respondents were likely utilizing the peripheral processing route when exposed to messaging about hemp, regardless of the accuracy of the information, which may contribute to the sharing of misinformation around the topic. Additionally, this finding is in support of prior research concluding consumers use the peripheral processing route when faced with messaging related to ANR (Goodwin, 2013; Meyers, 2008; Ruth & Rumble, 2017). However, respondents viewed the neutral and positive (mis)information messages as more credible compared to the negative misinformation message. This perceived message credibility would likely serve as a peripheral cue when elaboration is lacking (Petty & Cacioppo, 1986). The positive perception of the positive misinformation' credibility also indicates consumers may be more inclined to believe health claims that are overstated related to CBD. Interestingly though, respondents who were exposed to the negative misinformation message possessed less favorable attitudes toward growing hemp in Nebraska compared to those exposed to the neutral and positive (mis)information messages.

When developing communication related to agricultural hemp, communicators and Extension educators should recognize that consumers will likely be using the peripheral processing route to form attitudes. Focusing on the inclusion of peripheral cues like message source, frames, and images can help to inform attitudes. Message credibility should also be considered, and care should be taken to ensure the information presented is accurate and believable rather than focusing on catchy facts that might be misconstrued. Additional research is needed to understand how (mis)information can shape attitudes and behaviors. Despite lower levels of perceived message credibility, negative misinformation still negatively impacted attitudes. Exploring additional factors, like gender, political ideology, religion, prior knowledge etc., could provide more information about how misinformation informs attitudes. Examining respondents' willingness to share these messages through social media would also provide additional context

for how misinformation spreads online. In-depth interviews would also be beneficial in understanding how consumers respond to misinformation. This study should also be replicated with other agricultural commodities and across different states to build a more robust framework for examining the impact of misinformation on attitudes toward ANR topics.

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# Experts' Views on Poorly Understood Terms used to Market Poultry Eggs: Defining Cage-Free, Free-Range, Pasture-Raised, and Organic Egg Production

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## Introduction and Review of Literature

Housing systems for laying hens have become an increasingly complex issue for the poultry industry. It has been widely accepted that the housing of laying hens must provide necessities to ensure a positive quality of life, e.g., food, water, and shelter, as well as promote good health and welfare (American Veterinary Medical Association [AVMA], 2012). Further, "housing systems should [promote the] expression of important natural behaviors, protect the hens from disease, injury and predation, and promote food safety" (AVMA, 2012, p. 4). Historically, the basic principles of farm animal welfare have been somewhat straightforward (Hemsworth et al., 2015). However, a debate has emerged regarding acceptable standards for animal production systems – especially for the laying hen industry (MacRae et al., 2007). As a result, the well-being of farm animals has become a critical priority for policymakers, activist groups, and agriculturalists over the past decade (Hemsworth et al., 2015).

The ideologies that have traditionally guided animal welfare-related decisions have been rooted in science. However, in the 1990s, the principles of animal welfare began to shift from science-based to a social issue that ignited ethical, political, and environmental debates (Swanson, 1995). As a result of this shift, an increase in public concern for on-farm animal welfare standards surfaced (Alonso et al., 2020; Powers et al., 2020). In addition to this new trend, consumers became increasingly disconnected and unfamiliar with the food they purchased (Hepting et al., 2014). Because of these changes, food labels have played a critical role in influencing consumers who have become more focused on how their food has been raised (Ingenbleek & Immink, 2011). For example, some studies have indicated that consumers have been willing to pay premium prices for eggs labeled with product attributes related to hen health and well-being and their raising environment, which has led to the rise of hen welfare labeling (Powers et al., 2020; Alonso et al., 2020; Hepting et al., 2014).

The number of food labels that indicate egg production and animal welfare-related production practices, e.g., Cage-Free, has drastically increased (Lee & Lee, 2020). However, the accuracy and authenticity of food labels have been challenging to determine (Charlebois et al., 2016). For this reason, food labels that communicate specific product attributes have emerged (Batte et al., 2007; Loureiro & Umberger, 2007; Gadema & Oglethorpe, 2011; Shen et al., 2018). For shell eggs, labels that describe product attributes include production practices, e.g., Organic and All-Natural labels, whether certain ingredients were present, e.g., Non-GMO and Antibiotic-Free labels, and the extent to which the method of production affects the environment and animal welfare, e.g., Global Animal Partnership, United Egg Producers Certified, and Certified Humane.

The humane treatment of animals has become critical to a broad range of individuals and has quickly become a measure consumers use when deciding on the food products they purchase

(Alonso et al., 2020; Heerwagen et al., 2014). However, as food manufacturers attempt to differentiate products to attract a more label-savvy consumer with increasingly specialized and targeted labeling claims, the risk of unlawfully representing products has increased substantially (Endres & Johnson, 2011). On this point, Ochs et al. (2019) argued that consumers had been misinformed about the criteria needed to determine the ethical production of eggs. As such, it has become increasingly evident that the lack of definitions for commonly used egg labeling claims, specifically those related to hen welfare, has exhausted the commercial egg industry. To complicate this problem further, the commercial egg industry has faced criticisms from consumers and animal rights advocates regarding welfare standards and ambiguous label claims on egg packaging. Consequently, it has become critical to develop transparent and concise definitions that allow consumers to make efficient and educated purchasing decisions regarding common terms in egg labeling such as cage-free, free-range, pasture-raised, and organic (Alonso et al., 2020; Ochs, 2019).

## Theoretical Framework

This study was grounded in consensus-building theory (CBT) (Innes & Booher, 1999). Many organizations face complex problems that require input and expertise from multiple perspectives. Partnerships and collaboration have been considered essential when individuals' efforts cannot meet objectives and research consensus on commonly used terms (Schrage, 1990). Innes and Booher (1999) advanced some crucial insights into building consensus. In particular, researchers should recruit expert representatives and challenge them to evaluate an area of shared concern (Innes & Booher, 1999). For example, consensus-building has been used as a conventional method to "search for feasible strategies to deal with uncertain, complex, and controversial planning and policy tasks" (Innes & Booher, 1999, p. 412). It should also be noted that previous research has supported using this method to identify and generate consensus among stakeholders regarding critical issues in their field (Lamm et al., 2021). We used consensus-building theory in this study to agree on commonly misused and misleading terms used to educate, communicate, and market common egg labeling practices.

## Statement of Purpose

This study's purpose was to reach a consensus on commonly misunderstood terms (i.e., cage-free, free-range, pasture-raised, and organic) used to market eggs to consumers.

## Methodology

This investigation used a modified Delphi approach. Recognized and employed across a wide range of disciplines, Delphi has been used to reach a consensus among a panel of experts who have experience and expertise on a topic, issue, or concern (Stitt-Gohdes & Crews, 2004; Thangaratinam & Redman, 2005). To successfully conduct a Delphi study, three main criteria must be met. Ho et al. (2018) defined the criteria as a compilation of the following: (1) provide a thorough explanation of the study and develop an appropriate instrument; (2) determine the criteria for expert panelist selection; and (3) assemble and administer the survey and account for at least two rounds of data collection. A precise number of panelists has not been advanced in the literature to determine the number of experts needed to conduct Delphi research. However, five

to 10 panelists have been considered sufficient for relatively homogenous populations (Landeta, 2006; Loo, 2002; Robbins & Judge, 2008).

Hsu and Sandford (2007) suggested that the criteria level was subject to interpretation when determining consensus-building decision rules. Both rigorous and more flexible criteria determined the decision rules for this study. For example, we determined that during round two, at least 66% of panelists should respond within two categories on a three-point scale and have a mean of at least 1.98. To reach a consensus of agreement during round three, nine or more (>75.00%) panelists must have *Agreed* for each item to be retained (Hsu & Stafford, 2007).

In total, we recruited 12 experts to participate in this study. These individuals participated in all three rounds of data collection, with a response rate of 100% in all three rounds. Data were analyzed using Microsoft Office Excel® version 2021. Nominal data, i.e., some demographic characteristics, were analyzed using frequencies and percentages. However, ranges and averages were also calculated for the panelists' ages and years of experience. For each item in rounds two and three, the frequency distribution validity percentage was used to determine if consensus had been reached, the item should be retained for further consideration, or removed from the study (Buriak & Shinn, 1989; Jenkins & Kitchel, 2009). We achieved this by presenting four open-ended questions in round one. Each question allowed the panelists to explain their perspectives on the defining characteristics of the four laying hen housing environments.

In round two, 26 items were presented by the expert panel ($N = 12$; 100% response rate) in which more than two-thirds (>66.00%) of the participants selected either *Extremely Important* or *Slightly Important* and were considered items that reached consensus (Buriak & Shinn, 1989; Hsu & Sandford, 2007). Additionally, six items for which less than one-half (50.00%) of the participants selected either *Extremely Important* or *Slightly Important* were removed from the study. Round three of the study included items presented by the expert panel in which more than one-half (>50.00%) but less than two-thirds (<66.00%) of the panelists selected *Extremely Important* or *Slightly Important* during round two. In round three, seven items presented for reconsideration by the panelists failed to reach a consensus.

The group of experts who participated in this study were industry professionals in the laying hen sector of the poultry industry. The participants were recruited based on recommendations from two laying egg industry experts. After that, we used a snowball sampling approach in which our initial participants nominated other individuals who fit the parameters of this investigation. Many of this study's participants fell into one or more categories: university faculty, extension educators, animal welfare specialist, and leaders of professional poultry organizations. Regarding years of related work experience, nine (75%) of the panelists reported 21 or more years of experience, and three (25%) indicated 16 to 20 years (see Table 2). The experts' years of work experience ranged from 17 to 47 years. The experts' related work experience averaged 29.33 years.

## Findings

Round one of this study aimed to identify expert views on the defining characteristics of alternative egg production systems, i.e., cage-free, free-range, pasture-raised, and organic

housing systems. As a result, the expert panelists provided 39 statements to open-ended prompts. Similar statements were combined. In round two, panelists were asked to rate their level of agreement with the 39 statements derived from round one. The panelists were also asked to indicate how important individual characteristics were to each alternative egg production approach on a three-point, Likert-type scale: 1 = *Not Important at All,* 2 = *Slightly Important,* and 3 = *Extremely Important.* For the 39 items, more than two-thirds (>66.00%) of the panelists selected either *Slightly Important* or *Extremely Important.* Therefore, a consensus was reached for the 26 items (Carnes et al., 2010; Shinn et al., 2009) [see Table 1].

**Table 1**

*Experts' Agreement Regarding the Defining Characteristics (N = 26) of Alternative Egg Production Approaches, i.e., Cage-Free, Free Range, Pasture-Raised, and Organic*

| Round Two Items | *M* | *SD* | % Agreement |
|---|---|---|---|
| **Cage-Free** | | | |
| No Cages. | 2.78 | 0.667 | 92.7 |
| Freedom of movement within a barn. | 2.67 | 0.500 | 89.0 |
| Environment allows for natural behaviors. | 2.56 | 0.527 | 85.3 |
| Nest Boxes. | 2.56 | 0.726 | 85.3 |
| Hens can roam vertically and horizontally. | 2.44 | 0.527 | 80.0 |
| **Free-Range** | | | |
| Birds have access to indoors and outdoors. | 2.89 | 0.333 | 96.3 |
| Eggs laid by hens that have some access to the outdoors. | 2.67 | 0.500 | 89.0 |
| Free access to outdoors with no confinement. | 2.56 | 0.726 | 85.3 |
| Hens have access to pasture. | 2.22 | 0.833 | 74.0 |
| Freedom to roam around a barn. | 2.11 | 0.782 | 70.3 |
| **Pasture-Raised** | | | |
| Access to pasture area. | 3.00 | 0.000 | 100 |
| Hens are raised on pasture for majority of their life. | 2.78 | 0.441 | 92.7 |
| Eggs laid by hens with access to the outdoors. | 2.78 | 0.441 | 92.7 |
| Freedom of movement within a confined outdoor area. | 2.67 | 0.500 | 89 |
| Pasture must have huts to act as shelter. | 2.56 | 0.527 | 85.3 |
| Hens have access to pasture where grass is available. | 2.56 | 0.726 | 85.3 |
| Access to pasture year-round. | 2.56 | 0.726 | 85.3 |
| Flock is rotated so pasture remains fresh. | 2.44 | 0.726 | 81.3 |
| Grass. | 2.22 | 0.667 | 74.0 |

| Round Two Items | *M* | *SD* | % Agreement |
|---|---|---|---|
| Pasture is rooted vegetation (e.g. plants, not just grass). | 2.11 | 0.782 | 70.3 |
| Mobile houses on an outdoor range. | 2.00 | 0.866 | 66.7 |
| **Organic** | | | |
| Adherence to the USDA's National Organic Program standards | 2.89 | 0.333 | 96.3 |
| Non-GMO feed ingredients. | 2.78 | 0.667 | 92.7 |
| Organic standards for raising are followed after day 2 of life. | 2.44 | 0.726 | 81.3 |
| No exposure to chemicals of any kind. | 2.33 | 0.866 | 77.7 |
| Access to the outdoors. | 2.11 | 0.928 | 70.3 |

In round two, at least one-half (50.00%) but less than two-thirds (<66.00%) of the expert panelists selected *Not Important* or *Slightly Important* for 13 of the 39 items they were prompted to consider. Therefore, these characteristics did not reach a consensus during round two but met the requirements to be reconsidered.

In round three, the 13 items were reconsidered. However, all the items were deemed to have not reached a consensus of agreement in the final round. Therefore, they were excluded.

## Conclusions, Recommendations, and Discussion

The purpose of this study was to reach a consensus regarding commonly misunderstood terms used to market eggs to consumers. As a result, 26 items across the four terms reached a consensus of agreement. Because 66.66% of the items reached a consensus, we offer the following definitions for the four alternative egg production approaches (see Table 2).

**Table 2**

*Definitions for Cage-Free, Free-Range, Pasture-Raised, and Organic Egg Production that were Created Using Consensus-Building with Poultry Industry Experts*

| Alternative Egg Production Term | Definition |
|---|---|
| Cage-Free | • Hens should have the ability and freedom to roam within a barn or enclosed area that is free of cages and provides nesting boxes and refuge from predators while also promoting hens to act naturally. |
| Free-Range | • Hens should have access to freely roam on a pasture area or within the borders of a barn and experience minimal to no confinement. |

| Alternative Egg Production Term | Definition |
|---|---|
| Pasture-Raised | • Hens should have year-round access throughout the majority of their life to a minimally confined, regularly rotated pastured that has been planted with rooted vegetation. The hens should also have the freedom to seek refuge from predators or inclement weather through an outdoor hut or open concept barn area. |
| Organic | • Hens should be raised under the USDA National Organic Program standards from day two of life and beyond and have access to the outdoors, supplied a diet that has been derived from non-GMO ingredients, and experience zero exposure to chemicals of any kind. |

Previous research has demonstrated that alternative egg production methods and the resulting terms used to market these products have resulted in consumers deriving conflicting and often inaccurate interpretations (Powers et al., 2020). In particular, Parker and de Costa (2016) reported that consumers have struggled to understand terms used to market eggs, such as Cage-Free, Free Range, Pasture-Raised, and Organic. In response, the current investigation used a panel of experts to reach a consensus on the defining characteristics of the aforementioned terms. Consequently, this study generated important implications for future research and practice.

We recommend that a curriculum be developed to educate industry professionals and decision-makers on the differences between alternative and traditional egg production practices based on the definitions generated from this study. Tonsor and Wolf (2009) explained that consumer confusion has primarily resulted from a lack of clear definitions and standards in egg production. By being more open to addressing consumers' concerns, producers could gain more influence regarding the marketing and communication of alternative egg production approaches. We also recommend that professional egg industry organizations create targeted campaigns to communicate efficient and transparent information regarding the definitions, best practices, and efforts be produce safe, nutritious food in both traditional and alternative egg production. Because the average consumer has minimal knowledge and experience with agriculture but has greater access to information, research has indicated that they have become more motivated to learn about their food (Latiff et al., 2016). Despite this, Borgerson and Shroeder (2002) reported that sources of online agricultural information had been biased and largely misleading. Consequently, the poultry industry should explore ways to distribute accurate information across various media effectively that can be easily accessible to the public.

We also recommend that future research devise a robust understanding of the factors that motivate consumers to purchase alternative egg production products such as Cage-Free, Free-Range, Pasture-Raised, and Organic. Perhaps this knowledge could help traditional egg producers to learn new strategies to increase consumer trust and profit margins. Future research should also determine policymaker and legislative perceptions of the alternative egg industry. This effort could help determine the most appropriate and effective approaches to influence policy for the poultry industry.

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# An Evaluation of U.S. Egg Industry Experts' Perceptions of Alternative Housing Environments: A Hybrid SWOT-Delphi Approach

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## Introduction and Review of Literature

Many consumers and industry professionals have raised concerns about how laying hens have historically been housed and treated (Zhao et al., 2015). As such, the United States Department of Agriculture (USDA) created labeling guidelines that specify that "eggs labeled as *cage-free* or from *free-roaming hens* are laid by hens that are allowed to roam in a room or open area, which is typically a barn or poultry house" (United States Department of Agriculture [USDA], 2017, para. 2). Additionally, the USDA specified that hens raised outdoors or that have access to outdoor areas should be considered free-range or pasture-fed (USDA, 2017). In contrast, some egg brands have opted out of traditional USDA production and labeling regulations and developed their raising standards (Powers et al., 2020). However, loosely defined and ambiguous definitions of cage-free and free-range hens have created uncertainty among consumers regarding the ethics of various alternative housing options that have emerged in the poultry industry (Powers et al., 2020).

This issue has been further compounded by consumers' increased demand for choice in the egg industry, which has led to the development of an array of selections available in the retail egg market (Hisasaga et al., 2020). For example, grocery stores have begun to provide new egg products that champion alternative housing options such as cage-free, free-range, pasture-raised, and organic (Hisasaga et al., 2020). However, existing research has suggested that these niche products lack standards concerning the housing environment in which they have been produced (Lusk, 2019). This trend has resulted in consumer confusion because they struggle to differentiate among the various niche-market terms prevalent in the poultry industry (Lusk, 2019). Despite this, demand for these niche markets has increased recently (Hisasaga et al., 2020). For example, recent evidence has indicated that consumers prefer eggs sourced from alternative housing systems (Heng et al., 2013; Lusk, 2019). However, they also reported a reluctance to pay a premium for specialty eggs (Powers et al., 2020; Chang et al., 2010).

Nevertheless, specialty and designer eggs have been promoted by many brands' marketing campaigns (Hisasaga et al., 2020). Case in point, Pete and Gerry's, Vital Farms, and Organic Valley have been brands that have provided consumers with eggs raised in alternative housing environments in response to the rise in demand for niche products, which has been viewed as a strategic branding device. Consequently, it was critical to examine how poultry producers have used food labels to brand their products effectively.

Labels often represent a brand. However, it was not until the 1990s that food branding became popular (Moor, 2007). Since the term's rise, it has been difficult to define branding because of the different meanings and contexts associated with its use. Nevertheless, Moor (2007) suggested that branding could be described "…differently in… different contexts, where it makes use of different forms of representation, different techniques and technologies, and different kinds of

relationships for different kinds of strategic purpose[s]" (p. 7). Therefore, brands serve as informational tools and provide clear signals to consumers (Loken et al., 2010). According to Moor (2007), brands also make possible a repetition of information, which can help consumers organize experiences and perceptions strategically. As a result, many brands have begun to monitor consumer activity by embedding cultural values in their campaigns to target audiences' beliefs and behavior (Moor, 2007).

Previous research has also explored how consumers view brands and use them to make decisions (Coelho et al., 2018; Hoeffler & Keller, 2003; Songa & Russo, 2018). For example, using a meta-analytic approach, Hoeffler and Keller (2003) described how modern food companies have demonstrated that effective branding can positively influence consumers' association with their brand (Hoeffler & Keller, 2003). Further, quality brands can positively influence consumers' attitudes regarding a company's image, reputation, and ethics (Hoeffler & Keller, 2003). On this point, Coelho et al. (2018) explained that quality brands should be designed to meet consumers' desire to express their values and social desires (Coelho et al., 2018). This concept has been termed *brand personality* and refers to the social dynamics that connect products to the human experience (Martineau, 1958).

Because of these issues, consumers have consistently expressed a desire to understand better how their food has been raised. In response, Tarpley et al. (2020) sought to examine the comfort of young adults while viewing videos of cattle and swine harvesting. Further, the study aimed to describe how these practices elicited discomfort for the participants (Tarpley et al., 2020). The results of this study indicated that increased transparency regarding animal welfare and processes involving animal harvesting could lead to increased negative perceptions of common agricultural practices, especially regarding the farm animal industry (Croney & Reynnells, 2008). Consequently, graphic imagery may be met with great discomfort by the viewing audience (Tarpley et al., 2020). Therefore, it was critical to understand experts' perceptions of the perceived strengths, weaknesses, opportunities, and threats for egg producers to raise laying hens for niche markets. This knowledge held the potential to generate important implications for agricultural communications professionals.

## Theoretical Framework

This investigation was guided by consensus-building theory (CBT) (Fischer & Ury, 1991). In many organizations and industries, a struggle to agree on basic standards has led to considerable confusion. This phenomenon has been termed idealization (Hoffmann, 2021). Idealizations become a point of rationale to achieve the ultimate goal of benefiting consumers. Nevertheless, the question has remained – can professionals in the poultry industry agree on some of the industry's most controversial issues? Developed by Fischer and Ury (1991), CBT seeks help explain how industries, companies, and individuals come to an agreement on contentious issues. To accomplish this, four principles undergird the theory: (1) separate the people from the problem, (2) focus on interests, not positions, (3) provide multiple options or solutions to a problem, (4) provide results based on an objective, measurable standard (Fisher & Ury, 1991). In the current investigation, we used the four principles of CBT to reach a consensus on the strengths, weaknesses, opportunities, and threats (SWOT) of raising hens for niche markets.

## Statement of Purpose

This study sought to reach a consensus on experts' views of the SWOT of producers raising hens for niche markets, e.g., Cage-Free, Free-Range, Pasture-Raised, or Organic Egg Production.

## Methodology

We used a hybrid SWOT-Delphi approach to achieve the study's purpose (Hossain & Hossain, 2015). The Delphi approach has been commonly used as a method to forecast the level of uncertainty regarding a topic or problem in the absence of adequate data (Schmelzenbart et al., 2018). Delphi studies also allow researchers to examine the perspectives of experts to refine common responses through monitored feedback (Trevelyan & Robinson, 2015). Since the early 1950s, SWOT analyses have been used successfully as planning tools by industry professionals and researchers (Panagiotou, 2003). The SWOT approach divides perspectives on an issue into categories of internal and external factors – with strengths and weaknesses reflecting internal factors and opportunities and threats representing external factors (Duarte et al., 2006; Valentin, 2001). The Delphi approach has previously been used in combination with a SWOT analysis framework (Hossain & Hossain, 2015; López, 2004; Rehmat et al., 2014; Schmelzenbart et al., 2018) to guide the collection, analysis, and interpretation of data. SWOT analyses have been used in various contexts and have been considered one of the most practical approaches to analyzing risks, forecasting fluctuating trends, and capturing consequences on polarizing topics (Chernov et al., 2016; Párraga et al., 2014). Therefore, the SWOT analysis and Delphi method can be mutually beneficial.

Delphi utilizes both qualitative and quantitative data; therefore, the approach to statistical analysis has primarily been measures of central tendency (Hasson et al., 2000). When determining decision rules for reaching a consensus, Hsu and Sandford (2007) argued that the criteria was subjective. At the most basic level, reaching a consensus on an issue can be determined when a specific number of panelists fall within a certain range (Miller, 2006). For example, Ulschak (1983) recommended that consensus be based on rigorous decision rules by which 80% of panelist responses fall within two categories on a seven-point scale (Ulschak, 1983). In contrast, Green (1982) provided a liberal standard when he argued that researchers should only have 70% of panelists rate three or higher on a four-point Likert-type scale and garner a mean of at least 3.25. The decision rules for this study were determined by considering both rigorous and more flexible criteria. For example, we determined that at least 66% of panelists should respond to each item with either *Agree* or *Somewhat Agree* in round two to reach a *consensus*. Meanwhile, items falling within 50% to 65.9% were retained for reconsideration in round three. Further, items below 50% were discarded.

This study's participants were identified using a combination of purposive and snowball sampling. For example, two poultry industry experts nominated individuals they considered to be other experts. Then, we asked the initial participants to nominate additional individuals who fit this investigation's parameters for experts. As a result, we recruited 12 experts who participated in all three rounds of this study, i.e., a 100% response rate in all three rounds. This approach has been common for Delphi studies because it allows the researcher to approach panelist selection deliberately to gather a richer understanding of the phenomenon (Creswell, 2003). The panelists

who participated in this study included industry professionals in the laying hen sector of the poultry industry. Many of this study's participants fell into one or more categories: university faculty, extension educators, animal welfare specialists, and leaders in professional poultry organizations. The experts also had an average of 29.33 years of related work experience. It should also be noted that 83.33% ($n$ = 10) of the experts held an advanced degree in animal or poultry science.

Data were analyzed using Microsoft Office Excel® 2021. Nominal data, i.e., some demographic characteristics, were analyzed using frequencies and percentages. However, ranges and averages were also calculated for the panelists' ages and years of experience. For each item in rounds two and three, the frequency distribution validity percentage was used to determine if consensus had been reached, the item should be retained for further consideration, or removed (Buriak & Shinn, 1989; Jenkins & Kitchel, 2009).

## Findings

By applying a hybridized analysis framework to capture experts' perceptions of the SWOT of raising laying hens for niche markets, e.g., Cage-Free, Free-Range, Pasture-Raised, or Organic Egg Production, this study collected 25 Strengths, 30 Weaknesses, 21 Opportunities, and 13 Threats during round one through open-ended, qualitative responses. When asked to consider the 89 items using a six-point, Likert-type scale in round two, 65 (73.03%) items reached consensus. However, in round two, at least one-half (50.00%) but less than two-thirds (<66.00%) of experts *Agreed* or *Strongly Agreed* with 24 of the 89 items they were asked to consider on a six-point Likert-type scale (see Table 3). In other words, these items did not reach a *consensus of agreement* during round two but met the criteria for reconsideration in round three. To reach a consensus in round three, at least three-fourths (75.00%) of panelists selected *Agree* for each item. After reconsidering the 24 items that did not reach consensus in round two, the experts determined that 12 additional items reached a consensus in the final round. Therefore, 77 (86.51%) of the 89 items reached a consensus in this investigation. Because of space limitations in this abstract, we could not present all items that reached a consensus. However, Table 1 provides the top five SWOT items regarding producing laying hens for niche markets, i.e., Cage-Free, Free Range, Pasture-Raised, or Organic, based on percent agreement in this investigation.

**Table 1**

*Top Five SWOT Items Regarding Producing Laying Hens for Niche Markets, e.g., Cage-Free, Free-Range, Pasture-Raised, or Organic Egg Production Based on Percent Agreement*

| Item | *M* | *SD* | % Agreement |
|---|---|---|---|
| **Strengths (*n* = 25)** | | | |
| Product differentiation. | 5.18 | 0.751 | 86.3 |
| Non-Traditional/Niche producers (pasture-raised, cage-free, etc.) can target specific market concerns. | 5.09 | 0.944 | 84.8 |
| Non-Traditional/Niche markets benefit from positive consumer perceptions. | 5.00 | 0.775 | 83.3 |

| Item | *M* | *SD* | % Agreement |
|---|---|---|---|
| Packaging for non-traditional/Niche eggs is more appealing. | 4.91 | 0.701 | 81.8 |
| Flexibility to produce variety. | 4.91 | 1.446 | 81.8 |
| **Weaknesses (*n* = 30)** | | | |
| Non-traditional/Niche production requires higher input costs. | 5.40 | 0.843 | 90 |
| Non-Traditional/Niche production allows for a higher chance for internal parasites. | 5.40 | 0.699 | 90 |
| Non-traditional/niche housing may expose poultry to more predation. | 5.40 | 0.699 | 90 |
| Consumers are confused by the terms that are used to identify housing systems and methods of production. | 5.40 | 0.843 | 90 |
| Non-Traditional/Niche operations use more land but produce less. | 5.20 | 0.789 | 86.7 |
| **Opportunities (*n* = 21)** | | | |
| Production and marketing expectations from animal welfare groups should be clear. | 5.50 | 0.707 | 91.7 |
| Opportunities for distinct marketing can allow for product differentiation. | 5.40 | 0.516 | 90.0 |
| Consumer education. | 5.30 | 0.675 | 88.3 |
| Production and marketing expectations from volume food buyers should be clear. | 5.30 | 0.823 | 88.3 |
| Production and marketing expectations from consumers of marketing claims should be clear. | 5.30 | 0.823 | 88.3 |
| Non-traditional/Niche production methods allow for more variety. | 5.20 | 0.789 | 86.7 |
| **Threats (*n* = 13)** | | | |
| Biosecurity and disease outbreaks. | 5.50 | 0.707 | 91.7 |
| Production costs to maintain label integrity are increasing (e.g., costs of organic grain, costs of land to ensure outdoor access). | 5.20 | 0.632 | 86.7 |
| Market oversaturation decrease profitability. | 5.20 | 0.632 | 86.7 |
| Fluctuations in the economy (e.g., prices of feed). | 5.20 | 0.632 | 86.7 |
| Negative impacts on animal wellbeing if alternative housing systems are not implemented correctly. | 5.10 | 0.738 | 85 |

## Conclusions, Recommendations, Implications, and Discussion

In this study, the experts achieved a consensus on 77 items. Therefore, we concluded that there were multiple SWOT that influenced producers' ability to achieve a competitive advantage when communicating about using alternative housing approaches to market egg products. These factors could be essential to creating strategies for product labels and the marketing of niche egg

products. We also concluded that the potential existed for egg producers to raise laying hens intended for niche markets based on current alternative housing options such as Cage-Free, Free-Range, Pasture-Raised, or Organic Egg Production. Despite this, it should be noted that although strengths and opportunities existed for producers, there were also important weaknesses and threats that should be evaluated and addressed prior to pursuing an alternative egg production approach. To this point, the experts in this study agreed that 30 weaknesses existed in niche egg production, which was the highest number of items in any category to reach a consensus. Therefore, we conclude that if analyzing and comparing the opinions of expert panelists, the SWOT category of *weaknesses* should be critically analyzed prior to strategic planning (Chernov et al., 2016; Párraga et al., 2014). Because the experts reached a consensus that producers of niche eggs generally have less knowledge about how to implement niche production methods properly, we also conclude that producer education should be prioritized. Further, because ambiguous definitions of alternative housing terms have persisted and a lack of producer education, the experts reached a consensus that marketing niche eggs have become too complicated and confusing. Therefore, we conclude that marketing efforts for niche eggs should be transparent while employing effective product differentiation approaches.

Regarding the emergent *strengths* identified by the expert panelists, we conclude that producers of niche eggs have not effectively targeted consumers' concerns when marketing their products. For example, consumers have become increasingly concerned about environmental impacts, sustainability efforts, animal welfare-related claims, and other ethically based product attributes (Görener et al., 2012). Despite this, the expert panelist suggested that producers of niche eggs have not effectively addressed these concerns in practice. We also conclude that because niche market eggs typically have packaging that has been considered more appealing, the conventional egg market has become disadvantaged. The primary external factors (Walsh & Lipinski, 2009) were *opportunities* for niche egg producers, such as flexibility to produce various products and the ability to provide more options for retailers (e.g., Cage-Free, antibiotic-free, non-GMO). Finally, we conclude that the *threats* that niche egg producers should consider were the accuracy of their information on product labels, financial insecurity, and increasing production costs to maintain label integrity.

Moving forward, understanding industry expert perceptions of the experiences of niche market egg producers will be vital. Future efforts to address the *weaknesses* that panelists reached a consensus on should be targeted and specific. Therefore, we recommend that egg companies and brands create formal educational strategies for producers before establishing contractual agreements requiring them to market their products to alternative markets. The majority (70.00%) of experts agreed that producer education has been minimal, and producers of niche eggs have less knowledge about how to implement niche production methods properly. Based on this, we recommend that producer education efforts be prioritized. Another recommendation was that future research use the findings of this investigation to examine these issues with a larger sample size and different populations. We also recommend that future research evaluate and critique the current producer and consumer education efforts employed by leading organizations in the poultry industry. Conducting research in this manner could allow industry professionals and leaders to determine mutual concerns, needs, and interests. This approach to collaboration and determination of mutuality could lead to the development of education and training efforts, which could help them capitalize on their competitive advantages while also determining the level of transparency consumers desire in the marketing and communication of egg products.

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# A Comparative Case Study from a Design-Based Research Project to Examine Student Experiences in a Personal Leadership Course

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## Introduction and Background

In college agricultural leadership classrooms, today's learners are progressive, and societal needs have changed considerably with communication advancements and access to personal technologies (Caton-Rosser et al., 2014). Students want more personally meaningful learning experiences. Enhancing our understanding of their learning experiences and the facilitation of learning will help us meet the goals of agricultural leadership education. Design-based research (DBR) is a powerful new tool for understanding, as this methodology allows researchers to create new ideas and practices to implement in a learning environment (Sandoval & Bell, 2004). DBR simultaneously pursues the goals of developing effective learning environments and using such environments as natural laboratories to study learning and teaching. DBR is used in the context of this study to expand researchers' understanding of learning experiences. In the current study we develop an innovation in DBR analytical approaches, particularly in the use of network analysis to understand patterns in the complexity of learning experiences. The purpose of this study is to understand student experiences with assignments utilizing design thinking.

## Theoretical Framework

We used three theories to ground the learning experience design. The dynamic systems model of role identity (DSMRI) theory captures the holistic and rich content, structure, and process of identity and its formation within social-cultural contexts (Kaplan & Garner, 2017). We used DSMRI to facilitate intense engagement, positive coping, openness to change, flexible cognition, and meaningful learning (Kaplan et. al., 2014) through Odyssey Plans in which students created three different life plans. Situated learning theory argues that learning is specific to the social situation, and involves changes in identification with the discipline, the ability to engage in the practices of the discipline, and the contributions to the discipline (Lave & Wegner, 1991). We implemented this through life design interviews where students interviewed or shadowed someone in a potential career path to gain more insight into lived experiences within that career. Transformative learning theory describes learning as changes in assumptions through which students understand their experiences as they become more autonomous thinkers who negotiate their own values, meanings, and purposes rather than to uncritically act on those of others (Mezirow, 1997). We engaged students in this work through weekly reflective journals in which they practiced self-awareness and reframing.

## Method

This was a comparative case study within a design-based research (DBR) project. A comparative case study involves in-depth description and analysis of data from several bounded cases (Merriam & Tisdell, 2016). The bounded system for this comparative case study was students in a specific course during a specific semester compared to students in the same course in a

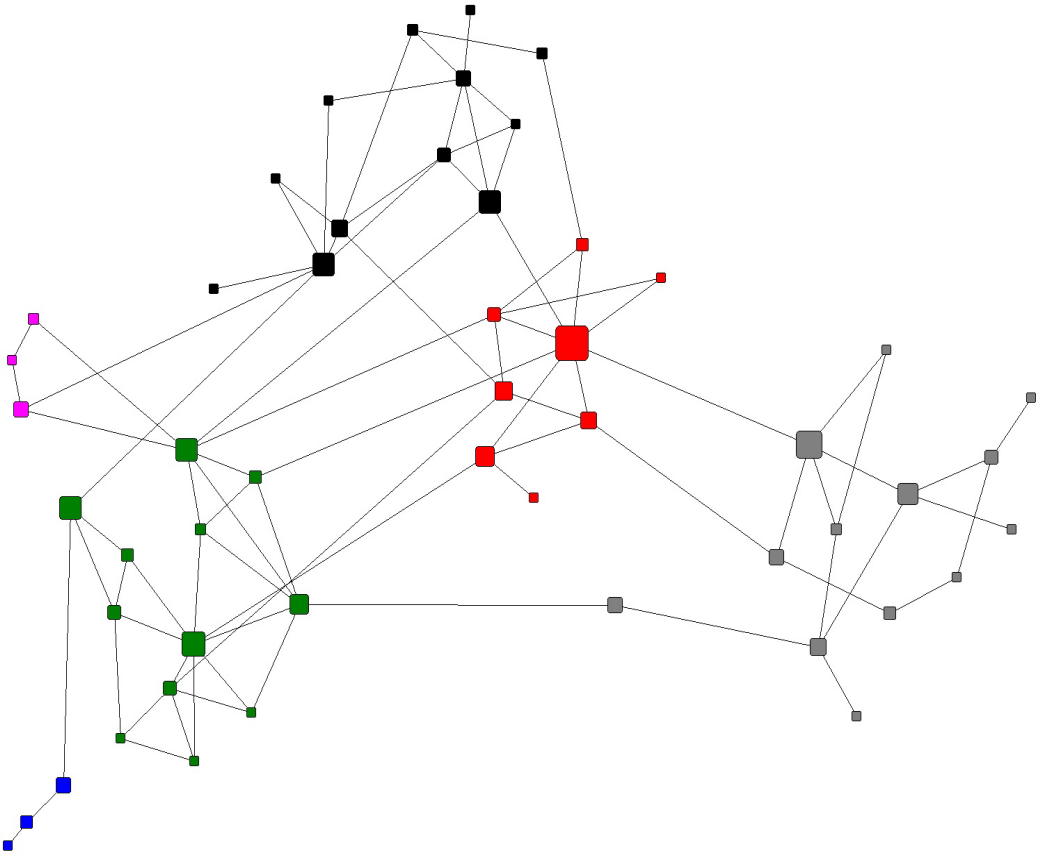
subsequent semester. Network analysis was used to analyze the coded qualitative data (student reflections). The parameters for this case included a personal leadership education course in the department of [agricultural leadership] in the [college of agriculture] taught once a year in the spring semester. It applies design thinking concepts from the book *Designing Your Life: How to Build a Well-Lived, Joyful Life* (Burnett & Evans, 2016). Students completed assignments related to prototyping their life. These assignments included: workview/lifeview reflections, odyssey plans, and prototyping their life plan/life design interviews. Students were then asked to reflect on their assignments and course content in journals. In DBR, the design of learning experiences is grounded in a set of principles derived from the most relevant and appropriate theories. The principles we derived from transformative learning theory were questioning one's own assumptions, transformation of habits, transformation of beliefs and assumptions, cognitive dissonance and self-reflection (Mezirow, 1997). The principles from situated learning theory included developing identity in discipline, participating in community, and building relationships in community (Anderson et al., 1996). From DSMRI we used the principles of change in self-perception, changes in reality, knowledge and beliefs, perceived action possibilities, and changes in purposes and goals (Kaplan & Garner, 2017). These principles were included in the coding process, and mapped with the struggles and strengths of students' experiences. In Spring 2021, 48 of 94 students consented to have their data collected, and in Spring 2022, 48 of 92 students consented. There were 4 reflections from each student completed after each learning activity. Consenting students' data was analyzed in MAXQDA Analytics Pro qualitative data software by coding the data in terms of alignment with principles from the theories in which the learning activities were grounded, struggles, and aspects of the activities which worked particularly well. Correlations were calculated for all pairs of codes, which were exported as Microsoft Excel correlation matrices and imported into UCINet software to conduct network analysis, create network maps, conduct cluster analysis, and calculate centrality measures. The purpose of the maps was to find relationships within the coded segments, where a Girvan-Newman cluster analysis was conducted (Girvan & Newman, 2002). We resized nodes according to betweenness centrality values. These maps illustrate the relationship between strengths, weaknesses, and theory in student experiences. We analyzed the relationship between 2021 Spring students' strengths, weaknesses, and principles of theory within each cluster and developed design moves which leverage strengths and theory to address struggles. These solutions were then implemented in the Spring 2022 course.

## Findings

From the Spring 2021 data we constructed a network map with 6 Girvan-Newman clusters at Q=0.584, indicating high confidence in the quality of the clustering (see Figure 1). In the red cluster the struggles were not a dominant aspect of their experience. Students' experiences were only connected to one theory principle, from DSMRI, changes in purposes and goals. These students' experiences included struggling with the logistics of prioritization, stepping out of their comfort zone, and the restrictions from COVID-19 impacts. What worked for these students was instructional support, the assignments lengths/time allotted, and the hands-on nature of course activities. We constructed the design moves for Spring 2022 of 1) providing encouragement to students as they begin to discuss their interview ideas, and 2) anecdotal stories from past students who were able to make huge strides towards goals they developed as a result of their interview.

**Figure 1**

*Network Map of Strengths, Struggles, and Principles of Students' Experiences in Spring 2021*



In the black cluster students faced many struggles, and there were no particular things that worked well for these students. Because there were no strengths to leverage, we leveraged theory to inform the design moves. These students struggled personally with idea generation/thinking, making networking connections, understanding/comprehension, and time management balance. There were interpersonal struggles in this cluster, including communication, networking, and extraneous issues. However, student experiences in the black cluster were aligned with principles from theory, including transformation of their beliefs and assumptions and transformation of habits from transformative learning, and developing identity in the discipline from situated learning. There was an interesting connection at the bottom left of the black cluster: Student experiences indicated wanting a more realistic scenario when coming up with a life plan, which was connected to the principle from the DSMRI theory of change in self-perception. Within this cluster, the many struggles tell a story of students experiencing tension and friction throughout their learning process. Not all struggles students experienced can be labeled as good or bad. However, there are some instances where students experienced a productive struggle, such as the tension between how they used to see themselves and the world, and a new, developing perception. These productive struggles relate to difficulty in idea generation, or understanding and comprehension. Interpersonal struggles such as time management balance, networking, and communication need to be addressed to align the student experience with that of the red cluster, which mapped more of what worked for students. The design moves for Spring 2022 that

emerged from this cluster were 1) to provide an opportunity for students to discuss their life plans with learning communities, 2) share their proposed interview project ideas, and 3) get peer assistance in the brainstorming process.

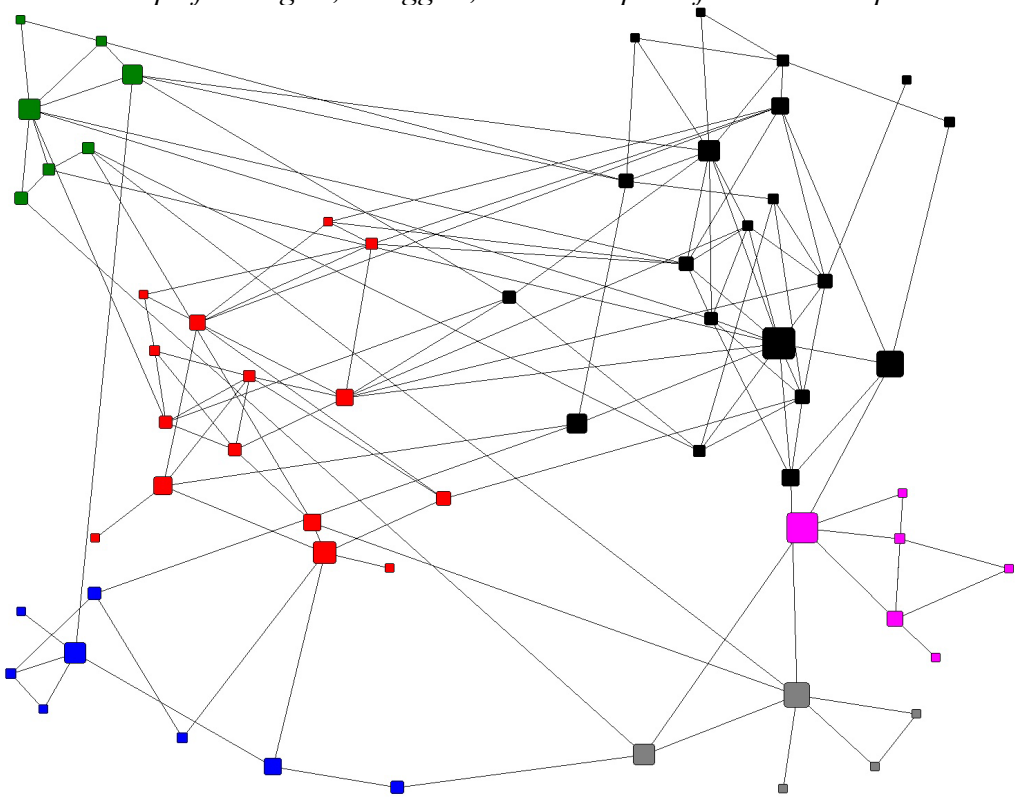
In the gray cluster, learner experiences included struggles with reading, writing, technology, and their personal inner self. Struggles were also faced when students had to work on a section of their life plan assignment in which they were asked to construct questions. What worked for these students was the structured template for the life plan assignment and participating in learning communities. Principles from theories were present in this cluster including participation in community and developing relationships in community from situated learning, and questioning of one's own assumptions and self-reflection from transformative learning. The first design move we constructed for this cluster was to have students share their life plan assignment with their learning communities to brainstorm possible questions that each visioned life plan may answer. Other design moves included 2) uploading an example plan on Canvas as a part of the assignment description, and 3) emphasizing reading the book.

Similar to the black cluster, the green cluster was dominated by struggles including misunderstanding instructions, scheduling, wanting more structured instructions, formatting of written assignments, assignment instructions release time, and assignment parameters. What worked for these students was learning from someone outside of the class through the interview assignment, and interview questions. These experiences in the green cluster did not align with any theory principles, therefore the closest theory to ground a potential design move was in the red cluster from DSMRI: changes in purposes and goals. The design move constructed were 1) to provide the interview assignment rubric, 2) clarify instructions and expectations early in the class, 3) measure the final reflections not by page count but by depth of response, 4) change the structure of the questions, and 5) include examples of correctly structured paragraphs in APA format. Design moves were not constructed from experiences mapped in smallest clusters (pink and blue).

Student reflections from Spring 2022 constructed a network map with 6 Girvan-Newman clusters at Q0.482 (see Figure 2). In the map of Spring 2022 data, we analyzed the data for any shifts in learner experiences after we implemented the design moves. One observation is that the red and black clusters are mainly struggles and theory principles, with some strengths mapped. This indicated that students' experiences from Spring 2022 are less defined by the strengths, but by the alignment with principles from theory. Additionally, the map of experiences from Spring 2022 features two large clusters, and the remaining four clusters are shrinking. This suggests to researchers that the experiences of students are becoming more theoretically grounded, and less sporadic as it relates to struggles. Struggles are becoming easier to address because they are becoming more connected to one another. Rather than creating a bunch of solutions for problems in large clusters, one solution can address various interconnected problems.

**Figure 2**

*Network Map of Strengths, Struggles, and Principles of Students' Experiences in Spring 2022*



Students' experiences of struggles and strengths in the black cluster indicated a relationship with principles from transformative learning including transformation of habits, beliefs and assumptions, self- reflection, questioning of one's own assumptions, and cognitive dissonance, all of which were present in Spring 2021 except cognitive dissonance and questioning of one's own assumptions, which were unique to Spring 2022. Theory principles from situated learning theory remained, such as developing identity in the discipline and participation in community. This suggests that students with similar learning experiences as those mapped in Spring 2021 were able to begin to question their assumptions about themselves and their future, and experience the dissonance that comes with the transformation of assumptions. The design moves from Spring 2021 appear to have reduced the lack of imagination and consideration regarding themselves and their future.

The red cluster from Spring 2022 also closely resembles the red cluster from Spring 2021. The theory principle change in purposes and goals from DSMRI was present in both, but one shift can be observed in the inclusion of other principles from DSMRI, including change in perceived action possibilities, change in self-perception, and change in reality and knowledge/beliefs. The theory principles present in the red cluster suggest that students in Spring 2022 experienced more identity development than in Spring 2021.

The students' experiences in Spring 2021 mapped in the green, blue, pink, and gray clusters dissolved, as observed in the Spring 2022 map of clusters. The green, pink, and gray clusters that

emerged from students' reflections in Spring 2022 were devoid of theory, and the blue cluster only presented one principle, participation in community from situated learning theory. In the Spring 2022 map we found experiences grounded in theory principles became more prominent for the major two clusters, red and black. These two clusters also grew in their complexity, encompassing more complex learning experiences.

## Implications and Discussion

The overall comparison of the second case in which design moves were implemented to the first case from which the design moves were derived suggests several practical principles for agricultural leadership education. The first is that having students engage with peers while simultaneously engaging with people in the broader community of educational leadership practice is an important aspect of transformative and situated learning. The second is that we must create space for productive struggle, cognitive dissonance, and exploration to allow for development of learner identity in terms of purposes, goals, and self-perceptions. Our findings suggest that grounding agricultural leadership learning experiences in situated learning theory (Lave & Wenger, 1991), transformative learning theory (Mezirow, 1997), and an identity theory such as the dynamic systems model of role identity (Kaplan & Garner, 2017) leads to powerful learning. This study also found that using network analysis to analyze learning experiences is a fruitful approach to iterative improvement of learning experiences while embracing the messiness and complexity of learning.

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# The Civic Engagement Skills Needed by Youth: An Assessment of Community Citizens

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## Introduction

The exodus of youth after high school graduation poses a severe threat to the resilience and vitality of rural communities (Hastings, Barrett, Barbuto, & Bell, 2011). Investing in youth is important for improving the future leadership and vitality of a community long term (Mohamed & Wheeler, 2001). Youth need to be equipped with a variety of skills related to serving their communities because they are more inclined to participate in civic engagement during their adolescent years than any other time in their life (Hart & Atkins, 2002; Finlay, Wrath-Lake, & Flanagan, 2010; Langston, 1987). Unfortunately, if youth are not encouraged to participate in civic engagement prior to graduating from high school, they are less likely to become highly engaged community members in adulthood (Blyth, Saito, & Berkas, 1997).

Civic engagement refers to how citizens engage in their community to improve conditions for others (Adler & Goggin, 2005, p. 236). Fortunately, today's youth have a desire for civic engagement and service-learning opportunities where they can assist others and make positive contributions to improve society (Adler & Goggin, 2005). Although the school is a logical institution for developing the skills necessary for increasing civic youth engagement (Lin, 2015), information is needed for how to develop and empower them adequately (Adler & Goggin, 2005). Therefore, the purpose of this study was to determine the civic engagement needs of youth in one rural, farming-dependent community in Oklahoma. Two objectives guided the study: (1) describe the knowledge and skills youth need to become local leaders, and (b) describe the knowledge and skills mentors need to assist youth in developing those skills.

## Theoretical/conceptual framework/perspective

The human capital theory undergirded the study (Becker, 1964; Shultz, 1971). Human capital is focused on helping people acquire and develop the education and skills necessary for employment or general wellbeing (Becker, 1964; Little, 2003; Shultz, 1971). Heckman (2000) advocated for research to identify the skills needed in youth as "early investment promotes later investment" (Heckman, 2000, p. 3). Understanding the knowledge and skills youth need to become civically engaged in their community as well as the mentoring skills for assisting them to do so can be informative for developing a mentoring program where adult civic leaders focus on building and sharing human capital to increase future civic leaders in their local communities.

## Methods

The Delphi technique was used to assess the needs of community members in the target county via Qualtrics questionnaires (Dillman et al., 2014). Criteria for determining experts included adults who held a community leadership position, were reflective of the county's demographics, and had experience working with youth on youth-related activities. To identify a representative panel, we used a snowball technique (Creswell, 2012). Through in-person and virtual exploratory interviews, we created an Excel document to track names of influential community members. In

all, 25 experts were selected based on the established criteria. They included business owners, educators, community volunteers, parents, religious leaders, and agriculturists.

Round 1 included the open-ended questions: (a)What knowledge and skills do youth need to become local leaders in the community? and (b)What knowledge and skills do mentors need to assist youth in developing those skills? We employed a six-point, Likert-type scale of importance in Round 2 ranging from 1 = no importance to 6 = high importance. We set a mean score of 4.5 or higher and 75% agreement by the panel of experts *a priori* to determine consensus in Round 2. Therefore, items not those thresholds in Round 2 were dropped from the study (Custer et al., 1999). Of the 25 panelists identified, 23 responded to Round 1 for a 92% response rate, and 17 participated in both Rounds 2 and 3 for a 68% response rate. Because all three rounds included more than 13 panelists, our study was deemed reliable (Dalkey, 1969).

Round 1 resulted in 99 statements (41 youth items, Table 1 and 58 mentoring items, Table 2) that were categorized into six themes by three independent coders (Montgomery & Crittendon, 1977). The themes included Civics (7 items), Communications (5 items), Critical Thinking and Problem Solving (5 items), Cultural Competency (5 items), Decision Making (6 items), and Leadership (7 items). Based on responses in Round 2, 92 of the 99 items (35 youth items, Table 1 and 56 mentoring items, Table 2) were retained. The items in which panelists agreed most for youth were: *Listen actively* ($M$ = 5.56, $SD$ = .51) and *Understand morality in decision making* ($M$ = 5.50, $SD$ = .51), as viewed in Table 1. The item *Listen actively* ($M$ = 1.65, $SD$ = 1.17) was ranked highest in terms of priority of all items listed in Round 3, followed by *Know what is happening in their community* ($M$ = 1.76, $SD$ = .97), and *Be open minded* ($M$ = 2.50, $SD$ = 1.51). Ten items reached 100% consensus of agreement among the panelists (see Table 1). Those 10 included: *Know what is happening in their community*, *Listen actively*, *Use critical thinking skills to solve a problem*, *Understand morality in decision making*, *Use decision-making skills*, *Use ethics in decision making*, *Understand how the decisions of others may impact them*, *Collaborate with others*, *Learn from others*, and *Develop long-term goals* (see Table 1).

**Table 1**

*The Level of Importance of Youth Civic Leadership Knowledge and Skills (Round 2) and their Prioritization (Round 3)*

| | % | Round 2 | | Round 3 | |
|---|---|---|---|---|---|
| Items | Consensus | *M* | *SD* | *M* | *SD* |
| *Civics* | | | | | |
| Know what is happening in their community. | 100.0% | 5.44 | 0.51 | 1.76 | 0.97 |
| Understand how local government works in this community. | 83.4% | 5.11 | 0.68 | 3.94 | 1.71 |
| Understand local economics. | 77.8% | 5.06 | 0.73 | 3.94 | 1.56 |
| Understand personal finance. | 88.9% | 5.17 | 0.62 | 4.06 | 2.25 |
| Know how resources are paid for in the community. | 88.9% | 5.17 | 0.62 | 4.41 | 1.81 |
| Know what resources are provided to them by the community. | 88.9% | 5.22 | 0.65 | 4.53 | 1.81 |

| | | | | | |
|---|---|---|---|---|---|
| Understand positions of power in the community. | 82.3% | 5.12 | 0.70 | 5.35 | 2.03 |
| *Communications* | | | | | |
| Listen actively. | 100.0% | 5.56 | 0.51 | 1.65 | 1.17 |
| Identify ways to use their voice productively in the community. | 88.9% | 5.17 | 0.62 | 3.00 | 1.37 |
| Communicate with different generations. | 88.9% | 5.28 | 0.67 | 3.29 | 1.16 |
| Communicate decisions to others effectively. | 83.3% | 5.22 | 0.73 | 3.41 | 1.37 |
| Communicate informed opinions to others effectively. | 88.9% | 5.17 | 0.62 | 3.65 | 1.22 |
| *Critical Thinking & Problem Solving* | | | | | |
| Use critical thinking skills to solve a problem. | 100.0% | 5.44 | 0.51 | 2.53 | 1.13 |
| Analyze situations to predict possible outcomes. | 88.9% | 5.11 | 0.58 | 2.71 | 1.21 |
| Think outside the box. | 88.9% | 5.33 | 0.69 | 2.71 | 1.65 |
| Learn from evidence-based information. | 88.9% | 5.22 | 0.65 | 3.00 | 1.23 |
| Use basic math. | 94.5% | 5.50 | 0.62 | 4.06 | 1.44 |
| *Cultural Competency* | | | | | |
| Be open-minded. | 88.9% | 5.11 | 0.58 | 2.50 | 1.51 |
| Understand human rights. | 83.3% | 5.22 | 0.73 | 2.63 | 1.36 |
| Understand what is necessary for the well-being of others. | 88.9% | 5.28 | 0.67 | 2.94 | 1.44 |
| Develop social awareness in their community. | 83.3% | 5.22 | 0.73 | 3.13 | 1.15 |
| Know the history of their region. | 77.8% | 5.00 | 0.69 | 3.81 | 1.42 |
| *Decision Making* | | | | | |
| Be accountable for decisions made. | 94.4% | 5.44 | 0.62 | 2.63 | 1.78 |
| Understand morality in decision making. | 100.0% | 5.50 | 0.51 | 3.38 | 1.86 |
| Use decision-making skills. | 100.0% | 5.50 | 0.51 | 3.56 | 1.97 |
| Understand how their personal decisions impact the larger community. | 88.3% | 5.17 | 0.71 | 3.69 | 1.58 |
| Understand ethics in decision making. | 100.0% | 5.44 | 0.51 | 3.81 | 1.52 |
| Understand how the decisions of others may impact them. | 100.0% | 5.44 | 0.51 | 3.94 | 1.48 |
| *Leadership* | | | | | |
| Be empowered to have a voice in their community. | 88.9% | 5.22 | 0.65 | 3.19 | 3.40 |
| Collaborate with others. | 100.0% | 5.39 | 0.50 | 3.44 | 1.32 |

| | | | | | |
|---|---|---|---|---|---|
| Learn from others. | 100.0% | 5.28 | 0.46 | 3.56 | 2.07 |
| Think ahead about their future. | 94.1% | 5.47 | 0.62 | 3.88 | 2.19 |
| Develop long-term goals. | 100.0% | 5.39 | 0.50 | 4.25 | 1.57 |
| Develop civic leadership. | 77.7% | 5.11 | 0.76 | 4.81 | 1.97 |
| Understand democracy. | 77.8% | 5.06 | 0.73 | 4.88 | 2.03 |

*Note.* Scale for ranking Round 2: 1 = no importance; 2 = very low importance; 3 = low importance; 4 = moderate importance; 5 = high importance; 6 = highest importance. Percent consensus was calculated by the frequency items were determined high importance (5) and highest importance (6). Round 3 items were priority ranked within sub-categories.

As listed in Table 2, six themes emerged through the data on mentoring skills including: Coaching (10 items), Ethics and Values (9 items), Leadership Capacity (12 items), Level of Community Engagement (6 items), Personal Behaviors (11 items), and Youth Partnerships (8 items). The items in which panelists agreed most were: *Have integrity* (*M* = 5.72, *SD* = .46), *Set a positive example* (*M* = 5.72, *SD* = .46), and *Adapt mentorship based on maturity levels* (M = 5.67, SD = .69). The items: *Be actively involved in the community* (*M* = 2.56, *SD* = 1.75) was ranked highest in terms of priority of all items listed in Round 3 followed by *Have integrity* (M = 2.69, SD = 2.18), and *Listen actively* (*M* = 3.06, *SD* = 3.13). Thirteen items reached 100% consensus of agreement with the panelists. Those 13 included: *Help youth reach their full potential*, *Help them [youth] set goals*, *Have integrity*, *Lead with humility*, *Set a positive example*, *Show up on time*, *Understand the reward of working with youth*, *Be respectful*, *Be encouraging*, *Have discipline*, *Be well-rounded*, *Foster positive relationships between adults and youth*, and *Support their [youth] goals for the community* (see Table 2).

**Table 2**

*The Level of Importance of Community Mentor Knowledge and Skills Items (Round 2) and their Prioritization (Round 3)*

| | % | Round 2 | | Round 3 | |
|---|---|---|---|---|---|
| Items | Consensus | *M* | *SD* | *M* | *SD* |
| *Coaching* | | | | | |
| Provide constructive criticism. | 88.9% | 5.33 | 0.84 | 4.31 | 1.96 |
| Be honest about not having all the answers. | 94.4% | 5.33 | 0.59 | 4.56 | 2.94 |
| Receive constructive criticism. | 94.4% | 5.56 | 0.62 | 4.63 | 2.96 |
| Willingness to teach others. | 94.4% | 5.56 | 0.78 | 4.94 | 3.24 |
| Build on strengths instead of weaknesses. | 88.9% | 5.22 | 0.65 | 5.06 | 2.35 |
| Motivate them to be actively engaged. | 83.3% | 5.22 | 0.73 | 5.19 | 3.06 |
| Help youth reach their full potential. | 100.0% | 5.61 | 0.50 | 6.19 | 3.04 |
| Help them set goals. | 100.0% | 5.39 | 0.50 | 6.56 | 2.83 |
| Empower them to be unique. | 83.3% | 5.28 | 0.75 | 6.69 | 2.39 |
| Adapt mentorship based on maturity levels. | 88.9% | 5.67 | 0.69 | 6.88 | 3.05 |
| *Ethics & Values* | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Have integrity. | 100.0% | 5.72 | 0.46 | 2.69 | 2.18 |
| Value all youth without bias. | 94.4% | 5.61 | 0.61 | 3.44 | 2.56 |
| Be open to new ideas. | 94.4% | 5.28 | 0.58 | 4.38 | 2.19 |
| Possess work ethic. | 94.4% | 5.56 | 0.62 | 4.50 | 1.67 |
| Provide facts, not opinions. | 94.4% | 5.33 | 0.77 | 4.63 | 2.00 |
| Provide sound information. | 94.4% | 5.33 | 0.77 | 5.56 | 2.61 |
| See the world in a different light. | 94.4% | 5.44 | 0.62 | 5.63 | 2.78 |
| Recognize drug use. | 94.4% | 5.61 | 0.61 | 6.44 | 2.16 |
| Recognize sexual prowess. | 77.8% | 5.22 | 1.31 | 7.75 | 1.34 |
| *Leadership Capacity* | | | | | |
| Listen actively. | 94.4% | 5.50 | 0.62 | 3.06 | 3.13 |
| Lead with humility. | 100.0% | 5.61 | 0.50 | 4.06 | 3.32 |
| Set a positive example. | 100.0% | 5.72 | 0.46 | 5.00 | 2.73 |
| Show up on time. | 100.0% | 5.67 | 0.49 | 5.88 | 3.46 |
| Willingness to talk to people. | 94.4% | 5.56 | 0.62 | 5.88 | 3.58 |
| Be adaptable. | 94.4% | 5.56 | 0.62 | 6.38 | 2.99 |
| Be self-reflective. | 94.4% | 5.67 | 0.59 | 7.00 | 2.78 |
| Be a problem-solver. | 83.4% | 5.11 | 0.68 | 7.06 | 2.54 |
| Communicate effectively with different generations. | 94.4% | 5.39 | 0.61 | 7.63 | 3.34 |
| Lead others. | 94.4% | 5.33 | 0.59 | 8.19 | 3.39 |
| Know how to best identify leaders. | 94.4% | 5.22 | 0.55 | 8.38 | 2.22 |
| Manage others. | 94.4% | 5.41 | 0.62 | 9.50 | 2.88 |
| *Level of Community Engagement* | | | | | |
| Be actively involved in the community. | 83.4% | 5.44 | 0.78 | 2.56 | 1.75 |
| Know how policies could impact them. | 83.3% | 5.17 | 0.71 | 3.31 | 1.66 |
| Know programs that will benefit them. | 83.3% | 5.11 | 0.68 | 3.44 | 1.59 |
| Understand demographics. | 88.9% | 5.44 | 0.71 | 3.44 | 1.59 |
| Know the impact of poverty. | 88.9% | 5.44 | 0.71 | 3.69 | 1.82 |
| Understand the reward of working with youth. | 100.0% | 5.61 | 0.50 | 4.56 | 1.50 |
| *Personal Behaviors* | | | | | |
| Be trustworthy. | 94.4% | 5.17 | 0.51 | 3.25 | 2.41 |
| Be respectful. | 100.0% | 5.33 | 0.49 | 4.25 | 2.57 |
| Be compassionate. | 94.4% | 5.50 | 0.62 | 4.75 | 3.17 |
| Be encouraging. | 100.0% | 5.61 | 0.50 | 5.25 | 2.67 |
| Be reliable. | 94.4% | 5.28 | 0.58 | 5.31 | 2.94 |
| Be empathetic. | 88.9% | 5.39 | 0.70 | 5.81 | 3.66 |
| Be available. | 88.9% | 5.56 | 0.71 | 6.31 | 2.58 |
| Have discipline. | 100.0% | 5.67 | 0.49 | 7.44 | 3.18 |
| Be willing to say “no.” | 88.9% | 5.22 | 0.65 | 7.44 | 3.05 |
| Be organized. | 88.9% | 5.50 | 0.71 | 7.75 | 3.13 |
| Be well-rounded. | 100.0% | 5.50 | 0.51 | 8.44 | 1.90 |

| | | | | | |
|---|---|---|---|---|---|
| *Youth Partnerships* | | | | | |
| Invite youth to help. | 88.9% | 5.28 | 0.67 | 3.25 | 1.77 |
| Respect the knowledge youth already have. | 94.4% | 5.50 | 0.62 | 3.94 | 2.24 |
| Involve them as partners in decision-making. | 88.9% | 5.22 | 0.65 | 4.25 | 1.98 |
| Foster positive relationships between adults and youth. | 100.0% | 5.50 | 0.51 | 4.38 | 2.92 |
| Support their goals for the community. | 100.0% | 5.67 | 0.49 | 4.56 | 2.10 |
| Willingness to learn about them. | 94.1% | 5.50 | 0.62 | 4.63 | 2.45 |
| Learn from one another. | 94.4% | 5.50 | 0.62 | 5.13 | 2.00 |
| Advocate for youth. | 94.4% | 5.50 | 0.62 | 5.88 | 2.31 |

*Note.* Scale for Round 2: 1 = no importance; 2 = very low importance; 3 = low importance; 4 = moderate importance; 5 = high importance; 6 = highest importance. Percent consensus was calculated by the frequency items were determined high importance (5) and highest importance (6). Round 3 items were ranked according to their priority within sub-categories.

## Conclusions/Discussion/Implications/Recommendations

It can be concluded that panelists believe youth need human capital development (Becker, 1964; Little, 2003; Shults, 1971) in the areas of civics and leadership based on those two themes possessing the greatest number of items. Specifically, panelists believe youth should be aware of the goings-on of their local community, as that item was rated highest with 100% consensus of agreement. This conclusion aligns with research from Mohamed and Wheeler (2001) who found investing in youth increases the future leadership and vitality of a community long term.

There seemed to be some discrepancy between the consensus of importance panelists placed on items in Round 2 and their prioritization of those same items in Round 3. Not all items that achieved 100% consensus in Round 2 were found to be top priorities when ranked among like knowledge and skill categories. Two items that were identified and reached consensus for both youth and community mentors were *Listen actively* and *Communicate with different generations.* For youth, the only items that achieved 100% consensus in Round 2 and also ranked as priority one for their sub-category in Round 3 were *Know what is happening in their community*, *Listen actively*, and *Use critical thinking skills to solve a problem*.

For community mentors, the only items that achieved 100% consensus in Round 2 and were also ranked as priority one for their sub-category in Round 3 were *Have integrity*. For mentors, items that achieved 100% consensus in Round 2 but were ranked as the last two priorities in their sub-category in Round 3 were *Understand the reward of working with youth* and *Be well-rounded*. Rather than knowledge or skills, most items identified by the panelists for community mentors were behavioral in nature.

Future research should be conducted using this list of skills to determine the willingness of adult leaders to provide mentoring to youth. Youth in the community should queried to determine the skills they possess already and to identify gaps in their leadership development. Finally, the skills identified in this study should be shared with the community, and a youth leadership program

should be developed in conjunction with the Extension educator to pair youth with local civic leaders to begin acquiring and developing the skills necessary to become engaged in and begin making positive contributions to their community (Adler & Goggin, 2005; Hart & Atkins, 2002; Finlay, Wrath-Lake, & Flanagan, 2010; Langston, 1987; Mohamed & Wheeler, 2001).

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# Preferred Conflict Styles of Extension Agents by Generation


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## Introduction, Purpose, and Objectives

Conflict in the workplace is an evergreen issue impacting individuals of all ages. Within the Cooperative Extension model, Extension professionals have a unique position where in a single workday individuals may be required to engage with youth and volunteers, as well as colleagues and supervisors. This frequent interaction with diverse audiences underscores the importance of Extension professionals possessing competencies including problem-solving, interpersonal skills, and self-management (Harder et al., 2010). Due to this, Extension professionals often experience conflict. Conflict arises when there is incompatibility, disagreement, or dissonance within or between social entities (Rahim, 2002). Conflict may develop when parties must participate in activities which are incongruent with their needs or interests, when parties have dominating behavioral preferences, when parties compete for a mutually desirable scare resource, when parties possess conflicting values, or when two parties must work together (Rahim, 2002).

Traditional workplaces are navigating employees from four generations in the workplace. However, with the addition of the volunteers as seen in the Extension model, it is possible to engage with others from five generations. The first generation, likely to be engaged in volunteering post-retirement, are Traditionalists and known as the Silent Generation, born between the years of 1928 and 1945 are associated with being conservative and rule-abiding likely due to their involvement with World War II (Pew Research Center, 2018). Baby Boomers, who are likely upper-management and close to retirement, are born between 1946 and 1964 (Pew Research Center, 2018). These individuals prefer a traditional style of work and have a strong 8 to 5 work ethic (Pew Research Center, 2018). Generation X, born between 1965 and 1980, are most likely positioned as middle managers or those next in line for a promotion (Pew Research Center, 2018). As the first generation to prioritize a healthy work-life balance, they value freedom and may question authority (Pew Research Center, 2018). Millennials, who are likely settled into their career path, are born between 1981 and 1996. In a workplace, Millennials desire for continued learning opportunities and appreciate ample feedback (Pew Research Center, 2018). The most recent generation to be engaged in the workplace is Generation Z who is born between 1997 – 2011 (Pew Research Center, 2018). This generation will likely be the most educated generation to date and be marked by empathy and entrepreneurship (Pew Research Center, 2018).

There are some conflicting results when using demographic data combined with conflict style to illuminate difference among employees (Korabik et al.,1993; Rahim & Katz, 2019). Rahim and Katz (2019) investigated the differences among conflict style based on sex and found that male

employees are more likely to use dominating conflict styles and female employees are more likely to use the other four conflict styles than males. When looking at the data based on decades, the compromising style was used more often in the 1980s and decreased in the 1990s (Rahim & Katz, 2019). The authors reflected other literature suggesting investigation between conflict style and generation should continue to be investigated (Jennings, 2016; Rahim & Katz, 2019). To date, there is no research literature related to interpersonal conflict management in the Extension context.

The purpose and objective of our study was to understand the interpersonal conflict styles used by County Extension Directors and 4-H/MG Extension professionals regarding their generation. This research aligns with the most recent national research agenda of the American Association for Agricultural Education (Roberts et al., 2016).

## Conceptual Framework

The *Dual Concern Model of the Styles of Handling Interpersonal Conflict* (Rahim & Bonoma, 1979) was used to guide this study. Originating from the work of Blake and Mouton (1964), this model divides conflict into two concerns or interests: concern for self and concern for others. The first dimension, concern for self, includes the level (high or low) to which an individual will preserve their self-interest when conflict arises (Rahim, 2002). Concern for others highlights an individual's desire to satisfy the needs of the opposing party in the conflict.

The intersection of the two dimensions creates five conflict preferences including a neutral option of compromising when both parties share similar interests (Rahim, 2002). Each conflict style has appropriate situations where each style is beneficial towards resolving the conflict. The avoiding conflict style, when concern for self and others is low, is used when individuals fail to satisfy any party's needs and typically results from withdrawing or avoidance of conflict situations (Rahim, 2002). The Obliging style, low concern for self and high concern for others, exists when a person minimizes their own concerns to benefit the needs of the other individuals. This conflict style is also used when an individual is aware they are wrong. The dominating style is marked by high concern for self and low concern for others. This is marked by win-lose situations where an individual forces their will on the other party (Rahim, 2002). The integrating style, high concern for self and high concern for others, is associated with effectively dealing with complex issues due to elements of diagnosis and solutions-orientation when identifying conflict scenarios.

## Methods

The target population for our study were County Extension Directors (CEDs), 4-H professionals, and Master Gardener Volunteer coordinators. CEDs supervise, manage, and work alongside the Extension agents in their counties and must interpersonal leadership behaviors often. 4-H professionals and Master Gardener Volunteer coordinators just also use interpersonal leadership behaviors often due to managing and leadership volunteers in their respective counties. For the purposes of this study, we combined 4-H and Master Gardner professionals using the abbreviation 4-H/MGV. We targeted the following six states to participate in our study due to the

researchers' work relationships and convenience: Florida, Georgia, Indiana, Maine, Maryland, and Mississippi. The total population for our study was 776 professionals.

We utilized a descriptive quantitative design for our study using survey methodology to gather the data (Ary et al., 2006). We used the Rahim Organizational Conflict Inventory–II, Form B (ROCI) instrument, and we modified the instrument by removing the term "subordinate' and used the terms "those I supervise" and "volunteers" to fit the Extension context. The ROCI consists of 28 statements and respondents are asked to indicate how they handle their disagreement or conflict on a 5-point Likert scale. The response options were: 1 = *Strongly disagree*, 2 = *Somewhat disagree*, 3 = *Neither agree nor disagree*, 4 = *Somewhat agree*, and 5 = *Strongly agree*. The five conflict styles measured include integrating, obliging, dominating, avoiding, and compromising. The two demographic questions we asked respondents for this study was their state of employment and their birth year. Using the respondents' birth year, we were able to code respondents by their respective generation type: 1928–1945 = Silent Generation, 1946–1964 = Boomer Generation, 1965–1980 = Generation X, 1981–1996 = Millennial Generation, and 1997–2012 = Generation Z (Pew Research Center, 2018).

We received approval from the University of Florida Institutional Review Board prior to conducting the study. The questionnaire was reviewed and assessed by a panel of three experts for construct and face validity (Ary et al., 2006). We calculated Cronbach's reliability coefficient (Cronbach's alpha) to ensure the ROCI constructs maintained internal consistency (Ary et al., 2006; Cronbach, 1951). Our questionnaire was validated by the expert panel review and the strong Alpha levels provided in Table 1.

Table 1

*Reliability Levels of the ROCI Constructs*

| ROCI constructs | CED instrument alpha levels | 4-H/MGV instrument alpha levels |
|---|---|---|
| Integrating | 0.93 | 0.81 |
| Obliging | 0.75 | 0.78 |
| Dominating | 0.76 | 0.84 |
| Avoiding | 0.78 | 0.75 |
| Compromising | 0.81 | 0.75 |

We followed Dillman's Tailored Design Method (Dillman et al., 2009) to increase response rate. We sent a pre-notice email, an invitation email, and two follow-up emails to our target population. A total of 272 complete and usable surveys were completed, yielding a 35.05% response rate. To minimize nonresponse error, we compared early to late respondents on each of the five ROCI constructs as recommended by Lindner et al. (2001); we did not find any differences on the ROCI styles between early and late respondents. We analyzed the data using SPSS version 26 statistical software package for Windows. We calculated frequency and descriptive statistics for our study objective.

## Results/Findings

Extension agent respondents from the Millennial generation category had the most responses (*n* = 110, followed by Generation X (*n* = 94), Baby Boomer (*n* = 54), and Generation Z (*n* = 14). CEDs were more likely to be from Generation X (*n* = 39), and 4-H / MGV respondents were more likely to be Millennials (*n* = 69). Extension agents that served a dual role in supervising both agents and volunteers tended to be a Millennial (*n* = 20).

Table 2

*Frequencies of the Generational Category and Type of Extension Agent*

| Generational Category | County Extension Directors | 4-H/MGV Extension Agents | Both CED and 4-H/MGV Roles | Total Respondent Population | |
|---|---|---|---|---|---|
| | *f* | *f* | *f* | *N* | *%* |
| Baby Boomer | 26 | 22 | 6 | 54 | 20% |
| Generation X | 39 | 49 | 6 | 94 | 35% |
| Millennial | 21 | 69 | 20 | 110 | 40% |
| Generation Z | 1 | 12 | 1 | 14 | 5% |

County Extension Directors and 4-H/MGV respondents were likely to use the same interpersonal conflict management style of integrating. The interpersonal conflict management style most likely to be used by respondents was the integrating style, followed by compromising, obliging, avoiding, and then dominating.

Table 3

*Frequencies of the Interpersonal Conflict Management Style and Type of Extension Agent*

| Interpersonal Conflict Management Style | County Extension Directors | | 4-H/MGV Extension Agents | |
|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* |
| Integrating | 4.36 | 0.62 | 4.39 | 0.45 |
| Obliging | 3.52 | 0.56 | 3.61 | 0.56 |
| Dominating | 2.53 | 0.74 | 2.64 | 0.82 |
| Avoiding | 3.12 | 0.80 | 3.45 | 0.72 |
| Compromising | 3.84 | 0.62 | 3.90 | 0.57 |

Respondents reported using the same likelihood of using interpersonal conflict management style behaviors, regardless of generation type. Integrating was reported by all generation as being the most interpersonal conflict management style used, followed by compromising, obliging, avoiding, and then dominating.

Table 4

*Frequencies of the Interpersonal Conflict Management Style and Generational Category*

| Interpersonal Conflict Management Style | Baby Boomer | | Generation X | | Millennial | | Generation Z | |
|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Integrating | 4.42 | 0.39 | 4.40 | 0.55 | 4.34 | 0.57 | 4.45 | 0.34 |
| Obliging | 3.58 | 0.57 | 3.58 | 0.47 | 3.57 | 0.61 | 3.80 | 0.72 |
| Dominating | 2.60 | 0.76 | 2.46 | 0.72 | 2.68 | 0.86 | 2.55 | 0.59 |
| Avoiding | 3.41 | 0.73 | 3.19 | 0.71 | 3.43 | 0.75 | 3.08 | 0.98 |
| Compromising | 3.93 | 0.55 | 3.81 | 0.65 | 3.93 | 0.58 | 3.91 | 0.46 |

## Conclusions/Discussion/Implications/Recommendations

Overall, there is no difference in conflict style preference based on generation or position within the sample included in this research. This aligns with some previous literature indicating that demographic data does not have an impact on conflict style (Korabik et al.,1993). However, when compared to a longitudinal study looking at graduates from an institution over forty years, the least preferred conflict style of Extension professionals compared to professionals and managers across all fields are different (Rahim & Katz, 2019). From most preferred to least preferred, Extension professionals use conflict styles in the following ranking: integrating, compromising, obliging, avoiding, and dominating. On the same assessment and framework, the professionals studied preferred the following styles from most common to least: integrating, compromising, obliging, dominating, and avoiding. This indicates that Extension professionals are less likely to use the dominating conflict style, marked by high concern for self and low concern for others, compared to a set of professionals among other varying fields (Rahim & Bonoma, 1979; Rahim & Katz, 2019).

Literature on Baby Boomers indicates that they are likely to be in upper-management positions, which is reflected in our sample as 59% of Baby Boomer respondents are CEDs (Pew Research Center, 2018). The COVID-19 pandemic had two impacts on Baby Boomers – forced an early retirement or prolonged their retirement due to unsure financial futures– which may be preventing some agents who are Generation X from potentially ascending to a CED role.

The most used conflict style is integrating, marked by a high concern for self and a high concern for others across all three agent types in our study (Rahim & Bonoma, 1979). The least used conflict style is dominating, which is a high concern for self and a low concern for others, for CEDS, 4-H and MG agents (Rahim & Bonoma, 1979).

Generation Z is most likely to use the integrating style, high concern for self and others, which is the most used conflict style (Rahim & Bonoma, 1979). This makes sense because literature indicates that Generation Z will likely be team-players as they take over the workforce (Pew Research Center, 2018). Additionally, Generation Z is most likely to use the obliging style, which is marked by low care for self and high care for others (Rahim & Bonoma, 1979). Generation Z is characteristically more empathetic than previous generations (Pew Research Center, 2018).

Millennials are the most likely generation to use the dominating style, the least preferred conflict style in this population, which indicates a high concern for self and low concern for others (Rahim & Bonoma, 1979). When asked to describe themselves in a 2015 Pew Research Center survey, 59% of Millennials described themselves as self-absorbed. Additionally, Millennials are the most likely generation to use the avoiding conflict style which indicates a low concern for self and low concern for others (Rahim & Bonoma, 1979). In a conflict situation, this looks like passing the blame onto others, sidestepping, or completing withdrawing from the situation (Rahim & Bonoma, 1979).

Baby Boomers and Millennials are equally likely to use the compromising conflict style, which is an intermediate level of concern for both sides and often involves giving up one's own desire to please the others (Rahim & Bonoma,1979). Due to the cyclical nature of generations, it is very likely that most Millennials have Baby Boomer parents.

To expand on this research project, conflict styles should be investigated within other areas of the Extension model, including other agents and volunteers. Conflict styles should be investigated comparatively with other career fields within agriculture and natural resources to gain a broader understanding of who Extension professionals engage with. A qualitative investigation into how different generations believe they engage could illuminate more of the nuances within individual conflict preference.

From a practitioner's perspective, training in conflict can help Extension professionals understand more about their conflict preference and those they work with. This study indicates that Extension professionals are likely to have high concern for others when engaging with conflict which can be a taxing preference. This should particularly be discussed with Generation Z employees as they are most likely to pair their high concern for others with a low concern for self. Regarding professional development, leadership educators involved in Extension staff development can create training programs with all agent types in mind because the needs are the same across agent type.

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# Using Poetic Dialogues to Enhance Community-Based Extension Impact Evaluation

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## Introduction, Purpose, and Research Questions

Disseminating evaluation results in usable and relatable ways is a cornerstone of Extension program evaluation (Johnson et al., 2013; Patton, 2008). Key to the dissemination of evaluation results is crafting an engaging presentation of results to demonstrate to stakeholders the relevance and importance of impact measurements (Johnson et al., 2013). One approach for creating engaging evaluation results for disseminating evaluation results in an engaging way is to incorporate arts-based methods (Simons & McCormack, 2007). The use of arts-based methodologies in designing, conducting, analyzing, and disseminating the results of Extension program evaluations can evoke "different ways of knowing and understanding the values of a program" (Simons & McCormack, 2007 p. 292). Poetry, specifically, offers an opportunity to communicate multiple realities within human experience allowing forms of knowledge to emerge in the evaluation process that are often excluded due to being positioned within a positivist, objectivist paradigm (Furman et al., 2007). While evaluation results are often presented dryly and without much that catches an intended user's attention, poetry can make data more vivid for intended audiences through capturing the feelings of those interviewed and providing opportunities to connect with the lived experiences of others through stories (Hill, 2005). Arts-based representations of Extension evaluation data can offer opportunities to deeply contemplate the experiences of both evaluators and stakeholders in a project, catalyzing critical reflection of and engagement with programmatic impacts for multiple audiences who have diverse experiences with the program (Johnson et al., 2013).

Richardson (1997) incorporated poetic forms of data in order to represent lived experiences and emphasize positionality within data (re)construction. Context, which includes the evaluator-as-instrument, becomes a framework for placing people and actions within a time-bound, physical, geographic, historical, and cultural setting, which then provides increased opportunities for understanding what they are saying and doing (Hill, 2005; Lawrence-Lightfoot & Davis, 1997). Hill (2005) highlights how poetry "exemplif[ies the researcher's] voice in dialogue with the

participants' and capture my voice discerning the sound and meaning of their voices […] while also honoring their voices […]" (p. 96). Through this reconstruction and contextualization, poetic forms of analysis can help evaluators capture and evoke "the full dimensionality of human experience" (Johnson et al., 2013, p. 487), leveraging the power of qualitative storytelling to communicate impact of a program. Poetic methodology can encourage the use of open reporting strategies that invite multiple voices and interpretations, involving the reader (and/or stakeholders) in active participation in meaning-making for Extension evaluation (Abma, 1997).

Poetic methods can allow researchers to communicate findings in multidimensional and more accessible ways (Hill, 2005). Poetry, as an analytic method, can help deconstruct initial analyses of data. For example, from a basic qualitative research design, new analyses and insights can be reconstructed through integrating artistic ways of knowing, specifically through emphasizing deepened dialogue with and about data from a researcher perspective (Ohito & Nyachae, 2019). Poetic representations of data analysis are a narrative method that foregrounds participant voices through building narratives as a way of knowing related to research or evaluation questions, infusing empathy and resonance into the research process (Ward, 2011).

While poetic forms of reflection have been used in Extension programming (Fortune et al., 2012), studies integrating Extension-based program evaluation and artful methods of analysis were not present in the literature. Evaluation is one method Extension professionals can use to communicate their impact to broader audiences and enhance the public value of Extension (Franz et al., 2014). Communicating this impact, however, can be difficult for Extension professionals, specifically related to creating stories from their programming (Franz et al., 2014). Poetic methodologies are a form of narrative inquiry that can illuminate embodied interactions within a specific context (Freeman, 2016), and due to the narrative structure, can be used by Extension professionals to communicate impact through stories. These poetic stories allow for a representation of data to evoke emotional as well as cognitive responses to findings (Ward, 2011). The current study addresses Research Priority Area 6 (Vibrant, Resilient Communities) by communicating evaluation impact in a culturally appropriate form (Graham et al., 2016), and Research Priority Area 7 (Addressing Complex Problems) through "innovative, inventive, and creative activities" that reflect the need for transdisciplinary solutions to complex issues, such as food insecurity (Andenoro et al., 2016, p. 58).

The purpose of the current study was to apply the poetic transcription method to focus group data in order to evaluate the social construction of identity and its influence on Extension program implementation and subsequent impact. Three research questions guided the study: 1) What lived and collective identities do participants describe in the focus groups for a community-based Extension project?; 2) What can poetic transcriptions illuminate about the lived identities of participants within a community-based Extension project?; and 3) To what extent does the narrative process allow for understanding the socially constructed reality within a community-based Extension project?

## Theoretical Perspective

The current study uses a postmodern philosophical orientation that "rethinks" (Caton, 2013, p. 127) the tension between constructivism, specifically social constructivism, and critical theory. Both theoretical perspectives are anchored in the interpretivist epistemology, which focus

analytical efforts toward the embeddedness of human relationships within the social scientific endeavor (Caton, 2013). Constructivism disavows the ontology of an "external objective reality independent of an individual from which knowledge may be collected or gained" (Constantino, 2008). Social constructivism, more specifically, examines the constructivist philosophy from a social perspective by defining bodies of knowledge as social constructs emergent from human history and social interaction (Constantino, 2008). Traditional constructivist approaches view knowledge as generated through an individual's mind, whereas social constructivism considers knowledge and meaning-making as a product of human relationships (Gergen & Gergen, 2008).

Critical epistemologies for qualitative research emerged from critical social theories about how social and political systems shape the lived experiences or realities of participants and thus influence how participants construct their reality, maintaining specific focus on power, privilege, and oppression (Merriam, 2002). Critical theory is oriented toward social justice and is rooted in a human rights agenda (Denzin, 2017). Lather (2007) described the primary motivation of critical theory as emancipatory. While traditional interpretivists center subjectivity in research, critical theorists use a modified subjectivity that explicitly acknowledges how the researcher, the researched, and society are influenced by their own lived experiences, and that these lived experiences are manipulated by power structures imposing characterizations of culture, politics, race, gender, and class (Howell, 2013).

## Methods

Traditional, objectivist forms of evaluation reporting prioritized authoritative texts, masking the author's role in data interpretation through various linguistic strategies such as third-person language and passive voice (Abma, 1997). Alternative approaches to data dissemination, however, can "unmask the author" (Johnson et al., 2013, p. 488), showing their role in data (re)construction and making the staging of data done by researchers/evaluators more evident (Glesne, 1997). Poetic analysis, one form of arts-based and affective methodologies, is a relatively new method in Extension evaluation research (Johnson et al., 2013; Sanders & Lamm, 2022). Social science research writing often positions the researcher or evaluator as speaking for participants, with the researcher crafting a narrative through decentering participant voice or masking their manipulation of the data (Öhlen, 2003). Through poetic analysis, the staging of data done by researchers for participants is more evident (Glesne, 1997), limiting how participant voices may be obstructed through more traditional methods of qualitative research, such as thematic analysis (Freeman, 2016).

The specific form of poetic analysis used in the current study was poetic transcription, which was developed by Glesne (1997) as the "creation of poemlike compositions from the words of interviewees… creat[ed] with data from a study such as interview transcripts" (p. 202-205). While poetic transcription has traditionally been used with interview data (Glesne, 1997); [Author, year], the current study attempted to expand the methodology to focus group data. The new method, designated as poetic dialogues, aimed to translate the affective method used to communicate social impacts of a project from individuals' perspectives (Sanders & Lamm, 2022), to a conversational dialogue in which the social construction of perceived evaluation impacts can be observed.

### Data Collection

Data collection occurred as part of the formative evaluation process for a five-year evaluation plan of a community-based Extension project. The project, called *Healthier Together* (HT), was a community-based Extension health promotion project aiming to reduce instances of diet-related chronic disease through increased access to nutrient-dense foods and safe spaces for physical activity in five rural counties identified as most at-risk for obesity in Georgia by the Centers for Disease Control and Prevention (CDC). The HT project was a cooperative agreement funded through the CDC in partnership with the University of Georgia Colleges of Public Health, Family and Consumer Science, and Agriculture and Environmental Science, with Georgia Cooperative Extension as the primary on-the-ground liaison between university staff and communities. As part of the formative evaluation process, focus groups occurred with members of community coalitions in each of the five counties involved in the HT project. Community coalitions were formed at the beginning of the HT project to guide community-level project development, decision-making, and implementation (Sanders et al., 2022). Coalition members worked closely with university and Extension faculty and staff, and were primarily self-appointed to the coalition due to their formal or informal leadership roles in the community. Focus groups were conducted from May to July of 2022 and lasted an average of an hour and a half each. Questions in the moderator guide for the focus group were developed through an appreciative inquiry evaluation lens (Preskill & Catsambas, 2006) and inquired about participants' role in the project, successes of the project over the last year, the impact of the project on the community, and community members' acceptance of the project. Only four out of the five counties had a focus group occur in year four due to project staff limitations in one of the counties that prevented the planning of a focus group there. Focus groups were audio recorded and transcribed by a third-party transcription service. The University of Georgia Institutional Review Board approved the project.

**Data Analysis**

Crafting the poetic transcriptions included the extraction of phrases from the focus group transcripts to tell the story of the social and intangible impacts of the community-based health promotion project. To create each poem, the primary author selected the phrases which embodied the intangible social impacts described by participants and eliminated certain words, such as those that directly discussed project logistics, which would distract from the narrative of the intangible impact. The primary author relied on MacLure's (2013b) conceptualization of *wonder* in data, where a qualitative analyst uses affective moments of surprise to recognize invitations within the data, and, "once invited in, [the] task [is] to experiment and see where it takes [you]" (p. 231). MacLure (2013a, 2013b) uses moments of wonder, or affective intensity, that emanate from data transcripts to explore data through an alternative lens, remaining attuned to one's embodied interactions and reactions to the data, such as a feeling in one's gut or a quickening heartbeat that alerts us there is something within the data that wants to be communicated. Using MacLure's (2013a, 2013b) wonder as analytic practice, the primary author focused on embodied moments of recognition within the focus group transcripts that prompted her to think more about how social impacts beyond those listed in the project goals could be identified in the data. Specifically, using wonder as an orienting analytical concept, the primary author recognized phrases in the transcripts that represented how participants would reflect on the project's impact on their community—moments when the participants revealed pieces of their collective identity in ways they might not have consciously recognized during the dialogical process.

A primary author constructed the data poems due to her positionality in the project and her moderation of the focus groups. The poetic transcriptions were reviewed and underwent peer debrief with the secondary and tertiary authors to enhance the trustworthiness of the data (Lincoln & Guba, 1985). The secondary author was the evaluation team lead and had deep knowledge of the communities, while the third author was not a member of the HT project and provided an external perspective on the poetic transcriptions. Additionally, the poetic transcriptions were shared with the four communities at coalition meetings for the HT project to provide an opportunity for member checking (Lincoln & Guba, 1985).

## Results

One of four poetic transcriptions is presented here to provide evidence of social impact communication through poetic analysis. The community coalition in one of the HT counties was selected for the results excerpt. This poetic transcription is chronologically true to the transcript, with words removed in order to focus on the social and intangible impacts of the HT project. Additionally, each transition in the justification (right or left) in the formatting indicates a new participant speaking, in an attempt to echo the conversational feel of a focus group setting.

**This is what we're doing. This is how we're doing it.**

Our community history is that we're a small town.

Most of our history is from our older generations that live here.

I know both my grandparents moved up here and lived up here,

and my family's from around here.

Most of the stories we're going to hear

you can get throughout the town,

through the generations come up.

They're all going to be passed down from family member to family member.

The longer people are here,

the older a generation can live a little bit longer,

the longer those stories stay around town

and become a part of everyday life.

I also think it's giving everyone a voice.

That's the bigger impact.

[It's] a collaboration.
It helps to support the efforts that the city has engaged in promoting our history…
Making these points of interest accessible.

Living in a small community, we really are a culture of faith.
When you're used to eating a certain way in a culture,
collard greens or ham hock,
you're still eating what you're eating, but you're eating it in a
healthier way.

People are engaging and
they're curious about wanting to change
or trying something different.

They're ready for the next step.
They want it and they want more.

The idea of asking someone to change habits or traditions is challenging.
"I grew up like this."
"That's how it's always been."
Well, that may be the case,
but now we see the downside of putting that stuff in your body.
The mindset,
the idea of changing that habit,
is where the challenge is in everything we do.

People's mindsets are changing.
Acceptance.
Willing to listen.
"This is what we're doing."

"This is how we're doing it."

It has shown others what infrastructures and organizations can do together by listening to the voice of the people.

In the poetic transcription, participants described the intangible impacts of HT as creating a cultural shift in the minds of community members, specifically related to healthy living. Participants also highlighted centering community voices in project development, using words such as "we" and "collaboration" to evidence the importance of collective community voice in project sustainability. The concept of a living heritage was also identified, where participants evolve the original project goals, of increasing healthy lifestyles and decreasing instances of diet-related chronic disease, to extend the need for healthy living in order to preserve their heritage for future generations.

## Conclusions, Implications, and Recommendations

The poetic transcription presented in the current study helps demonstrate the ability of arts-based ways of knowing and methodologies to more fully communicate the impacts of Extension programming to stakeholders, from funders to community members. The dissemination of poetical data shows the entangled relationship between researcher and researched (Glesne, 1997; Sanders & Lamm, 2022), important for an evaluator's perspective who has been fully involved in the project for three and a half years. The primary author's knowledge of and experience with the communities over the last few years provided an opportunity to construct a narrative form of impact assessment that helps capture the intangible impacts of a community-based Extension project that has affected communities in ways that cannot be fully captured by descriptive data alone. In rural communities specifically, due to lack of geographic access and the nature of slow cultural shifts that occur in response to change, traditional modes of evaluation may not fully capture the impacts of a project and thus not communicate to stakeholders effectively what the project is actually doing on the ground and in the minds of community members. When working in rural communities, like those in the HT project, narrative forms of data analysis that allow for the emergence of heritage, tradition, and community pride can help Extension program participants see the change they create that is then communicated back to funding stakeholders.

Poetic transcription, while a rich, narrative mode of communicating impact, does not suffice as the only evaluation method for large grant projects. However, including poetic forms of analysis can help create more holistic forms of impact assessment, beyond what quantitative measures and qualitative themes can evidence alone. Poetic analysis remains an experimental form of writing in Extension evaluation research (Johnson et al., 2013; Sanders & Lamm, 2022); however, this experimentation allows for the exploration of data outside traditional positivist or interpretivist paradigms that often dominate evaluative thinking (Sanders & Lamm, 2022). Poems help evoke an emotional response from their reader, which helps communicate the intangible changes that occur within Extension program development and implementation not often captured in traditional evaluation approaches.

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# Psychometric Properties of the Community Viability Indicator (CVI) Instrument

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A key component of the Cooperative Extension Service (CES) mission is to increase the viability of communities (Seevers & Graham, 2012). Unpredictable social, political, environmental, agricultural, and financial conditions challenge communities to evaluate their security with forward-thinking criteria. To recognize fragile conditions that contribute to a community's advancement or deterioration, leaders and advocates must deliberate which practices and policies best serve their communities for long-term success through a variety of measures (Blanke & Walzer, 2013). In waves of urbanization, this deliberation is especially crucial for rural communities (United States Census Bureau, 2016). A viable community is one where members can envision meaningful lives based on job opportunities and community assets and resources (Aarsaether et al., 2004). These communities also have a culture that is appealing to those both inside and outside of the community (Fullilove, 2013). Resilience and sustainability are both required and encompass various measures of how prepared a community is to shoulder future challenges (Magis, 2010; Valentin & Spangenberg, 2000). Many communities seek to evaluate how assets and resources translate to success in an unpredictable future. One solution is to develop models with universal usage, which are useful for guiding decisions and leading local change efforts (Blanke & Walzer, 2013).

In response, researchers developed a Community Viability Indicator (CVI) model (Hogg et al., 2016) with three overlapping constructs which represent the human components of a viable community: community sentiment, community vision, and capable leaders. While these constructs enhance one another, examining each individually can yield distinctions to identify specific areas to focus community viability efforts. Dependence solely on census data, such as ledger book measures, to predict a community's well-being is unreliable and at times detrimental to communities. A more holistic view of community assets is recommended to revive failing towns (Mattson, 2017). To do this, perspective needs to shift from merely looking at available resources to examining how a community can thrive in changing environments from a members' perspective.

This model provided an avenue for researchers to develop a CVI instrument, which measures community members' views on community sentiment, community vision, and capable leaders. The researchers developed each construct based on literature and theory in community resiliency and sustainability. Establishing the reliability and validity of the entire instrument and each construct independently is necessary to build an instrument for universal usage. The overarching goal of this line of research is to build a reliable and valid instrument to be used by community leaders and Extension professionals for identifying areas of strength and vulnerability in the human components of community viability.

## Purpose and Objectives

The purpose of this study was to examine the validity and reliability of the CVI instrument, which the researchers designed to measure members' perceptions of their community sentiment, community vision, and capable leaders to indicate overall community viability. This research aligns with Priority 6: *Vibrant, Resilient Communities* of the most recent American Association for Agricultural Education National Research Agenda (Graham et al., 2016) by creating a measure for examining indicators of human components of community viability within communities. The objectives of this study were:

1. Determine the validity of the Community Viability Indicator (CVI) instrument.
2. Determine the reliability of the Community Viability Indicator (CVI) instrument.

## Theoretical and Conceptual Framework

Researchers grounded the CVI model in diffusion of innovation theory (Rogers, 2003), sense of community theory (McMillan & Chavis, 1986), and the community capitals framework (CCF) (Flora & Flora, 2008). Using information collected from the CVI with the diffusion-innovation process in mind, leaders can identify the most urgent needs in their community, while accounting for adoption rate of change, based on perceptions of community members (Rogers, 2003). To better understand these perceptions, researchers turned to the sense of community theory as a frame (McMillan & Chavis, 1986). Sense of community theory consists of the following constructs: membership, influence, integration, and fulfillment of needs (McMillan & Chavis, 1986). This theory lends to the CVI because it provides an understanding of how community members' feelings toward their community indicate the ability of the community to become more viable. Another factor indicative of a community's current and potential viability, which can influence perception of its members, is availability of assets and resources. Using the CCF, researchers identified seven assets, or capitals, in communities to determine how they impact economic development (Flora & Flora, 2008). All seven capitals are present and interdependent in all communities, but in varying levels of development.

The conceptual framework uses these capitals and assets as contextual indicators in communities and provides insight into the development of the CVI model. The model has three interconnected circles representing human indicators (i.e., capable leaders, community sentiment, and community vision) surrounded by a larger circle that represents sustainable infrastructure. The model is based on the concept that as the human indicators grow, they come closer to interacting with available resources surrounding them (e.g., social, political, environmental, and economic infrastructure). Focusing on the human-centered part of this framework, we maximize social contributors which can minimize negative effects caused by a lack of some resources.

For a community to be viable, capable leadership is essential and often predicts the success or failure of longevity in new initiatives (Beer, 2014). Institutional leaders, grassroots leaders, and the power elite all play distinct roles as capable leaders, and are the primary groups associated with decision-making and community action processes (O'Brien et al., 1991). These types of leaders provide opinion leadership and have a meaningful impact on community engagement (Keys et al., 2016). Acknowledging and understanding different types of leadership and their impact provides insight into community sentiment and vision for a sustainable and resilient future (Keys et al., 2016).

A community's vision for their future is key to increasing sustainability and providing capacities for communities and their members to implement and respond positively to change initiatives (Herbet-Chesire & Higgins, 2004). Examining historical and recent successes and failures provides insight for vision of the communities' future. Communities that are consistently changing and investing within their futures can move toward defined goals and thrive during hardships and upheavals (Skeratt, 2013). These communities experience continual growth and are more resilient to unforeseeable challenges. Community vision relies on built infrastructure and draws upon community sentiment and capable leaders for support for success. Primarily, community members must invest in a shared vision for the future.

Community sentiment emerges organically from community members' emotional ties and personal interactions between one another and the community at large. Community members, not their leaders, determine the significance of history, culture, values, dynamics, and resources within a community (Lysgård, 2016). Community sentiment can be observed through the sense of pride community members have for their locality and their level of engagement and volunteerism within their community. Community sentiment can be deepened through participatory efforts that are relevant to the lives of community members (Deweese-Boyd, 2005; Glenzer et al., 2011). To increase community sentiment, community members must feel there is a role for them within their community and see value within that role (Blackshaw, 2010).

### Instrument Development and Previous Testing

To develop the instrument, a research team created an internal and external model, construct map, and designed a blueprint for questions using these models and previous literature. The original model included sustainable infrastructure as a fourth, interwoven component. The original instrument also included questions pertaining to sustainable infrastructure. A principal component analysis (PCA) ($n$ = 335) provided evidence of four separate components, but several items did not align with the component it was designed to represent. The Cronbach's alpha for the overall instrument indicated a reliability of .817. The community vision component yielded an acceptable Cronbach's alpha ($\alpha$=.774). However, the reliability of community sentiment ($\alpha$=.606) and capable leader ($\alpha$=.627) dimensions were questionable. Sustainable infrastructure ($\alpha$=.558) yielded a poor internal consistency. After reexamining the model and instrument, a team of researchers determined sustainable infrastructure should be removed from the instrument. Researchers advise analyzing available resources to assess sustainable infrastructure rather than collecting community members' perceptions of their existence and quality. Additionally, a few items were reworded and/or added based on previous results. This led to the development of a new model as described above.

## Methods

This study sought to determine the reliability and validate the revised CVI instrument, developed by the researchers to measure community viability, based on perceptions of community sentiment, community vision, and capable leaders. To accomplish the objectives of this study, we recruited participants through a Qualtrics online panel and implemented quota sampling to achieve a general population sample ($n$ = 1,028) of adults with relatively even distribution across rural, urban, and suburban communities in the United States.

## Instrumentation

Based on the CVI model (Hogg et al., 2016) and supporting literature, the researchers developed a 21-item instrument to measure community vision (6 items), capable leaders (7 items), and community sentiment (8 items). The CVI instrument aims to provide insight on overall views of community viability, identify areas for community concentration, and aid leaders and Extension professionals in decision-making related to programming and community development. Participants self-report their attitudes and perceptions of community viability. The CVI instrument utilizes a five-point Likert scale which allowed individuals to place their communities on a range from 1 (*strongly disagree*) to 5 (*strongly agree*). The inventory had a norm-referenced interpretation with a threshold established for determining community viability based on the construct map. Additionally, the survey included demographic questions for age, gender, marital status, education level, ethnicity, household income, and community classification (i.e., rural, urban, suburban). For the purposes of this study, no parameters were provided for community classification, which allowed participants to respond based on how they defined their community type.

## Data Analysis

The researchers analyzed the data using SPSS (version 24.0; IBM Copr., Armonk, NY). The researchers employed a principal component analysis (PCA), which is often used to reduce dimensionality of an instrument and reveal interrelated variables (Jolliffe, 2002) to explore the construct validity and examine different components of the 21-item CVI instrument. The researchers specified in SPSS to only report component loadings higher than 0.3 to ensure reasonable factorability. The Barlett's test of sphericity was significant ($\chi^2(210) = 13575.92$, $p < .001$). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .965, which is above the recommended value of .6. The researchers utilized varimax and oblimin rotations of the factor loading matrix to examine solutions for two, three, and four factors. We selected the solution, which explained 63.04% of the variance, because of the original design of the instrument and the eigen values on the scree plot (Jolliffe, 2002).

We conducted reliability analyses to determine the Cronbach's alpha of the overall CVI instrument and each component based on the rotated component loading results from the PCA. Based on Cronbach (1951), we determined components with a Cronbach's alpha >.7 to be acceptable for usage. The researchers examined the removal of each item's impact on the Cronbach's alpha to determine whether any items should be discarded.

# Results

## Objective 1: Determine the Validity of the CVI Instrument

We developed the 21-item CVI instrument based on the CVI model ([Authors], 2016) and supporting literature to measure community vision, capable leaders, and community sentiment. Theoretically and conceptually, the researchers created items, which intended to represent the different constructs within the CVI model: community vision, community sentiment, and capable leaders. The PCA yielded three components, which explained 63.04% of the variance. We extracted items with loadings greater than .4. We selected the highest rotated

component loading on each respective dimension for determining the component for the six items, which loaded into more than one component. The factor analysis yielded results somewhat consistent with the intended instrument design. However, some factors loaded in unintended constructs. Seven items factored into each of the three components. Table 1 includes all 21 items and their rotated components sorted by the dimension the researchers created each item to represent. We determined through a correlation matrix that two items ("my community has a clear vision for the future" and "community leaders include community members in decision making") were correlated above .7 with multiple other items. Therefore, we chose to remove those items prior to examining reliability.

**Table 1**

*Rotated Component Loadings based on a PCA for 21 Items on the CVI Instrument*

| | CS | CV | CL |
|---|---|---|---|
| Community Sentiment | | | |
| Volunteering within my community is important. | **.695** | | |
| I support local community events and initiatives. | **.745** | | |
| I have friends in my community. | **.661** | | |
| I belong in my community. | **.617** | .444 | |
| I know my community's history. | **.643** | | |
| I participate in community events. | **.742** | | |
| Everyone is welcome in my community. | | | .702 |
| We celebrate community traditions. | **.532** | .484 | |
| Community Vision | | | |
| My community seeks new opportunities. | | **.758** | |
| My community has a clear vision for the future. | | **.722** | |
| My community has a plan for the future. | | **.679** | .451 |
| Community led efforts benefit everyone. | .444 | **.553** | |
| My community learns from our successes and failures. | | **.458** | |
| My community is willing to change. | | | **.699** |
| Capable Leaders | | | |
| Our community leaders are friendly and approachable. | | **.745** | |
| Community members have the opportunity to serve in leadership. | .446 | **.742** | |
| Community leaders listen to community members. | | | **.589** |
| Community leaders are representative of community members. | | .555 | **.575** |
| Community leaders work well with each other. | | | **.740** |
| Community leaders include community members in decision making. | | | **.761** |
| Community leaders respond well to community issues. | | | **.746** |

*Note:* Underlined headings refer to the dimensions the researchers developed the items for based upon literature. CV=Community Vision, CS=Community Sentiment, and CL=Capable Leaders.

**Objective 2: Determine the Reliability of the CVI Instrument**

We conducted reliability analyses to determine Cronbach's alphas of the revised 19-item CVI instrument and each component based on the rotated component loading results from the PCA. The overall CVI instrument yielded a Cronbach's alpha of .944. Community sentiment (α=.857) including seven items, community vision (α=.874) encompassing six items, and capable leaders (α=.892) consisting of six items resulted in good internal consistency. For each individual component, we determined removing items additional did not have a substantial impact on internal consistency.

## Discussion, Conclusions, and Recommendations

The factor analysis yielded results somewhat consistent with the intended instrument. However, after removing the two items, we also had to consider reasoning and appropriateness of the new component some statements loaded in, as compared to their intended construct. The statements "everyone is welcome in my community" and "my community is willing to change" loaded into capable leaders. After examination of literature, we determined keeping these items in their new component would be an appropriate change to the instrument based on the knowledge that leadership represents the overall feeling of welcomeness and actions associated with change (Heifetz, 2009). The two items that loaded into community vision rather than the intended capable leaders component included "our community leaders are friendly and approachable" and "community members have the opportunity to serve in leadership." Our discussion and examination of literature lead to consideration of these two items representing idyllic vision rather than views of capable leadership (Kouzes & Posner, 2017). For this reason, we decided to keep both items in the community vision component.

The 19-item CVI instrument yielded promising validity and reliability results. Based on the results, the CVI instrument could serve as a valuable tool for Extension professionals, university personnel, and others working in communities. The CVI instrument stands to provide insight into perceptions of community members on community sentiment, community vision, and capable leadership. Understanding these perceptions provides leaders with insight on how to harness and build upon social assets in their community to increase overall viability. The model identifies opportunities for maximizing human components to overcome challenges with a lack of available resources. This holistic tool was created for universal usage in different communities (Blanke & Walzer, 2013). The CVI instrument can help identify needs, assets, and resources by exposing areas of strength and opportunities based upon human components of community viability. This is especially valuable when working to harness volunteers and contributors to community initiatives. This instrument reveals opportunities for community leaders, including Extension personnel, to consider how they could develop programming to increase leadership competency, increase sentiment, and work collaboratively on visioning initiatives.

We recommend the CVI instrument be utilized by Extension and community development professionals to examine the strength of their community's leaders, sentiment, and vision to further advance change efforts and predict adoption rates of community members (Rogers, 2003). This knowledge can be particularly useful in understanding volunteer perceptions and the likelihood for individuals to contribute. As our next steps, we recommend testing the CVI instrument with a probability sample in a single community, to achieve a more representative, context-bound sample (Ary et al., 2018). Examining a single community will aid

in establishing face and criterion validity for the instrument. Community members in the sample should have the opportunity to provide explanation for their responses to each item. This will also aid in providing additional insight for face validity. Extension professionals and other community leaders should be included to provide additional insight on community vision, community sentiment, and capable leaders and can provide feedback on their perspectives regarding the usefulness of the tool within their respective communities.

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# Exploring the Self-Perceived Needs of School-Based Agricultural Education Teachers

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## Introduction, Purpose, and Objectives

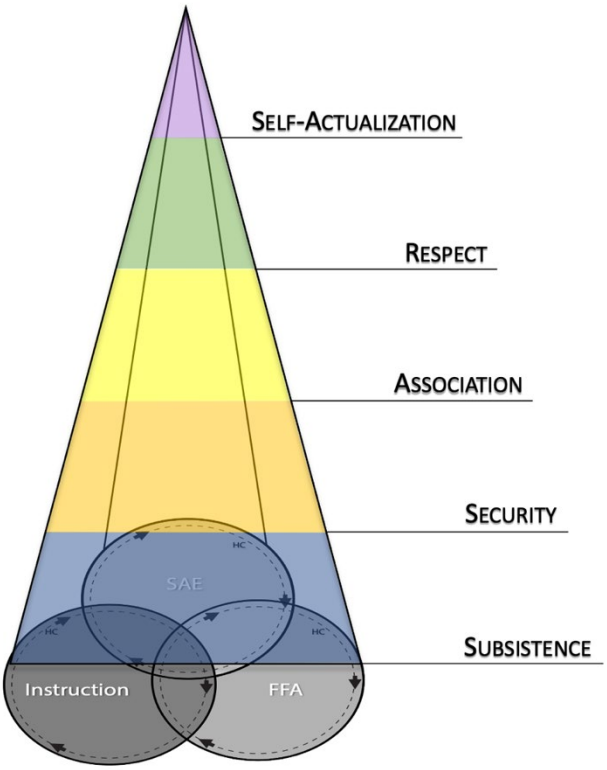
Within school-based agricultural education (SBAE), teacher shortages have been documented since 1917 with the passing of the Smith-Hughes Act (Eck & Edwards, 2019), and shortages demand an understanding of SBAE teachers' professional development needs. For more than 30 years, research has demonstrated that SBAE teachers' professional development needs include FFA program management, developing public relations, supervised agricultural experience (SAE) development/supervision, computer technology, and managing student behavior (DiBenedetto et al., 2018). More recent research within the agricultural education profession has broadened the focus on professional development needs to include work-life balance, job satisfaction, and program needs – in response to the teachers' effort as well as mental, physical, and emotional stress that comes from managing a successful program (DiBenedetto et al., 2018; Doss et al., 2022; Phipps et al., 2008; Shoulders et al., 2021).

Both historical and current research efforts have an overlap of themes between SBAE teachers' needs and job satisfaction factors. Furthermore, historical and current research provides recommendations to develop teacher preparation and professional development to address these reoccurring issues (DiBenedetto et al., 2018; Doss et al., 2022). Addressing needs and improving job satisfaction are elusive tasks because a "one size fits all" approach to career-specific human capital development is ineffective to meet the needs of all SBAE teachers (Klassen & Chiu, 2010). The discernment of current SBAE teachers' needs is paramount due to their exacerbated workload and stress caused by the Covid-19 pandemics' convoluted and constantly changing policies (DiBenedetto et al., 2018; OECD, 2021; Phipps et al., 2008; Shoulders et al., 2021). This amplified social, emotional, and mental stress and anxiety has led to the overburdening of SBAE teachers' abilities to cope with stressors, indicating the need for research to understand SBAE teachers' current needs (OECD, 2021; Shoulders et al., 2021). Therefore, identifying SBAE teachers' needs is essential to provide support and resources for stress mitigation and offset the ongoing teacher attrition. The purpose of this study was to identify the current needs of SBAE teachers in Florida, Georgia, and South Carolina, and the overarching research objective was to explore the self-perceived needs of in-service SBAE teachers in the three-state region.

## Theoretical/Conceptual Framework

To better understand the essence of current SBAE teachers lived experiences, an adaption of *Maslow's Hierarchy of Needs* (Maslow, 1943) was utilized to demonstrate the relationship between the roles, responsibilities, and human needs of SBAE teachers by combining the *Three-Component Model for Agricultural Education* (FFA, n.d.)*, Maslow's Hierarchy for Teachers* (Fisher & Royster, 2016), and *The Effective Teaching Model for SBAE Teachers* (Eck et al., 2019), (see figure 1). This model serves as a conceptual depiction of the needs of SBAE teachers, undergirded by the three identified theories/models.

**Figure 1**
*Conceptual Model of Support for School-Based Agricultural Education Teachers*




## Methods

To address the research questions, a qualitative hermeneutic phenomenological approach was developed to gain the essence of the lived experiences of SBAE teachers. For the purpose of this study, a census population of in-service SBAE teachers (N = 1,205) in three southeastern states (i.e., Florida, Georgia, and South Carolina) were invited to participate (Creswell & Poth, 2018; Privitera, 2020). A complete email frame developed the study population, utilizing existing frames and state listservs. An initial personalized email and three contact points were used to invite SBAE teachers (N = 1,205) to participate in the interview process and share their experiences (Dillman et al., 2014). All SBAE teachers in Florida, Georgia, and South Carolina (N=1205) had an equal opportunity to participate (van Manen, 2014). Interviews were scheduled until saturation of themes were reached, which was achieved in 15 interviews (Creswell & Poth, 2018; Saldana, 2021). Zoom was utilized to facilitate interviews with SBAE teachers in Florida, Georgia, and South Carolina between November 1st and December 15th of 2021.

Participants represented a range of personal and professional characteristics, including gender, years of teaching experience, and teaching site situations in middle school, high school, career center, and exceptional center locations. All participants were involved in the phenomena of teaching SBAE (van Manen, 2014). Of the 15 SBAE teacher participants, four were male, nine taught middle school, and six of the participants taught in different high school situations. Additionally, an even divide of five early career, five mid-career, and five late-career SBAE

teachers participated in the interview process. While this population doesn't align with the current national SBAE teacher demographics with an increased percentage of female and middle school SBAE teachers, it does represent the Florida, Georgia, and South Carolina demographics.

To understand the phenomenon of teaching SBAE in the twenty-first century and the depth of program needs as we move to a post-pandemic educational frame, an interview protocol was intentionally designed to understand the struggles, successes, modifications, and motivations of SBAE teachers in relation to their needs and how they balance their SBAE program. While the interview protocol was limited to nine questions, interview length ranged from 38 minutes to three hours, with an average length of an hour and thirty minutes. Interview length is attributed to the interviewer's ability to build rapport through the interview process because of their SBAE teaching experiences. The ability to develop rapport allowed participants to feel safe and acknowledged as they shared their experiences and the essence of the phenomenon (van Manen, 2014), as the interviewer served as an SBAE teacher in Florida for the past nine years.

Open coding was utilized in Round One to allow the emergence of codes from lived experiences to develop the essence or meaning of the phenomenon from the qualitative interview transcripts, Zoom audio recordings, and interviewer notes (Creswell & Poth, 2018). To ensure creditability, research team member checks were conducted to reduce interviewer bias during the coding process (Creswell & Poth, 2018). Data were triangulated utilizing Zoom video recordings, audio transcripts, and interviewer notes (Creswell & Poth, 2018; Privitera, 2020; Saldana, 2021). To ensure the trustworthiness and consistency of the study, rigorous procedures were upheld to maintain credibility, transferability, dependability, and confirmability (Privitera, 2020; Saldana, 2021). To ensure the potential for the data collected to remain transferable, the research team: a) described participants and the setting in which interviews were conducted, b) explained the process for contacting and interacting with participants, and c) represented a diverse population of perspectives related to the phenomenon being studied.

## Findings

Four overarching themes emerged during the coding process: (1) *Health and Wellness of SBAE Teachers, Students, and Communities;* (2) *Support Structures for SBAE Teachers*; (3) *Student Human Capital Development*; and (4) *Resources for SBAE Teacher Success*. The first theme, *Health and Wellness of SBAE teachers, students, and communities,* focused on factors that impacted an individual's and communities' quality of life as influenced by health, social-emotional wellness, and stress factors. Teachers overarchingly felt this year had been the toughest yet, demonstrated by participants' responses: "By far my hardest year in the classroom," and "I do think I am just emotionally fatigued from the past couple of years." An early-career teacher who started teaching at the height of the pandemic stated: "I was very intentionally focused and build a name for my program without having to do all the real stuff." Early-career teachers reported being overwhelmed with the amount of work required to manage a complete SBAE program, whereas established teachers expressed anxiety and emotional stress from not being able to support students and manage the program. Despite these challenges, participants discussed their drive to provide students opportunities. A representative comment was: "So now their FFA experience is not as good and that weighs heavy on my heart." While another elaborates: "trying to be a safe place, but also making sure they're [SBAE students]

engaged, that's been hard." This internal conflict between teachers' well-being and their heart for their programs is rooted deeply in the desire to provide opportunities, build relationships, and develop students' potential.

The theme *Support for SBAE teachers* depicted the need for support to function within the classroom and be successful in FFA and SAE. Although schools typically have support structures (i.e., administration, guidance counselors, resources officers, and social workers) in place, SBAE teachers reported that these "departments" always seem to be unavailable. One representative comment was: "…they [those in teacher support roles] are just as overwhelmed as we are" and "our school is understaffed, and district policies keep changing." Some participants had many support departments offered, such as "…guidance department, social worker, [and] psychiatrist." Yet, others shared a lack of support from guidance counselors. Teachers fell into one of two camps related to support, those who felt supported and respected and those who felt underappreciated with a lack of support. Unfortunately, the majority of teachers felt a lack of appreciation and support, as some explained they were not receiving the same support as core courses: "the training and resources that academics are constantly getting… could be used in our classroom." Others expressed similar sentiments of "…we're not recognized", "we're kind of stuck" and "as electives, we are thrown to the wolves." Participants working in these under-supported schools continue to feel overwhelmed and disrespected.

SBAE Teachers' primary role is to *develop human capital* within their students through classroom/laboratory instruction, FFA, and SAE. This development takes place in all three components, not just within the FFA component, but participants found the lack of extracurricular opportunities and changing pandemic policies challenging to engage and motivate students in meaningful skill development. Participants felt the need to refocus their programs to meet students' current needs. Participants reflected on the State FFA Association's support, and participants shared mixed reviews. Representative comments included:

- "To me, as far as a setback, I believe, so firmly in the value of FFA and leadership and I think we have lost so much of that."
- "My time with them needs to be more hands-on."
- "FFA has not gone back to what it was before Covid. My kids are good test takers but that's not the point of FFA."
- "Getting students to buy in …that social aspect, that's so important, that's one of the biggest parts of FFA. It's hard to build leadership when you're on a screen."

SBAE teacher participants reported a consistent need for *resources* (i.e., curriculum, content, frameworks, and project outlines) as well as the reoccurring "need for training/ support" on how to use and implement technology. When late-career teachers discussed trying to flip curriculum to work in different modalities they reported: "It got overwhelming really quick." Participants expressed a need for more training, preparation time, and user-friendly resources to flip instruction. "Yeah, we learned some lessons on making quality digitally delivered instruction." Additionally, teachers asked for content specific to Agriculture, Food, and Natural Resource (AFNR) pathway standards and training to better meet students' social-emotional needs. "I see growth in myself, embracing change and updating lesson plans. If I'm bored, they're bored, so I am switching it up to find new things and new resources." Participants explained that having

premade content like ICEV was helpful but they "didn't rely on it as much as others but prepackage deals don't fully meet mine or my students' needs."

## Conclusions and Recommendations

SBAE teachers have basic mental, physical, and emotional wellness needs that impact their program and work-life balance. Stress and anxiety were found to be major factors complicating SBAE teachers' ability to cope with stress which aligns with previous research from Doss et al. (2021) and Shoulders et al. (2021). This could be attributed to career phases but may indicate that teachers who started during the pandemic need additional support to continue within the profession (Traini et al., 2020). The high expectations SBAE teachers have for themselves and their programs are a result of their desires to serve and heart for their students and communities, especially by providing student opportunities. Cultivating relationships with students, developing student human capital, and providing mentorship are aspects that SBAE teachers take pride in and identify as important, consistent with teachers' need for associations within the profession, school, community, and student mentorship, as outlined by Fisher & Royster (2016).

This suggests that SBAE teachers need support at a basic human level to promote individual wellness, as supported by Maslow's hierarchy of teachers (Fisher & Royster, 2016), basic human needs must be met before individuals can ascend to higher levels. When these essential needs are not addressed, SBAE teachers often feel stuck, exhausted, and overwhelmed by the stress, leading them to find balance, support, and purpose outside of the profession (Sorrenson et al., 2016), which was echoed throughout the interviews. These needs were not limited to *health and wellness* but were ever-present within school-based structures. While SBAE teachers agreed that schools offered many departments of support, they were still found to lack the human resources to provide relief for teachers, which is evident in their inability to get students to support staff in times of crisis. This leads teachers to question if they are doing enough to support students' social/emotional needs, becoming the first line of social/emotional support for students. As a byproduct, SBAE teachers do not feel safe and lack confidence in what was once a secure, protected, and valued profession (Fisher & Royster, 2016). Perhaps if we addressed SBAE teachers' support needs they would not struggle with stressors, allowing them to feel valued and respected helping to develop essential career-specific human capital (Eck et al., 2019; Fisher & Royster, 2016). Without the development of teachers' basic *subsistent* and *security* needs through career-specific human capital development, they are limited, thus effectively creating a struggle to develop students' human capital through the three-competent model for SBAE (Thornton et al., 2020).

SBAE teachers possess a tool to restore motivation and meet social/emotional needs, which is building relationships and rapport with students (Doss et al., 2022; King et al., 2013; Terry & Briers, 2010). These relationships are forged by providing students opportunities, but development requires support, facilitation of opportunities, social interaction, and engagement of students' interests (FFA, n.d.; Terry & Briers, 2010). Sadly, many participants found these opportunities to be limited, leaving State and National FFA Associations trying to determine best practices to support teachers and provide opportunities for all students.

SBAE teachers who had a vision, plan, direction, or goals had the motivation and the growth mindset to keep improving even at the height of the pandemic, whereas teachers who did not

have a vision found themselves overwhelmed and struggling to keep students engaged. Historically, SAE programs have been an area in which teachers needed support (King et al., 2013), often being seen as additional paperwork and stress for the SBAE teacher (Doss et al., 2022). Unique to this study, SAE was an aspect in which implementation was found to be a success or failure depending on teachers' plan and ability to adapt the practice to different learning modalities. Teachers who had a plan for SAE expressed great success and reported an increase in engagement and motivation, allowing students to become excited about learning again, as opposed to those without a plan whose students have shifted their priorities and interests away from the SBAE program. Practical recommendations include providing clear structures, and plans for implementation, reflection, and program management to support SBAE teachers' current and future practice.

Teachers varied within the levels of Maslow's Hierarchy for Teachers (Fisher & Royster, 2016), especially when considering the individual components of the three-component model for SBAE. Perhaps the three-component model becomes unbalanced across programs due to the level of support and SBAE teacher human capital related to each component, as teachers cannot develop the human capital in students that they themselves do not possess. Could it be that the needs identified justify an SBAE support model that is human-focused? Perhaps the conceptual model should be used as a proactive approach to teacher support, success, and well-being. It is recommended that leaders in the profession help teachers establish healthy boundaries to maintain work-life balance and reduce stress and anxiety. Therefore, it will take someone who understands the distinct needs and desires of a SBAE to affect teachers' work-life balance. Self-care talk alone will continue to not address the root of the issue as teachers search for balance and coping strategies. Perhaps SBAE at large should redefine what healthy relationships between work and personal life entail. To address these needs, state and district level support should develop professional learning networks to meet teachers' social needs while providing safe and accessible space for discussing career-specific concerns. Additionally, teacher preparation faculty should provide early career and preservice teachers with essential skills and coping strategies to navigate and establish healthy career boundaries, focusing on awareness of the stressors that exist within the profession. Continued curriculum, teaching methods, and technology training should be considered for mid to late career SBAE teachers to meet their in-service needs.

Recommendations for research include the validation of the Conceptual Model for SBAE Teacher Support to see if it could be an effective lens for meeting and supporting the human development needs of teachers. This study should be replicated in other regions to determine if the individual needs of SBAE teachers are similar nationwide. Further research is needed to understand the impact of these needs and how they impact an individual's ability to achieve self-actualization. Research should explore the perspectives of SBAE supporters to evaluate if the needs identified in this study are visible and if the supports are in place to fill the gaps identified.

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# Curricular Needs of Oklahoma School-Based Agricultural Education Teachers

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## Curricular Needs of Oklahoma School-Based Agricultural Education Teachers

## Introduction, Purpose, and Objectives

Since the foundation of school-based agricultural education (SBAE), teachers have developed curricula to meet the needs of their students and communities (Phipps et al., 2008). Curriculum is a plan of study with outlined experiences and activities offered by an educational program that is grounded in the philosophy of preparing individuals for future success by developing their knowledge, ability, and skills through hands-on learning (Phipps et al., 2008). SBAE serves as career and technical education (CTE) for the agricultural industry, leaving the SBAE teacher to develop a curriculum plan that meets the needs of all (Phipps et al., 2008).

Effective SBAE teachers utilize rigorous standards to support and align the complete SBAE program (i.e., classroom/laboratory instruction, FFA, and SAE) with the goal of developing the whole student for their future success (Swafford, 2018), which is represented by the preparation and utilization of sound practices within the complete SBAE program (Eck et al., 2021). Additionally, aligning with current agricultural trends, the integration of applied science, technology, engineering, and math (STEM) is essential (NRC, 2014; Stripling & Ricketts, 2016). Therefore, the Agriculture, Food, and Natural Resource (AFNR) standards are nationally aligned with eight career pathways to support SBAE teachers as they frame curriculum to meet program specific needs (The Council, 2015). To further support the rigor and relevance of a complete SBAE program, the AFNR standards have been cross walked with Common Career and Technical Core, Next Generation Science, Common Core Mathematics, and Common Core English Language Arts standards, ensuring that regardless of the pathways chosen, students are prepared to for the 21st century workforce (Baker et al., 2012, Judson et al., 2020).

Curriculum resources range in cost, standard alignment, access, and utility for SBAE teachers. The Oklahoma Department of Career and Technology Education (2015) has previously supported the development of state-specific curriculum for seven SBAE pathways, including Animal Systems; Biotechnology Systems; Environmental Systems; Food Production and Processing; Natural Resources; Plant Systems; and Power, Structural and Technical Systems utilizing the AFNR standards to ensure access to competency-based, industry-aligned instructional materials. With changes to available funding for CTE in Oklahoma, these resources are no longer being updated, leaving SBAE teachers looking for resources to fill the gap and

support their needs (Oklahoma Career Tech, 2022). Further exacerbating the situation is the need to provide curriculum congruence and community connectivity (Moser & McKim, 2021).

Therefore, understanding the curriculum needs of teachers is critical, as "researchers and policymakers agree that providing all K-12 students a quality education depends largely upon our capacity to staff schools with highly effective teachers" (Ronfeldt, 2012, p. 3). Williams et al. (2018) identified high quality teachers as those who can engage students using relevant curriculum that assesses student learning through measurable outcomes. Furthermore, Darling-Hammond (2003) linked teachers leaving the profession early to not having adequate preparation related to content and curriculum. Leading to the Oklahoma Department of Career and Technology Education and Oklahoma State University working to determine the next steps for providing relevant curricular resources to SBAE teachers across the state. Specifically, the implementation of Curriculum for Agricultural Science Education (CASE) was being considered. Therefore, this study aimed to determine the curricular needs of SBAE teachers in Oklahoma, guided by three research questions:

1. Determine the current SBAE courses offered across Oklahoma,
2. Identify the curriculum resources being implemented by Oklahoma SBAE teachers, and
3. Establish the level of interest in CASE curricular resources and professional development opportunities by SBAE teachers in Oklahoma.

## Theoretical/Conceptual Framework

This study was undergirded with human capital theory, as human capital evaluates the education, skills, experience, and training (Schultz, 1961; Smith, 2010; Smylie, 1996) an individual invests essential to their career (Becker, 1964). Specifically, within this study, the essential human capital for SBAE teachers in Oklahoma to effectively prepare students for college and career readiness using relevant curriculum was evaluated. The specific human capital includes curriculum and professional development focused on advancing students agricultural and STEM literacy. The current human capital identifies the deliberate investment SBAE teachers' have made in their professional development (Schultz, 1971) to better prepare students. Desired human capital relevant to curriculum integration supports the notion that SBAE teachers work continually to improve themselves through professional development opportunities, helping to offset teacher burnout (Roberts & Dyer, 2004). The specific human capital needed by SBAE teachers varies (Lepak & Snell, 1999) based on personal and professional characteristics, ultimately impacting their teaching effectiveness (Eck et al., 2021).

The conceptual model developed by Eck et al. (2020) was adapted for this study to include additional factors related to STEM curriculum integration, as Davis and Jayarante (2015) found teachers needed support for math, reading, and writing in agricultural curriculum, along with higher-order and critical thinking skills. Together, the human capital theory and the conceptual model of effective teaching for SBAE teachers (Eck et al., 2020) provides a lens to evaluate the current and needed curriculum of SBAE teachers in Oklahoma, as the factors are embedded within the human capital (i.e., education, skills, experiences, and trainings) SBAE teachers have developed to be effective in their career. This inquiry becomes more pertinent as teachers are questioning their preparedness following the pandemic (Bushweller, 2020; Daniel, 2020).

## Methods

SBAE teachers in Oklahoma who attended one of five area Chapter Officer Leadership Training (COLT) conferences hosted by the Oklahoma FFA Association ($n$ = 372) served as the accessible population (Privitera, 2020) for this study. SBAE teachers attending the COLT

conferences were asked to scan a QR code to complete the survey questionnaire, of which, 153 teachers completed the questionnaire, resulting in a 41% response rate. The response rate generated by this study is statistically in line with other response rates from online or digital survey questionnaires (Wu et al., 2022). Table 1 outlines the personal and professional characteristics of the Oklahoma SBAE teachers who participated in this study. Teacher career stages were identified as Early-Career (1 to 6 years), Mid-Career (7 to 15 years), and Late-Career (16+ years) following the recommendations of Smalley and Smith (2017). The number of students representing a program were categorized based upon the necessary requirements for schools to apply for addition agricultural education teacher(s) (i.e., 1 to 79 indicates one agricultural education teacher needed, 80 to 159 would indicate the need for an additional agricultural education teacher within the program) according to Oklahoma Career Tech (2022).

**Table 1**

*Personal and Professional Characteristics of SBAE Teachers in Oklahoma (*n = *153)*

| Characteristic | | *f* | % |
|---|---|---|---|
| Gender | Male | 81 | 52.9 |
| | Female | 47 | 30.8 |
| | Prefer to not respond | 25 | 16.3 |
| Pathway to Certification | Traditional | 115 | 75.2 |
| | Alternative | 12 | 7.8 |
| | Emergency | 2 | 1.3 |
| | Prefer to not respond | 24 | 15.7 |
| Career Stage | Early-Career | 60 | 39.2 |
| | Mid-Career | 30 | 19.6 |
| | Late-Career | 38 | 24.9 |
| | Prefer to not respond | 25 | 16.3 |
| Number of SBAE Teachers in Program | 1 | 83 | 54.2 |
| | 2 | 44 | 28.8 |
| | 3 | 19 | 12.4 |
| | 4 | 0 | 0.0 |
| | 5 | 2 | 1.3 |
| | Prefer to not respond | 5 | 3.3 |
| Number of Students in SBAE Program | 1 to 79 | 63 | 41.2 |
| | 80 to 159 | 64 | 41.8 |
| | 160 to 239 | 11 | 7.2 |
| | 240 or more | 10 | 6.5 |
| | Prefer to not respond | 5 | 3.3 |
| CASE Certification | Yes | 8 | 5.2 |
| | No | 145 | 94.8 |

The questionnaire was comprised of four sections aimed at determining current program offerings and needs related to curriculum resources and training, including program

demographics, CASE integration, curriculum needs, and personal and professional characteristics. The survey questionnaire was developed following the recommendations of Dillman et al. (2014), including optimization for mobile devices and evaluation of face and content validity by a panel of experts with over 50 years of experience in secondary and post-secondary agricultural education. Response rate is often considered a threat to the validity of research (Dillman et al., 2014). Therefore, the researchers compared the demographics of the participants to those who chose not to participate (non-respondents) based on the recommendations of Lindner et al. (2014), as the multiple time and place sampling method of the same general population (Ary et al., 2002) limited the ability to compare early to late respondents. The comparison based on personal and professional demographics were found to be similar, demonstrating a representative sample of SBAE teachers in Oklahoma.

SPSS Version 27 was utilized to analyze the data collected from the survey questionnaires. Specifically, data analysis was implemented to identify frequencies, percentages, and distributions in conjunction with test for homogeneity of variances. The data were found to be abnormally distributed and did not have homogeneity of variance which was attributed to larger sample sizes of independent groups within each identified variable. To align with the purpose of this study, neither one-way ANOVAs nor independent sample *t*-tests were conducted.

## Findings

The first research question aimed to determine the current courses being offered in SBAE programs across Oklahoma. The 153 SBAE teachers participating in this study reported teaching nine primary courses (i.e., Introduction to AFNR, Ag Mechanics, Ag Explorations, Animal Science, Ag Communications, Introduction to Horticulture, Ag Principles and Applications, Natural Resources, and Plant Science). Table 2 provides the frequency and percentage of programs offering each of the identified courses, with *Introduction to Agriculture, Food, & Natural Resources* being the most common course offered and *Other* being the least. The *Other* course category referred to local program specific courses such as meat processing, agricultural leadership, seventh grade ag, or wildlife management.

**Table 2**

*Current Number of SBAE Programs Offering Specific Courses in Oklahoma (*n = *153)*

| Course | *f* | % |
|---|---|---|
| **Introduction to Agriculture, Food, & Natural Resources** | 141 | 92.2 |
| **Agricultural Mechanics** | 133 | 86.9 |
| **Agricultural Explorations** | 128 | 83.7 |
| **Animal Science** | 103 | 67.3 |
| **Agricultural Communications** | 95 | 92.2 |
| **Introduction to Horticulture** | 82 | 53.6 |
| **Agricultural Principles and Applications** | 52 | 34.0 |
| **Natural Resources** | 49 | 32.0 |
| **Plant Science** | 34 | 22.2 |
| **Other** | 29 | 19.0 |

*Note.* Participants could select multiple options related to courses being offered.

The second research question investigated the curriculum resources being utilized by SBAE teachers in Oklahoma. The most common curriculum resource used by SBAE teachers in Oklahoma were Curriculum and Instructional Material Center (CIMC) followed by iCEV, with the least common being ATP and G-W Publishing textbooks (See Table 3).

**Table 3**

*Curriculum Resources Used by SBAE Teachers in Oklahoma (*n *= 153)*

| Resource | *f* | % |
|---|---|---|
| **Curriculum and Instructional Material Center (CIMC)** | 129 | 84.3 |
| **iCEV Multimedia** | 90 | 58.8 |
| **One Less Thing** | 15 | 9.8 |
| **AgEdNet** | 12 | 7.8 |
| **Other** | 11 | 7.2 |
| **Ag Ed Toolbox** | 10 | 6.5 |
| **Delmar/Cengage Textbooks** | 8 | 5.2 |
| **CASE** | 6 | 3.9 |
| **ATP Textbooks** | 2 | 1.3 |
| **G-W Publishing Textbooks** | 1 | .65 |

*Note.* Participants could select multiple options related to curriculum resources being used.

The third research question investigated the level of interest SBAE teachers in Oklahoma had related to CASE curricular resources and professional development opportunities. Eighty-nine percent ($n$ = 136) of the SBAE teacher participants reported a level of interest (i.e., possibly interested or interested) in CASE curriculum and professional development, based on a three-point scale (i.e., interested, possibly interested, or not interested). Those that were not interested were not prompted to answer the questions associated with specific interests. Participants were interested in a variety of courses offered by CASE, with the greatest interest being *Principles of Agricultural Science – Animal*, followed by *Introduction to Agriculture, Food, and Natural Resources*. While the least desired programs were *Agricultural Research and Development* and *Technical Applications in Agriculture.* Table 4 provides the frequency and percentage of each CASE curriculum to indicate the number of teachers interested in each of the opportunities.

**Table 4**

*CASE Curriculum Interest from SBAE Teachers in Oklahoma (*n *= 136)*

| Curriculum | *f* | % |
|---|---|---|
| **Principles of Agricultural Science – Animal** | 98 | 72.0 |
| **Introduction to Agriculture, Food, and Natural Resources** | 85 | 62.5 |
| **Agricultural Power and Technology** | 68 | 50.0 |
| **Principles of Agricultural Science – Plant** | 59 | 43.4 |
| **AgXplore Middle School** | 34 | 25.0 |
| **Mechanical Systems in Agriculture** | 33 | 24.3 |
| **Agricultural Business Foundations** | 33 | 24.3 |
| **Animal and Plant Biotechnology** | 28 | 20.6 |
| **Agricultural Research and Development** | 18 | 13.2 |
| **Technical Applications in Agriculture** | 13 | 9.6 |

*Note.* Participants could select multiple options related to CASE Curriculum interest.

## Conclusions and Recommendations

The most common SBAE courses being offered in Oklahoma were introductory courses for eighth and ninth graders (i.e., Introduction to Agriculture, Food, & Natural Resources and Agricultural Explorations [92.2%]) along with *Agricultural Mechanics* (86.9%) and *Animal Science* (67.3%). These primary pathways align with the primary industries in Oklahoma

(Oklahoma Commerce, 2022), and further support the need for SBAE teachers to have curriculum congruence and community connectivity (Moser & McKim, 2021). Curriculum congruence (Moser & McKim, 2021) further aligns with human capital theory, as SBAE teachers' specific education, skills, experience, and training (Schultz, 1961; Smith, 2010; Smylie, 1996) align with their deliberate investment in preparing their students (Schultz, 1971).

Over 84% of participants reported utilizing CIMC as a curriculum resource, aligning with the statewide adoption of the curriculum material and resources since 1967 as part of the Oklahoma Department of Career and Technology Education (2015). Unfortunately, these resources remain available but have not been updated since 2016, when the Oklahoma Career Tech (2022) moved away from curriculum development. Oklahoma Career Tech (2022) now offers AgEdNet, iCEV Multimedia, Ag Ed Toolbox, and One Less Thing as potential curriculum resources on their SBAE teacher website, which supports each of those showing up as curriculum resources currently being used by teachers in Oklahoma.

Regardless of the current resources being utilized, the overwhelming interest (89%) from SBAE teachers in Oklahoma was to participate in CASE professional development. Perhaps this is an indicator of a lack of satisfaction with current resources, that are perhaps outdated, costly, or not sufficiently preparing students for the 21st century workforce (Baker et al., 2012; Judson et al., 2020). The specific interest in CASE offerings aligns with courses being taught across Oklahoma, as animal science, introductory curriculum, and agricultural mechanics are the most desired trainings. This professional development interest of SBAE teachers to deliberately invest in their career specific human capital (Schultz, 1971) will ultimately position them to better serve their students; as high-quality teachers engage students using relevant curriculum that assesses student learning through measurable outcomes (Williams et al., 2018).

Based on the findings of this study, it is recommended that SBAE teacher preparation programs consider the current curriculum resources available to teachers in their respective states. Although there is not a one size fits all curriculum, teacher preparation programs hold a vested interest in the development and retention of effective SBAE teachers, therefore it is pivotal to consider curriculum and associated needs. Oklahoma should explore the potential of hosting multiple CASE institutes in the coming years to help support current and future teachers, specifically with regards to *Animal Science*, *Introduction to Agriculture, Food, and Natural Resources***,** and *Agricultural Mechanics*. Considering future research, this study should be replicated across the country to determine current state specific curriculum integration and teacher needs. Additionally, a longitudinal study should be conducted in Oklahoma to evaluate the impact of CASE professional development related to courses being taught, curriculum being integrated, student impact and areas of interest regarding professional development and curriculum for SBAE teachers.

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# Identifying School-Based Agricultural Education Teacher Needs and Support Gaps

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## Introduction, Purpose, and Objectives

School-based agricultural education (SBAE) teachers are tasked with varied responsibilities in and out of the classroom, all while attempting to establish work-life balance (Terry & Briers, 2010). Doss et al. (2022) found that relationships built with students positively impacted teachers' intention to stay within the profession, as relationships positively impact the lives of students within their programs (Terry & Briers, 2010). SBAE teachers focus on managing a complete and balanced program, which adds to the list of responsibilities to create meaningful learning opportunities for student growth and development (Terry & Briers, 2010). Unfortunately, SBAE teachers still have gaps in their abilities, complicating the work-life balance and stress that teachers face as they navigate the purposeful professional development needed to further their human capital development (Eck et al., 2019; Shoulders et al., 2021). A historical review spanning three decades of SBAE teacher needs assessments depicts that several needs are recurring, including general administrative tasks, public relations for the program, managing student behaviors, computer technology, FFA program management, and supervised agricultural experience (SAE) development and supervision (DiBenedetto et al., 2018).

While work-life balance and teacher stress have been heavily researched in recent decades, solutions for SBAE teacher needs and satisfaction have not been fully realized (DiBenedetto et al., 2018; Doss et al., 2022). Therefore, identifying teachers' needs on a human level is essential to further support SBAE teachers and potentially offset the ongoing teacher attrition concerns (Eck & Edwards, 2019). This task is elusive because a “one size fits all” approach to professional learning through training, workshops, or in-service will be ineffective to meet the needs of all SBAE teachers (Klassen & Chiu, 2010). King et al. (2013) recommended that the continuation of teacher need research should be utilized to guide the skill development and individual needs of SBAE teachers through professional development designed by the department of education (DOE), state and regional FFA staff, and SBAE teacher educators. Each of these expert SBAE teacher supporters serve in different aspects of the complete SBAE program. Therefore, the SBAE supporters’ perceptions are instrumental in identifying needs and support gaps – recognizing that each may be limited by the phenomenon witnessed within their roles. Thus, two research questions guided this study to determine the perceived needs of SBAE teachers in Florida, Georgia, and South Carolina: (1) What are the needs of in-service SBAE teachers as perceived by expert SBAE teacher supporters? (2) What are the current support structures available to in-service SBAE teachers according to expert SBAE teacher supporters?

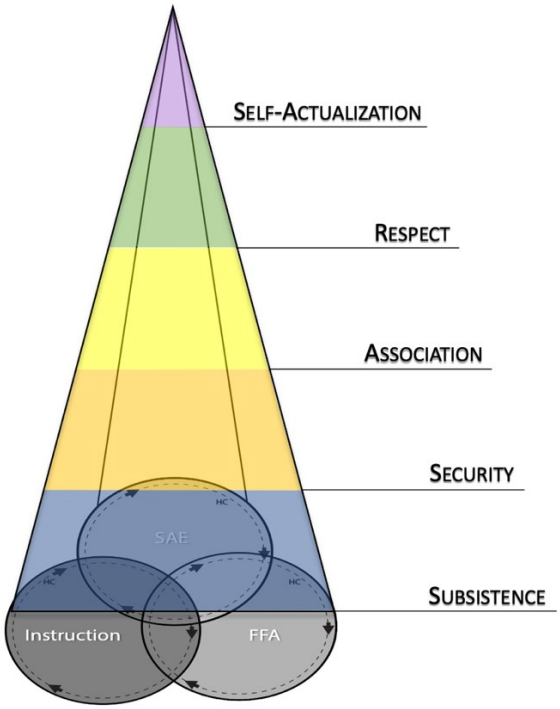
## Theoretical/ Conceptual Framework

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* (FFA, n.d.), 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; Smylie, 1996). To illustrate the connections between *Maslow's Hierarchy for Teachers* (Fisher & Royster, 2016), the *Three-Component Model for Agricultural Education* (FFA, 2022), and *The Effective Teaching Model for SBAE Teachers* (Eck et al., 2019), a conceptual model was established (see Figure 1) to serve as a frame to assess SBAE teacher's needs.

**Figure 1**

*Conceptual Model of Support for School-Based Agricultural Education Teachers*




## Methods

To address the two research questions, a non-experimental Delphi design was utilized. For the purpose of this study, a census population of expert SBAE teacher supporters (N=71) in three southeastern states (specifically, Florida, Georgia, and South Carolina) were invited to participate (Privitera, 2020). An initial personalized email followed by three contact points were used to invite experts to participate in all three rounds of the Delphi (Dillman et al., 2014). The Delphi method (Dalkey et al., 1972) was implemented to determine the needs of in-service SBAE teachers and identify the current support structures available as perceived by expert SBAE teacher supporters. The panel of experts included post-secondary agricultural education faculty, state and regional FFA support staff (i.e., recruitment and retention specialists, agricultural education curriculum specialists), state and district CTE supervisors, and state Department of Education (DOE) representatives for agricultural education. Since their professional roles revolve around the preparation and support of SBAE teachers, they were deemed to be experts on the subject, which is essential to ensure the success of the Delphi approach (Dalkey, 1969).

A Delphi that has more than 13 respondents per round has a reliability of .80, making it essential to reduce the expert panelist attrition rate to maintain research integrity (Dalkey, 1969). Qualtrics was utilized for survey instrument delivery and data collection for all three rounds, and the instruments were developed to be accessible for computer or mobile devices per the recommendations of Dillman et al. (2014). Round One consisted of two open-ended questions being distributed to the expert panel: (a)What do you perceive the current needs of school-based agricultural education teachers to be considering their role within a complete program (i.e., Classroom/Laboratory Instruction, FFA Advisement, and SAE Supervision)?, and (b) What support systems are currently in place to help meet those identified needs? The goal of Round One was to gain the perspective of the expert SBAE supports on SBAE teacher needs and

supports. The identified needs were analyzed utilizing the constant comparative method (Creswell & Poth, 2018) and redistributed to the panelists in Round Two. This method allowed the researcher to use the panelists' voices from the open-ended responses to develop a list of items for Round Two. Items distributed in Round Two were ranked on a 4-point Likert-type scale of agreement: *strongly disagree* (1), *disagree* (2), *agree* (3), or *strongly agree* (4). The research team established an a priori consensus rating, including a mean score of 3.0 or higher and 100% agreement by the panel of experts to meet consensus in Round Two. Items not meeting consensus in Round Two were redistributed in Round Three, which sought to achieve consensus for any remaining items, utilizing a dichotomous scale of agreement (i.e., *Agree* or *Disagree)*, with consensus considered at an 85% agreement level. Additionally, experts were asked to provide rationale or clarifications for any items that they did not agree with (Hsu & Sanford, 2007) in Round Three. Any items not reaching the 85% level of agreement were removed from the final list of items (Custer et al., 1999).

## Findings

Regarding the perceived needs of SBAE teachers, Round One resulted in 80 statements, from 13 experts, varying from single words, such as "Respect" or "Support" to detailed statements including "Training on FFA integration within a complete program," "Skills and techniques for working with students with special needs," or "Relevant evaluations that reflect their complete program." The 80 statements were evaluated by the research team using the constant comparative method (Creswell & Poth, 2018), condensing statements that were deemed to have the same meaning as another, resulting in 44 statements.

Those 44 statements were sent out in Round Two to the expert panel who rated each item on a four-point scale of agreement. For a statement to achieve consensus in Round Two, an a priori mean rating of 3.0 or higher, with 100% agreement amongst the experts was implemented. Mean scores ranged from 3.9 (purposeful professional development) to 2.8 (assistance/resources for training FFA teams), Table 1 outlines the results of Round Two, identifying the mean, standard deviation, and percentage of agreement for each item.

**Table 1**

*Round Two: Level of Agreement for Perceptions of SBAE Teacher Needs (n = 13)*

| **Identified Need** | ***M*** | ***SD*** | ***% Agreement[a]*** |
|---|---|---|---|
| **Purposeful professional development** | 3.90 | .32 | 100 |
| **SAE Support** | 3.80 | .42 | 100 |
| **Support for teacher mental health** | 3.80 | .42 | 100 |
| **Access to essential resources** | 3.80 | .42 | 100 |
| **Community support** | 3.80 | .42 | 100 |
| **Parent support** | 3.80 | .42 | 100 |
| **Support from local school administration** | 3.80 | .42 | 100 |
| **Classroom/Laboratory Support** | 3.70 | .48 | 100 |
| **FFA Support** | 3.70 | .48 | 100 |
| **Emotional health support** | 3.70 | .48 | 100 |

| | | | |
|---|---|---|---|
| **Their planning period (i.e., not being required to cover other classes/duties during this time)** | 3.70 | .48 | 100 |
| **Respect** | 3.70 | .48 | 100 |
| **Relevant evaluations that reflect their complete program** | 3.70 | .48 | 100 |
| **Work-life balance** | 3.70 | .48 | 100 |
| **Classroom management skills** | 3.70 | .48 | 100 |
| **Support to identify student mental health issues** | 3.60 | .52 | 100 |
| **Skills and techniques for working with students with special needs** | 3.60 | .52 | 100 |
| **Tools to address student mental health issues** | 3.50 | .85 | 84.6 |
| **Accessibility training** | 3.50 | .53 | 100 |
| **Resources on FFA integration within a complete program (i.e., Program of Activities, National Chapter Award, Proficiency Awards)** | 3.50 | .53 | 100 |
| **State level support** | 3.40 | .52 | 100 |
| **Curriculum resources** | 3.40 | .52 | 100 |
| **Support for hybrid teaching (i.e., in-person, virtual, simultaneous)** | 3.40 | .52 | 100 |
| **Support to aligning lab facilities to program curricula** | 3.40 | .70 | 92.3 |
| **Agricultural content knowledge** | 3.40 | .52 | 100 |
| **Training of "SAE for ALL" implementation** | 3.40 | .52 | 100 |
| **Pedagogical content knowledge** | 3.40 | .52 | 100 |
| **Laboratory management training** | 3.40 | .52 | 100 |
| **Support in providing equal opportunities to all students** | 3.40 | .52 | 100 |
| **Training to implement a variety of formative evaluation techniques** | 3.30 | .48 | 100 |
| **Laboratory safety resources** | 3.30 | .68 | 92.3 |
| **Diversity, equity, and inclusion (DEI) training** | 3.30 | .68 | 92.3 |
| **Resources to recruit traditional and non-traditional ag students** | 3.30 | .68 | 92.3 |
| **Resources to integrate experiential learning opportunities for students** | 3.30 | .48 | 100 |
| **Clear and consistent protocols for handling COVID-19 cases** | 3.20 | .63 | 92.3 |
| **Greenhouse management skills** | 3.20 | .63 | 92.3 |
| **Agricultural mechanics skills** | 3.20 | .63 | 92.3 |
| **Training on effective Online delivery techniques** | 3.20 | .63 | 92.3 |
| **Resources to provide chapter level activities** | 3.20 | .63 | 92.3 |
| **Lesson planning training** | 3.10 | .74 | 84.6 |
| **Resources for awarding and recognizing SAEs** | 3.10 | .74 | 84.6 |

| | | | |
|---|---|---|---|
| **Resources to help students overcome various levels of public speaking anxiety** | 2.90 | .32 | 92.3 |
| **Assistance/resource to develop FFA officer teams** | 2.90 | .74 | 76.9 |
| **Assistance/resources for training FFA teams** | 2.80 | .63 | 76.9 |

*Note.* 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree; [a] = items marked as either a 3 or a 4.

Fifteen of the 44 statements failed to reach consensus in Round Two, resulting in those statements being resubmitted to the experts for review in Round Three. In Round Three, experts were asked to agree or disagree with each statement, if they disagreed, they were prompted to provide rationale as to why they disagreed. For a statement to be retained in Round Three, an 85% a priori level of agreement amongst the experts was set as the threshold (see Table 2).

**Table 2**

*Round Three: Level of Agreement for Perceptions of SBAE Teacher Needs (n = 14)*

| **Identified Need** | ***Agree*** | ***Disagree*** | ***% Agreement[a]*** |
|---|---|---|---|
| **Tools to address student mental health issues** | 14 | 0 | 100 |
| **Resources to recruit traditional and non-traditional ag students** | 14 | 0 | 100 |
| **Support to aligning lab facilities to program curricula** | 13 | 1 | 92.8 |
| **Diversity, equity, and inclusion (DEI) training** | 13 | 1 | 92.8 |
| **Laboratory safety resources** | 12 | 2 | 85.7 |
| **Greenhouse management skills** | 12 | 2 | 85.7 |
| **Agricultural mechanics skills** | 12 | 2 | 85.7 |
| **Training on effective Online delivery techniques** | 12 | 2 | 85.7 |
| **Lesson planning training** | 12 | 2 | 85.7 |
| **Resources for awarding and recognizing SAEs** | 12 | 2 | 85.7 |
| **Resources to help students overcome various levels of public speaking anxiety** | 12 | 2 | 85.7 |
| **Assistance/resource to develop FFA officer teams** | 12 | 2 | 85.7 |
| **Assistance/resources for training FFA teams** | 12 | 2 | 85.7 |
| **Clear and consistent protocols for handling COVID-19 cases** | 11 | 3 | 78.6 |
| **Resources to provide chapter level activities** | 11 | 3 | 78.6 |

*Note.* An a priori of 85% was set by the researchers to retain the characteristics.

Two items did not meet consensus in Round Three (see Table 2); rationale provided by the expert panel included “should be taught in teacher preparation,” “these are resources already out there,” “schools can provide that support for all teachers,” and “not all SBAE teachers need these skills.”

The second research objective aimed to identify the current support structures in place to meet the needs of SBAE teachers. Twelve responses were received from the experts with statements sharing the sentiment of: “very few,” “not many on a state level,” “none, that I am aware of any,” “professional development,” “I can’t think of any” and “This varies state by state.”

## Conclusions/Discussion/Implications/Recommendations

SBAE teachers’ career-specific human capital needs are reflected in 26 of the 42 items ranging from skills and techniques for working with students with special needs, laboratory management training, and pedagogical content knowledge demonstrating that SBAE teachers need further instructional skill development (DiBenedetto et al., 2018; Doss et al., 2022; Eck et al., 2019; 2021; Traini et al., 2020; Yopp et al., 2020). SBAE teacher's human development needs were represented in 14 of the 42 items including support for teacher mental health, respect, work-life balance, and emotional health support, underscoring that teacher wellness is essential (Fisher & Royster, 2016; Shoulders et al., 2021; Sorensen et al., 2016). Six of the 42 items represent relationships and networks of support including school administrative support, parent support, and community support, illustrating the importance of connecting with stakeholders to meet student's needs (Doss et al., 2022; Fisher & Royster, 2016; Sorensen et al., 2016).

The 42 items demonstrate the current support gap for SBAE teachers and are represented within the *Conceptual Model of SBAE Teacher Support.* All 42 items were found in the literature but call to question why are these needs recurring if they are genuinely essential human capital of SBAE teachers? Furthermore, how do we change the approach to create impactful change to reduce attrition and support SBAE teachers across the profession? A lack of resources were mentioned by the SBAE teacher supporters as effective in providing SBAE teacher support, consistent with previous research (Doss et al., 2022; King et al., 2013). It is interesting and puzzling why the respondents did not identify resources or supports to bridge the current SBAE teacher needs gap, including themselves as expert SBAE supporters’. This is ironic, considering that the historical foundation of the American Association for Agricultural Education was based on preparing preservice teachers, supporting the current teachers, developing teaching aids, and contributing to professional improvement (Sutherland, 1946), perhaps displaying the depth of our disconnect from SBAE teachers’ human needs and the longing for the professional community, resources, and security within the profession. Perhaps by addressing these gaps, we could create proactive change in SBAE teacher work-life balance and reduce the current rate of attrition within the profession (Doss et al., 2022; Shoulders et al., 2021; Sorensen et al., 2016). Based on the findings, SBAE teachers have support gaps that need to be addressed from a more human development lens to truly create proactive support for SBAE teachers.

It is recommended that state FFA staff provide assistance and a framework for developing state-specific FFA and SAE activities that are inclusive and meet the needs of all students in SBAE. State SBAE teacher preparation faculty should consider the depth of current needs of teachers within their state and develop purposeful teacher professional development opportunities that increase SBAE specific human capital. Additionally, faculty should consider the needs identified in this study and integrate them into teacher preparation coursework. A coordinated plan is needed on the part of state DOE, state and regional FFA staff, and SBAE teacher educators to address these needs through systematic professional learning. Future research should aim to validate the conceptual model presented in this study to address future support structures and

professional development that will effectively increase teachers' human capital within the profession. The 42 items should be further evaluated for national relevance to determine if it could serve as a future tool to identify gaps in SBAE teacher needs nationwide. Additionally, a qualitative lens should be used to further explore the depth of SBAE teacher needs. Since this study was limited to three southeastern states, the 42 items should be considered nationally to determine gaps and differences that potentially are regionally limiting.

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# Impact of a Prolonged Professional Development on Teachers' Confidence in Using Inquiry-Based Learning in the Classroom

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## Introduction

The Partnership for 21st Century Skills (2008) indicated more than 50% of U.S. high school students lacked science proficiency, and this has not improved. Out of 1.8 million high school graduates who completed the ACT in 2019, only 36% met the benchmark for collegiate science readiness (ACT, 2019). In Nebraska and Tennessee, who require all graduates to complete the ACT, only 33% and 27%, respectively, met college readiness benchmarks for science (ACT, 2019). Other testing further verifies inadequate science preparation; for 2021-2022, the Nebraska Student-Centered Assessment System determined that 52% of 11th grade students lacked science proficiency (Nebraska Department of Education, 2022).

According to Conner et al. (2021), professional development (PD) programs for science and agriculture teachers designed around the inquiry-based learning (IBL) teaching strategy could help to improve science proficiency amongst our high school students. IBL also allows individuals to practice and develop their critical thinking skills and their problem-solving ability (Savery, 2006). More specifically, PD that continues over a longer period of time is supported by the current knowledge of how teachers learn, and a prolonged PD is more effective than short-term workshops (National Research Council [NRC], 2000). "In order to teach in a manner consistent with new theories of learning, extensive learning opportunities for teachers are required" (NRC, 2000, p. 203). Prolonged PD programs have the opportunity to make meaningful impacts on teachers' ability to utilize new teaching strategies in the classroom. Therefore, the purpose of the study was to explore the impact of a prolonged PD on teachers' confidence in using IBL teaching strategies.

## Conceptual Framework

Guskey's (2002) model of teacher change provided the framework for this research and guided the development of PD for this project. This model suggests that teachers will not truly change beliefs and attitudes related to a new teaching strategy until they see changes in the students themselves – a workshop alone is not sufficient in changing teacher attitudes (Guskey, 2002). In order for teachers to fully commit to using a new teaching strategy, they need to be able to see how it will work in the classroom first (Guskey, 2002). Prolonged PD programs allow teachers to learn, implement, and evaluate how new teaching strategies impact students' learning outcomes, which would likely lead to greater changes in beliefs and attitudes compared to a stand-alone workshop (Guskey, 2002). Kreifels et al. (2021) found that a 12-month PD program successfully prepared agricultural teachers to integrate IBL into the classroom and positively influenced teachers' perceptions of IBL.

Additional best practices for PD programs include the use of active learning for participants that would allow them to engage with training content in a meaningful way opposed to simply listening to instruction or speakers (Desimone & Garet, 2015). Having teachers participate in lessons as the "students" and engage in IBL is one way to implement active learning during PD programs (Colclasure et al., 2022). This approach has also been found to be successful at increasing teachers' confidence and intent to integrate IBL activities in the classroom (Colclasure et al., 2022).

While prior research has demonstrated the utility of a prolonged PD program, data were collected after the conclusion of the 12-month PD (Kriefels et al., 2021). Prolonged PD programs consist of multiple meetings and opportunities for development, so there is a need to understand teachers' confidence in using IBL in the classroom after they are trained on using the teaching materials but *before* they begin integrating it into the classroom. Understanding what approaches lead to increased confidence for teachers before they move forward to classroom instruction will aid in the development of future prolonged PD programs.

## Purpose & Objectives

The purpose of this study was to explore the impact of a prolonged PD program on teachers' confidence in using IBL strategies for teaching animal sciences content. The following research questions guided this study:

RQ1: What were participants' perceptions of a prolonged PD program?
RQ2: How did the prolonged PD program influence the participants' confidence in using IBL?

## Methods

This current study is part of a larger research project. Agriscience and science teachers from Tennessee and Nebraska participated in a year-long PD program that started in the summer of 2022. For this project, the teachers completed three online modules focused on best practices for using IBL in the classroom and then participated in a 5-day in person PD program that was offered in Tennessee and Nebraska during June and July of 2022. During the PD, teachers played the role of high school students and were actively engaged with six different IBL activities. The IBL activities were designed to showcase animal science concepts and scientific principles that are commercially applicable and used in agriculture. The six animal science concepts included animal health, breeding and genetics, management, meat science, nutrition, and/or reproductive physiology. Additionally, each IBL activity demonstrated a basic scientific concept related to biology, chemistry, or physics. Participants were provided with the resources to implement the IBL activities in the classroom and were expected to teach with these activities during the following school year.

Basic qualitative methodology was used to fulfill the purpose of this study (Merriam, 1998). After the conclusion of each in-person PD program during June and July of 2022, participants were broken into two focus groups per state (four focus groups in total) and a semi-structured moderator's guide was used to ask participants questions about their motivation to participate in the program, their experience in the program, and their thoughts related to IBL. At the point of data collection, participants had completed the training portion of the prolonged PD but had yet to begin implementation in the classroom.

There were six to nine participants in each focus group, with a total of 30 participants combined. Twenty-one of the participants taught agriscience ($n$ = 21), six taught biology ($n$ = 6), and three taught chemistry ($n$ = 3). Participants in the program had been teaching for a range of one to 28 years ($M$ = 9.75, $SD$ = 8.45). Focus groups were used for this research to allow participants to express their opinions and thoughts in a social setting (Morgan, 1998). Each focus group lasted approximately 60 minutes and were recorded and transcribed for accuracy. After the focus groups were transcribed, the lead coder used Glaser's (1965) constant comparative method of analysis to identify emergent themes related to the teachers' perceptions of the PD.

To help address potential bias or assumptions of the coder that may threaten the validity of the study, a researcher subjectivity statement has been included (Merriam, 1998). The primary coder was a master's student studying agricultural and extension education at the University of Nebraska-Lincoln and has a bachelor's degree from the University of Tennessee, Knoxville in agricultural education. In order to address the reliability of the analysis, the primary coder and a secondary coder independently analyzed one of the focus group transcripts and met to discuss their discuss their codes and, upon agreement, developed a code book to help direct analysis (Creswell, 2013). To help increase the validity of the study, peer-debriefing was used during data analysis (Holloway, 1997). The peer debriefer was involved in the project but not present for the focus groups – she served as a *devil's advocate* during the coding process and to challenge assumptions and provide alternative views for the lead coder. Additionally, an audit trail was created to keep track of how codes were identified, defined, and condensed to increase the findings' dependability (Lincoln & Guba, 1985).

## Findings

### Participants' Perceptions of the PD

Participants' appreciation of participating in active learning during the professional development emerged during the focus groups. One common theme was how the PD provided immersive experiences for the participants. When asked to provide feedback on the professional development program, many of the participants described how beneficial it was to experience the activities from the student perspective. Participant 2 (NE) stated, "I really like the sequencing [of the PD] and [how] it's replicated [to] what we might see in our actual classroom." When discussing how surprisingly immersive the PD program was compared to others, Participant 6 (NE) explained, "You are the students, you are actually going to put yourselves in these situations and do the [activities]...So that way you understand your student's perspective when they are doing [the activity]" Participant 5 (NE) had a similar view stating, "My favorite part was

actually getting to be the student and doing [the activities]." Additionally, Participant 9 (NE) added, "I love the fact that we got to try activities out as a student."

Participants also discussed how by experiencing the activities as a student, they were able to identify areas of weakness that may occur in their own classrooms. Participant 6 (TN) explained,

> I think the facilitators did a really great job of throwing us into the same situation that we would throw our students into. Some of us even turned into some of our lower level performing students…[when faced with challenges] my brain just locked up [and] I cannot process through this right now. I really liked that they let us struggle for a little bit and then if we still needed help, they gave us the next little bit of information instead of just giving anybody the answer.

Other participants brought up the value and importance of learning by doing. Participant 7 (NE) stated, "Reading the lesson plan versus going through the lessons and doing them, you learn more if you're thinking about those [inquiry] questions and creating things, asking questions, exploring, and researching etc." Overall, the participants enjoyed the structure of the PD program and getting to actually engage in the IBL activities themselves.

**Participants' Confidence in Using IBL**

As conversations progressed, many participants discussed how the immersive experience affected their confidence to teach inquiry-based learning curriculum materials. Most participants' confidence increased after participating in the professional development program, especially first year teachers. Participant 6 (NE) said, "[Inquiry-based learning] was my weak area. And as a first-year teacher, this certainly improves my ability to teach that not only in the animal science context, but also with the science focus as well." Similarly, Participant 4 (NE) expressed,

> These are the lessons that we were doing throughout the week. Getting to do them is really helpful. Being taught them before you have to teach the lesson gives me a lot of confidence going into my first year of teaching.

Participants with more teaching experience also conveyed their increased confidence in teaching with inquiry-based learning. Participant 2 (TN) shared, "Being able to participate in [the professional development], both as a student and a teacher at the same time, I think that's really where that confidence comes in terms of being comfortable with the material in particular."

Participant 14 (TN) had a similar opinion stating,

> It did improve my confidence… just being here and the way the PD was presented put me in the student's seat, and I wasn't necessarily in that teacher hat mode. I was a student, so I was like this is what I need to be doing with my student. It gave me that confidence that I need.

Furthermore, some participants agreed that their confidence slightly increased, as Participant 8 (NE) shared "This [professional development] certainly increased my confidence to be able to

for sure teach the lessons that we went through, and [I'm] somewhat confident in the ability to write and create inquiry lessons."

However, a few participants indicated their confidence was not heavily influenced by the professional development. When discussing the participants' confidence levels with animal science and inquiry-based learning concepts, some participants admitted they were already confident prior to the professional development as Participant 12 (NE) stated, "I would say that this PD didn't necessarily increase my ability, as again, [inquiry-based learning has been] a part of [our] practice for several years." Although some participants already possessed confidence, Participant 5 (TN) shared, "But now [after the professional development] I feel more highly qualified."

As the discussion moved to reflecting on the overall impact of the in-person professional development, Participant 8 (TN) said,

> This is the first professional development that I have ever been to where they took us through the entire lesson, let us do the lesson ourselves and then gave us the materials to take it back to our kids. That is one of the biggest things that has made this the best professional development that I have gone to, because I'm able to take what I learned, and what I implemented, home and I can do it seamlessly.

By the end of the in-person PD program, the participants reported they were confident in using IBL in their classes in the future.

## Conclusion and Discussion

The purpose of this study was to explore the impacts of a prolonged PD on teachers' confidence in teaching with IBL strategies in the classroom. Specifically, this study explored teachers' confidence after completion of the in-person PD meeting of a year-long program but prior to teachers implementing IBL in the classroom. Many of the participants commented on how they enjoyed the immersive aspect of the PD. Instead of passively learning about IBL strategies and receiving lesson materials, participants were asked to play the role of the student as they engaged in the IBL activities themselves. This immersive role-playing approach to the PD appeared to influence the participants' satisfaction with the workshop, which reflects best practices for incorporating active learning into PD programs (Desimone & Garet, 2015). Many of the participants commented about how playing the role of the student allowed them to not only better understand how to implement IBL teaching strategies, but how students would likely be engaging with the content. While Guskey's (2002) model of teacher change proposes teachers need to see their students engage with new teaching strategies before changing beliefs and attitudes, the findings from this study indicate that using active learning strategies that immerse teachers in the role of the student during the PD program may yield similar results. This role-playing would allow teachers to see how IBL could be implemented and allow them to experience it themselves before implementing it in the classroom.

Allowing teachers to work through the IBL activities as students did appear to increase their confidence in using IBL to teach animal science concepts in the future, which was in line with

past research (Colclasure et al., 2022). Some of the teachers pointed out that this teaching strategy was a weakness of theirs but getting to spend an entire week learning the content and engaging in IBL helped to increase their confidence. Even teachers who started the workshop with some understanding of IBL walked away feeling like they had increased their expertise with executing the strategy. As teachers integrate IBL into their classes and see the impacts on student learning outcomes, the teachers' confidence and appreciation for using IBL is expected to increase further (Kreifels et al., 2021; Guskey, 2002). Overall, using the active learning strategies during the in-person PD meeting did appear positively influence teachers' confidence in using IBL during the next stage of the prolonged PD program.

## Recommendations

Due to the qualitative nature of this study, the findings are not generalizable. However, they do provide meaningful insight for the development of teacher PD programs. The findings from this study indicate there are benefits in allowing teachers to experience lessons both as a student and a teacher during a prolonged PD program. When developing PD programs, agricultural teacher educators should think beyond the length of the program to consider how the content will be delivered to teachers as well, thus ensuring active learning strategies are utilized. Allowing teachers to participate in the developed lesson plans and engage with the teaching materials as students would allow them to better understand how to facilitate the lesson while seeing it from the perspective of the student. This strategy helps to increase confidence and could also serve to help teachers begin to move through Guskey's (2002) model of teacher change before implementing IBL in their classes.

While the findings are specific to inquiry-based learning with animal science concepts, there could be value in replicating a similar inquiry-based learning professional development in other areas of agriculture such as plant science, agricultural business, or agricultural mechanics. Additionally, as some participants already possessed confidence before the professional development, further research could be explored on whether being traditionally or alternatively certified influences teacher's self-efficacy and confidence in teaching IBL. This study should be conducted in other states to gain a broader insight on the impacts an immersive professional development has on high school science and agricultural teachers across the country.

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# Preservice Teachers' Factors of Perceived Performance While Student Teaching: Development of a Self-Evaluation Instrument


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## Introduction

A student teaching internship is the capstone experience for many teacher preparation programs at universities. Lasting between ten and sixteen weeks, student teaching internships provide opportunities for preservice teachers to develop skills in classroom instruction, student management, lesson preparation, personal and professional growth, and reflection as an educator (Miller & Wilson, 2010). Student teaching internships provide invaluable opportunities for immersive learning experiences in a true classroom environment, which cannot be simulated easily in other ways (Coleman, 2021). Gaining experience interacting with students, parents, fellow teachers, and administration is difficult to learn in university class environments. The preservice teachers' school placement and cooperating teacher are assigned by their university. School placements and cooperating teachers are often assigned based on the growth areas needed by the preservice teacher. Responsibilities of the cooperating teacher include serving as a mentor to the preservice teacher, as well as providing nonformal feedback and formal evaluation throughout the student teaching experience (Miller & Wilson, 2010). Throughout the student teaching internship, preservice teachers are also expected to complete various self-assessments and activities that allow them to reflect and evaluate their own skill development.

Repeated self-assessment is an important aspect of growth during the student teaching internship. Self-assessment occurs when students make judgements regarding their own learning and achievements, leading to self-regulated learning (Falchikov & Boud, 1989; Panadero et al., 2016). Self-assessment is considered a valuable tool in the development of self-regulated learning (Max et al., 2022; Panadero et al., 2016). Understanding how preservice teachers self-assess their ability on teaching tasks related to instructional design, instructional practice, student-centered teaching, teacher professionalism, and being a reflective and autonomous practitioner can help teacher educators better prepare preservice teachers for a student teaching internship and later career success. Through this study we sought to fill a void in education literature for valid and reliable survey instruments that measure preservice teachers' perceived ability during the student teaching internship experience, based on the Florida teaching standards in agricultural education. To date, there are seemingly no instruments to measure preservice teachers' perceptions of performance while completing a student teaching internship in comparison to the Florida teaching standards. As such, there is a need to develop an instrument to measure these variables.

## Conceptual Framework

Self-regulated learning explores the metacognitive, motivational, and behavioral aspects of learning (Zimmerman, 1986, 1989b). Self-regulated learning describes how a student takes an active role in their own learning by identifying strategies to improve their understanding and monitoring their learning, especially doing so without the encouragement of teachers, parents, and other instructional leaders (Zimmerman, 1989a). Though there are multiple self-regulated learning models, they have 3 characteristics in common: (a) a cyclical process, (b) elements comprised of cognition, metacognition, motivation and emotion, and (c) a set of skills that can be developed and learned (Panadero et al., 2016).

The cyclical process of self-regulated learning typically includes four steps: (a) plan, set goals, and lay out strategies, (b) use strategies and monitor performance, (c) reflect on performance, and (d) use results from previous performance to guide the next one (Zimmerman, 2002; Zumbrunn et al., 2011). In this study, it is expected that preservice teachers will consider each week of their student teaching internship to be a "performance" and will complete the cyclical process as such. Student teachers should set goals each week and determine the strategies for achieving the goals. As they move through the week of teaching and interacting with students, preservice teachers should informally monitor their performance and self-assess their progress towards achieving the goals they have set for the week. At the end of the week, the preservice teacher should complete the self-assessment instrument and reflect on their performance and use the results to guide their goal setting for the next week.

## Purpose and Objectives

The purpose of this study was to develop an instrument (weekly self-assessment form) that measured preservice teachers' factors of perceived performance during the 14-week student teaching internship. The study was guided by the following objectives:

1. Determine if constructs describing factors of performance are internally consistent.
2. Determine if instrument items cluster into latent constructs that can be used to describe factors of performance.

## Methods

The participants were chosen through single-stage, nonprobability convenience sampling. Each cohort of preservice teachers who were completing a student teaching internship in the spring semesters of 2015 – 2019 were included in the study, yielding 81 participants. After removing 22 participants whose student teaching portfolios were missing, incomplete, or inaccessible, 59 participants remained (Coleman et al., 2021). All data was collected through a student teaching portfolio, which each participant completed as part of their internship.
The completed student teaching portfolio includes 12 components: (a) pre-placement experiences, (b) teaching calendar, (c) placement experiences, (d) clock hour worksheet, (e) weekly reflection journal, (f) SAE visits, (g) case study, (h) mock interview, (i) weekly lesson plans, (j) weekly self-evaluation forms, (k) weekly cooperating teacher evaluation forms, and (l) university supervisor evaluation forms.

The weekly self-assessment form created to evaluate the preservice teachers' perceived performance was adapted from the Florida Educator Accomplished Practices (FEAPs) which are standards developed by the Florida Department of Education (Florida Department of Education, n.d.). University of Florida teacher education faculty from the Agricultural Education and Communication department adapted the Florida teaching standards into an instrument for a preservice teacher weekly performance self-assessment. Since this was a newly developed instrument there was a need to determine if latent constructs existed within the modified preservice teacher self-evaluation form. Individual items were selected to develop an index to measure said constructs (Kumar Chaudhary & Israel, 2015). The modified instrument had 26 items. One item, develops learning experiences that require students to demonstrate skills and competencies, was removed because more than half (52.9%) of the data were missing. The 25 remaining items measured five latent constructs: (a) instructional design (five items), (b) instructional practice (six items), (c) student-centered teaching (four items), (d) teacher professionalism (five items), and (e) reflective and autonomous practitioner (five items).

All data were analyzed using SPSS version 27. Descriptive statistics were used to summarize demographic data. The data were analyzed for the distribution of missingness (Schafer & Graham, 2002), and 37.4% ($n$ = 19,482) of the values were missing at random. The proportion of missing data was considered to be relatively large (Schafer, 1999). Therefore, multiple imputation was conducted to address the missing values (Schafer & Graham, 2002; van Ginkel et. al., 2020). Using the pooled results from the analysis of ten multiple imputed data sets, descriptive statistics (mean, standard deviation, frequency, and percentage) were used to meet the objectives of this study.

Reliability analysis was conducted using Cronbach's alpha to check the internal consistency of each construct's items. Because the instrument was modified significantly, exploratory factor analysis (EFA) using principal axis factoring was used to analyze the relationship between variables (Floyd & Widaman, 1995).

## Results/Findings

### Objective 1: Determine the internal consistency reliability of constructs

All five constructs exceeded the recommended alpha coefficient of .7 (DeVellis, 2012); therefore, the items were deemed reliable (Table 2). The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was utilized to assess the suitability of the data for factor analysis. Results were inspected for a value of .6 or above (Kaiser, 1970, 1974). Further, Bartlett's Test of Sphericity was assessed for significance ($p \leq .05$; Bartlett, 1954). The KMO Measure of Sampling Adequacy and Bartlett's Test of Sphericity are reported in Table 1.

**Table 1**

*Cronbach's Alpha, KMO Measure of Sampling Adequacy, and Bartlett's Test of Sphericity for Factors of the Weekly Self Evaluation*

| Factor | | | Bartlett's Test of Sphericity |
|---|---|---|---|

| | Cronbach's Alpha | KMO Measure of Sampling Adequacy | Approx. Chi-Square | *df* | *p*-value |
|---|---|---|---|---|---|
| 1 | .89 | .85 | 2378.96 | 10 | .00 |
| 2 | .90 | .90 | 2678.35 | 15 | .00 |
| 3 | .86 | .79 | 1524.90 | 6 | .00 |
| 4 | .84 | .82 | 1928.87 | 10 | .00 |
| 5 | .86 | .84 | 1918.16 | 10 | .00 |

**Objective 2: Determine if items cluster into latent constructs**

Based on Kaiser's (1970) criteria, factor loadings with eigenvalues of one or more should be retained. All factors, with eigenvalues greater than one, and the total common variance explained, are listed in Table 2. The communalities of a factor are measures of the proportion of common variance (Field, 2018). The factor loadings were strong, and the range of values is reported in Table 2. The mean values of the factors' commonalities are as follows: (a) instructional design ($M$ = .62), (b) instructional practice ($M$ = .60), (c) student-centered teaching ($M$ = .61), (d) teacher professionalism ($M$ = .56), (e) reflective and autonomous practitioner ($M$ = .56).

**Table 2**

*Eigenvalues, Percent of Variance, Factor Loadings, and Communalities for Factors of the Weekly Self Evaluation*

| Factor 1: Instructional Design | Eigenvalue | % of variance |
|---|---|---|
| | 3.11 | 62.22 |
| Item | Factor Loading | Communalities |
| Designs instruction for students to achieve mastery | .80 | .64 |
| Selects appropriate formative assessments to monitor learning | .82 | .67 |
| Uses diagnostic student data to plan lessons | .65 | .42 |
| Sequences lessons and concepts to ensure coherence and required prior knowledge | .88 | .77 |
| Aligns instruction with state-adopted standards at the appropriate level of rigor | .79 | .62 |
| Factor 2: Instructional Practice | Eigenvalue | % of variance |
| | 3.58 | 59.59 |
| Item | Factor Loading | Communalities |
| Organizes, allocates, and manages the resources of time, space and attention | .82 | .68 |
| Establishes and maintains rapport with students | .76 | .58 |
| Communicates challenging learning expectations to each student | .76 | .58 |
| Establishes and maintains consistent standards of classroom behavior | .75 | .56 |

| | | |
|---|---|---|
| Makes the physical environment as safe and conducive as possible | .72 | .52 |
| Uses instructional time effectively | .81 | .66 |
| Factor 3: Student-Centered Teaching | Eigenvalue | % of variance |
| | 2.44 | 60.92 |
| Item | Factor Loading | Communalities |
| Makes learning goals and instructional procedures clear to students | .80 | .64 |
| Makes content comprehensible to students | .73 | .53 |
| Encourages students to extend their thinking | .78 | .61 |
| Monitors students' understanding through a variety of means, providing feedback to students to assist learning, and adjusting learning activities as the situation demands | .81 | .66 |
| Factor 4: Teacher Professionalism | Eigenvalue | % of variance |
| | 2.77 | 55.38 |
| Item | Factor Loading | Communalities |
| Builds professional relationships with colleagues to share teaching insights to coordinate learning activities for students | .71 | .51 |
| Communicates with parents or guardians about student learning | .54 | .30 |
| Is punctual, uses mature judgement, provides accurate reports and records (professional responsibility) | .87 | .76 |
| Presents a professional appearance in dress, grooming, attitude, and demeanor | .80 | .64 |
| Professional behavior is consistent with the Code of Ethics & Principles of Professional Conduct of the Education Professionals in [State] | .76 | .57 |
| Factor 5: Reflective and Autonomous Practitioner | Eigenvalue | % of variance |
| | 2.83 | 56.50 |
| Item | Factor Loading | Communalities |
| Reflects on the extent to which learning goals were met | .65 | .42 |
| Demonstrates a sense of efficacy | .76 | .58 |
| Demonstrates enthusiasm for teaching | .71 | .51 |
| Demonstrates responsiveness to supervision (ability to accept constructive criticism and incorporate suggestions into teaching performance) | .82 | .67 |
| Demonstrates initiative and self-reliance | .80 | .64 |

## Conclusions/Recommendations

The purpose of this study was to develop an instrument which can be used to measure preservice teachers' perceptions of performance during a student teaching internship based on the Florida teaching standards, to promote self-assessment as a part of self-regulated learning. Through this study it was determined that five latent constructs exist within the modified preservice teacher self-evaluation form: (a) instructional design, (b) instructional practice, (c) student-centered teaching, (d) teacher professionalism, and (e) reflective and autonomous

practitioner. All five constructs were internally consistent, exceeding the ideal alpha coefficient. The instrument was found to be reliable because all five proposed factors met the criteria to be classified as constructs including eigenvalues, total common variance, and factor loading.

The final validified instrument is a form which is to be completed weekly by the preservice teacher and evaluates their perception of performance in relation to the Florida teaching standards. The instrument is 25 individual questions which are grouped into five latent constructs. The instrument can be used to measure preservice teacher growth during a student teaching internship, as perceived by not only the student teacher, but also the cooperating teacher and university supervisor. When used with goal setting and reflection, this instrument can be used to promote self-regulated learning through self-assessment (Falchikov & Boud, 1989; Max et al., 2022; Panadero et al., 2016).

University teacher education programs should continue to use the self-evaluation instrument as a way for preservice teachers to engage in self-regulated learning. This self-evaluation instrument provides an essential form of nonformal feedback, which should be provided to preservice teachers in addition to formal evaluations (Miller & Wilson, 2010). Self-evaluation should be used in conjunction with cooperating teacher and university supervisor performance evaluations throughout the student teaching experience.

Further research is currently being conducted to measure preservice teachers' perceptions of performance longitudinally throughout the student teaching internship. We hope to further analyze the preservice teachers' self-regulated learning by evaluating their weekly reflections alongside the weekly self-assessment instrument. Other teacher preparation programs should seek to use the instrument to help assess preservice teachers' perceived abilities and growth before and during the student teaching internship. It is recommended that future research should compare preservice teachers' mean self-evaluation scores to cooperating teachers' or university supervisors' evaluation scores of preservice teachers as well to evaluate the perceived growth of the student teacher across all parties.

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# Understanding the Mentorship Experiences of Cooperating Teachers and Student Teachers During the Student Teaching Internship: A Phenomenological Exploration

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## Introduction and Literature Review

Mentoring programs have been widely utilized across the profession to increase teacher retention. Teachers often feel overwhelmed by the transition into the classroom, and mentors are placed to aid with the process (Ingersoll & Strong, 2011). Just as mentors are placed with new teachers, cooperating teachers (CT) are being asked to step into the role as a mentor and positive role-models for their student teachers (ST), as the CT's influence on the ST is one of the most impactful elements during the student teaching internship (STI) (Matsko et al., 2020; Roberts, 2006; Young & Edwards, 2005). However, the exact mentorship role the CT plays during the internship has yet to be defined (Dunning et al., 2011; Ganser, 2002). Effective mentoring programs for CTs have been emphasized to help STs develop stronger teaching skills to have a successful start to their teaching career (He, 2010). To strengthen the CT's mentorship skills, formalized preparation and support needs to be provided throughout the internship experience (Young & MacPhail, 2005).

Additionally, research supporting the relationship of the CT and their ST as mentor and mentee has indicated the need for CTs to implement best practices for mentoring (Korte & Simonsen, 2018). These practices can be categorized into three overarching themes: Social Support, Professional Support, and Role Modeling (Alemdag & Simsek, 2017; Barry, 2019; Russell & Russel, 2011). Along with understanding the best practices for mentoring, a mutual understanding of mentor and mentee roles should be sought after to increase the benefits of the CT and ST relationship (Kajs, 2002). The ST needs guidance in how to receive and utilize the mentorship, just as the CT needs guidance and training for their role (McIntyre & Killian, 1987).

In 2018, the Department of Agricultural Education and Communication (AEC) at the University of Florida (UF) created a mentorship training program for their CTs to develop their mentorship skills before and during the ST internship experience. The program utilized a pre-internship mentorship workshop, bi-weekly emails and infographics to CTs concentrating on one mentorship skill, monthly collaborative zooms, and a website to support the best practices for mentorship that the CTs should be utilizing in the classroom. The program has evolved to now include STs at the mentorship workshop and provides them with training on how to receive and utilize feedback. To further develop support programs for mentorship skills of CTs, an exploration of the CTs' and STs' experiences during the internship needs to be conducted.

## Epistemological and Theoretical Framework

For this study, we utilized an epistemological lens rooted in constructivism. Constructivism is based on the assumptions that learners create their knowledge of worldly understandings based on their own understanding of experiences (Vijaya Kumari, 2014; Vygotsky, 1978). By using this lens, we can begin to understand the mentorship that occurred between the CT and ST by examining their lived experiences of the mentorship that occurred during the STI.

Mentorship skills that are explored in this study support three major components of a successful mentorship program: social support, professional support, and role modeling

(Alemdag & Simsek, 2017; Barry, 2019; He, 2010; Russell &Russel, 2011). Utilizing Roberts' (2006) Model of Cooperating Teacher Effectiveness, more specifically the area of the ST/CT Relationship, efforts are needed to develop the mentorship skills of the CT and preparing the next generation of school-based agricultural educators (SBAE) (Clarke et. al, 2014).

Additionally, Social Desirability Bias (SDB) was also drawn upon for this study. SBD is a participant's unintentional altering of a response to appear more desirable to what they believe the researcher wants to hear (Beretvas et. al, 2002). SDB can impact the research in several ways, however the potential of the CT altering their description of their use of best practices is an area of exploration in this study. In order to combat SDB, the STs' experiences were compared to the CTs' to paint a more robust view of mentoring practices during the STI (Goneya, 2005).

## Purpose and Objectives

The purpose of this study is to explore how the best practices for mentoring by CTs are being implemented in the school-based agriculture education program in the state of Florida from the perspective of both the CT and the ST who participated in the UF/AEC Cooperating Teacher Support Program. The objectives of this study are to:

1. Compare the mentorship experiences of the CT and ST.
2. Describe the preferred method of mentorship that is provided by CTs from the perspective of the CT and the ST.
3. Describe the impact of the CT on the ST's decision to enter a career teaching agriculture.

## Methods

### Research Design

Using a phenomenological approach, this study explored the mentorship experiences of the ST and CT during the STI. Phenomenology focuses on how the participants' lived experiences effect knowledge, perspectives, and choices (Creswell, 2013). To ensure trustworthiness, investigator triangulation was utilized through field notes and participant observation of facial expressions and vocal tones. Member checking was also utilized with the participants to establish credibility in trustworthiness. Additionally, peer debriefing was used to ensure the researcher's results remained accurate (Creswell & Creswell, 2018).

### Participants

The participants in this study were a part of a broader study that utilized secondary school-based agricultural education teachers who served as CTs, as well as their STs, during the Spring 2022 ST internship. During the Spring 2022 ST internship, fifteen pairs of CTs and STs participated in the [university and department] capstone experience, professional development (PD), and the overall [department] CT support program. Using a purposive sampling technique, all CTs and STs from the Spring 2022 internship were recruited for this study. A minimum of five STs and five CTs were sought to increase the understanding of the internship experience and use of the mentoring best practices (Polkinghorne, 1989). Although we were not able to recruit this number of participants, five STs and four CTs agreed to participate, with four participants as matched pairs. The CTs for this study consisted of three traditionally certified female teachers and one alternatively certified male teacher. They all taught between 10 to 25 years, and the one male participant was the only member to have previously hosted a ST before. The STs consisted of four females and one male member, with all STs deciding to enter the profession following their STI. For this study, participants were given pseudonyms to maintain anonymity.

## Interview Protocol

Data was collected via semi-structured interviews. The interview protocol was reviewed by two faculty that were considered experts in the field of agricultural education or qualitative research (Salkind, 2012). The protocol allowed the participants to share their experiences of mentoring and being mentored. During the interview, probing questions were utilized to gain a deeper understanding of their experiences. The interviews lasted between 45 to 60 minutes and were recorded and transcribed through Zoom.

## Data Analysis

Following the assignment of pseudonyms using a random name generator, transcripts were reviewed for accuracy. Once accuracy was verified, a two read process was conducted to refamiliarize with the experiences of the CTs and STs (Saldana, 2013). In the third read, structural codes were utilized to distinguish the usage of the three major components of best practices for mentorship: social support, professional support, and role modeling (Alemdag & Simsek, 2017; Barry, 2019; He, 2010; Russell &Russel, 2011; Saldana, 2013). Subsequently, in vivo coding was used further allow themes to emerge within the structural codes (Saldana, 2013.)

## Reflexivity

Reflexivity is important because it acknowledges the researcher's background and bias as the primary research tool (Creswell, 2013). It helps the researcher, participants, and audience legitimize the claims from the research process. The two researchers involved in this study are both former secondary agriculture teachers and FFA advisors. Both researchers have previously taught in the same region as the data was collected. The research team consisted of a faculty member and doctoral student at [university department] at the time of data collection and writing. The researchers also led the CT support program and PD. The researchers acknowledge their biases from their own lived experiences as teachers, cooperating teachers, and within teacher preparation. They were cognizant of their own opinions regarding the support of cooperating teachers.

# Findings

## Cooperating Teachers

Of the four CTs that participated in the interview process, three expressed feeling comfortable in implementing best practices of mentorship during the internship experience and their desire to ensure their ST was successful. Curiously, Ms. Lang expressed her comfort through emphasizing her years of experience as an agricultural teacher. Alternatively, Ms. Adkins did not feel completely confident in implementing the best practices for mentorship and recognized the difference between teaching experience and mentoring experience. She expressed the want for more explicit training on mentoring during the internship experience.

## Student Teachers

Of the five STs who participated in the interview process, three expressed being positively influenced by their CT during the internship process. Kristin expressed her appreciation to her CT's ability to put her wellbeing first, as well as how they impacted her decision to continue into the classroom. Mandy and Zack shared how their CTs helped them to recognize how agriculture teachers can build programs that are beneficial to the students and the

community, but also to their own wellbeing. Unfortunately, Lillie felt her CT was distracted during the internship experience and left her seeking feedback from other teachers, whereas Grace stated her confidence in teaching decreased during the internship leaving her unsure if she was prepared to take on her own classroom.

## Themes

The data also painted a picture of the internship experience of both the CTs and the STs within the three domains of social support, professional support, and role modeling.

### *Social Support*

Well-being and communication were the most prominent themes when discussing social support with both the CTs and STs. The CTs talked about how as their relationship with their ST grew stronger, they began to recognize when their STs needed additional help with managing their well-being. Mr. Porter expressed how he managed his ST's well-being by explaining the process of stepping in when needed. He continued:

> You want your intern to be ready. But they're not going to be ready right away…it takes small steps…it goes back to them being successful…you don't want them to have a bad experience…so taking those small steps, it's just not a just one and done plunge.

Similarly, the STs expressed recognizing their CTs concern for their well-being. Interestingly, the STs talked more about how their CTs stepped in to help with behavioral corrections in the classroom when explaining their well-being being positively influenced by their CT.

The importance of communication between the CTs and their STs was evident as both the CTs and STs shared their experiences within social support. The CTs explained how they frequently communicated with their ST, as well as how open they were with their dialogue. Ms. Lang highlighted her openness by stating, "I'm pretty direct. You know where you stand with me, and you know what I think. So, I was able to, like, express that." Comparably, the STs also explained how open their CTs were throughout the entire internship process. They mentioned communication occurring before and after school, during lunch, between lessons, in the evenings, and on the weekends. The STs expressed their appreciation for their CTs being willing to answer quick questions about lesson planning outside of school hours. Grace recognized that her negative internship experience within social support could have been due to her own lack of communicating her thoughts and needs to her CT.

### *Professional Support*

When discussing professional support, feedback was the leading theme discussed by both the CTs and STs. All five STs expressed appreciation for feedback they received. They told stories of how their CTs would utilize informal feedback, often throughout the day (i.e., between classes, during lunch, or after school). Mandy explained, "My favorite thing was she'd [ask], 'what do you think went well?' Or… 'what happened?'...And if I didn't bring [something she saw] up…she would give me specific things like, 'well, what about when this happens?" Similarly, the CTs explained their use of informal feedback throughout the day but elaborated on their use of note-talking to guide their feedback. Ms. Adkins explained:

> I would always give her at the end of a, like, written observation, like, here's what I want you to do next week, and then next week, I would go, okay, did we meet that goal? Like,

where are we trying to get? Did we get there? So, some weeks, we didn't get there, but we set … that same goal for the next week.

Two additional themes predominantly emerged from professional support: introductions to the school and community and time management. Ms. Wilson specifically talked how she explained the importance of building relationships with school staff, especially the maintenance staff, with her ST. Furthermore, all four CTs explained how they emphasized time management and keeping up with the daily tasks of being an agriculture teacher (i.e., administrative tasks, land lab maintenance, FFA planning and paperwork, etc.). Mandy, Zack, and Kristin also explained how their CTs emphasized finding a work-life balance to sustain a career as an agriculture teacher. Lillie was left questioning if a work-life balance was possible after watching how her CT navigated day-to-day operations of her program.

### *Role Modeling*

Two main topics emerged within the area of role modeling: the roles of the agriculture teacher and teaching phases. STs explained how they watched their CTs navigate their many roles. They noticed how their CTs ran their FFA chapters and SAE programs, as well as how they managed their classrooms. Unfortunately, STs could not explicitly explaining their CTs philosophies behind why they ran their programs the way they did.

When talking about the teaching profession, most of the CTs expressed how they emphasized the importance of being a life-long learner to their STs, with all four having discussions with their STs about building rapport with students. Mr. Porter said, “I probably did that through demonstrating… Trying to make it fun, or it's just not. You can enjoy the experience. It's work. But it can be enjoyable as well. So, I let her see that I have fun doing it.”

The STs had mixed statements when talking about the teaching profession. Often their CTs explained their own experiences as new teachers, but only Mandy, Zack, and Kristin explained how their CT talked to them about how their teaching career has changed and what they did to continue to improve as teachers and remain happy throughout their career.

## Conclusion, Discussion, and Recommendations

The purpose of this study was to explore how CTs implemented mentoring best practices with their STs in a SBAE program. While we recognize these findings to be Florida specific, we believe these findings begin to paint a picture of the mentorship experiences that are occurring between CTs and STs. Through this research, we were also able to understand specific practices by mentors that were occurring within the areas of social support, professional support, and role modeling (Alemdag & Simsek, 2017; Barry, 2019; Russell & Russel, 2011)

For objective one, we compared the mentorship experiences of the CTs and STs. Overall, the STs were able to recognize how their CTs were or weren’t implementing best practices for mentorship. They expressed that often their mentor would often demonstrate something rather than explain it. The STs appeared to echo what the CTs stated, showing that the CTs were also recognizing their implantation of best practices for mentoring. There was one pair that did not share the same perspective of mentorship practices during the STI. The CT felt confident in how they handled the STI experience and the support that they gave their ST. However, their ST felt their CT was often distracted and put too much emphasis on teaching for an exam that was given during the STI. This misalignment could be attributed to the CTs focus on how the exam

preparation should be delivered rather than giving the ST space to be creative and try out new lessons.

Objective two began to explore the preferred method of mentorship that was provided by CTs from the perspective of the CT and the ST. Communication and frequent feedback emerged as the preferred method of mentorship for both parties. The STs seemed to thrive when their CTs stayed in constant communication with them about their teaching practices and other duties they may need to complete. This could be attributed to the current generation of students feeling like they need constant feedback to grow professionally (Half, 2015).

When describing the impact of the CT on the ST's decision to enter a career teaching agriculture for objective three, only three STs described their CTs positively impacting their decision to teach. These three STs were the ones that were able to give detailed examples of how their CTs mentored them throughout the experience. Alternatively, the two who did not feel like their CTs influenced their decision to enter the classroom were not able to share as many positive accounts of mentorship. Of these two, one sought additional advice and guidance from others throughout their internship to help them feel prepared to teach, while the other admitted to their own personality inhibiting their experience with their CT.

We recommend CTs become more familiar with the three major areas for best practices for mentoring prior to the STI. Ideally, they should work to develop their mentorship skills through university programs or other mentorship training opportunities. Additionally, it is our recommendation that CTs seek advice on how to explain their philosophies and the reasoning behind their actions to their STs. STs will benefit from both seeing and hearing why their CTs do what they do.

For university faculty that work closely with cooperating teachers, we recommend incorporating a preparation and support program geared specifically towards building mentorship skills. It is imperative to look for all gaps that could be addressed by these support programs. Through these interviews, an added emphasis on building a community of CTs emerged. Additionally, we recommend that university faculty work to demonstrate their own mentorship skills while interacting within the triadic model of ST, CT and university supervisor that is often seen during the STI.

We recommend continuing studying the lived experiences of the CTs and STs during the STI. These experiences begin to help practitioners understand what is occurring in the day-to-day interactions between the CTs and STs. Ultimately, trying to understand the relationship and needs of CTs and STs can help create preparation and support programs that can better prepare CTs in their role as mentors for STs who are at the cusp of their agriscience teaching career. We also recommend that this study be repeated at a multi-state level to bring in a more robust view of the experiences of CTs and STs across the profession. Finally, longitudinal data on the student's decision to enter the field post STI could provide insight on the impact that the cooperating teacher support program has had in the history of its implementation.

We are currently exploring a mixed-methods approach that will help build this body of research and understanding of this phenomenon. Effectively supporting CTs has the potential to help STs have a successful start to their teaching career. Findings from this study's phenomenological exploration can begin to help practitioners develop programs like these within teacher preparation programs (Barry, 2019; He, 2010).

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# Understanding Teacher Preparation of the Past: A Historical Narrative of the Student Teaching Block in Agricultural Education

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The teaching experience gained through the student teaching experience is a crucial step in the development of teachers (Beamer, 1967; Brandford et al., 2000; Camp & Bailey, 1998; Cardozier, 1967; Nichols, 1992; Sorenson et al., 2018). However, as with most other areas of education, the student teaching experience has been ever-evolving and has differed considerably by state and institution (Martin, 1982). The preparatory experiences leading up to student teaching also vary greatly. Regardless of structure or format, there can be no argument that the overall goal of the student teaching experience is to produce a person who is no longer the student but has become the teacher. However, a transformative student teaching experience requires interactions between reflection, theory, and practice (Retallick & Miller, 2010).

Learning in any capacity involves taking risks. A professional learning community encourages collaboration, thus creating a learner-centered environment where growth can occur (Bransford et al., 2000). The idea of a professional learning community in student teaching can be seen in the structure of the cohort model. A cohort is formed when students engage in courses and, along with their instructors, embody the interactions between reflection, theory, and practice needed for professional growth (Retallick & Miller, 2010). An early description of a student teaching cohort can be seen in the description provided by Works (1916), in which a senior pre-service teacher was placed at a school for one semester observing, then teaching the following semester. During the original student teacher's teaching semester, a new pre-service teacher begins their observation period, forming a rudimentary community of practice with peer-to-peer learning and instruction (Works, 1916). From this model, the first appearance of a "block plan" for student teaching takes shape (Beamer, 1967, p. 201), in which highly structured sequences of teaching experience programs resulted in the culminating experience of student teaching.

Immediately prior to student teaching, pre-service teachers could engage in a "summer practice program" to prepare them for student teaching (Beamer, 1967). The summer programs consisted of two weeks in which students became familiar with the community and school and prepared for their teaching semester. Pre-service teachers prepared lessons and visual aids and turned these in with a portfolio of work from a provided assignment consisting of information about the student teaching site. The summer program experience was associated with a course in the fall semester in which pre-service teachers reported back to their peers and instructor, sharing their experiences and reflecting as a group (Beamer, 1967). While noted as highly favored by students and effective in structure, the summer program was not mentioned as an element of field experiences in the second edition of *Teacher Education in Agriculture* (Burkey, 1982).

However, the block type model in which structured opportunities to prepare for student teaching and engage in two-way communication has been a continued theme in agricultural teacher preparation. While not called a block by name, a preferred 15-week outline of student teaching highlights what is essentially the historical outline of the student teaching block. Student teachers

begin their semester on campus as a group before traveling to their student teaching centers. In the middle of the experience, the cohort returns to campus to share with other student teachers and university instructors. Finally, the cohort ends the semester with group reflections, once again on campus (Miller & Wilson, 2010). For the student teaching experience to successfully transform the student into the teacher, there must be structured time for completing the critical interactions of reflection, theory, and practice (Retallick & Miller, 2010). Understanding the evolution of the student teaching block from the summer program to today's present-day structure can provide key guidance on what is needed for the student teacher of today and, maybe of greater importance, the student teacher of tomorrow.

## Conceptual Framework

This study was grounded in Human Capital Theory (Becker, 1964; Schultz, 1971) and focused on teacher human capital (Myung et al., 2013). Further, Tyler's (1949) four basic principles provide a framework for evaluating the purpose of teacher preparation programs to build capacity for a sustainable and effective teacher workforce. The questions are as follow: (1) What educational objectives are the students to be helped to attain? (2) What learning experiences can be provided that will enable the students to attain the objectives? (3) How can learning experiences be organized for effective and continuing learning? and (4) How can the effectiveness of the curriculum be evaluated? (Tyler, 1983, p. 74). Quality instruction occurs when an identified purpose leads to the development of objectives that, in turn, guide instruction through activities and assessments (Tyler, 1983). Tyler's (1949) four questions provided the conceptual frame that guided the research objectives to obtain a clear purpose for the student teaching block in agricultural education. Additionally, the conceptual model of using Tyler's (1949) four questions, through the lens of Human Capital (Becker, 1964; Schultz, 1971) provides an outline for understanding the evolution of the block experience over time and within institutions.

## Purpose

This historical narrative sought to investigate and describe the student teaching block in agricultural education. The following research questions guided this study:

1. Historically, what was the purpose and structure of the student teaching block in agricultural education?

2. How has the student teaching block changed over time in agricultural education?

## Methods

We sought to understand the student teaching block as it has been developed and implemented historically in agricultural education. A historical narrative approach was used to accomplish the study's purpose. Salevouris and Furay (2015) explained the historical narrative approach as analyzing various events, actors, and items that have shaped a historical phenomenon. For the purposes of this study, the student teaching block was operationalized as the time period (weeks or days) immediately before the student teaching experience, which is an intensive period used to

prepare the cohort/students for the internship (the student teaching experience). This study utilized several sources of primary data to understand better the history of the student teaching block in agricultural education: (a) expert interviews, (b) researcher-identified literature, and (c) participant-provided artifacts and literature (McDowell, 2002). A combination of purposive and snowball sampling methods was used to recruit participants (Creswell, 2013). Participants must have 25 or more years of experience in agricultural education to participate, which could include time as an SBAE teacher. Contact information for the participants ($N = 6$) was gathered via their university web pages.

The semi-structured, one-hour interviews were conducted via Zoom. Further, additional artifacts and literature used in the analysis were collected from participants after conducting the interviews. Observer comments in the form of field notes were recorded by the interviewers and aided in the interpretation and analysis of the transcripts (Ary et al., 2010). Items in the interview protocol were developed to allow participants to provide descriptions of the student teaching block that were rich with their understanding of the block, its purpose, and the changes throughout history. Six interviews were conducted, and all participants were current faculty at the rank of Professor in agricultural education at land-grant universities. Five participants identified as male and one participant identified as female. Table 1 overviews participants' experiences, cumulative years in the profession, and participant identifier.

**Table 1**
*Participant Experiences and Years in Profession*

| Participant Identifier | Years in Profession | Experiences |
|---|---|---|
| A | 41 years | SBAE teacher for 15 years who has worked in professional teacher education and curriculum development at three universities. |
| B | 35 years | SBAE teacher for five years. Their career has spanned three universities, focusing on teacher preparation. |
| C | 31 years | SBAE teacher for seven years. Their career has allowed them to be involved formally and informally with teacher education at three universities. |
| D | 50 years | SBAE teacher for three years. Their career has involved teacher education at two universities. |
| E | 35 years | SBAE teacher for eight years, then worked as the [State] FFA Coordinator. Over the course of their, they have been involved in teacher preparation at three universities. |
| F | 28 years | SBAE teacher for four years and has served in administrative and faculty positions at two universities. |

**Data Analysis**

*Otter.ai* online software was used to transcribe each interview, and the researchers verified the transcripts post-transcription. Inductive coding using the constant comparative method was utilized to analyze the data (Creswell, 2013; Corbin & Strauss, 2015). Three rounds of coding (open, axial, and selective) were conducted (Corbin & Strauss, 2015). In the open coding round, interview transcription data were analyzed by hand, line-by-line, to establish an initial set of 22 open codes (Miles & Huberman, 1994). These codes were organized in a data matrix using Microsoft Excel (Maxwell, 2013). Then, the research team negotiated the codes and consolidated them into four codes. In the final round, codes were selected by the researchers, and four themes were confirmed. Lincoln and Guba's (1985) criteria for establishing trustworthiness were used to build rigor into the study. Credibility was established through data and investigator triangulation (Creswell, 2013). Additionally, inter-coder agreement was achieved through multiple rounds of coding. The research team met at least bi-weekly throughout the research project. During this time, confirmability was achieved through the practice of reflective bracketing to reduce bias (Tufford & Newman, 2010), exercising reflexivity around our assumptions and roles (Ary et al., 2010; Tracy, 2010), and conducting multiple data checks (Lincoln & Guba, 1985). Dependability was established through our use of rigorous qualitative methodologies, as described above. Lastly, transferability was established through our thick and rich data report below so that consumers of this research may draw their generalizations (i.e., naturalistic generalization) regarding our findings (Lincoln & Guba, 1985; Stake, 1978).

## Findings

Four themes emerged through our analysis of the data. The four themes included: (1) Origins, (2) Purpose and Philosophy, (3) Structural Elements of the Block, and (4) Limitations and Forward Thinking. The four themes help to describe how agricultural education has used the block and begins to allow us to think about the future of the student teaching block and its purpose in teacher preparation. Pseudonyms are used to explain the findings.

### Theme 1: Origins

Several participants identified experiential learning theories and pragmatism as the basis for the block in agricultural education (Participants C, D, & E). For example, "John Dewey, all the way back to Will James and pragmatism and that sort of thing has always been [our] basic philosophical roots, I would say" (Participant D). Participant F also cited Vygotsky (1987) as another foundational theory supporting the origin of the student teaching block stating, “You want the student challenged enough where they're struggling, but they're successful.” Participants suggested that the origin of the student teaching block in agricultural education began as early as 1917 with the passage of the Smith-Hughes Act. Participant A said, "Dial back to 1917, Smith-Hughes … we're gonna have vocational agriculture in thousands of American high schools. Where're the teachers? … They had to figure out what was going to be the source of these teachers.” Additionally, it was propounded that the initial structure and format of the block was based on approaches by other subject areas by teacher preparation programs at normal schools (Participant A).

### Theme 2: Purpose & Philosophy

The block in agricultural education has had multiple purposes. Participants noted that one purpose of the block was to create a sense of camaraderie between students as they all have the same lived experience. Participant A posited, "You get a very strong sense of camaraderie between the students, so you're developing a support system, they're all commiserating, they're all having the same experience." Another purpose of the student teaching block is to confirm whether or not they want to teach. One participant mentioned, "For some students, it's a defining moment in terms of whether or not they want to teach" (Participant E). Many participants mentioned statements such as "intense experience," "concentrated," "immersive work," and "capstone" to describe the purpose of the block (Participation A, B, D, & E). Participant C, D, and E noted that experiential learning undergirded the purpose of the block. Participant C stated, "Dewey really speaks into the idea of experiential learning and how, you know, the student teaching experience is real-world practical experience." Others cited that pragmatism and proximal development theories also helped build the block's foundation (Participants E & F). Participant C cited Lortie's (1975) work in the apprenticeship of observation also aids in describing the philosophical underpinnings of the block structure.

**Theme 3: Structural Elements of the Block**

The structure varies widely across the profession. Participant A described the block at their current university as consisting of a one-week experience at the beginning of the student teaching semester with a midterm and final seminar meeting. Participant A said, "One week on campus, and then out for essentially close to 14 weeks, I guess, maybe coming back to campus a couple of times for various activities, and then finishing up with some sort of seminar at the end." This structure was a change from what was once a four-week experience prior to student teaching. Others described their institution's block format as initially a multi-week period prior to student teaching to now having no block, as described in this study. Participant D described the change by saying, "The student teaching experience itself in the public schools has, over the years, been increased to where it's now a full secondary school semester, which typically is a longer semester than our university semester." Course variation also differs across university block structures. Participant F stated, "we covered teaching methods, curriculum development." A critical structural element to the block, as mentioned by several participants, is the opportunity to "sharpen" (Participant A) and practice delivering lessons in an environment created for feedback and critique before student teaching. Participant C provided insight into the suggestion of implementing the block after the students had been in the classroom for a short time. They stated, "But I do think that the integration during and getting them to reflect during the student teaching when they came to campus, and they could do individual as well as group reflection on some of these important concepts with that experience they were having or are gaining that was I think that was beneficial."

**Theme 4: Limitations and Forward Thinking**

Several participants spoke about the block's limitations and the current system's future. As a limitation, Participants A and D discussed the need for more field experience as a limitation to the block system, referencing an increase in state requirements of time in the classroom as one reason some universities have chosen to forgo the block experience. Participant B provided a similar line of thought by noting, "I would say need dictated when we would put students out to

student teach…it was needed for how to get all of the content met, and then how to logistically get all of the needs met for students as we would place them out for student teaching in a really efficient and effective way for certification." Many suggested their concerns moving forward. Some participants worried that if teacher preparation in agricultural education were to forgo the block system, that strong sense of community and the opportunity to develop a deep camaraderie, collaboration, and sense of purpose would be lost. For example, Participant B mentioned, "you lose that opportunity to develop that deep camaraderie, sharing resources, not that some of that still doesn't happen, but probably not with the same kind of intensity that occurred in a four-to-six-week period." Some participants said preparing teachers continues to become more challenging as the contexts of classrooms continue to change and suggests rethinking the name of student teaching as a whole to embody the many roles teacher preparation programs must prepare students to fill. Participant C stated, "I really think student teaching is misnamed, you know, because it sounds like I'm a student at a university, and I'm going to go out and teach. And it's much more about student professional management."

## Conclusions/Discussion/Implications/Recommendations

Based on the findings, the purpose of the block as it relates to the agricultural education profession is to provide an intensive, immersive experience to prepare soon to be student teachers in an environment that provides an opportunity for practice and reflection before entering the classroom. Findings in this study show a trend of moving to fewer weeks of block and, in some cases, no block in many universities. This is supported by Bandura (1977) that mastery experiences and opportunities to practice can lead to mastering a behavior and improve overall self-efficacy. The results of this study identified the importance of the community of learners created through the block format. As the profession discusses the block as part of the SBAE teacher preparation program, it is essential to discuss how this community of learners and camaraderie will be facilitated and continued. Situating student teachers in a professional learning community ensures a learner-centered focus and supports that learning experiences should be organized to achieve the purpose (Bransford et al., 2000; Tyler, 1949, 1983). In this case, the profession needs to look deeply at how the block and student teaching experiences are organized to fulfill the purpose of camaraderie identified in this study.

It is recommended that periodic check-ins or seminars with student teachers be done to ensure they have the opportunity to reflect, commiserate, and learn from each other as they experience student teaching, as noted in Miller and Wilson (2010). Such a structure will also help to build a support system that can be used as they enter the profession and form their natural professional learning communities (Bransford et al., 2000). As a profession, it is also recommended that teacher preparation programs discuss the value of the block as needed for practice and preparation, or rather should student teachers begin the school year in their cooperating centers and return to campus later in the semester to reflect on lived experiences from their time in the classroom. Discussion around effectively organizing the block can ensure we achieve our purpose, which relates to Tyler's (1983) fourth question.

Future research should seek to understand the current understanding and perspectives of cooperating teachers and recent student teachers regarding the block. With an analysis of the teaching block's historical trends and the block's current perspectives, a study to explain how the

differences have benefited or hindered the teacher development process and recommendations for organization should be conducted. Other research should look to explain the lived experiences of student teachers who had a block experience prior to student teaching versus those who began the school year in the classroom to identify the purpose of each format.

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# Perceptions of Pre-service Teachers' Ability to Use AET as a Data Management System

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## Introduction, Purpose and Objectives

Debate exists on whether financial literacy should be taught as a stand-alone course or by integrating it into other curricular areas (Totenhagen et al., 2015). Regardless, what is understood about financial literacy is that educators should provide students with active and engaging learning experiences where they use their actual money to make decisions and apply concepts related to money management (Totenhagen et al., 2015).

School-based agricultural education (SBAE) provides opportunities for students to manage data and keep records on their agricultural enterprises and projects. Yet, teaching financial literacy to students has been a continual and long-lasting struggle for SBAE teachers (Foster, 1986; Layfield & Dobbins, 2002; Miller & Scheid, 1984; Sorensen et al., 2014; Toombs et al., 2020). In their study of agricultural education teachers in Oregon, Sorensen et al. (2014) found that using AET was one of the highest in-service needs of both early-career (i.e., those with less than six years of experience) and experienced teachers (i.e., those with six or more years of experience). What is more, research from Oklahoma State University indicated that preservice teachers had the least amount of overall self-efficacy related to managing the financial data aspect (i.e., record books) of their students' SAEs (Toombs et al., 2022).

*AGED 3203: Advising Agricultural Student Organizations and Supervising Experiential Learning* is a junior-standing course for preservice teachers that is focused on aspects of FFA and SAE and designed to help address such needs. The course includes laboratories where students engage with all aspects of the program, such as advising a local FFA Chapter, supervising student projects, and managing data through The Agricultural Experience Tracker (The AET), where students log entries, produce reports, and complete award applications from fictitious data sets. Such experiences are designed to prepare students for their future expectations as SBAE teachers once they enter the academy. As such, *AGED 3203* seeks to improve student knowledge and experiences related to financial literacy and data management using The AET. The course description is as follows:

> *AGED 3203* ". . . is designed to determine the resources and trends of local communities with respect to agricultural production and agribusiness. Emphasis will be placed on agricultural education program policies, FFA chapter advisement, planning and managing the instructional program, and the identification and completion of records and reports required of a teacher of agricultural education in Oklahoma." (Robinson, 2022, p. 1)

The AET is used nationwide by SBAE teachers and students to assist in the acquisition of record keeping skills in time and finance (Hanagriff, 2022). The goal of The AET is to track FFA and award-related experiences as well as actual educational experiences occurring in SBAE programs. In 2021, more than 8,000 SBAE and FFA programs and 1.1 million SBAE students used The AET to assist in tracking Supervised Agricultural Experiences (SAEs), recording FFA

activities, and creating and managing FFA award applications (Hanagriff, 2022). The AET has been adopted by 91% of all SBAE and FFA Programs across the nation (Hanagriff, 2022). In Oklahoma, SBAE teachers are required to use The AET to track student data and generate FFA-related reports (R. Bonjour, personal communication, April 13, 2017). With the heavy expectation to integrate The AET into SBAE programs, what impact can a semester-long course have on students' self-perceptions to use it?

The purpose of this study was to describe the self-perceived and actual efficacy of pre-service SBAE teachers toward operating and managing student projects through The AET. The study was guided by the following research objectives: (1) describe the personal characteristics of students enrolled in the course, (2) describe the perceived self-efficacy of pre-service SBAE teachers to use The AET for managing student projects, and (3) describe the abilities of preservice SBAE teachers to use and advise students in The AET.

## Theoretical Framework

Bandura's (1977) Self-Efficacy Theory guided the study. Self-efficacy is the belief a person has in his or her ability to perform a specific task or tasks (Bandura, 1977). It is based on repetition of completing the task with the assistance of a mentor. Self-efficacy can increase with a person's successes and decrease with their failures to complete the task (Wilson et al., 2020) and is largely dependent on an individual's continual effort, devotion, and behavior toward the task (Walumbwa et al., 2011). Four sources impact a person's self-efficacy (Bandura, 1994). These sources include mastery experiences, psychological arousal, vicarious experiences, and verbal persuasion. Mastery experiences provide the greatest opportunity for increased self-efficacy when individuals succeed at, or accomplish, a task. Vicarious experiences aid in improving self-efficacy when individuals are involved in the experience of observing others (i.e., models) successfully complete a task. Verbal persuasion is produced through encouragement and occurs when individuals are told they ". . . have what it takes to succeed" (Bandura, 1994, p. 3). Physiological arousal is related to how individuals react to the situations they encounter (Bandura, 1994). With the need to increase financial literacy among students in the American school system, and the role SBAE teachers can play in creating such authentic learning opportunities and experiences, it is important to assess students who aspire to be SBAE teachers on their self-perceived and actual ability to use The AET.

## Methods

The study was approved by the Oklahoma State University Institutional Review Board (IRB) on January 26, 2022. All students ($N = 42$) enrolled in the junior-level *AGED 3203* at OSU during Spring 2022 course were invited to participate in the study. Three points of data were collected. The first observation ($n = 41$) was conducted at the beginning of the semester (Week 1). The second observation ($n = 41$) was conducted at the midpoint of the semester (Week 8), and the third observation ($n = 32$) was conducted at the end of the semester (Week 16). Students were completed a questionnaire using Qualtrics regarding their perceived self-efficacy for using The AET. The questionnaire included personal characteristic questions and 22 statements regarding their perceived self-efficacy to perform various competencies in the AET. Each competency statement was rated on a 5-point, Likert-type scale ranging from 1 *Strongly Disagree* to 5 *Strongly Agree*. Statements were derived from The AET *Quizizz* assessments; 22 complementary statements were developed to determine the perceived self-efficacy of the participants when

using The AET. For example, one question on the *Quizizz* asked, "As an FFA officer, where do you record your officer meetings and chapter meetings?" The complementary perceived self-efficacy statement was "Log FFA Activities." Another *Quizizz* example was, "After logging into your AET, (blank) should be completed 100% before beginning any other entries." The complementary perceived self-efficacy statement was, "Create a student AET profile" derived from The AET. The three assessments addressed student knowledge of The AET icons, financial applications, and record book terms.

Descriptive statistics, including central modes of tendency (means and standard deviations) and variability (frequencies and percentages), were used to analyze the data. Personal characteristics included student type (traditional four-year or transfer), FFA degree(s) obtained, FFA office(s) held, and years of FFA experience. Student perception data were analyzed by recording the mean and standard deviation for the group at each of the three observation points. The change in mean scores between observations one and three were calculated to determine the change in perceptions from the beginning to end of the semester.

## Results/Findings

Objective one sought to describe the personal characteristics of the students enrolled in *AGED 3203*. The personal characteristics of the students are presented in Table 1. One-half ($f = 21$) were traditional, four-year students with the other one-half ($f = 20$) being transfer students. One-quarter ($f = 36$) of the students had received their Greenhand award, and 33 (23%) had received their State FFA Degree. Thirty-two (68%) had served as a Chapter FFA Officer, seven (17%) had been a State Proficiency Finalist, and 34 (80%) had been an FFA member for at least four years (see Table 1).

**Table 1**

*Personal and Professional Characteristics of Participants (*N = *42)*

| Characteristics | *f* | % |
|---|---|---|
| **Type of College Student** | | |
| Traditional, four-year OSU student | 21 | 50.00 |
| Transfer student | 20 | 47.62 |
| Did not answer | 1 | 2.38 |
| **FFA Degrees Obtained** | | |
| Discovery | 19 | 13.20 |
| Greenhand | 36 | 25.00 |
| Chapter | 35 | 24.31 |
| State | 33 | 22.92 |
| American | 16 | 11.11 |
| Did not answer | 1 | 0.69 |
| **Officer Positions Held** | | |
| Chapter FFA Officer | 32 | 68.09 |
| District FFA Officer | 2 | 4.26 |
| Area FFA Officer | 1 | 2.13 |
| State FFA Officer | 3 | 6.38 |
| National FFA Officer | 0 | 0.00 |
| Not an officer | 8 | 17.02 |

| | | |
|---|---|---|
| Did not answer | 1 | 2.13 |
| **State Proficiency Finalist** | | |
| Yes | 7 | 16.67 |
| No | 34 | 80.95 |
| Did not answer | 1 | 2.38 |
| **Years of FFA Membership** | | |
| 5 years | 19 | 45.24 |
| 4 years | 15 | 35.71 |
| 3 years | 3 | 7.14 |
| 2 years | 1 | 2.38 |
| 1 year | 0 | 0.00 |
| I was not an FFA Member | 3 | 7.14 |
| Did not answer | 1 | 2.38 |

Objective two sought to describe the perceived self-efficacy of pre-service SBAE teachers to use The AET for managing student projects. Mean scores were compared across observations for each assessment as well as cumulatively (see Table 2). Student perceptions ranged from the real limits of disagree to agree on all statements in Observation 1 and increased from neither agree or disagree to strongly agree in Observation 3. Students experienced the greatest amount of perceived growth in the areas of National Chapter Award Applications (*MD* = 1.26), Use the market manager (*MD* = 1.22), and Advise students' research SAEs (*MD* = 1.21).

**Table 2**

*Perceived Self-Efficacy of Students (*N = *42)*

| | Observation 1 | | Observation 2 | | Observation 3 | | |
|---|---|---|---|---|---|---|---|
| Statement | *M* | *SD* | *M* | *SD* | *M* | *SD* | *MD* |
| Log FFA Activities | 3.71 | 0.89 | 4.21 | 0.71 | 4.34 | 0.59 | 0.63 |
| Enter Journal Entries | 3.68 | 0.92 | 4.36 | 0.61 | 4.53 | 0.56 | 0.85 |
| Enter Financial Entries | 3.66 | 0.90 | 4.29 | 0.76 | 4.25 | 0.83 | 0.59 |
| Log Community Service Activities | 3.61 | 0.98 | 4.02 | 0.71 | 4.19 | 0.88 | 0.58 |
| Create a Student AET Profile | 3.59 | 1.08 | 4.26 | 0.62 | 4.19 | 0.77 | 0.60 |
| Log FFA Offices | 3.39 | 1.06 | 3.74 | 0.98 | 4.06 | 0.93 | 0.67 |
| Create an AET Resume | 3.22 | 1.02 | 3.55 | 0.96 | 3.97 | 0.92 | 0.75 |
| Use the AET Portfolio | 3.17 | 0.96 | 3.78 | 0.92 | 4.13 | 0.78 | 0.96 |
| Advise Students in completing State FFA Degree Applications | 3.07 | 1.09 | 3.74 | 1.09 | 3.84 | 1.03 | 0.77 |
| Log FFA Committees | 3.05 | 1.10 | 3.55 | 1.12 | 4.03 | 0.88 | 0.98 |
| Advise Students' Entrepreneurship SAEs | 3.05 | 1.01 | 3.93 | 0.88 | 4.03 | 0.81 | 0.98 |
| Advise Students' Foundational SAEs | 2.95 | 1.03 | 3.98 | 0.80 | 4.13 | 0.86 | 1.18 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Advise Students' Placement SAEs | 2.88 | 0.97 | 3.93 | 0.91 | 4.06 | 0.83 | 1.18 |
| Advise Students' School-Based Enterprise SAEs | 2.80 | 1.02 | 3.86 | 0.97 | 3.94 | 0.83 | 1.14 |
| Advise Students' Research SAEs | 2.76 | 0.98 | 3.79 | 0.91 | 3.97 | 0.81 | 1.21 |
| Advise Students' Service-Learning SAEs | 2.76 | 0.93 | 3.81 | 0.96 | 3.94 | 0.83 | 1.18 |
| Advise Students in Completing Proficiency Applications | 2.76 | 1.01 | 3.71 | 0.96 | 3.81 | 0.96 | 1.05 |
| Using the Breeding Herd Manager | 2.73 | 1.15 | 3.69 | 0.91 | 3.66 | 0.96 | 0.93 |
| Advise Students in Completing American FFA Degree Applications | 2.63 | 1.01 | 3.52 | 1.14 | 3.61 | 1.13 | 0.98 |
| Use the Market Manager | 2.46 | 0.99 | 3.60 | 1.02 | 3.69 | 0.98 | 1.23 |
| Advise Students in Completing Agriscience Fair Applications | 2.46 | 1.06 | 3.26 | 1.14 | 3.44 | 1.14 | 0.98 |
| Advise Students in Completing National Chapter Award Applications | 2.33 | 1.03 | 3.19 | 1.18 | 3.59 | 1.31 | 1.26 |

*Note.* 1 = *Strongly Disagree,* 2 = *Disagree,* 3 = *Neither Agree nor Disagree,* 4 = *Agree,* 5 = *Strongly Agree*; *MD* = Mean Difference score between Observations 1 and 3.

Objective three sought to determine students' actual ability to identify features and use The AET as a curricular resource for SAEs across the semester. The AET *Quizizz* were used to measure student knowledge of the data management program. Mean scores were compared across observations for each assessment as well as cumulatively (see Table 3).

**Table 3**

*Actual Ability of Participants to Identify and Use Features within The AET (*N = *42)*

| | Observation 1 | Observation 2 | Observation 3 | |
|---|---|---|---|---|
| AET Quiz Components | *M* | *M* | *M* | *MD* |
| Record Book Terms | 62.20 | 74.86 | 69.49 | 7.29 |
| AET Icons | 57.07 | 70.48 | 69.20 | 12.13 |
| Financial Applications | 55.80 | 57.19 | 59.10 | 3.30 |
| Cumulative | 57.40 | 65.93 | 65.02 | 7.62 |

*Note.* Quiz scores ranged from 0 to 100

Students' actual knowledge of The AET Icons, Financial Applications, and Record Book Terms increased between Observations 1 and 2, with Record Book Terms and AET Icons both increasing by more than ten percent. However, during Observation 3, Record Book Terms and AET Icons exhibited a decrease in students' actual ability to recall terms and identify icons. Although slight, actual ability to determine correct Financial Applications increased throughout all three observations. Cumulatively, students' actual ability to use The AET increased from Observation 1 to Observation 2, and then slightly decreased when evaluated in Observation 3. The greatest growth of The AET Quiz Components from Week 1 to Week 16 was realized for AET Icons (*MD* = 12.13). In comparison, Financial Applications experienced the least amount of change (*MD* = 3.30) in students' actual ability throughout the semester-long course experience.

## Discussion/Conclusions/Recommendations

Roughly one-half of the students began their undergraduate education at OSU. Three (7%) students were not FFA members in high school. What is more, 21% of the students failed to receive their State FFA Degree, and only 17% had been a finalist for a State FFA Proficiency Award. Therefore, it is possible that a high number of students failed to have adequate experience with The AET prior to this course. As such, it might be unfair to expect these students obtain mastery (Bandura, 1994) in The AET as a result of one class.

Students' self-perceived abilities to use The AET increased across all areas throughout the semester, which supports Bandura's (1977) assertion that self-efficacy is solidified through rich experiences of performing a particular task over time. Increases were detected across the semester in all 22 statements, indicating that the students improved their efficacy for using the software and advising student SAEs because of the course.

Students' actual abilities also increased overall when compared across the three-point time series; however, the growth might not be sustained long term, as scores showed a decrease between observations two and three in comparison to those noted between observations one and two. It is possible that the results might be attributed to the timing of the presentation of content related to The AET. Specifically, aspects of The AET were emphasized heavily during the first one-half (eight weeks) of the semester, and then tapered off toward the end of the semester. The more elevated scores detected from Observation 1 to Observation 2 may be due to the recency effect of the emphasis of The AET during that time frame. Although students' actual ability to determine Financial Applications in The AET increased across the three observations, their mean scores were still below a 60%, indicating a failing grade. Unfortunately, students were only able to increase their overall knowledge of The AET by a total of eight and one-half points (a grade of D) from Week 1 to Week 16. Simply stated, participants are not proficient in the financial applications of The AET, which is concerning considering the importance of teaching financial literacy in the current climate (Totenhagen et al., 2015).

It is recommended that this study be replicated with these students as they enter the teaching profession. This longitudinal trend study would provide comparisons between perceived and actual self-efficacy of teachers based on actual projects and experiences of their students and their readiness to learn such content. The timing of when to teach certain topics to students is an imperative task for all teacher preparation programs. Perhaps students simply are not ready to learn aspects of The AET during the spring semester of their junior year. Based on the findings

of this study, it is imperative that we, as a teacher preparation program, implement aspects of The AET into other pre-service courses, where appropriate, to provide students additional opportunities and iterations necessary for mastery experiences (Bandura, 1994). In addition, regarding the practice of teaching SBAE, the state office of career and technical education in Oklahoma should be alerted to the actual competency and self-efficacy levels of the new teachers in the state so that appropriate professional development may be provided once these students enter the teaching ranks.

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# Investigating the Effects of Cognitive Style on Course Motivation for Students' Enrolled in a Team-Based Learning Formatted Introductory Agricultural Mechanics Course at Louisiana State University

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## Introduction

In recent years, it has become increasingly important for educators to adapt to new pedagogies in order to develop higher order thinking skills for their students to meet the demands of the 21st century workplace (Fuhrmann & Grasha, 1983; Jonassen, 2000; Ulmer & Torres, 2007). Due to the highly structured components of the workplace today, skills associated with problem solving or critical thinking are highly desired (Gokhale, 1995) because employers want individuals who can find, identify, and solve complex problems in an effective and efficient manner (Johnson, 1991). However, students today often do not solve meaningful problems as a part of their curricula (Jonassen, 2000).

To combat these lack of skills, educators have begun to incorporate more innovative teaching methods like flipped classrooms into their pedagogy. The first flipped classrooms can be seen emerging in the early 2000's (Frederickson et al., 2005; U.S. Department of Education, 2001; Strayer, 2007). This type of platform allows students to take command of their own learning outside of classroom and educators time to facilitate meaningful interactive learning experiences during class time (Lage et al., 2013). Another type of flipped classroom is Team-Based Learning (TBL). TBL is a student-centered approach that shifts instruction away from a traditional lecture format and creates a more student-focused learning environment (Artz et al., 2016; Nieder et al., 2005). Essentially, TBL allows the learner to take on the responsibility of learning the conceptual knowledge outside of class time and focus on the procedural knowledge in class (Michealsen & Sweet, 2008). In this format students are able to develop problem-solving and critical thinking skills by being provided the ability to solve real-world application exercises.

Even though TBL emerged in the 1970's, research supporting its use and effectiveness have been rather few and far between, especially in agricultural education. However, recent research on the use of TBL has been conducted. McCubbins et al. (2016) conducted a study to examine student perceptions of TBL in a capstone course. The findings from this study suggest that students had a positive view of TBL and were highly satisfied with the student-centered learning environment (McCubbins et al., 2016). The results from this study also indicated that working in teams had a positive impact on student motivation to work and learn in a collaborative setting (McCubbins et al., 2016). Similarly, McCubbins et al. (2018) conducted a study to assess student engagement in a TBL formatted course and found that TBL in fact did support students critical thinking, motivation to learn, and ability to effectively apply course concepts. Further, Figland, Blackburn, and Roberts (2019) reported that students were highly satisfied with a TBL formatted agricultural mechanic's course. These students perceived that TBL supported the development of

problem-solving skills and promoted positive collaboration between group members and increased student self-efficacy in agricultural mechanics (Figland et al., 2019). Therefore, the questions arise: Does cognitive style effect course motivation of students enrolled in a TBL formatted course?

## Purpose and Objectives

The purpose of this study was to determine the effect cognitive style had on course motivation of students enrolled in an introductory agricultural mechanic's course at Louisiana State University.

The following null hypotheses guided this study:

> $H_0$1: There is no statistically significant differences in course motivation based on cognitive style for students enrolled in an introductory agricultural mechanic's course.

## Theoretical Framework

The theoretical framework used for this study was Kirton's (2003) Adaptation-Innovation Theory (A-I Theory). The A-I Theory is founded on the belief that every individual is creative and can solve problems, whether they be simple or complex (Kirton, 2003). However, the A-I Theory is only a measure of cognitive style that examines problem solving an individual basis (Kirton, 2003). Primarily, this theory is concerned with the influence of individual cognitive style and preferred mode to learn.

Within Kirton's Adaptation-Innovation Theory, individual cognitive style falls between adaptation and innovation on a continuum from 32-160 (Kirton, 2003). This type of scale does not allow any individual to be purely an adaptor or purely and innovator. Specifically, individuals with scores ranging from 32-95 are considered more adaptive and prefer a more structured environment when solving problems. These individuals prefer well-established problems and favor working within the current problem structure (Kirton, Bailey, & Glendinning, 1991). More adaptive individuals tend to collaborate well with group members and generate ideas that favor consensus (Kirton, 2003). On the contrary, individuals who scores range from 96-160 are considered more innovative in nature and prefer less structure to solve the problem and often challenge boundaries (Kirton, 2003; Lamm et al., 2012). More innovative individuals tend to break the boundaries and generate ideas outside the current group structure (Kirton, 2003). Often, individuals falling more on the innovative side of the continuum tend to be novel and find different ways to solve problems. Whereas adaptors tend to be safer, more predictable, conforming, and less ambiguous when solving problems (Kirton, 1999, 2003).

## Methods

The data associated with this study were collected as part of a larger research project that investigated the effect students' cognitive style had on small engines problem-solving ability. A one-group pretest-posttest preexperimental design was used to collect data associated with this research project (Campbell & Stanley, 1963; Salkind, 2010). This method is highly used in

educational research when all individuals are assigned to the experimental group and observed at two time periods (Campbell & Stanley, 1963; Salkind, 2010). However, because there is no comparison group it is nearly impossible to determine if the change occurred from the intervention of other extraneous variables.

The population/sample of this study were students enrolled in an introductory agricultural mechanic's course at Louisiana State University during the spring semester of 2018 ($n$ = 17) and spring semester of 2019 ($n$ = 15). However, one student from the spring semester of 2018 did not complete enough course work and was excluded from the study, therefore, our sample population totaled $n$ = 31. Demographically, the majority of our participants were female ($n$ = 17, $f$ = 54.8), classified as sophomores ($n$ = 13, $f$ = 41.9), and majored in Agricultural and Extension Education ($n$ = 13, $f$ = 41.9).

Homogeneity was tested using independent sample t-tests to determine if there was statistically significant different between the students enrolled in the spring of 2018 and 2019 semesters based on age ($p$ = 0.596) and cognitive style ($p$ = 0.109). A Chi-Square test was then utilized to determine if differences existed between gender and the two semesters ($p$ = .576). This analysis revealed that out population was homologous and therefore the data were merged for further analysis.

**Instrumentation**

Student motivation was assessed by utilizing the Course Interest Survey (CIS) developed by Keller (2010). The goal of this instrument was to determine how motivated students were before and after a particular lesson or course. This instrument comprised of 34 items, which made up the four subscales of the ARCS model (Attention, Relevance, Confidence, and Satisfaction). Participants responded on a five-point Likert-type scale from *1 = not true, 2 = slightly true, 3 = moderately true, 4 = mostly true*, and *5 = very true*. All students in this course completed the CIS instrument via paper format at the beginning and end of the small gasoline unit. The CIS instrument was attached to the back of the pretest packet and posttest packet, which were handed out on the first day of the small engine's module and on the last day of the small engine's module.

The scoring guide used to attain the measures of the ARCS utilizing the CIS are displayed below in Table 1 (Keller, 2010, p.4). Those items on the instrument that were labeled as *reverse* were reverse coded in SPSS software when the data from the instrument were entered.

Table 1
*Scoring Guide for the CIS (Keller, 2006)*

| Attention | Relevance | Confidence | Satisfaction |
|---|---|---|---|
| 1 | 2 | 3 | 7(reverse) |
| 4 (reverse) | 5 | 6 (reverse) | 12 |
| 10 | 8 (reverse) | 9 | 14 |
| 15 | 13 | 11 (reverse) | 16 |

| | | | |
|---|---|---|---|
| 21 | 20 | 17 (reverse) | 18 |
| 24 | 22 | 27 | 19 |
| 26 (reverse) | 23 | 30 | 31 (reverse) |
| 29 | 25 (reverse) | 34 | 32 |
| | 28 | | 33 |

## Results

At the beginning of the course, students were administered the Course Interest Survey (CIS) (Keller, 2010). The students completed the CIS at the beginning of the small gasoline engines unit and then were reassessed at the end of the unit. Overall, average individual pre-course motivation was 150.45, with scores ranging from 129-167. When looking at individual cognitive style categories, individuals who were more adaptive had a mean score of 149.57, with a range of 129-167 on the pre-course motivation survey, while more innovative individuals had a mean score of 153 and a range of 135-165. In terms of the four CIS construct areas; the more adaptive individuals had a mean score of 4.01 in the pre-attention construct, which is interpreted as *mostly true*. The more innovative students also had a mean pre-attention score of 4.19, which is *mostly true*. On the relevancy area, the more adaptive individuals had a mean score of 4.61 and the more innovative individuals had a pre-relevancy score of 4.68, which are both interpreted as *very true*. Within the satisfaction area, the more adaptive individuals had a mean score of 4.49, which is interpreted as *mostly true.* The more innovative students had a mean score of 4.60 pre-satisfaction construct, which is interpreted as *very true*. Finally, in the area of confidence, the more adaptive students had a mean score of 4.45, which is *mostly true*. While the more innovative individuals had a pre-confidence mean score of 4.50, which are both interpreted as *very true* (See table 2).

Table 2
*Pre-Course Interest Survey Scores for Students Enrolled in Introduction to Agricultural Mechanics by Cognitive Style (n = 31)*

| Item | *f* | *M* | *SD* | Minimum | Maximum |
|---|---|---|---|---|---|
| Overall Pre-course Motivation | 31 | 150.45 | 10.430 | 129 | 167 |
| Overall Pre-course Motivation by Cognitive Style | | | | | |
| More Adaptive | 23 | 149.57 | 10.166 | 129 | 167 |
| More Innovative | 8 | 153 | 11.464 | 135 | 165 |
| Individual Construct Pre-course Motivation by Cognitive Style | | | | | |
| Attention | | | | | |
| More Adaptive | 23 | 4.01 | .521 | 2.250 | 4.750 |
| More Innovative | 8 | 4.19 | .496 | 3.125 | 4.625 |
| Relevance | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| More Adaptive | 23 | 4.61 | .293 | 3.890 | 5.00 |
| More Innovative | 8 | 4.68 | .509 | 3.625 | 5.00 |
| Satisfaction | | | | | |
| More Adaptive | 23 | 4.49 | .452 | 3.56 | 5.00 |
| More Innovative | 8 | 4.60 | .385 | 4.00 | 5.00 |
| Confidence | | | | | |
| More Adaptive | 23 | 4.45 | .384 | 3.75 | 5.00 |
| More Innovative | 8 | 4.50 | .509 | 3.625 | 5.00 |

On the post-course motivation survey the average course motivation scores were 151.10, with scores ranging from 109-167. Also, the 23 more adaptive individuals had an average score of 152.09, with a range of 109-167 on the post-course motivation survey. Whereas the eight more innovative students had an average score of 156 and ranged from 141-167 on the post-course motivation survey. In terms of the four CIS construct areas; in the attention area the more adaptive individuals had a mean score of 4.09, which is interpreted as *mostly true*. The more innovative students also had a mean post-attention score of 4.33, which is *mostly true*. In the relevancy area, the more adaptive and more innovative individuals both had a mean score of 4.64, which is interpreted as *very true*. Within the satisfaction area, the more adaptive individuals had a mean score of 4.56 and the more innovative students had a mean score of 4.67, which again is recorded as *very true*. Finally, in the area of confidence, the more adaptive students had a mean score of 4.58 and the more innovative individuals had a post-confidence mean score of 4.70, which are both interpreted as *very true* (See table 3).

Table 3
*Post-Course Interest Survey Score for Students Enrolled in Introduction to Agricultural Mechanics by Cognitive Style (n = 31)*

| Item | *f* | *M* | *SD* | Minimum | Maximum |
|---|---|---|---|---|---|
| Overall Post-course Motivation | 31 | 153.10 | 11.80 | 109 | 167 |
| Overall Post-course Motivation by Cognitive Style | | | | | |
| More Adaptive | 23 | 152.09 | 12.79 | 109 | 167 |
| More Innovative | 8 | 156 | 8.37 | 141 | 167 |
| Individual Construct Pre-course Motivation by Cognitive Style | | | | | |
| Attention | | | | | |
| More Adaptive | 23 | 4.09 | .565 | 2.875 | 5.00 |
| More Innovative | 8 | 4.33 | .347 | 3.875 | 4.875 |
| Relevance | | | | | |
| More Adaptive | 23 | 4.64 | .418 | 3.110 | 5.00 |
| More Innovative | 8 | 4.64 | .341 | 4.110 | 5.00 |
| Satisfaction | | | | | |
| More Adaptive | 23 | 4.56 | .455 | 3.110 | 5.00 |
| More Innovative | 8 | 4.67 | .316 | 4.110 | 5.00 |

| | | | | | |
|---|---|---|---|---|---|
| Confidence | | | | | |
| More Adaptive | 23 | 4.58 | .341 | 3.75 | 5.00 |
| More Innovative | 8 | 4.70 | .258 | 4.25 | 5.00 |

A Mann-Whitney U test was used to determine the statistical significance of the difference between course motivations by cognitive style. The Mann-Whitney U test determined that there was no statistically significant difference in course motivation by cognitive style ($p$ = .619). (See table 4).

Table 4
*Mann-Whitney U Test for Differences in Course Motivation by Cognitive Style for Students Enrolled in Introduction to Agricultural Mechanics*

| *U* | *Z* | *p* |
|---|---|---|
| 81 | -.498 | .619 |

## Conclusions/Implications

After completing the pretest and posttest, students were asked to complete a course interest survey to determine the effects of cognitive style on course motivation. However, much like content knowledge, there were found to be no differences between an individual's course motivations by cognitive style. However, the more innovative students had higher course motivations on the pre and posttest than the more adaptive students. When examining each individual ARCS construct in the CIS, all students had the highest motivation in the area of relevance and satisfaction. Therefore, the students in this course felt that the course content was relevant to their overall learning and indicated that they were highly satisfied with the course.

This conclusion, however, is not consistent with previous research done by McCubbins et al. (2016) and McCubbins et al. (2018), which indicated that working in teams increased student motivation to learn and work collaboratively. However, it is more consistent with research completed by Figland, Blackburn, and Roberts (2019), which indicate students have an overwhelming positive perception of a team-based learning formatted agricultural mechanics course and are highly satisfied with the course.

When digging deeper into this category, it was noted that the more innovative individuals had higher course motivation on the pre and the posttest than the more adaptive students, but the more innovative individuals are the least successful troubleshooters. Perhaps, the more innovative students have higher motivations because of the course structure, which allows for less structure and more idea generation ability, which the more innovative student prefer (Kirton, 2003; Michealsen & Sweet, 2004; Sibley & Ostafichuk, 2015). Further, perhaps the slight increase in motivation is because of the adoption of a TBL formatted course, which allowed for a student-centered learning environment (Michealsen & Sweet, 2004; Sibley & Ostafichuk, 2015).

## Recommendations

Additional research is recommended to further investigate the role cognitive diversity has on student motivation. The results from this study indicate no statistically significant relationship existed between cognitive diversity and course motivation. However, the more innovative

students reported being more motivated on the pre and posttest than any other group. Investigating factors associated with student motivation may bring insight into the role motivation has on problem solving ability.

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# Improving Agricultural and Environmental Education through Experiential Learning: An Evaluation of a Statewide STEM Initiative for SBAE Teachers

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## Introduction, Review of Literature, and Statement the Problem

The U.S. coast has lost roughly 6,000 square miles of land since the 1930s (Colton, 2016). As a consequence, this environmental issue has greatly affected the agricultural industry in Louisiana as well as other coastal areas. Despite these trends, it should be noted that agriculturalists and environmentalists have traditionally worked together to address common concerns and, as such, relationships appear to be strengthening. For example, new collaborative opportunities have emerged after the Environmental Protection Agency (EPA) and the National FFA Organization signed a memorandum of understanding in early 2019 (AgDaily, 2019). This memorandum has been one example of new possibilities to address issues such as coastal loss, by placing a greater curricular emphasis on how science, technology, engineering, and mathematics (STEM) principles could be used to solve problems. Such a curricular shift in school-based agricultural education (SBAE) could help supply the career pipeline with practitioners, researchers, and inventors that have the skills needed to tackle a world fraught by many complex environmental and agricultural issues (Roberts et al., 2020).

SBAE has many natural connections to STEM. However, Wang and Knobloch (2018) advanced an integrated approach by which educators emphasized the teaching and learning of any two or more STEM subjects in agriculture to better foster students' critical thinking, transdisciplinary understandings, and problem-solving abilities. On this point, SBAE students have identified a more favorable perception of agriculture when it was used as a context to teach science and reported a better understanding of scientific principles when they were taught in a contextualized approach (Balschweid, 2002). Meanwhile, Parr et al. (2006) found that mathematics contextualized in agricultural mechanics improved students' attitudes toward learning mathematics. However, some conflicts have also emerged in literature on STEM in SBAE. For example, Thoron and Burleson (2014) reported that integrating STEM increased student motivation to learn science concepts. However, Chumbley et al. (2015) described SBAE students' primary motivation to learn science as driven by their desire to earn a high grade rather than increased interest in agricultural content. Despite these conflicting reports, teachers, teacher educators, and state agricultural leaders have consistently expressed value in integrating STEM concepts in SBAE (Smith et al., 2015; Stubbs & Myers, 2016; Swafford, 2018).

Louisiana has historically lacked an SBAE curriculum with intensive STEM concepts. Instead, career and technical education in Louisiana has focused on preparing students to acquire industry-based credentials (Louisiana Department of Education, n.d.). As a consequence, SBAE teachers often have little time to focus on other areas of agriculture, especially environmental science (H. Smith, personal correspondence, July 17, 2022).

Because of this deficiency, in 2017 a new credential, called Agritechnology (Agritech), was introduced to ensure that Louisiana SBAE students receive instruction in more areas of agriculture while still achieving an industry based credential. However, this guidance for this credentialing program included basic learning standards and lacked a robust curriculum to support instruction. As a result, teachers were often not able to successfully certify their students in Agritech. Therefore, a problem has existed in ensuring that Louisiana SBAE teachers have the resources needed to successfully prepare students to become Agritech certified while also becoming STEM literate.

In 2020, our research team secured a USDA-NIFA grant to carry out a STEM initiative for teachers. The initiative had two distinct phases in which we (1) developed a curriculum for the Agritech credential as well as supporting laboratories and other resources that were contextualized in agricultural and environmental issues, and (2) created professional development training for Louisiana SBAE teachers, so they could effectively use the curriculum and facilitate experiential, STEM-based laboratory experiences that supported the curriculum. This approach, however, had not been evaluated regarding its effectiveness.

## Theoretical Framework

Kolb's (1984) experiential learning theory (ELT) grounded Louisiana's STEM initiative. According to Kolb, ELT can be defined as "the process whereby knowledge is created through the transformation of experience. (Kolb 1984, p. 41). Kolb's ELT allows for learning through four modes with the instructor being responsible for guiding learners through the experiences. The ELT model consists of learning through concrete experiences and/or abstract conceptualism and then transforming that learning through reflective observations and/or active experimentation (Kolb & Kolb, 2017). The completion of all four stages of experiencing, reflecting, thinking, and acting allows deeper learning to occur (Kolb & Kolb, 2005).

In SBAE, Shoulders and Myers (2013) reported that teachers spent approximately 43% of their time providing concrete experiences and only 12% of their time guiding students through active experimentation. Additionally, only 30% of teachers in the study reported using all four stages of ELT to support learning in their classrooms (Shoulders & Myers, 2013). To attain divergent knowledge, teachers should not only provide opportunities for students to grasp new knowledge but must also experience that knowledge actively (Knapp & Benton, 2006). Although the value of using experiential learning to promote STEM integration in SBAE has been advanced (Smith & Rayfield, 2017, 2019), there has been little work to distill specific methods and approaches to improve teachers' satisfaction, skills, and intent to use experiential learning to promote STEM growth through agricultural and environmental science.

## Background of the Study

After the receiving grant funding in 2020, we selected 10 Louisiana teachers for a grant funded Agritech Ambassador Training Program (Agritech Ambassadors). This program supported the development of an Agritechnology curriculum, which embedded STEM content into existing state agricultural education and credential standards and provided for the creation of laboratory guides and laboratory materials to improve the teaching and learning of agricultural and

environmental science. In 2021, the selected Agritech Ambassadors participated in an intensive three-day training, grounded the Kolb's ELT model, which included concrete experiences related to the content in the Agritechnology curriculum, resources and laboratory guides, the scientific method, training methods, and evaluation tools. The teachers also participated in active experimentation while completing laboratory activities and analyzed the laboratories for training and use in Louisiana. After the training, the Agritech Ambassadors began leading professional development sessions across the state throughout the 2021-2022 school year. Each Agritech Ambassador training session lasted approximately two hours and provided SBAE Teacher participants with information related to the Agritechnology curriculum, reasons to integrate STEM content, methods of incorporating the scientific method in SBAE courses, and experiential laboratories.

## Purpose and Objectives

The purpose of this evaluation was to document the effectiveness of a professional development approach for teachers regarding how to integrate STEM concepts using experiential learning into the SBAE curriculum. Two objectives guided the study:

1. Identify the level of satisfaction, skill development, and intent to integrate STEM-based agricultural and environmental content of Louisiana SBAE teachers participating in an Agritechnology Ambassador training program.

2. Identify the level of satisfaction, skill development, and intent to integrate STEM content when utilizing Agritech Ambassadors to provide professional development opportunities for Louisiana SBAE teachers.

## Methods

This evaluation study was grounded in Kirkpatrick's and Kirkpatrick's (2006) evaluation framework. The framework focuses on four levels of training outcomes: (1) participants' levels of satisfaction with the training program; (2) changes in participants' knowledge, skills, and aspirations; (3) changes in participants' professional behavior and practices; and (4) organizational impacts of participants' changes (Kirkpatrick & Kirkpatick, 2006). This project focused on the first three levels of outcomes.

This study, as part of a larger program and investigation, consisted of a pre-post quasi-experimental design which collected data related to changes in both the Agritech Ambassadors' as well as the SBAE Teacher participants' satisfaction with their respective training programs, their skill development regarding the Agritech content, and their intent to integrate STEM laboratories in their classroom. For Agritech Ambassadors, the pre-test was given at the beginning of the training and the post-test was administered after completion. For SBAE Teacher participants, retrospective pre and post-tests were given at the end of the training.

For the Agritech Ambassadors, this study developed pre- and post-evaluation survey tools with necessary scales for collecting data related to Agritech Ambassadors' levels of satisfaction, skill, and readiness. The satisfaction recording measure used in the instrument consisted of 12 items with a five-point Likert scale ranging from 1 = *Not Satisfied* to 5 = *Very Satisfied*. The

Cronbach's reliability alpha of this 12-item satisfaction scale was 0.87. Participants' skill development was assessed by recording their level of confidence to implement the Agritech curriculum. The skill recording scale used in pre and post-tests consisted of eight skills related to Agritech curriculum implementation with a five-point Likert scale ranging from 1 = *Not Confident* to 5 = *Very Confident*. The Cronbach's reliability alpha of this eight-item skill recording scale was .84. Participants' level of readiness to apply the Agritech curriculum was recorded using six potential practices with four possible answer choices. Lastly, this group was asked to indicate whether they intend to implement these six practices as a result of completing the program with four answer choices (1) *No*, (2) *Maybe*, (3) *Yes*, and (4) *Already Doing*.

For the SBAE teacher participants that engaged in a professional development led by the Agritech Ambassadors, the satisfaction recording instrument consisted of five items with a five-point Likert scale ranging from 1 = *Not Satisfied* to 5 = *Very Satisfied*. The Cronbach's reliability alpha of this five-item satisfaction scale was 0.87. Skill development was assessed by recording their level of confidence to implement the Agritechnology curriculum. The skill recording scale in the retrospective pre- and post-survey consisted of six skills related to Agritechnology curriculum implementation with a five-point Likert scale ranging from 1 = *Not Confident* to 5 = *Very Confident*. The Cronbach's reliability alpha of this six-item skill scale was 0.84. Participants' level of readiness was recorded using six potential practices with four possible answer choices. Participants were also asked to indicate whether they intended to practice each of these six practices as a result of engaging in the STEM initiative. The respondents were provided four answer choices (1) *No*, (2) *Maybe*, (3) *Yes*, and (4) *Already Doing*.
Data were analyzed using the IBM-SPSS 26 program. Descriptive statistics were used to summarize data and paired sample t-tests were used to compare the knowledge and skills of both the Agritech Ambassadors and the SBAE teacher participants who participated in the program before and after completion of the program.

## Results

### Results of the Agritech Ambassador Training Program

There were 10 SBAE teachers selected to participate in the Agritech Ambassador training program. However, only eight of them completed the program evaluation for a final response rate of 80% with one participant dropping out of the program and one being unable to complete the final day of training. Participants' years of experience as an agriculture teacher ranged from two to 25 years with a mean of 12.8 ($SD$ = 8.2). The number of unduplicated students for the Agritech Ambassadors ranged from 53 to 350 students with a mean of 147 students ($SD$ = 92). Those participants who have multi-teacher programs indicated their total number of students ranged from 108 to 350 students with a mean of 226 students ($SD$ = 79). These teachers described their potential to impact 1,322 students directly in their SBAE programs.

All participants were *satisfied* or *very satisfied* with the overall professional development they gained from the Agritech training program and the program components. Further, all eight teachers who responded to the post-survey said that they met their learning expectations and were either very satisfied (62.5%) or satisfied (37.5%) with the training program.

Participants' skill development was recorded by identifying their confidence to carry out the selected eight instructional tasks on a five-point Likert scale ranging from 1 = *not confident* to 5 = *very confident*. Participants' instructional skills improved from pre-test to post-test in all areas. The overall skill development was assessed by summating the scores of eight items on the scale and comparing the summated pre- and post-test scores using the paired sample t-test**.** The overall skill test score on this 8-item scale ranged from 8 (very low) to 40 (very high). Findings indicated that participants were able to improve their instructional skills significantly from the pre-test ($M$ = 22.8) to the post test ($M$ = 31.3) ($t$ = 7.0, $p < .00$). The comparison of pre and post-test summated scores of each participant further indicated that all the participants gained skills regarding instructional development and learning facilitation. All participants indicated they intended to apply or already applied learned Agritechnology STEM instructional strategies and curricular materials to improve their SBAE programs. This highlights the significant outcomes of the training program and resource materials in contributing to improve the SBAE programs.

**Results of the SBAE Teacher Participants' Training Sessions**

In total, 75 teachers participated in the ambassador led training sessions with 57 completing usable evaluations for a response rate of 76%. The years of experience of the SBAE teachers who participated in the professional development led by the Agritech Ambassadors ranged from student teachers with no experience to 33 years with a mean of 10.7 ($SD$ = 9.4). The number of unduplicated students in training participants' SBAE programs ranged from 13 to 330 students with a mean of 92 students ($SD$ = 41). Those participants who have multi-teacher programs indicated their total number of students ranged from 87 to 400 students with a mean of 226 students ($SD$ = 94). The SBAE teachers who completed the Agritechnology curriculum training had 3,667 unduplicated students in their agriculture education programs. Therefore, the training presented to SBAE teachers has the potential to impact 3,667 students**.**

After receiving training from the Agritech Ambassadors, the SBAE teacher participants were asked whether they met their learning expectations, all the participants said yes, which indicated their satisfaction with the training presented by trained peers. This was further confirmed by participants' ratings of the levels of satisfaction with presenters, program contents, learning resources, lab activities, and the overall training. For instance, 96.4% of the participants were either satisfied or very satisfied with the presenters highlighting the potential of using the Agritech Ambassadors as trainers to teach other SBAE teachers. Of the participants, 98.2% were either satisfied or very satisfied with the lab activities indicating their receptivity to the integration of experiential-based, STEM concepts into the curriculum.

SBAE teacher' skill development was recorded by using their confidence to carry out the select six instructional tasks on a five-point Likert scale ranging from 1 = *not confident* to 5 = *very* confident using retrospective pre and post-test survey at the end of the training. Descriptive statistics were used to summarize the results. The mean values of participants' instructional skills increased from the pre-test to the post-test. We assessed the overall skill development by summating the scores of six items on the scale and comparing the summated pre and post-test scores using the paired sample t-test**.** The overall skill test score on this 6-item scale ranged from 6 (very low) to 30 (very high). Findings indicated that participants were able to improve their overall instructional skills significantly from the pre-test ($M$ = 14.6) to the post-test ($M$ = 22.7 ($t$ = 7.1, $p < .00$). The comparison of summated pre and post-test scores further indicated that all

the participants gained skills related to the curriculum implementation. Participants were also asked if they intended to use six educational areas to measure intent to integrate STEM content, a vast majority of participants indicated that they intend to apply learned instructional strategies and curricular materials to enrich their SBAE programs. For instance, 77.5% of the respondents said that they would integrate STEM content into their SBAE curricula. Ten percent of the participants indicated that they were already doing so in their programs.

## Conclusions, Implications, and Recommendation

Based on the results of this study, intensive professional development training for SBAE teachers provided a measurable increase in teacher perceptions and intention to increase STEM integration in agricultural and environmental science, which could help future SBAE students address critical issues such as costal loss moving forward (Roberts et al., 2020). This model provides a baseline for helping teachers better understand STEM content while also utilizing active experimentation in their courses. The Agritech Ambassadors indicated they were *Satisfied* (38%) or *Very Satisfied* (63%) with the training program and their knowledge of the subjects addressed in the training increased across all participants. Similarly, SBAE teacher participants' confidence and overall skill increased as a result of this initiative.

In particular, this training also helped to increase the Agritech Ambassadors as well as the SBAE teacher participants' perceptions of inquiry-based instruction and delivering laboratory-based content. Similar to the findings of Shoulders and Myers (2013) prior to training, teachers indicated that they were not using active experimentation in their classroom and identified a low perception of their abilities to integrate lab activities in their programs. As a result of this training, 75% of participants indicated they intended to increase both STEM content as well as laboratory skills to teach agricultural and environmental science. The professional development also improved teachers' perceptions, which will hopefully lead to a greater integration of laboratory and STEM activities into their programs. However, it is important to consider that within previous studies, most agriculture teachers react positively to the incorporation of STEM content (Smith et al., 2015; Wilson & Curry, 2011), but may not include active experimentation in their classrooms (Shoulders & Myers, 2013).

According to Kolb (1984) concrete experience, reflective observation, abstract conceptualization, and active experimentation can be used as a learning process to help further develop learning. This training process utilized all stages of Kolb's (1984) model, but also helped teachers identify how they could use these processes in their own classrooms, with the intention of increasing the active experimentation phase of STEM-based learning into their existing courses. Although this study focused on teachers' intent to integrate STEM content, this format may serve as a model for other states that want to increase STEM in their SBAE programs.

Regarding recommendations for practice, programs such as this were time consuming to develop and implement but provided an in-depth educational experience for teachers through a train-the-trainer approach, which appeared to successfully increase both comfort and motivation to replicate these skills in their classrooms. Similar programs should be developed across the U.S. to provide training to a larger number of teachers. Additionally, this program should be repeated regularly, to ensure that new teachers can successfully teach this content to their students. Moving forward, follow-up studies should be conducted to examine if teacher intent led

to changes within the classroom. For example, during the professional development, it is possible that teachers were very optimistic about their ability to incorporate STEM content, but did that translate to practice when they returned to their classrooms? If not, what barriers existed? This study was conducted with a relatively small number of teachers, therefore, similar studies should also be conducted in other states and with larger populations to determine if this model increases knowledge of STEM content in agricultural and environmental science and if it can support the increased intent to implement with a wider population.

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# Teaching Outside of the Margins: School-Based Agricultural Education Teachers' Perspectives on Globally Competent Teaching During an International Experience


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## Introduction and Review of Literature

In recent decades, the globalization of our world has seemingly reshaped society's social and professional fabric (Longo & Saltmarch, 2011). This shift has led individuals to engage in more globally integrated activities across borders, which has been crucial to growing our world's economy (Myers, 2010). For individuals to be competitive in this rapidly changing workforce, it has become critical for individuals to understand how their careers have become situated in the global landscape (Cseh et al., 2019). This notion has become particularly relevant for the agricultural industry, which has been tasked with preparing future generations to succeed in the global economy (Radhakrishna et al., 2003).

To achieve this goal, educators must be competent in teaching concepts from a global perspective (Pigg et al., 2021). The Longview Foundation (2008) described a globally competent student as having knowledge and curiosity about world history, an understanding of language, cross-cultural communication skills, and a commitment to ethical leadership. However, for students to be adequately prepared for the global age, educators must also possess knowledge and skills on a range of global issues, pedagogical approaches, the ability to teach students how to analyze data across contexts, understand multiple points of view, and have a solid commitment to ensuring students become responsible citizens of the world (Longview Foundation, 2008).

Because of the need to produce more globally competent students, researchers have called for integrating global concepts into the agricultural education curriculum over the past decade (Conner et al., 2017; Conner & Roberts, 2013; Foster et al., 2014; Wright et al., 2019). Globally competent teaching refers to the "…knowledge, skills, mindsets, and values needed to [teach students] to thrive in a diverse, globalized society" (Trichnor-Wagnor et al., 2019, p. 3). In school-based agricultural education (SBAE), empirical evidence has been conflicted regarding the global preparedness of teachers and students to address complex issues in the 21st Century (O'Malley et al., 2019; Heinert et al., 2020; Wingenbach et al., 2003). For example, Heinert et al. (2020) found that SBAE students generally held positive attitudes, beliefs, and understanding of international agricultural concepts. However, other empirical evidence has suggested that SBAE students and teachers lack knowledge of different cultures, people, and issues (Pigg et al., 2020; Wingenbach et al., 2003). Consequently, more work has been needed to understand how best to

prepare SBAE teachers to equip their students with the dispositions, knowledge, and skills needed to navigate a globally integrated society.

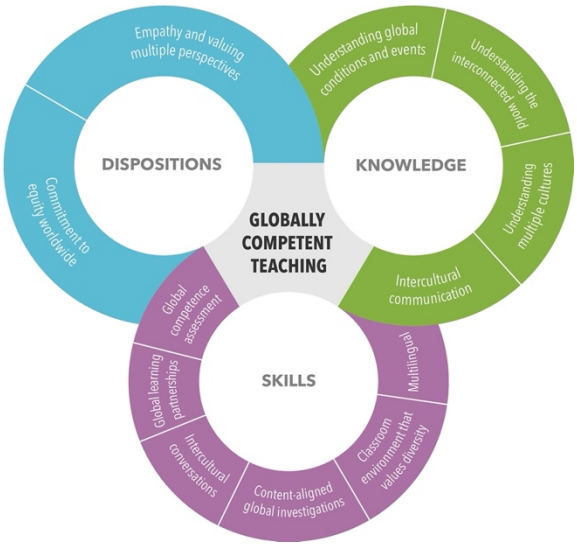
On this point, some researchers (Brooks & Williams, 2001; Gorter et al., 2020) have called for using international experiences to expand SBAE teachers' perspectives on globally competent teaching. For instance, Brooks and Williams (2001) found that after teachers participated in an international experience in Costa Rica, they felt more prepared to teach concepts in SBAE from a global perspective. Similarly, after an international experience in Ecuador, Gorter et al. (2020) reported growth in teachers' attitudes, beliefs, classroom practices, and personal and professional pursuits. Although these findings have been encouraging, insufficient evidence has examined the role of international experiences in shaping SBAE teachers' perspectives on globally competent teaching. The lack of knowledge of this phenomenon inspired this investigation.

## Conceptual Framework

The Tichnor-Wagner et al. (2019) model of globally competent teaching emerged as the most appropriate lens to interpret the findings of this study. The model suggests that globally competent teaching results from 12 distinct elements that can be delineated using teachers' (a) dispositions, (b) knowledge, and (c) skills. Through this lens, dispositions reflect teachers' attitudes, beliefs, and values using verbal and nonverbal communication approaches. Tichnor-Wagner et al. (2019) argued that two critical dispositions influence globally competent teaching: (1) a commitment to equity worldwide and (2) empathy and valuing multiple perspectives. Meanwhile, knowledge refers to teachers' interdisciplinary understanding of cultures, events, and systems across the globe and the ways in which they interconnect. As such, four key elements comprise global knowledge: (1) understanding of global events and happenings, (2) understanding of how the world is interconnected, (3) experiential understanding of multiple cultures, and (4) understanding of intercultural communication. Finally, the model suggests that teachers must integrate their dispositions and knowledge into their teaching practices to have the skills needed to prepare their students for the world. Consequently, globally competent teaching includes six primary skills: (1) communicating in multiple languages, (2) creating a classroom environment that values diversity and global engagement, (3) integrating learning experiences for students that promote content-aligned explorations of the world, (4) facilitate intercultural and international conversations, (5) develop partnerships that provide real-world contexts for global learning opportunities, and (6) develop and use appropriate methods of inquiry to assess students' global competence development. In the current investigation, the model of globally competent teaching helped us make sense of teachers' perspectives on globally competent teaching in SBAE during an international experience in Costa Rica.

**Figure 1**

*Tichnor-Wagner et al. (2019) Model of Globally Competent Teaching*




## Background of the Study

In this study, eight SBAE teachers from Louisiana were selected to participate in a one-week international experience in Costa Rica, which was funded through a USDA-NIFA grant. While in Costa Rica, the teachers had the opportunity to engage with a range of academic and technical experts on issues that affected the country's agricultural industry. For example, the teachers were introduced to issues concerning (a) animal science, (b) coastal loss, (c) coffee and cacao production, (d) environmental education, (e) plant science, and more. As the teachers interacted with experts and gained a deeper understanding of issues and problems affecting the industry, they collected four forms of data: (1) audio recordings of interviews with experts, (2) documents, (3) photographs, and (4) video. The teachers used this data to create instructional case studies, 24 total, that were later distributed to SBAE teachers in Louisiana to globalize an existing curriculum. Our intent when employing this approach was to provide teachers with the resources to support globally competent teaching in Louisiana SBAE.

## Purpose of the Study

This investigation sought to examine Louisiana SBAE teachers' perspectives on globally competent teaching. One research question framed the study: What were Louisiana SBAE teachers' views on how to foster global competence for their students during an international experience in Costa Rica?

## Methodology

We used Stake's (1995) instrumental case study design to achieve this investigation's purpose. The case was bounded by career and place; for example, all participants were SBAE teachers from Louisiana who were selected to engage in an international experience in Costa Rica. We also used Lincoln's and Guba's standards for rigor and trustworthiness – confirmability, credibility, dependability, and transferability – to ensure qualitative quality.

The teachers ($N = 8$) were selected using a competitive application process in which we emphasized diversity regarding teaching experience and licensure pathway. The participants'

teaching experience varied from three to 28 years, with six identifying as female and two as male. Meanwhile, the teachers were evenly divided regarding their licensure route, with four being traditionally certified and the other four having received licensure through an alternative certification pathway.

During the international experience, the teachers were required to submit the following reflective items: (a) audio reflections of their most salient experiences abroad, (b) a photograph and caption of their most significant cultural takeaway, and (c) a photograph and caption of their most significant teaching takeaway. As a result, we analyzed 56 audio recordings and 112 photographs and captions as data for this investigation. Further, we also conducted persistent observations and a two-hour focus group interview with all eight participants on the final day of their experience abroad in Costa Rica. Although the participant-submitted photographs were included in our analysis, it should be noted that they were not used in this abstract due to space limitations.

After the data were collected, we employed Saldaña's (2021) qualitative coding procedures to analyze each data source. As such, we used structural, descriptive, and in vivo approaches in our first cycle of coding to examine the data using multiple lenses (Saldaña, 2021). This process resulted in 812 first-cycle codes. Next, we utilized axial coding to examine the existing relationships among the first-cycle codes and reduce them to categories. At this point, we met as a research team to negotiate our categories to ensure they made sense in the context of this investigation. During this phase, we also employed thematic analysis to distill our findings further and emerge the study's three themes.

## Findings

As a result of our analysis of the data, three themes emerged (1) teaching outside of the margins, (2) global storytelling, and (3) innovative global experiences. The themes narrate the ways in which the teachers in this study articulated how they intended to create globally competent students in SBAE as a result of their international experience.

### Theme #1: Teaching Outside of the Margins

During their time in Costa Rica, the teachers began to articulate a shift in their thinking in regard to teaching agricultural and environmental concepts that extended *outside of the margins.* In particular, they began to talk about the need to feature the experiences of marginalized populations when teaching. For example, Participant #7 said: "I am beginning to understand that teaching ag is more than just about teaching facts but also changing the hearts and minds of my students to [create a more] just world." On this point, Participant #2 shared: "when I get back home, I want to make sure to teach about how agriculture has a great diversity of people, traditions, and practices. I need to [do a] better job highlighting that diversity in my ag classes." Participant #4 also began to ponder more deeply why agriculture has been riddled with inequalities throughout the world. She reflected: "there is a lack of machinery and technology [in Costa Rica]. So much of what they do here is primitive. I need to talk more about [the history] of this to my students." She continued: "I think talking about the privileges we have access to [in the U.S.] in agriculture are not realized or considered by my students."

Tichnor-Wagner et al. (2019) explained that for teachers to be globally competent, they must have a commitment to *equity*. In the current study, the teachers' commitment to equity appeared to surface through becoming more critically conscious. Case in point, Participant #1 explained: "this trip has made me aware that my understanding of ag is based on my own experiences and people [in other countries] have completely different assumptions of the industry, and that is okay." Participant #1 further shared: "when I get back to my classroom, I think I will talk more about how what we consider right and wrong in ag is based on what we know." He continued: "I need to do a better job with my students about helping them understand that other countries may do something different because they do not have the knowledge or the money to do it like us, and that's fine." In a similar sentiment, Participant #8 reflected: "I take for granted how wealthy we are as a nation. I teach my students about how we are the greatest ag power in the world. She further shared: "However, I think this trip opened my eyes about how I need to teach my students about why this is the case and how we can help other countries ag industries more." In our observations, we also noted that the participants began to talk informally about how to engage their students in conversations about inequalities and how to address such.

**Theme #2: Global Storytelling**

As a result of the teachers' shifts in global thinking during their time in Costa Rica, they began to ponder ways to instill such a perspective in their students – a notion that was not included in Tichnor-Wagner et al. (2019) model. Perhaps the most common strategy the teachers articulated was how to use storytelling to resonate with their students to build empathy and have them more authentically engage in global problem-solving. For example, in their daily reflections, teachers often included specific stories about their time in Costa Rica that they wanted to share with their students. For example, Participant #5 explained: "I got so many pictures during our site visit to the repurposed hydroponic system at C.A.T.I.E University. I have a hydroponic system at school, and it's going to be so cool to compare the systems with my students." Meanwhile, we observed Participants #1 and #6 capturing video throughout the international experience. When asked why they did such in the focus group interview, Participant #1 shared: "We got the video because I do not think my reflections are powerful enough. I want my students to really feel and experience what I have here in an impactful way." Participant #8 also shared during the focus group interview: "I've got to really think about how to talk with my students about my experiences here. I want them to feel what I have felt. So, I have to spend some time figuring out how to talk about global ag more impactfully."

**Theme #3: Innovative Global Experiences**

The final theme, innovative global experiences, emerged during the international experience as teachers brainstormed ways to integrate global learning into their curriculum (Tichnor-Wagner et al., 2019). For example, we observed the teachers talking informally about ways to integrate global concepts into the content they had already taught in SBAE. Further, several participants mentioned organizing an international agriculture experience that would allow teachers in Louisiana to take their students abroad. We also observed several teachers exchanging contact information with professionals and individuals they met in Costa Rica so they could arrange virtual guest lectures for their SBAE classes.

During the focus group interview, we asked the teachers about our observations. Participant #2 responded: “Yes, I am thinking about how to teach from a more global perspective now. I think the main thing I want my students to understand is how connected the agricultural industry is throughout the world.” She continued: “I am just figuring out what types of experiences will really help that click for my students.” Participant #7 also echoed this sentiment: “I do not see global learning as an add-on; I think it is embedded in what we do.” He expanded: “I am going to use pictures that I have taken here in my ag mechanics classes to get them to problem-solve ways that Costa Ricans could use basic design principles we learn in class to address problems in crop production here.” Meanwhile, Participant #6 explained: “I am trying to figure out an activity I can do to highlight the different philosophies between the U.S. and Costa Rica toward agriculture, sustainability, and environmental education.” She continued: “I think I just need to do a better job of figuring out ways for my students to have the same *ah-ha* moments that I have had while in Costa Rica.” Therefore, the international experience in Costa Rica made the teachers in this study ponder more deeply how they could more impactfully integrate innovative global experiences into the SBAE curriculum.

## Conclusions, Discussion, Implications, and Recommendations

This investigation examined Louisiana SBAE teachers’ perspectives on globally competent teaching. Through our analysis of the data, we demonstrated that the teachers expressed three primary strategies they intended to use to foster global competence for their students as a result of their international experience: (a) teaching outside of the margins, (b) global storytelling, and (c) innovative global experiences. Consequently, we conclude that this short-term international experience for SBAE teachers appeared to expand their perspectives on globally competent teaching positively. In the current investigation, we used Tichnor-Wagner et al. (2019) model of globally competent teaching to ground our study conceptually. It should be noted that although two of our themes aligned with concepts expressed in the model, the second theme did not. Further, multiple elements outlined in the model were not articulated by the teachers in this investigation. As such, we conclude that the SBAE teachers in this investigation should not be considered fully globally competent; instead, their global identity appeared to be still emerging. Consequently, we recommend that future research examine whether Tichnor-Wagner et al. (2019) model should be revised to reflect different phases of global competence.

In the first theme, teaching outside the margins, the SBAE teachers reported shifts in how they intended to teach agricultural and environmental concepts. For example, they suggested the international experience motivated them to teach their students how marginalized populations in other countries were impacted by various issues and problems in the agricultural industry – a notion supported by existing research (Pigg et al., 2020, 2021]). However, one concept not previously reported was how the teachers appeared to mature regarding their critical consciousness to advance issues of equity in the agricultural industry from a global perspective. Therefore, we recommend that future research examine how developing a critical consciousness through international experiences for SBAE teachers may positively influence teaching and learning about equity for marginalized populations.

In the second theme, global storytelling, the SBAE teachers began to ponder how to articulate their global experiences in ways that would resonate more impactfully for their students – a concept that does not appear to have been reported in the literature on international experiences

for SBAE teachers. In particular, the teachers documented their critical thoughts in their journals, captured video, and images they hoped to share with their students to help them better understand concepts from a global perspective. As such, we recommend that future research explores strategies that may help teachers better narrate their lived experiences abroad in ways that can lead to growth in their students' global perspectives and knowledge.

The final theme explored how the international experience motivated the SBAE teachers to consider new ways to integrate global learning into their curriculum – a sentiment supported by previous work (Brooks & Williams, 2001; Gorter et al., 2020). Unique to this study, however, was the innovative strategies that the teacher planned to use to globalize their curriculum. Moving forward, we recommend that future studies examine this notion using a larger sample size and in different contexts to understand whether an international experience can lead SBAE teachers to globalize their curriculum using practical strategies.

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# Are There Differences in Teachers' Agricultural Mechanics Professional Development Needs?

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## Introduction and Theoretical Framework

As agricultural subject matter, agricultural mechanics is a popular choice with students enrolled in school-based agricultural education (SBAE) coursework (Valdez & Johnson, 2020) and is consequently taught in programs across the United States (Burris et al., 2005). SBAE teachers need to be knowledgeable and skilled in a battery of agricultural mechanics topics, such as power mechanics, metal fabrication, and structures construction (Hainline & Wells, 2019; Wells & Hainline, 2021; Wells et al., 2021). Teacher professional development (PD) is one method for improving teacher competence (Ward, 2009). Teacher PD in the context of SBAE has been studied extensively (DiBenedetto et al., 2018). Grieman (2010) indicated that continuing education is important for teachers' professional growth. More recently, researchers (Clemons et al., 2018; Smalley et al., 2019; Sorensen et al., 2014) have noted that teachers have PD needs across a range of technical agriculture subject matter, including agricultural mechanics. Regarding teachers' agricultural mechanics PD needs, both Sorensen et al. (2014) and Yopp et al. (2020) reported differences in needs based on years of teaching experience. This indicates teachers undergo a metamorphosis in their agricultural mechanics PD needs over time. Could Sorensen et al.'s (2014) and Yopp et al.'s (2020) findings be consistent on a national level? Moreover, do other teacher demographic factors such as teacher certification route and teacher career phase result in differences in SBAE teachers' agricultural mechanics PD needs? These questions warrant further inquiry.

We used human capital theory (HCT) as the guiding framework for our study. HCT suggests training and education will bolster the productivity and earnings of individuals, thus contributing to their economic productivity (Garibaldi, 2006; Tan, 2014). Becker (1993) noted "[e]ducation and training are the most important investments in human capital" (p. 17) and in the context of education, human capital serves as the largest single investment for K-12 public schools (Myung et al., 2013). PD serves as a means to strengthen the professional practice of teachers to equip them with the tools to increase student achievement (Bowgren & Sever, 2009; Darling-Hammond et al., 2017). However, Gabriel (2010) argued effective PD should be differentiated to accommodate the interest, needs, commitment, and awareness of each individual teacher. The notion of a one-size-fits-all approach to teacher PD has been deemed as dangerously ineffective in terms of boosting the engagement and capacity of teachers' professional growth (Bowgren & Sever, 2009; Darling-Hammond & Richardson, 2009; Gabriel, 2010; Ruhland & Bremer, 2002). To help address human capital development needs and to better prepare teachers to successfully teach agricultural mechanics, we found it imperative to examine differences in teachers' agricultural mechanics PD needs based on selected demographics factors.

## Purpose, Objectives, and Null Hypotheses

As part of a larger, national-level study focused on describing the agricultural mechanics PD needs of SBAE teachers, the purpose of our study was to examine potential differences in teachers' agricultural mechanics PD needs based on selected teacher demographic factors. Our study aligns with Research Priority 5 of the American Association for Agricultural Education (AAAE) National Research Agenda (NRA): Efficient and Effective Agricultural Education Programs (Thoron et al., 2016). We used two research objectives to guide our study:

1) Describe teachers' educational and professional experiences.

2) Examine the impact of teacher career phase and teacher certification route on teachers' agricultural mechanics PD needs.

We further used three null hypotheses to guide our study's statistical analysis:

$H_o1$: In the population, there is no statistically significant difference in teachers' agricultural mechanics PD needs based on the interaction of teacher career phase and teacher certification route.

$H_o2$: In the population, there is no statistically significant difference in teachers' agricultural mechanics PD needs based on teacher certification route.

$H_o3$: In the population, there is no statistically significant difference in teachers' agricultural mechanics PD needs based on teacher career phase.

## Methods

### Instrumentation

We used Borich's (1980) needs assessment model to structure our study. Scholars in Agricultural Education (e.g., Clemons et al., 2018; Hainline et al., 2021) have used Borich's (1980) needs assessment model to study teachers' PD needs. We used a 72-item instrument to conduct our study. We included a mixture of seven multiple-choice and open-ended items to examine the demographic characteristics of the respondents. Sixty-five items were related to an assortment of agricultural mechanics topics (e.g., *Use of electrical systems tools [ex. digital multi-meter, wire strippers, etc.]*, *Procedures for structural welding*, etc.). We used Hainline and Wells's (2019) list of agricultural mechanics knowledge and skills needed by SBAE teachers to help establish the 65 needs assessment items used in our study. For each needs assessment item, we prompted respondents to specify the importance (1 = *Not important* [NI], 2 = *Of little importance* [LI], 3 = *Somewhat important* [SI], 4 = *Important* [I], 5 = *Very important* [VI]) to teach each agricultural mechanics topic within SBAE programs and to then indicate their perceived competence (1 = *Not competent* [NC], 2 = *Little competence* [LC], 3 = *Somewhat competent* [SC], 4 = *Competent* [C], 5 = *Very competent* [VC]) to teach each agricultural mechanics topic.

### Validity and Reliability

We assessed the validity of our instrument by consulting a panel of seven agricultural teacher educators which were on faculty at seven academic institutions across the United States. We deliberately selected each member of the panel to bring diverse, unique experiences and perspectives associated with agricultural mechanics. We sent an e-mail out to each panel member. Our e-mail contained a copy of the initial version of our instrument and a panel of experts' response form. The panel of experts' response form included detailed instructions about the instrument. We asked the seven panel members to both assess our instrument for content validity and face validity and to use the panel of experts form to provide detailed feedback about our instrument and offer suggestions for instrument improvement. We also requested that they send the form and an edited instrument back to us via e-mail. The responses from the panel members noted our instrument would be suitable for our study if their recommendations were undertaken. We subsequently adjusted the instrument based on their feedback, which resulted in the final 72-item instrument used in our study. Our instrument was thus face valid, content valid, and ready to advance to the pilot study stage.

**Pilot Study**

We assessed the reliability of the *Competence* and *Importance* scales used within the 65-item needs assessment portion of our instrument by way of a pilot study. We conducted our pilot study during the Fall 2019 semester as a census study with all 287 SBAE teachers who taught in Iowa during the 2019-2020 academic year. Based on the recommendations offered by Dillman et al. (2014), we used multiple contacts and incentives (i.e., five $20.00 gift cards drawn at random) to solicit and encourage participants for our pilot study. Our data collection process for the pilot study involved a total of five iterations of contact: (1) a pre-notice e-mail, (2) an initial invitation to participate, (3) a first reminder, (4) a second reminder, and (5) a third and final reminder. Two of the pilot study email addresses bounced, reducing the total number of potential respondents to 285.

Seventy Iowa SBAE teachers responded to our pilot study instrument (response rate = 24.6%). We calculated Cronbach's alpha coefficients to assess the reliability of the *Competence* and *Importance* scales used within the 65-item needs assessment portion of our instrument. A post-hoc reliability assessment produced Cronbach's alpha coefficients for the *Competence* ($\alpha$ = .98) and *Importance* ($\alpha$ = .97) scales, which were considered to be acceptable levels of reliability based on the interpretations posited by George and Mallery (2003). At the conclusion of our pilot study, we deemed the scales used in our instrument reliable and subsequently conducted our formal study during the Spring 2020 semester.

**Sample**

The target population for our formal study encompassed of all SBAE teachers in the United States during the 2019-2020 academic year. Nina Crutchfield, the former South Central Local Program Success Specialist at the National FFA Organization, specified that there were 13,471 SBAE teachers across the nation during the 2019-2020 academic year (personal communication, March 24, 2020). Provided by the National FFA Organization at our request, we used a probabilistic sample of 374 SBAE teachers from across the United States. We calculated the sample size based on Dillman et al.'s (2014) probability sampling calculator (acceptable

amount of sampling error = ±5% of the true population; Z statistic associated with confidence level = 1.96, 95% level), which follows Krejcie and Morgan's (1970) formula.

**Data Collection**

During our formal study, we used Qualtrics to send five e-mail contacts to SBAE teachers. E-mails to 10 teachers bounced (failure rate = .03%), reducing the total number of potential respondents to 364. Per the recommendations of Dillman et al. (2014), we used multiple contacts and incentives (i.e., 10 $20.00 gift cards drawn at random) to help elicit responses. The five e-mail contacts included: (1) a pre-notice about the study, (2) an initial invitation to participate in the study, (3) a first reminder, (4) a second reminder, and (5), the third and final reminder. Data collection ceased nine days after we sent the fifth contact.

One hundred SBAE teachers responded to our instrument in the formal study, yielding a response rate of 27.5%. Recent national studies (Sherman & Sorensen, 2020; Sorensen et al., 2017) have had similar response rates (26.8% and 30.08%, respectively). We set a response completion threshold of 75% *a priori*. We excluded the six respondents who completed less than 75% of the instrument from our data analysis procedures. After the conclusion of the formal study, we elected to reassess the reliability of the *Competence* and *Importance* scales within the 65-item needs assessment portion of our instrument. We used Cronbach's alpha coefficients to do so. A post-hoc reliability assessment yielded Cronbach's alpha coefficients for the *Competence* ($\alpha = .98$) and *Importance* ($\alpha = .97$) scales, which we once again deemed as having acceptable levels of reliability according to the interpretations provided by George and Mallery (2003).

**Data Analysis**

We used the IBM® Statistical Package for the Social Sciences (SPSS©) software, Version 27, to analyze our data. To address nonresponse error, we compared early responders to late responders in accordance with Lindner et al.'s (2001) recommendations. We considered teachers who responded before we sent the first reminder email ($n = 48$) to be early responders while we considered teachers who responded after we sent the first reminder email ($n = 46$) to be late responders. We used an independent samples *t*-test to compare responses on all *Competence* scale items. We identified no statistically significant differences ($t(92) = -1.43$, $p = .19$) between the early responders and the late responders.

We analyzed data associated with objective one by calculating descriptive statistics (i.e., frequencies, percentages, measures of central tendency, and measures of dispersion) to describe the educational and professional experiences of the SBAE teachers in this study. While we did not report the resulting data in the current abstract, we calculated average discrepancy scores (ADS) for each group of teachers for each of the 65 needs assessment items. Aside from the analysis of discrepancy scores, we also calculated the mean and standard deviation for each item for each group of SBAE teachers.

To address objective two, we conducted a factorial ANOVA to examine the effects of teacher career phase and certification route on teachers' agricultural mechanics PD needs. We

operationalized the dependent variable, agricultural mechanics PD needs, by calculating mean discrepancy scores (MDS) for each respondent. To calculate the MDS, we calculated each respondent's discrepancy scores (DS) for each item by subtracting their perceived competence to teach rating (1 = *Not competent*, 2 = *Little competence*, 3 = *Somewhat competent*, 4 = *Competent*, 5 = *Very competent*) from their perceived importance to teach rating (1 = *Not important*, 2 = *Of little importance*, 3 = *Somewhat important*, 4 = *Important*, 5 = *Very important*). We then averaged the DS for all items for each individual to compute their MDS.

We used a residual analysis to test the assumptions of the factorial ANOVA. We used Shapiro-Wilk's test to assess normality, Levene's test to assess the homogeneity of variances, and boxplots and studentized residuals to identify potential outliers. We calculated Partial eta squared (ηp2) effect sizes to determine the practical significance of the findings. We used Cohen's (1988) effect size classifications to interpret our results (i.e., small effect size = 0.0099; medium effect size = 0.0826; and a large effect size = 0.20).

## Results

The typical respondent had taught agricultural education for an average of 10.51 (*SD* = 9.85) academic years and had their obtained agricultural education teacher certification via an undergraduate-level teacher preparation program (*f* = 56; 59.57%). We used Solomonson and Retallick's (2018) *Professional Agriculture Teacher Life Cycle Stages* model to designate teachers' career phases. We classified 38 respondents who reported between one and five years of teaching experience as early-career (EC) teachers, 33 respondents who reported between six and 15 years of teaching experience as mid-career (MC) teachers, and 23 respondents who reported 16 or more years of teaching experience as late-career (LC) teachers (see Table 1).

**Table 1**

*Teacher Demographics*

| Item | *f* | % |
|---|---|---|
| Teacher Career Phase | | |
| Early-career (EC; 1-5 years of teaching experience) | 38 | 40.43 |
| Mid-career (MC; 6-15 years of teaching experience) | 33 | 35.11 |
| Late-career (LC; 16+ years of teaching experience) | 23 | 24.47 |
| Teacher Certification Route | | |
| Traditional Certification | 56 | 59.57 |
| Non-traditional Certification | 38 | 40.43 |

We conducted a 3 (teacher career phase) x 2 (teacher certification route) factorial ANOVA to examine the effects of teacher career phase and teacher certification route on agricultural mechanics PD needs (i.e., MDS). We tested the assumptions of the factorial ANOVA by performing residual analysis. The data in our study were normally distributed as assessed by Shapiro-Wilk's test ($p > .05$). We did not identify the presence of outliers based on our examination of boxplots and studentized residuals. We found there was homogeneity of variances as assessed by Levene's test for equality of variances, $p = .857$. There was not a statistically significant interaction between teacher career phase and teacher certification route

for the MDS of the teachers, $F(2, 88) = .384$, $p = .682$. We failed to reject the first ($H_o1$) null hypothesis. Field (2018) posited that when an interaction effect is not statistically significant, the main effects included in the two-way ANOVA should be explored (see Table 2).

**Table 2**

*Factorial ANOVA Source Table of Main and Interaction Effects of Teacher Career Phase and Teacher Certification Route on the Dependent Variable of Teachers' MDS Associated with Agricultural Mechanics PD Needs*

| Source | *SS* | *df* | *MS* | *F* | *p* | $\eta_p^2$ |
|---|---|---|---|---|---|---|
| Corrected Model | 17.099 | 5 | 3.420 | 4.722 | 0.001 | - |
| Intercept | 54.029 | 1 | 54.029 | 74.608 | 0.000 | - |
| CERT | 2.648 | 1 | 2.648 | 3.656 | 0.059 | - |
| Career Phase | 13.038 | 2 | 6.519 | 9.002 | 0.000 | 0.170 |
| Career Phase x CERT | 0.556 | 2 | 0.278 | 0.384 | 0.682 | - |
| Error | 63.727 | 88 | 0.724 | | | |
| Total | 146.647 | 94 | | | | |

*Note*. $p < .05$, CERT = Teacher certification route

The main effect of teacher certification route on agricultural mechanics PD needs was not significant, $F(1, 88) = 3.656$, $p = .059$. We failed to reject the second null hypothesis ($H_o2$). The main effect of teacher career phase on agricultural mechanics PD needs was significant, $F(2, 88) = 9.0002$, $p < .001$, $\eta_p^2 = .170$; thus, we rejected the third null hypothesis ($H_o3$). The effect size ($\eta_p^2 = .170$) for the main effect of teacher career phase was between medium and large (Cohen, 1988). We used a Bonferroni *post hoc* test and found that the overall agricultural mechanics PD needs were significantly lower for LC teachers ($M = 0.45$, $SD = 0.69$) when compared to the EC teachers ($M = 1.34$, $SD = 0.93$). We further found that the overall agricultural mechanics PD needs were significantly lower for MC teachers ($M = 0.82$, $SD = 0.94$) in comparison to the EC teachers ($M = 1.34$, $SD = 0.93$; see Table 3).

**Table 3**

*Comparison of Teachers' Agricultural Mechanics PD Needs Based Upon the Bonferroni Post Hoc Test*

| Group | *n* | $M^1$ | *SD* |
|---|---|---|---|
| EC teachers | 28 | $1.34^{a,b}$ | 0.93 |
| MC teachers | 32 | $0.82^{b}$ | 0.94 |
| LC teachers | 30 | $0.45^{a}$ | 0.69 |

*Note*. [1] = Subscripts with differing letters are significantly different at $p < .05$.

## Conclusions, Discussion, and Recommendations

Consistent with Sorensen et al. (2014) and Yopp et al. (2020), we found that there were indeed differences in teachers' agricultural mechanics PD needs based on teacher career phase. In particular, differences existed between EC teachers and LC teachers and between EC teachers and MC teachers. We expected this finding, as teachers who remain in the profession longer are

more likely to grow and develop themselves professionally (Grieman, 2010), such as through increasing their familiarity with agricultural subject matter. From the perspective of HCT as described by Becker (1993), it is critical that teachers be offered opportunities to engage in agricultural mechanics PD that suits their teacher career phase. We recommend that SBAE stakeholders (e.g., agricultural teacher educators, industry representatives, etc.) facilitate teacher career phase-differentiated PD opportunities for teachers. Doing so will help to positively impact the teacher competence development process for those who most need it.

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# Tell Me How You Really Feel About the AET

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Recordkeeping has been an integral part of what is now known as the Supervised Agricultural Experiences (SAEs) dating back to its origins as Stimson's (1919) home project method in 1919 (Moore, 1988). While there is no national record book adopted by the National FFA Organization, North Carolina has provided the AET to all agriculture programs at no cost to the program since 2012 (Joshua Bledsoe, State Director, personal communication, October 2022). The Agricultural Experience Tracker (The AET) was created in 2007 and outlines their goals as:

> to develop a system to help education students using standard business practices, track the diversity of SAE projects that exists, help teachers supervise SAEs, coordinate teachers and students to collaborate in managing the agricultural program and collect information teachers can share with their stakeholders to grow the value of agricultural education (The AET, n.d.).

Teachers need professional development on using the AET and on keeping SAE records. In a 2014 study, Sorensen et al. found *utilizing the AET record book* was the highest need among Oregon Agricultural Science teachers using a Borich needs assessment model. When the data was analyzed across career phases, induction teachers (those in years one through five) ranked it third most important while non-induction teachers (those who were in at least their sixth-year teaching agriculture) ranked it second highest need overall. Oregon did not have a state-wide record book at the time so it is interesting to note that *managing student SAE records* was the 8th highest need out of the forty-nine identified competencies. In her thesis, Aviles (2017) found that Oklahoma agriculture teachers also found the AET to be complex and the author concluded this could both hinder adoption of the innovation and may prompt some to discontinue its use. While the AET has been around since 2007 and available to all agriculture teachers in North Carolina since 2013, no empirical research has been conducted about the user experience for these teachers. The purpose of this study was to determine how North Carolina teachers are implementing and experiencing the AET. The research question guiding this study was how is AET being used in SBAE programs in North Carolina?

This study was guided by Roger's (2003) Diffusion of Innovation theory. Roger's (2003) model has five stages of adoption beginning with knowledge, and progressing to persuasion, then decision, followed by implementation, and finally confirmation. Roger's (2003) theory also addresses the order in which individuals adopt an innovation. The innovators and early adopters are some of the first to choose to integrate a technology followed by the early majority, late majority and laggards. Since we were looking specifically at the AET and the program is being provided to all agricultural programs in North Carolina whether requested or not, we looked to Rogers (2003) for information on mandates. Rogers indicated that "mandates for adoption are a mechanism through which the system exerts pressure on an individual to recognize the relative advantage of an innovation" (p. 240).

## Methods

We chose to utilize a phenomenological qualitative approach both because of the lack of literature related to the AET implementation and use and the integrated nature of the AET use in programs and through a teacher's lived experience (Creswell & Creswell, 2018). Participants were purposely chosen to reflect a breadth of program types, locations, sizes and teaching experience as well as preparation across multiple institutions and pathways. Participants were contacted in April and May of 2022 with interviews conducted via Zoom through April to June of that same year. Participants were asked eight semi structured interview questions yielding more than five hours of recorded interview data which was transcribed before coding. Researchers also memoed their findings, impressions, and reactions while conducting interviews checking in to know when we had reached data saturation. Data were initially coded using the research questions and then further coded after one pass through all data. We have used thick rich descriptions and participant quotes as allowed within the limited pages of the call.

Our thirteen participants included: Tammy, a second-year teacher in an urban, single teacher middle school program. Patsy, a third-year teacher at a single teacher suburban high school. Reba, a fourth-year teacher at a rural single teacher high school. Naomi, a fifth-year teacher in a two-teacher rural high school. Loretta, a fifth-year single teacher in a suburban middle school. Kenny, a fifth-year teacher in a rural, two teacher high school program. Dolly has 8 years of teaching experience and serves in a three-teacher rural high school. Rosanne has 10 years of experience and works as a single teacher in the only high school serving a rural/ suburban area. Randy is an 11-year veteran teacher working in a two-teacher rural high school. Emmylou, one of three teachers serving in an urban high school and she has 14 years of experience. Willie has taught 18 years in a rural high school with four teachers total. Keith has been teaching for 24 years and teaches in a rural community at a three-teacher high school. Lastly, George has 25 years of teaching experience in a two-teacher rural/suburban high school.

We acknowledge in this statement of reflexivity that both researchers continue to be involved in agricultural education. Both have taught SBAE in North Carolina and both required their students to have SAE projects while only one researcher utilized the AET in her program. Both researchers work together to teach the experiential learning course for agricultural education students at [name] University where students are learning about experiential learning SAE for All and use of the AET.

## Results/Findings

Five themes were constructed from the data. The first theme was *Converts*. We heard from participants who have found a way to use the AET in their whole programs and, even when moving positions or states, have advocated for the costs and benefits of the AET in their contract negotiations. There were teachers singing the praises of the integrations in the AET and how it provides features they were using a lot of other tools to complete. Dolly recognized "I know a lot of teachers are not on board with AET but if they would just start using that one day at a time, they could be, because it is a great, great program." Patsy stated that "I use it religiously" and listed tools she loved like the "AET messenger [because] you can group students up on there. So I group them by CDEs. I group my officer team…but if I just need to send like 'hey practice tomorrow's canceled', I can just send that to my CDE team." She even turns to the AET

information first, sharing that "when I go to get a student's contact information, I go to AET and not PowerSchool because the student gave me that information and I trust it more." Thinking about the data she has collected for her program, Patsy shared:

> as a teacher, the biggest thing that we can get from [the AET] is tracking our hours or summer hours on there, so my county when they asked for like my summer hours and accountability, like it's already all on there. I can upload pictures, just like my students do for their SAE. But, also data, my career and college manager, the person that's over all of CTE for my school, she asks every year for the demographics of our CTSO and I'm probably the only person that can pull it up in less than five minutes because of the AET… I can print out like a list of all the vendors or all the people that have hired my students, how much money cumulatively all my students have made that school year, and I have taken that data to job interviews like just to show you like my students do work based learning, here is the data from last school year.

Patsy also shared that she would be moving states during the summer and requested from her new school to "make sure in your budget for next year that there is a fee. Because…it would be even more difficult for me to go to teaching without [the AET] at this point." Reba started by saying "I love the AET" but also hedged a little with "I'm not sure if I'm using it to its fullest potential because I don't know if I know all the ins and outs." Loretta utilizes the AET with her middle school students, sharing "I use AET a ton. I can't imagine not using AET, though I do give a paper option if kids choose to do that, but most kids don't choose to do that, most kids do the AET." She said "it's really great, it's really not that hard you just have to do it." She also believes the mobile app makes record entry easier for students stating "when I teach kids how to record hours for SAEs I tell them how, I make them use the mobile website because it's a whole lot easier to log hours."

The second theme emerging from the data is called *Was using the AET, but stopped*. Several participants shared that they have used the AET in their programs previously, but due to various frustrations have chosen to eliminate or limit its use. Willie indicated the challenge of consistency with the use of the AET in a multi-teacher program:

> When it came out, I used it a lot and pushed real hard, especially with the agriscience students and getting them to learn how to enter stuff in and put in records and having them use the app on their phone and taking pictures and it worked good for me to evaluate SAE programs, then we got too big and too busy And so we quit using it so much and we use it more for just the kids that have a proficiency award.

While Rosanne felt the constant evolution of the AET made it too hard to keep up, maintain updated teaching resources and stay ahead of the students, stating "I was exhausted, the kids were exhausted and then they went, and I think this [was the] breaking point for me, was they added that skill thing" indicating the learning objective/skill integration that permeates the platform requiring choices from projects plans to journals. She also admitted that she has struggled with her decision to give up using the AET:

> which kind of kills me because I feel like I was one of the teachers in our state that really kind of tried to help other teachers and I tried to really promote that AET. But as we've tried to make it easier, it's overcomplicated things.

Tammy indicated that using the AET in the middle school classroom was uniquely challenging. Not only were the students less academically developed but also, the sixth grade students were only in the course for nine weeks. As she transitions to a new school, she plans to leave the AET out of her new program:

> I'm going to try to make SAE as simple as possible next year just to get started. I don't think I'm going to introduce the AET to them just because I think it might be a little bit too much for them to keep track of, so I'm going to use kind of what I've been doing with sixth grade, just the virtual little journal that I made

The third theme is the *Desire to simplify.* Multiple participants believed the AET was overly complex. For Tammy, she finds the log-in especially frustrating for her middle schoolers, saying "I know I have students ask me every day, 'I forgot my login again' and I ended up making like a Google slides presentation that walks them through step by step" She added that to create this resource "took me like four hours to make" but needed a resource so she was not their only way to solve login issues. Naomi indicated that "a lot of them still struggle with AET and getting around it." Reba shared the "AET is a struggle for me, as well as the students, so I get emails you know 'what's the chapter ID' or 'how do I log-in to AET' or 'how I do this'.

For Loretta at the middle school level, she felt there could be more clarity where "there is some issues [sic] with again transferring stuff from the middle school to the high school if the high school ag teachers do it correctly or not." Dolly indicated that she wants to see the terminology in the AET to be friendlier to the broad clientele using the program "some of the stuff is geared towards Texas…we had a student fill out the proficiency with a very small beef operation, but some of the wording was like you would use when you had thousands of head of cattle or whatever."

Participants want to have the ability to simplify what their students see in their AET accounts by having the ability to turn off features. Rosanne desired adaptability:

> It would be really nice as an educator to go in and kind of like custom create features to go and turn on and off features in so that, if I have a student that is looking to get a proficiency award or American, state degree and those skills that come with that is important, I can have that to where that's enabled for that student, but then I can turn it off for all my other students that we just want to get them some hours recorded and use that program so if we could be given some options to create kind of like in learning management systems, you can go and enable features based off what your preferences are.

> I wish I could go in and turn stuff off so that you know the extra stuff that doesn't apply to North Carolina or that I'm not doing in class right now. That I could turn that off, so that they don't see it, because I think when they open up their profile and they got all that stuff on there… I think it confuses them and it's just harder to teach them how to use the website, because you know there's just so many steps to get to setting up their experience there's so many steps to get into their Journal and it's a great idea poorly executed (George).

Even though she has shared a desire for the AET to be less complicated, Emmylou also had praise for the support offered by the AET site and its management team. She indicated the "AET functionality can help a little, but they're good when you take the time to tell them they need to fix something."

The fourth theme identifies the *Reluctant users*. Multiple participants referenced that they were only using the AET because they had no other option, especially where regional, state, and national applications were involved. Kenny stated "State and American are the ones you don't have a choice, that's how you have to do it, then we kind of realized we can use it for chapter degree, we can also use it for greenhand" adding "maybe that's something we do this year". George expressed his frustration in the situation saying, "We use AET for the awards piece, because we have to" and "I know I've got to do better with that because pretty much the whole world revolves around AET right now so I'm not happy about that, but that's the way it is." When reflecting on his multi-teacher program's relationship with the AET, Willie felt "it's hard to if you got me and one of my teaching partners, I do it this way, and they do it a different way, it makes life a little more difficult, that's why you quit doing things like AET." Some programs, like Keith and his teaching partners "still use our own record books" and he went on to lament that as the state moves applications over to the AET for degrees, proficiencies and other awards he added "I guess we're going to be using it a lot more this coming year." Randy indicated teachers received the AET and recognized buy-in was a process. He stated "we went from… something you got to pay for a yearly subscription to okay now the state pays for it so once it went that route and everyone learned it was going to stick around then more people started using it… just give people time to train and learn and kind of figure out what's going on is going to help everyone."

Lastly, the fifth theme highlights a *Challenge with alignment*. Several participants felt that the AET does not align with the current SAE for All model which required teachers to be creative in giving instructions to students for record keeping and accountability in class. Dolly was vocal that "I do not feel like [SAE for All] lines up with the AET 100%." Participants were especially frustrated with the redundancy involved in having students use the AET to enter records then share information with their learning management system (LMS) or jumping between other programs. Emmylou mentioned the multi-step process to enter grades by saying "grading on AET is not very easy, or is at least one more program I have to go to grade and so that's where for me that breaks down, is even if I make them record it then it's the follow up". Dolly felt we should use integrate tools when possible, adding:

> Instead of doing a Google Doc on workplace safety, I think there's a workplace or safety quiz on the AET. You know, and then Ag Explorer, those kind of line up with it, but it's just a lot of click this link and come back and put it on this document, whereas if we just did everything on the AET, then you can run reports and it's not going so much back and forth, it's like the two programs are fighting with each other to be used.

## Conclusions/Discussion/Implications/Recommendations

We were indeed seeing evidence of the finding Aviles indicated in her 2017 research warned were a possibility. She predicted the complexity of the AET would cause some teachers to discontinue its use and we are indeed seeing some teachers who had been implementing the

AET for student SAE recordkeeping in their classrooms and have stopped. Some indicated their students find it hard to use and they get tired of answering those questions. Fortunately, the AET is on the right track with the recent Google log-in integration and they should continue to address common teacher issues. It could be considered that the AET is unsuccessfully trying to be all things to all people. Because of this, the AET can move quickly which makes it challenging for teachers to stay up to date or ensure their resources are current. While the "Tuesday Tips" emails are a great place to share best practices, the AET should consider batching these small tweaks and release monthly or quarterly roll outs of new features, possibly labeling the current version such as version 2022.1, 2022.2, etc. similar to phone or computer updates.

Teachers are already tasked with using local course management systems and find it difficult to record and grade in multiple places while also navigating a third resource of the SAE for All guides. Teachers want flexibility within the AET to best suit their programs. Many mentioned how in their LMS, they can turn off features that students do not need to engage with. Occupational students, for example, journaling only without other features. Perhaps a ready to go printable from the AET that was packaged easily. Easterly & Simpson (2020) found that teachers who have high self-efficacy and pedagogical design capacity are adapting resources, but in their study of Utah teachers, the AET was being offloaded (not being modified) more than other resources. Curricular resources that are subject to offloading "should clearly communicate the learning goals and have specific teacher direction" since they are being used with very little teacher modification.

It is also important to note that middle school teachers are choosing to opt out of using the AET or creating options for their students to opt out. By doing this, student records are not easily accessible and transferable as these students move into high school. The AET should consider offering a limited interface for middle school programs that gives the teacher flexibility to open or release additional actions for students as necessary.

It is clear that some teachers are only using the AET because it is required to complete FFA degrees and award applications. Again, Rogers indicates that the system is using this mandate to help move laggards to recognize the power of an innovation. For some, this has opened up new features and opportunities to explore while others are continuing to only use where required. As change agents, state staff should consider requiring more from programs that can only be accomplished through the AET. In the last year, North Carolina has begun submitting all waivers for FFA event participation through student AET accounts. Perhaps more activities like submitting teacher contract hours or documenting student state mandated assessment records in the AET would drive adoption and adaptation of the AET through increased use. There are laggard teachers who have reluctantly adopted mostly because of state requirements while others have reached the confirmation stage. There are also a few who have reached confirmation and revisited their decision to adopt the AET. State staff can offer more training and/or bring in presenters for teachers. Offering pre-recorded or asynchronous resources can help, but teachers need the time to work with the innovation and decide how to integrate it in their program.

Teachers acknowledged the AET is probably more powerful than their current level of use would indicate. State staff should utilize the opinion leaders in showing what the AET is

capable of and training to offer time to explore the AETs features. The AET could consider creating "train the teacher" lessons for "expert" AET users to help lead professional development for others in their states. Aviles (2017) found time to familiarize themselves with the AET was a barrier for teachers in Oklahoma. State staff should consider adding tiered AET workshops at in-service and professional development to allow all teachers to increase their self-efficacy towards using the AET.

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**Making it Happen: SAE for All Implementation in North Carolina**

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Supervised Agricultural Experience (SAE) is a work-based learning project for students in School-Based Agricultural Education (SBAE) and is one of the three major components of agricultural education (The National Council for Agricultural Education, n.d.). This portion of SBAE is often credited to Stimson's (1919) home project for farm boys in vocational agriculture classes (Croom, 2008; Moore, 1988; Smith & Rayfield, 2016). While SBAE and SAE have evolved over time, the evolution of the SAE project has not maintained relevance among all SBAE teachers and many have admitted to not incorporating SAE in their programs or not requiring all students to maintain an SAE project (Steele, 1997; Wilson & Moore, 2007). Even though teachers are admittedly not implementing SAE, it is still touted by the same teachers as highly valuable for students (Retallick, 2010; Wilson & Moore, 2007). This disconnect was a motivating factor for the National Council for Agricultural Education (The Council) to come together and redesign SAE into a project that is accessible and attainable for all SBAE teachers and students, known as SAE for All (The National Council for Agricultural Education, n.d.).

SBAE teachers have indicated many barriers to implementing SAEs in their programs. Specifically, The National Council for Agricultural Education (n.d.) specifies time, student enrollment, agricultural background, resources, administrative support, and understanding of SAE as barriers. Addressing the need for a clearer purpose and guidance for SAE has been called on time and time again through research (Doss & Rayfield, 2019; Dyer & Osborne, 1995; Retallick, 2010; Wilson & Moore, 2007), therefore, the SAE for All philosophy addressed this need and was adopted in 2015 (The National Council for Agricultural Education, 2015) and implementation guides were created in 2017. In North Carolina, terminology was updated in the state curriculum in 2019 and the SAE for All model was rolled out at the CTE Summer Conference in July 2019 (Joshua Bledsoe, State Director, Personal communication, October 2022). Teacher implementation of new practices is a challenge that has plagued SAE models for years (Dyer & Osborne, 1996). Since North Carolina SBAE teachers have been expected to utilize the SAE for All model in their programs since 2019, there is a need to understand how it has been implemented in SBAE programs. The purpose of this qualitative study was to explore SAE for All implementation among SBAE teachers in North Carolina. In this research, "SAE for All implementation" will be generally defined as using the SAE for All model and guides created by The Council with students. The research question guiding this study was how is SAE for All being used in SBAE programs in North Carolina?

The framework for this study was Rogers' (2003) Diffusion of Innovation theory. Rogers (2003) defines diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). When looking at the diffusion of an innovation, there are typically five perceived attributes, including relative advantage, compatibility, complexity, trialability, and observability (Rogers, 2003). Due to the relatively recent development of SAE for All, participants in this study are within the five stages of the innovation-decision process. The stages move from knowledge, persuasion, decision, implementation to confirmation (Rogers, 2003).

## Methods

This phenomenological qualitative study aims to gain a better understanding of the lived experience of implementing SAE for All among SBAE teachers in North Carolina. This was selected due to the developing nature of SAE for All implementation in North Carolina (Creswell & Creswell, 2018). SAE for All was rolled out in the state in 2019, therefore a shift to this new model should be happening in SAE expectations and requirements across the state. These findings address one portion of a broader study into SAE for All implementation. Participants were selected through purposive sampling to gather a representative sample of the state teacher population. Participants were contacted via work email between April-June 2022 and study inclusion criteria consisted of: (1) Current North Carolina SBAE teacher, (2) At least one full year of experience as a SBAE teacher, and (3) Include SAE as a component of your SBAE program. Participants indicated through a Qualtrics consent form their willingness to participate in the study and scheduled an interview time through email. Individual interviews were conducted with thirteen participants between April-June 2022 yielding more than five and half hours of interview data which were transcribed from recordings by the researchers. The semi-structured interview protocol consisted of eight questions.

The thirteen participants are described here. Tammy is a second-year teacher in an urban, single teacher middle school program. Patsy is a third-year teacher at a single teacher suburban high school. Reba is a fourth-year teacher at a rural single teacher high school. Naomi is a fifth-year teacher in a two-teacher rural high school. Loretta is a fifth-year single teacher in a suburban middle school. Kenny is a fifth-year teacher in a rural, two teacher high school program. Dolly has 8 years of teaching experience and serves in a three-teacher rural high school. Rosanne has 10 years of experience and works as a single teacher in the only high school serving a rural/suburban area. Randy is an 11-year veteran teacher working in a two-teacher rural high school. Emmylou is one of three teachers serving in an urban high school and she has 14 years of experience. Willie has taught 18 years in a rural high school with four teachers total. Keith has been teaching for 24 years and serves a rural community at a three-teacher high school. Lastly, George has 25 years of teaching experience in a two-teacher rural/suburban high school.

Several methods of data analysis were used to provide an accurate representation of how SAE for All is being implemented in North Carolina. During interviews, researchers made memos to record their reactions, thoughts, and emerging themes. Data from the transcribed interviews were coded by both researchers to identify major themes. Researchers then compared their themes to confirm findings. Trustworthiness was established through rich, thick descriptions. Direct quotes throughout the findings are used to provide the clearest overview of the phenomenon of implementing SAE for All in SBAE classrooms in North Carolina. Reliability was established through continuous review of coding and clear communication between both coders working with the collected data. We offer the following statement of researcher reflexivity. Both researchers are involved in the agricultural education profession, both taught SBAE in North Carolina and required their students to have SAE projects while one researcher utilized SAE for All in her program. Both researchers work together to teach the experiential learning course for agricultural education students at [University] where students are learning about SAE and SAE for All. These experiences have positively shaped both researchers'

opinions of SAE and SAE for All and will allow them to be aware of possible successes and challenges in implementing SAE for All, but also may impact their interpretation of themes and findings.

## Results/Findings

When looking at how SAE for All is being used in the state, three themes were constructed from the data. The first theme is *What is working*. Participants were consistent in their plans for expanding school-based enterprise SAEs. George shared his program was "trying to get some more school-based enterprises going and I think kids are really getting excited about that because they can go out and do those things they can see it, touch it, feel it, and experience it." While Randy noted "using SAE for All has made me understand this more, you can use those school-based projects to make them to be more successful." For her middle school students, Tammy has plans to "cut back on some of the ideas" and "make it a little more school based". Others were more specific in their school-based enterprise projects and plans like Kenny and Dolly. Kenny had a plan to use school facilities while donating a portion of any profits back to the chapter to help create a "realistic kind of business scenario." Dolly wrote a grant to install "a sensory garden for the exceptional children on campus so every member helped some in some capacity with that and they all log their hours through the AET with that and their picture."

Participants also shared an increased interest in Agriscience Fair for their own students and seeing other SBAE teachers rise to the challenge of incorporating research in their programs. Kenny identified one area of the model that most excited him was agriscience fair because "everybody, no matter where you're at resource wise can do some form of research project." Willie saw the ag teacher as the limitation stating that a lack of confidence from the teacher meant that many students don't hear about the research/ agriscience fair option for SAE adding "it seems overwhelming to the ag teacher so it's easiest if I don't mention it because then I don't show that I am incompetent with it."

Participants believe SAE for All has helped students plan for their future careers. In multiple cases, participants indicated that SAEs were especially helpful in removing potential careers from students' interest lists. Dolly shared SAE "It does help them figure out what kind of careers they want to go into, and it eliminates the ones they don't want to go into." A number of teachers indicated they believe SAE for All can work but would like to see examples of programs implementing the program really well. Reba felt that through professional development, "I'd like to see examples of how other teachers are implementing it, because we haven't really got the chance to see that…I think that would be pretty beneficial."

The second theme is *What is not working*. The general consensus among most teachers was that COVID had hindered their progress in implementing SAE for All. Many participants echoed Rosanne in that when COVID hit "if there was something that we had to weed out in order to just survive through all of that personally, SAE was one of those things." However, Loretta was an outlier in her take on teaching through COVID stating "when we were 100% virtual that was basically your assignment in ag."

Teacher misconceptions about SAE for All and incomplete understanding of the model have also led to challenges for implementation. Multiple teachers referenced foundational projects as being anything that did not directly relate to agriculture, like Dolly's statement: "we don't discourage foundational because some of them that's what they need…but we do make [them] have some kind of ag aspect to it, even if they don't want to do an ag career eventually." Or Reba's comment that "with SAE for All we've been able to implement students using their job, as their SAE project as like a foundational project and that's more geared towards students who don't have anything agriculture [or] anything else available to them." Naomi also said that "Level two we don't necessarily focus on foundational as much just because once they've already done it one time." Participants also struggled to see the value in having their students connect foundational activities with immersion SAEs. Naomi also indicated that foundational was "like resume cover letter stuff and kind of looking into things that are happening in agriculture, while the immersion one is something that might interest them a little bit more in a specific area." George stated his students "feel like that a lot of the foundational stuff is just another assignment." Similar sentiments were shared by Kenny who said when students come into the agriculture program with an immersion SAE already in place, "we want to focus on that more than the foundational side and so … we need to do this and *check that box*, so that we can focus on what you have."

With the tiered levels of SAE for All, alignment across multi-teacher programs is challenging. While some multi-teacher programs have communicated about SAE for All and still maintain their philosophical differences, others have not addressed a plan to align at all. Willie could identify that in his four-teacher program "50% of us find it more important than the other 50%" while Naomi stated that "I cannot speak for [my teaching partner's] classes, he's a little different than I am".

With awards driving SAE for some teachers, the alignment of SAE with the award structure was discussed. Reba stated that proficiency awards were still very much for traditional projects adding "I don't know how you could shift gears to accommodate for students who are doing an exceptional foundational SAE."

The third theme is *A needed shift in SAE Philosophy*. This shift has been especially challenging for veteran teachers. Keith indicated he and his two teaching partners are close to retirement and acknowledged "I mean we've got four or five years left so sometimes it's hard to change your ways of doing things". The most common hang-up has been the belief that SAE for All is not "ag enough" for some. Willie indicated it bothers him that SAE for All allows for non-agricultural SAE projects, but also continued that "I have to be so flexible in my program for students." Dolly, speaking for herself and her teaching partners stated, "we 100% believe in SAEs and while we do like SAE for All I will say we lean more toward the immersion side because I mean we are agriculture educators." George expanded "I feel like if we're going to do SAE you know, let's go ahead and get them into an immersion project and get them actually doing something." This idea of a foundational SAE as a 'hurdle' to get students past was not unique to George. Others stated the same idea in different ways. Emmylou noted that in her program "I've got this kid in level one, but he's already had level two for [my teaching partner]. He doesn't need to be doing foundational stuff again." To be clear, as designed SAE for All would have every student in every agriculture course engaging in a foundational SAE whether

they have an immersion SAE or not. Reba identified the overall process of change in agricultural education as a barrier. She stated, “Ag Ed is very rooted in tradition and how things have always been, and how they're always going to be”. Rosanne indicated that she was at a place, career wise, where she was frustrated with SAE. She indicated “the way that SAE was kind of designed, I just was really frustrated and needed something fresh to be done. My kids were frustrated with it” and that summer she planned to spend time planning a new way. That is the summer when she was introduced to SAE for All. She also indicated it required a philosophical adjustment stating, “it's been a whole different kind of paradigm shift that I was willing and excited for.” Earlier career teachers have indicated a smoother transition in their SAE philosophy. Loretta felt strongly that, “I think if it's presented correctly in the right way to kids and if teachers understand it, it's a huge benefit for them.” Rosanne thought the challenge is “getting people to realize like SAE he doesn't have to be what it used to be.” Adding, “it can, but it doesn't have to be.”

Tammy reflected on SAE for All at the middle school and “even the foundational one, is a little bit too much for the middle school level…I feel like if there's maybe a level underneath foundational like exploratory it might work better for middle school.” Loretta, who is also in a middle school program, indicated some of the activities are not a fit and thought teachers would benefit from “simplification of materials”. She specifically referenced resumes and the fact that her students do not have much to put on a resume. Loretta also stated students are already doing a lot of career exploration in middle school courses, so she focuses on “doing something they are proud of” keeping up with their records, and presenting in class.

In recent years, the state’s curriculum was updated to include completion of a foundational SAE in the assessment. Some teachers told us this is what moved them to begin implementing SAE for All. Reba stated she found the SAE for All foundational activities “because that was actually linked in the PBM [state mandated performance based assessment], that's how I found out about it and started using it.” Many participants indicated they were only using the SAE for All model because of this but did not feel they had enough time for students to complete the full foundational guide. Kenny shared “I probably get through like one or two activities out of the five that's recommended and then, then we just kind of move on.” Reba summed up what many of us have known about SAE for years, describing the three circle model as a three-legged stool, with classroom being the strongest and what the teachers are hired and trained to do, while FFA is likely a motivator that brought many into the profession while continuing that “SAE is kinda like the redheaded stepchild of that little three circle model” and that “SAE is always the area, no matter what we do, it's always going to be the area that needs the most help.”

## Conclusions/Discussion/Implications/Recommendations

This study illuminates the current level of SAE for All implementation in North Carolina and areas where improvement is needed. It is clear that our teachers do not fully understand the purposes of foundational SAE in the SAE for All model. Therefore, a relaunch within the state or a train the trainer event is necessary to help teachers understand the model and align their philosophies. State staff should work to provide these opportunities and continue to keep SAE for All as a relevant topic at all teacher in-service meetings. The task of implementing SAE for

All well is a big request of teachers. The intricate nature of moving a program full of individual students through multiple years of individualized SAE growth and advancement to provide each student with career preparation for their individual goals is not an easy task for anyone. When you layer on the innovative nature of SAE for All, teachers need a model of success they can look to for guidance. They need to see a teacher who is able to implement all of the lofty and worthy goals of SAE while teaching the state curriculum and serving the local community well with the FFA program. The challenges of aligning philosophically can be compounded when a program adds multiple teachers, therefore it is important to offer examples of successful programs at a variety of levels. Identifying models of success and sharing them with SBAE teachers at large should be a top priority for The Council in the coming years. State staff, National Teacher Ambassadors for FFA, and NAAE leaders should connect programs to The Council to accomplish this goal. While some may say the "tail is wagging the dog", research shows and teachers clearly told us in these interviews, that FFA awards and degrees are driving what is happening in the classroom as it relates to SAE. Until these very visible FFA metrics of success evolve to include or even celebrate all of the components of SAE for All, integration will continue to lag.

We initially struggled with where we were seeing a shift among our teacher group. While we initially thought perhaps it was aligning to teacher career phase, it also appears teacher mindset is playing a role. Those teachers who can see themselves as only a few years from retirement indicate they are reluctant to change something they do not see as wholly broken while others indicate that SAE for All was taught to them in their teacher education program and is the only pathway to SAE integration they have ever known. Those in the middle were most interesting. Some appeared to be philosophically influenced by their teaching partners while still others were seeking innovation in SAE out of frustration with how SAE was not working for them under the old model. This is a group that needs guidance and influence from teacher opinion leaders. Using those late career, growth mindset teachers to set the stage during training may be critical for teacher buy-in.

State FFA Staff are critical change agents in the diffusion of SAE for All. Many participants indicated they only used SAE for All the first time because it was embedded in the curriculum as part of the performance based measure. The ability to drive change through requirements whether that be in curricular integration or as a part of mandated professional development, external motivation can be a tipping point for someone considering an innovation. The same can be said of our teacher education programs. There are four teacher education institutions in North Carolina and only two have a course fully dedicated to SAE for All and experiential learning required of those in the undergraduate licensure pathways.

We did hear from teachers that SAE for All went a long way toward solving many of their issues with SAE. It gave a clearer pathway for students who did not walk into the classroom with a *built-in* immersion SAE. Conversely, several participants indicated the old model was easier for *some* students. Elliott and Lambert (2018) offered the term rural privilege as a way to describe, in part, "rural students whose family has the financial means and space to engage in larger SAE projects" and students who's "family experiences and knowledge, particularly in production agriculture, may give them an advantage over urban students."

Lastly, we heard from those currently at a middle school that SAE for All is missing a level, needing something below what is currently offered in the SAE for All guides at the Awareness level. While the model shows awareness as appropriate for students in grades 6-9, our classroom teachers suggested putting the sixth graders at the same level as a high school freshman was not working and middle school students needed something more exploratory in nature. We recommend the SAE for All committee consider this pre-awareness option.

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# Examining Level of School Garden Integration among Elementary Agriculture Education Teachers in Georgia

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## Introduction, Purpose, and Objectives

Agricultural education endeavors to teach children about "the plants, animals, and natural resource systems" (Talbert et al., 2014, p. 264). Recently, only students in secondary education and up were the usual recipients (National Association of Agricultural Educators, 2022), but Georgia sought expansion of this programming into the elementary grade levels. This move was supported by Senate Bill 330, which passed in April of 2018 and helped establish a pilot program for elementary agricultural education (Georgia Senate Bill 330, 2018). Georgia House Bill 1303 passed in April of 2022, changing the pilot to an ongoing program.

Teaching agricultural education at the elementary level is not a new idea despite the recent legislation. Previous research lists the lack of agricultural literacy among today's youth, agriculture's infusion in many areas of life (Hess & Trexler, 2011; Koy & Tarpley, 2020), and the benefit of experiential learning as reasons why learning about agriculture at a young age would be valuable (Knobloch et al., 2007; Mabie & Baker, 1996; National Research Council, 1988).

School gardens are one such avenue for experiential learning (DeMarco et al., 1999). Teaching in gardens pairs well with subject material in agriculture, math, English, and science, among others (Ozer, 2007), but little research establishes how gardens could supplement classroom learning. Thus, the purpose of this study was to examine the level of school garden integration in elementary agricultural teachers' classrooms. The objectives of this study were to 1) describe elementary agriculture teachers' level of school garden integration and 2) utilize the GREEN Tool results to determine topic areas for future professional development for Georgia elementary agriculture educators.

## Theoretical/Conceptual framework

Georgia legislative acts may have provided the space for elementary agricultural education, but no three-component model exists for these age ranges. The traditional model is the result of several programmatic developments that came together over time and suggests the following components to be included in the agriculture education classroom: classroom or laboratory instruction, experiential learning, and leadership education (Croom, 2008; National Association of Agricultural Educators, 2022).

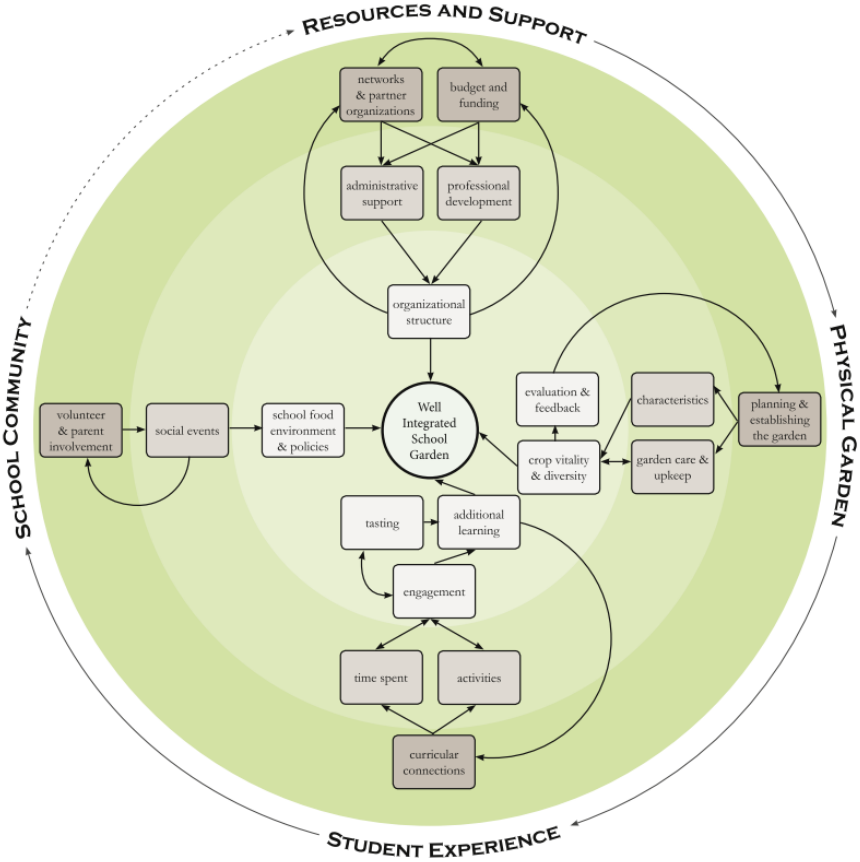
Experiential learning (Kolb, 1984) is an important theoretical component of the agricultural education model and proposes that agricultural education should be a mechanism by which educators help students move beyond retaining knowledge to creating new meaning in other areas of their life (Baker et al., 2012). Given the lack of a model at the elementary level,

Peake et al. (2020) conducted a study to establish appropriate agricultural standards based on the needs of elementary students in Georgia. Sixteen stakeholders decided on 52 relevant standards topics. Bailey (2021) later conducted a needs assessment to further assess the appropriateness of these standards, the results of which showed teachers need guidance on introducing experiential learning in the elementary setting. An easy-to-incorporate example of this is school gardens, a long-standing experiential learning and agricultural education practice (Williams, 2019). John Dewey (1938) also put forth the idea that gardens allow children to connect with the natural world. For example, during a writing session, children could be asked to describe the garden using the five senses; additionally, when tending to the garden, children could be asked to harvest one-third of the bell peppers on each plant. Furthermore, working with plants in the garden could be a viable and relevant way to teach the plant life cycle.

For students to receive a wide range of benefits, gardens must be well-integrated within the school community (Burt et al., 2017). The GREEN (Garden Resources, Education, and Environment Nexus) Tool, Figure 1, describes the necessary components for gardens to become integrated within the school and serves as a functional conceptual framework for this study. The conception itself is a circle, with four domains lining the outside of the circle: Resources and Support, Physical Garden, Student Experience, and School Community. Each domain has a variable number of components, which are oriented in an N-S, E-W fashion. The components are arranged from the outside of the circle moving in to suggest that moving inward can lead to a more integrated garden. Resources and Support is the suggested entryway.

**Figure 1**

*The GREEN (Garden Resources, Education, and Environment Nexus) Tool (Burt et al., 2017)*




## Methods

This study was mixed methods in nature and used a concurrent triangulation design based on quantitative data obtained from an online questionnaire and qualitative data collected from follow-up focus groups use to validate both sets of data. The questionnaire was distributed online via Qualtrics to all identified elementary agriculture education teachers in Georgia (N=35). This contact information was readily available from the Georgia Department of Education. Those who completed the initial questionnaire were asked to participate in a focus group, and compensation was provided for participation.

The online questionnaire was modeled after the GREEN tool scorecard, and researchers worked with Dr. Kate Burt, the first author of the GREEN Tool (Burt et al., 2017), to develop this questionnaire. The tool has four domains comprised of 19 total components deemed essential to having a well-integrated school garden. Each component was written as a question and respondents were asked to rate on a scale of one to seven, one being the lowest and seven being the highest, how well each component described their school garden. To better understand the elementary agriculture teachers' backgrounds, the researchers included a demographics question that asked teachers to explain the number of years and their experiences working in a garden. Another question asked whether the teacher believed they were the best individual at their school to answer this survey. Finally, each component question asked teachers to rate their confidence on a scale of one to seven (one being not confident at all, seven being very confident) of how true they believed their answer to be about that evaluative component of the garden. This study

operated as part of a larger initiative to learn more about Georgia elementary agriculture teachers and was conducted as part of a larger NIFA/USDA grant focusing on professional development for elementary agriculture education teachers.

The reliability of the tool for Georgia elementary agricultural teachers could not be established due to the small sample size. Only descriptive measures (means (M) and standard deviations (SD)) via SPSS Version 27 were used in reporting measures. Another limitation was that because the questions were worded based on the scorecard, some questions were purposely left double-barreled. Focus groups were conducted to mitigate these concerns and clarify the quantitative nature of the questionnaire. For example, one question asked teachers if they felt they had enough outside connections from organizations and individuals to support their garden. During the focus groups, teachers were asked to explain these connections and if they were primarily from organizations or individuals. At the end of each section of questions during the focus groups, the conversations were summarized out loud for the teachers' review.

Online questionnaire data were collected during June 2022. Due to limited participation and varying teacher schedules, the collection period was extended through mid-August 2022. Thus, one focus group was held at the end of June and another at the end of August. Throughout the duration of the data collection period, 15 teachers completed the questionnaire (n=15) in its entirety and 11 teachers (n=11) attended the focus groups.

## Results/Findings

### Participant Demographics and Their School Gardens

All 15 teachers taught a combination of kindergarten through 5$^{th}$ grade; two teachers also taught middle school (6$^{th}$ through 8$^{th}$) grades. Most of the teachers were female (n=11, 73%), under the age of 50 (n = 11, 73%), and were certified to teach agriculture (n=9, 60%). The total years taught varied, from less than 5 years to more than 20 years, and most teachers had been teaching agriculture for less than 10 years (n=11, 73%). However, all teachers had some type of gardening or farming experience.

Every teacher indicated they had some type of school garden their students used in some capacity. Several teachers described using more than one type of gardening setting or interaction activity, but the most popular methods were raised beds (n=15, 100%), pollinator gardens (n=6, n=40%), and alternative systems (e.g., hydroponic) (n=5, 33%). Some teachers listed having a sensory or themed garden (n=2), container garden (n=3), open plot (n=2), or greenhouse (n=4). Two teachers listed growing food for the cafeteria, and four listed fruit production. Additionally, every teacher indicated their students participated in the general maintenance and care of the garden. A majority of teachers (n=10, 67%) indicated they connect the garden to learning in the classroom. Other types of interaction were less often indicated but included food, nutrition, or cooking activities, or some type of construction activity.

### GREEN Tool Results

Four domains comprise the GREEN Tool: Resources and Support, Physical Garden, Student Experience, and School Community. Table 1 illustrates the means (M) and standard deviations (SD) for the GREEN tool and confidence scores. Standard deviations for the GREEN tool scores ranged as much as 2.4 points, so the lowest and highest scores are also listed.

Eighteen of the 19 mean confidence scores for the components were above six, indicating teachers were confident they were capable of answering questions related to their school garden.

In Domain 1, the administrative support component had the highest mean score whereas the organizational structure component had the lowest mean, where administrative support refers to support from key leaders within the school community, and organizational structure refers to the individuals that determine how to operate the garden program. The focus group conversations highlighted that many teachers rely on their local Farm Bureau and garden-related supply stores for support (this falls under the component network and partner organizations). At least two teachers expressed they wished they had more chances to connect with their fellow elementary agriculture education teachers, too, and said they appreciated the opportunity of the focus group to ask questions of their peers. Many teachers indicated their administration was supportive of their garden program, yet they still lacked any sort of regular funding and professional development opportunities to support and sustain their program.

In Domain 2, both the planning and establishing the physical space and space for the physical garden had the highest mean scores, and the evaluation and feedback component had the lowest mean score. Regarding the two highest mean scores, these components refer to the deliberate action taken to plan the garden based on the school's needs and the actual space devoted to the garden, respectively. Evaluation and feedback refer to the communication or information one receives about the effectiveness or efficacy of the garden. The focus group conversations revealed conflicting points, especially in relation to the planning and establishing of the physical space component. At least six teachers indicated the garden's location was not ideal (e.g., too far from the classroom, water hookup is hard to reach), particularly because they were not involved in the planning process. Despite these contradictions, almost all teachers said they were proud of the garden and enjoyed its space, despite some of the difficulties they expressed related to its layout. Regarding evaluation and feedback, teachers often rely on the expressed emotions of the students. This falls more clearly under Domain 3, which will be discussed next.

The connection with the curriculum component had the highest mean score while the tasting component had the lowest mean. The high mean for connections with the curriculum indicates teachers do not struggle with matching teaching in the garden to state-mandated learning objectives. The focus group conversations also corroborated this: Most of the agriculture teachers confirmed they do not struggle relating the state standards to learning in the

**Table 1**

*Summary and Comparison of GREEN Tool and Confidence Scores for all domains (n=15)*

| Domain 1 – Resources and Support | | | | | | |
|---|---|---|---|---|---|---|
| Component | GREEN Tool Scores | | | | Confidence Scores | |
| | Lowest | Highest | M | SD | M | SD |
| Budget and Funding | 1 | 7 | 4.4 | 2.2 | 6.3 | 0.6 |
| Network and Partner Organizations | 3 | 7 | 4.8 | 1.8 | 5.9 | 1.3 |
| Administrative Support | 3 | 7 | 5.2 | 1.4 | 6.3 | 0.6 |
| Professional Development | 1 | 7 | 4.4 | 2.1 | 6.2 | 0.6 |
| Organizational Structure | 1 | 7 | 3.3 | 2.1 | 6.1 | 0.6 |

| Domain 2 – Physical Garden | | | | | | |
|---|---|---|---|---|---|---|
| Component | GREEN Tool Scores | | | | Confidence Scores | |
| | Lowest | Highest | M | SD | M | SD |
| Planning and establishing the physical space | 1 | 7 | 5.7 | 1.6 | 6.4 | 0.4 |
| Garden care and upkeep | 3 | 7 | 4.9 | 1.8 | 6.2 | 0.6 |
| Space for the physical garden | 1 | 7 | 5.7 | 1.9 | 6.3 | 0.6 |
| Crop vitality and diversity | 2 | 7 | 5.1 | 1.6 | 6.3 | 0.6 |
| Evaluation and feedback | 1 | 7 | 4.3 | 1.7 | 6.3 | 0.7 |
| Domain 3 – Student Experience | | | | | | |
| Component | GREEN Tool Scores | | | | Confidence Scores | |
| | Lowest | Highest | M | SD | M | SD |
| Connection with curriculum | 6 | 7 | 6.3 | 0.5 | 6.3 | 0.6 |
| Learning opportunities | 5 | 7 | 5.9 | 0.9 | 6.3 | 0.6 |
| Time spent in the garden | 4 | 7 | 5.7 | 1.2 | 6.3 | 0.6 |
| Activities | 5 | 7 | 5.9 | 0.7 | 6.4 | 0.4 |
| Engagement | 5 | 7 | 6.2 | 0.6 | 6.4 | 0.4 |
| Tasting | 3 | 7 | 4.5 | 1.3 | 6.4 | 0.4 |
| Domain 4 – School Community | | | | | | |
| Component | GREEN Tool Scores | | | | Confidence Scores | |
| | Lowest | Highest | M | SD | M | SD |
| Volunteer and parent involvement | 1 | 7 | 2.9 | 2.2 | 6.3 | 0.6 |
| Social events | 1 | 7 | 3.4 | 2.4 | 6.4 | 0.4 |
| Food environment | 1 | 7 | 4.3 | 1.6 | 6.0 | 0.4 |

*Note.* Under GREEN Tool Scores, 1 indicates the component does not describe their garden at all, and 7 indicates it does describe the garden. Under confidence scores, 1 is not confident at all, and 7 is very confident.

garden. At least two of the teachers also teach core subjects (e.g., math and science) but indicated that although they must work harder to lesson plan, they do not struggle to connect the curriculum with learning in the garden. Tasting as a component had the lowest mean score in this domain, which was not anticipated given that three teachers indicated this was a way the students interacted with the garden. Additionally, during the focus groups, several teachers indicated the students loved tasting what they grew. A few teachers discussed that students were particularly excited when the school nutrition staff prepared and served the vegetables they had grown. A consideration for this low score could be that teachers only considered tasting activities that they led to be the criteria for this component (i.e., they may not count when the students tasted the vegetables in the cafeteria).

All components in Domain 4 ranked low relative to the components of the other domains. The conversations during the focus groups were also the shortest when discussing this domain. At least two teachers mentioned the COVID-19 pandemic played a significant impact on their

school's ability to bring in volunteers or host social events. Additionally, though teachers acknowledged the garden can be used to teach about nutrition, few teachers discussed how they used the garden to do so. When prompted for further discussion about nutrition at their schools in general, one teacher mentioned they may discuss the different components of MyPlate in relation to growing food in the garden, and another teacher commented that the MyPlate posters hang in their school cafeteria.

## Conclusions/Discussion/Implications/Recommendations

This study sought to 1) describe elementary agriculture teachers' level of school garden integration and 2) utilize GREEN Tool results to determine topic areas for future professional development for Georgia elementary agriculture educators.

### Objective 1

The GREEN tool proposes that a well-integrated school garden will have all 19 components. From the findings, the qualitative data did seem to support the quantitative findings in that teachers generally noted they do not struggle engaging students in the garden, either via physical activities or classroom learning. Teachers indicated outside support is low due to a school's lack of volunteer activity and general lack of consideration for certain components, among other reasons. Future research should examine the efficacy of the components in Domain 4. Specific attention should be given to questioning whether the absence of these three components affects the longevity of a school garden program and if these three components are relevant in an elementary agriculture education classroom. Attention should also be given to if and how these three components contribute to the experiential learning approach. For example, a question could be: If parents come in to volunteer *and* give a talk about how gardening plays a role in their life, does this increase the potentiality of gardens as experiential learning?

### Objective 2

Professional development ranked 14$^{th}$ of the 19 components considered necessary for having a well-integrated school garden Considering the relatively low-rank order of this component, as well as the low rank of the components in Domain 4, an emergent question is: Would these components be worthwhile topics of future professional development? At least two teachers indicated the ongoing pandemic affected their ability to bring external individuals into the school. Though future research could focus on the development of professional development material, another consideration could be to ask if and how emergency situations have shaped or changed school garden programs. A final avenue for research could be exploring how such a situation determines short and long-term courses of action for school garden programs.

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# Understanding the Views of Beef Show Cattle Parents and the Reasons Why Their Children Participate

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## Introduction and Literature Review

The time-honored tradition of cattle exhibition can be traced back to 1811 when Elkanah Watson, often called the *Father of American Fairs*, formed the Berkshire Agricultural Society and sponsored the first fair (MAFA, 2022). Now often referred to as a *Cattle Show*, the display included 383 sheep, seven bulls, 109 oxen, nine cows, three heifers, two calves, and one boar (Oliver, 2011). Unlike their counterparts of today, these early livestock shows would have taken many days to travel to and would have been a large undertaking for all who attended. In contemporary times, livestock shows are now held throughout the year, with every state hosting its own state fair (Sanctioned Shows, 2022). Those who have participated included exhibitors of all ages, with many young people being a significant focus. Further, showing animals and caring for those that are shown has begun to be incorporated across the country as part of educational programs in high schools, colleges, and other clubs and organizations (Sanctioned Shows, 2022). Livestock shows that cater to youth exhibitors, ages eight to 21 years old, have a long-standing tradition in the livestock industry. Junior livestock shows were introduced as "a teaching tool to help develop young people in animal agriculture and to make better citizens out of them" (Parrett, 2003, p. 1). Parrett (2003) further explained that beef cattle shows provide important opportunities for young people to learn about the cattle industry, meet successful cattle industry leaders, make friends, and improve their social and communicative skills. Therefore, livestock shows offer opportunities for youth to maintain an interest in agriculture (Parrett, 2003, p. 2).

Research has indicated that parents and exhibitors value the interpersonal skills they gain the most from exhibiting livestock animals (Boleman et al., 2004; Holmgren & Reid, 2007; Keith & Vaughan, 1998). Further, quantitative research studies have examined parents' and exhibitors' perspectives on the value of showing. The majority of these respondents defined life skills as (a) accepting responsibility, (b) goal setting, (c) increased self-esteem, and (d) the ability to make new friends. Additionally, Anderson et al. (2015) found that exhibitors at the North Carolina Fair had an increased ability to set goals, show responsibility, and set priorities. Livestock exhibition has long been a part of FFA as one type of Supervised Agricultural Experience (SAE) project. Pals and Slocombe (1985) demonstrated the five greatest benefits from SAE programs that promoted acceptance of responsibility, developed self-confidence, opportunity to learn on their own, developed independence, and learned how to work with others. The National Council for Agricultural Education (2019) suggested a foundational SAE program that encourages students to incorporate five components. These components are (a) career exploration and planning, (b) employability skills for college and career readiness, (c) personal financial management and planning, (d) workplace safety, and (e) agricultural literacy.

After a review of the literature, it was determined that the most common perceptions of livestock exhibition were positive and pointed toward increased *soft skills* (Boleman et al., 2004; Holmgren & Reid, 2007; Keith & Vaughan, 1998, Pals & Slocombe, 1985). However, the time and financial requirement of livestock exhibition, particularly the showing of beef cattle, raises many questions regarding the motivations of exhibitors and their parents. Research has discussed the benefits of participation, but the nexus behind such an undertaking has remained under-researchered. Therefore, the two principal questions that guided this study was: (1) *what motivates parents of youth livestock exhibitors to participate in beef cattle showing and (2) what benefits and detriments to parents of youth livestock exhibitors perceive related to beef cattle showing.*

## Purpose

The purpose of this study was to identify youth livestock exhibition benefits and detriments as perceived by parents of youth exhibitors. In addition, this study aimed to identify why parents allowed their children to participate in livestock shows. The results of this study may help explain the parents' confidence or concerns in their children's participation in livestock shows that can be used by 4-H Extension personnel, FFA Advisors, livestock show management, and the livestock show industry. The findings may also be used to help correct weaknesses in the current program or to help elevate the positives that this program has to offer.

## Objectives

1. What benefits do parents of beef livestock show exhibitors observed since their child began exhibiting cattle?
2. What positive effects have parents of beef livestock show exhibitors seen from showing cattle?
3. What negative effects have parents of beef livestock show exhibitors seen from showing cattle?
4. Have parents of youth exhibitors noticed better interpersonal skills in their children since they began showing beef cattle?

## Theoretical Framework

This study was underpinned by the human capital theory, which is based on an individual's acquisition of skills, knowledge, experiences, and education (Becker, 1964, Little, 2003, Schultz, 1971; Smith, 2010; Smylie, 1996). The use of leisure to improve skills and knowledge is widespread, and it has been unrecorded. By investing in themselves, people can improve the range of choices available to them. Further, it is a way individuals can enhance their personal welfare (Schultz, 1961). Human capital has often been utilized in the economics literature; however, the theory has implications for agricultural education. As students engage in activities, such as livestock exhibitions, they should be increasing aspects of their human capital, thereby increasing their future employability (Becker, 1964).

## Methodology

A qualitative study was determined to be the most practical research type based on the subject matter and timing of the study. We conducted qualitative research because of the complex and detailed nature of the issue. A deeper understanding of issues can only be established by talking directly with people, going to their homes or places of work, and allowing them to tell their stories unencumbered (Creswell & Poth, 2018). For this study, we employed an intrinsic case study design that allowed us to focus on the particular case (Stake, 1995).

During the junior heifer show, in-person interviews were conducted at the 2022 Fort Worth Livestock Show and Rodeo (FWSSR). All interviews were conducted on the grounds of FWSSR and were participants selected purposefully. The interviews were recorded with the participants' approval and either conducted in the open or done privately, depending on the subjects' desire. Most interviews were conducted in the cattle tie-outs, and two were conducted in a medical tent by the W.R. Watt Arena. In all, 12 fathers, five mothers, and one grandmother participated in this study. In two instances, the guardians desired to be interviewed together for a total of 10 families agreeing to be interviewed.

During the process of data analysis, we analyzed using the coding processes advanced by Saldaña (2021). In qualitative data analysis, a code is a researcher-generated interpretation that symbolizes or translates data and attributes meaning to each individual datum for later purposes or pattern detection, categorization, theme, assertion or proposition development, theory building, and other analytic processes (Saldaña, 2021). We utilized in vivo, process, and structural coding for the first cycle of coding (Saldaña, 2021). In Vivo coding is appropriate for virtually all qualitative studies, but particularly for beginning qualitative researchers learning how to code data and studies that prioritize and honor the participant's voice (Saldaña, 2021). The final process was structural coding. Structural coding applies to content-based or conceptual phrases representing a topic of inquiry to a larger segment of data that relates to a specific research question used to frame the interview (Saldaña, 2021). During this cycle of coding, codes were grouped together that had a similar tone or significance. Additional codes were added to this list after reviewing the data for anything missed during the first coding cycle. During the third cycle of coding, four themes emerged that were analyzed for this study: (1) perceptions of livestock shows, (2) support approaches, (3) perceived short-term outcomes of livestock show participation, and (4) perceived long-term outcomes of livestock show participation. Careful consideration was given to codes that could be arranged in multiple themes. Codes were reviewed by which family they came from and how they used them in each interview. Depending on the judgment of a different researcher, these final codes could have easily been interpreted differently for each of the four themes.

## Findings

After completing the coding process, four main themes emerged in this case study: (1) Perceptions of Livestock Shows, (2) Support Approaches, (3) Perceived Short-Term Outcomes of Livestock Show Participation, and (4) Perceived Long-Term Outcomes of Livestock Show Participation.

Theme 1 – *Perceptions of Livestock Shows.* The data provided from the 10 families were consistent throughout the data collection process. The parents had more favorable perceptions of livestock shows than negative perceptions. During the last coding session, 49 unique codes emerged. The data revealed that parents had a mostly positive perception of showing beef cattle.

The concept that emerged most consistently was that showing beef cattle teaches youth responsibility, a notion supported by Families #2, #8, #9, and #10. Direct quotes from the families that supported this sentiment were Family 2, “This program teaches responsibility and character.” Family 8 said,” He [his son] takes the initiative to take care of things and shows that he’s responsible.” Family 9 said, “She [her daughter] is getting up earlier in the mornings as she has two different projects that need to be taken care of.” Family 10 said, “all of the projects have been done by herself; these animals teach them responsibility.” Parents also mentioned other interpersonal traits that have been learned through showing beef cattle. Families 2 and 3 mentioned character building, and Family 5 mentioned time management. Based on what was reported by the families, it was evident that regardless of winning, the investment in livestock showing goes beyond just simple experience but, instead, provides a targeted experience that builds a variety of skills that can be used in a future career within the agriculture industry or without it, including organization and responsibility. Experience and strength in such skills could make these participants more productive in all job areas, making the perception of showing good for learning about the specific animals and useful in building future life skills applicable in a myriad of workplace settings.

Theme 2 – *Support Approaches.* Due to the tremendous work and effort involved, beef cattle projects would be difficult to complete without the support of friends and family. All 10 families provided different levels of support to their children. This was largely dependent on the age of the exhibitors. It was a consistent theme that the younger their child, the more help parents provided to their children. However, as they got older and their child was more able to handle day-to-day chores, parents stepped back and let their child take over more responsibilities. The dad of Family #4 said the “kids do the majority of the work at the barn and while they are at the shows,” because showing is “what they do and it’s what they like to do.” From learning the financial aspects of the project to walking heifers back from the wash rack, the parents in this study have demonstrated that they support their child in beef cattle showing and that it was a family affair.

Theme 3 – *Perceived Short-Term Outcomes.* All families discussed positive outcomes of beef cattle showing, and specifically, families #4, #5, and #6 each reported their youth experiences similar short-term outcomes such as learning the value of hard work, solving problems, learning responsibility, and gaining self-esteem. Family 7 said plainly, “they got to get up and do their responsibility. The animals cannot feed or water themselves”. Families 1 and 9 each discussed their children developing confidence and “coming out of their shells” and being able to talk confidently to others showmen, families, and judges. The father of Family #5 said that participating in showing cattle has taught his children how to balance projects since both show livestock and play competitive sports. Being able to take care of your schoolwork, livestock projects, and play sports takes planning and work to prepare for various events. All three parents were extremely proud of their children because they could multitask school, home life activities, and raising an animal.

Theme 4 – *Perceived Long-Term Outcomes*. Similar to the previous theme, no family discussed the negative long-term outcomes of beef cattle exhibition. Most of the responses from families

indicated their children were going to seek a career in agriculture, even though not all of the families' children live on a traditional farm or ranch. Family 6 stated, "raising them in the barn is the best decision I could have ever made." They say that these kids learn in the barn will take them further than they'll ever learn from basketball or anything else. It teaches them leadership, responsibility, dedication, and time management. Mom says, "I think it's the best way for them to be raised, and hopefully, they will pass it on to their kids." On the other hand, the mom from Family #7 has a different perspective since she has two grown adult children in this group of interviews. A motto she goes by was "if you achieve what you're doing now, you can achieve even higher as you grow." Her youngest son says he loves showing beef cattle and has positive thoughts about furthering his career with animals. Further, Family 8 has the least amount of experience raising cattle, but their son is learning patience daily because of his project.

## Conclusions

The results of this research project demonstrated the positive impacts of what showing beef cattle has done in the lives of these 10 families. By partnering with 4-H and FFA, these parents saw the effects of this program in which they: "learn about the cattle industry, meet successful cattle industry leaders, make friends, and improve their social and communicative skills (Parrett, 2003, p.1)." Even though we see scandals and questionable ethical choices by a few, these parents overwhelmingly support this extracurricular activity and have made it a family affair so that each family member plays a role. Similar results were reported by Boleman et al. (2004), where responsibility ranked first among participants in this study. The ten families also concurred by listing setting goals, knowledge of the livestock industry, building positive self-esteem, and developing oral communication skills. The families also added skills their children are developing beside the ones mentioned, including time management, self-character, sportsmanship, and dedication. Whether they are used in your career or personal life, these skills are important for success. After interacting with the parents, observing the show, and noticing the diversity of people these exhibitors interacted with during the project, it appears that livestock showing encourages exhibitors to develop the needed skills to be successful in the job market.

## Discussion

The findings of this study illustrated support for human capital theory and the importance of investing in youth development through livestock shows. The data supporting this theory suggested that the junior livestock show exhibitors were learning more than how to show cattle but also learning lifelong skills that will take them well into their future careers. As explained by their parents, these junior exhibitors were learning, responsibility, work ethic, patience, time management, interpersonal skills, and self-worth. As Schultz (1959) wrote, people that invest in themselves as individuals and as families better their national and local communities. There is no greater example than at the *Fort Worth Stock Show and Rodeo*, where generations of families come together to exhibit livestock. These children and families know what hard, manual work looks like and try to stay out of poverty while being involved in the agricultural industry. Due to parents investing in their children's future, most of the families' junior exhibitors have an idea of what they want to be after high school. Further, the skills learned through participation in

showing cattle could lead to increased productivity in the workplace as these junior exhibitors enter their future employment as they have been taught the value of hard work and interpersonal skills. This can also be said about livestock showing where the parents from Family Four said, "you can't always win, but it is worth every dollar." Looking at the literature and interviews of the families in this study, these parents are looking for an activity that encourages "having a faithful life and feeling loved, to interpersonal and social skills" (Dunn et al., 2003, p. 1371).

## Future Recommendations

Practically, the results of this study should be shared with Extension agents and FFA advisors as they recruit and promote livestock exhibition progams. Additionally, short infographic-style materials could be created to utilize as handouts to youth and parents who may be unsure of the value of the activity. From a research perspective, additional research should be conducted to investigate the *dark side* of livestock exhibitions. While we attempted to be neutral in terms of questioning and utilized probing questions that could have allowed negative themes to emerge, none did. Perhaps similar studies could be conducted with former livestock exhibitors, parents of former showmen, or families who have quit showing altogether to gather a full view of the benefits and detriments of livestock exhibition.

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# The Emotional Duties of an Agricultural Educator: Evaluating the Confidence Levels of Agricultural Educators to Support Students with Adverse Childhood Experiences

## Introduction, Purpose, and Objectives

The agricultural education profession can be a rewarding and fulfilling vocation. The opportunity to motivate students through leadership, assist them in developing a passion for the agricultural industry, and guide them to success in their chosen career paths is a worthwhile element of the profession for many educators. While these duties may be the part of the typical agricultural educator's job description, many times occur when it is necessary to emotionally support students in a professional manner (Murphey & Sacks, 2019).

In adolescence, many psychosocial functions are formed, and cognitive development is in transition to adulthood (Silverman & Hinshaw, 2008). Adverse Childhood Experiences (ACEs) can be a barrier to healthy cognitive development (Gilbert et al., 2019; Goodman, 2017; Petruccelli et al., 2019). ACEs are potentially traumatic events that occur during childhood (0–17 years old; Center for Disease Control [CDC], 2022). According to the CDC (2022), 61% of adults have experience with at least one ACE and nearly 17% have personal experience with four or more ACEs.

The effects of ACEs can be substantial (CDC, 2022). Adults with these types of experiences are more prone to violent crime, drug use, poverty, and unemployment (Petruccelli et al., 2019). Agricultural educators are often the emotional supporters for students experiencing these types of traumatic experiences. Furthermore, students that have high occurrences of ACEs are drawn to Career and Technical Education (CTE; Houtepen et al., 2020). Evaluating agricultural educators' confidence levels to adequately support students with ACEs will help ascertain their preparation levels to support these students.

The purpose of this study is to evaluate the confidence levels of agricultural educators to emotionally support students who struggle with ACEs. The following research objectives were investigated:

1. Describe agricultural educator's personal experiences with ACEs.
2. Evaluate agricultural educator's confidence levels to emotionally support students with high ACE scores.

## Theoretical Framework

The Contemporary Trauma Theory was used as the theoretical framework for this study (Goodman, 2017). This theory aims to provide a lens into the effect of trauma on psychosocial functions (Goodman, 2017). ACEs can be a barrier to cognitive development; however, through the Contemporary Trauma Theory, investigating this barrier will assist educators in emotionally supporting students experiencing these situations (Goodman, 2017). Agricultural educators are often in positions to positively affect students who are in these overwhelmingly negative situations. This is particularly true because students with high ACE scores are often drawn to CTE (Houtepen et al., 2020). Assessing agricultural educator's personal experiences with ACEs

and their confidence levels to emotionally support students with high ACE scores will provide insight into the preparation levels of agricultural educators to support these students.

## Method

We used a descriptive correlational research design. The research instrument consisted of two sections. Section one of the instrument measured the personal childhood experiences of agricultural educators and the confidence levels of agricultural educators to support students with ACEs and section two collected demographic data on the participants. The personal childhood experiences of agricultural educators were assessed using the ACE's questionnaire, which consisted of 10 "Yes" or "No" questions. For every question where the participants answered "Yes", one point was added to their ACE score. We adapted the ACEs questionnaire for this study from the official ACEs questionnaire developed by the World Health Organization (WHO, 2022). We also investigated the confidence levels of agricultural educators to emotionally support these students using a five-point Likert-type scale ranging from 1 = "Not Confident at All" to 5 = "Extremely Confident".

We measured the survey instrument with post hoc reliability, which deemed the instrument suitable for this study. The scale had a high reliability coefficient, using Cronbach's alpha, for scales measuring confidence levels of agricultural educators to emotionally support students with ACE scores at .958 (Gliem & Gliem, 2003). A list of agricultural educators was compiled using resources from each state's agricultural educator directory. Due to mistakes in the agricultural educator directory, frame error is a possible limitation of the study. The list included the name of the agricultural educators and their email address. This list contained viable email addresses for 349 agricultural educators in Tennessee, 159 in Utah, 64 in North Dakota, and 503 in Illinois ($N$ = 1,075).

We collected data using a census approach to alleviate sampling bias. Gay and Diehl (1992) suggested that a 10% response rate is needed for sound descriptive research. We achieved a response rate of 10.79% ($n$ = 116) in this study. We retained partial responses of participants who completed the instrument but not the demographics. In the study, we achieved ($n$ = 109) full responses and ($n$ = 7) partial responses. In the published research, it has been observed that response rates have declined over time (Baruch, 1999). This is consistent with findings from Mavis and Brocato (1998) that determined that electronic survey methods yield lower response rates. The findings in this study should not be generalized past the participants assessed.

To assess non-response bias and early/late response bias, we used a Multivariate Analysis of Variance (MANOVA) to compare differences among early responders and late responders (Lindner et al., 2001). To mitigate non-response bias, we sent four emails over a two-week period to recruit new participants. To determine nonresponse bias, participants who responded to the first two emails were considered early respondents ($n$ = 71) and participants that responded to the third email were considered late respondents ($n$ = 45). After analyzing for non-response bias and early/late response bias, we found no statistical differences. The analysis of all data occurred using SPSS Version 28.0. To analyze research objectives one and two, we used central tendencies through frequencies and percentages.

**Table 1**

*Personal Demographics of Agricultural Educators*

| | | *f* | % |
|---|---|---|---|
| Gender | Female | 60 | 52.2 |
| | Male | 55 | 47.8 |
| Race | White | 112 | 97.3 |
| | African American | 1 | 0.9 |
| | Other | 2 | 1.8 |
| Highest Degree Earned | No Degree | 1 | 0.9 |
| | Associates | 3 | 2.7 |
| | Bachelors | 59 | 51.7 |
| | Masters | 46 | 40.3 |
| | Specialist | 1 | 0.9 |
| | Doctoral | 4 | 3.5 |
| Teacher Certification | Traditional Certification | 96 | 83.9 |
| | Alternative Certification | 16 | 13.5 |
| | Other | 3 | 2.6 |
| School System Type | City School System | 40 | 35.1 |
| | County School System | 50 | 43.9 |
| | Other | 24 | 21.1 |
| Agriculture Department Size | 1 Teacher | 57 | 50.0 |
| | 2 Teachers | 40 | 35.2 |
| | 3 Teachers | 13 | 11.4 |
| | 4+ Teachers | 4 | 3.4 |

*Note*. Retained partial responses causes the *n* to vary on some demographic categories.

Of the most notable demographic areas, 52.2% (*f* = 60) of participating agricultural educators were female and 97.3% (*f* = 112) were white. Furthermore, 92.0% (*f* = 105) of assessed educators had a bachelors or master's degree as their highest degree earned and 85.2% (*f* = 97) taught in a one or two teacher department. In addition, 43.9% (*f* = 50) taught in a county school system and 83.9% (*f* = 96) were traditionally certified.

## Results

***Research Objective One***

**Table 2**

*Adverse Childhood Experience Questions Utilized in Instrument*

| | |
|---|---|
| Question #1 | Did a parent or other adult in the household often: Swear at you, insult you, put you down, or humiliate you? Or Act in a way that made you afraid that you might be physically hurt? |
| Question #2 | Did a parent or other adult in the household often: Push, grab, slap, or throw something at you? Or ever hit you so hard that you had marks or were injured? |
| Question #3 | Did an adult or person at least 5 years older than you ever: Touch or fondle you or have you touch their body in a sexual way? Or attempt or have sexual intercourse with you? |
| Question #4 | Did you often feel that: No one in your family loved you or thought you were important or special? Or your family didn't look out for each other, feel close to each other, or support each other? |
| Question #5 | Did you often feel that: You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? Or your parents were too drunk or high to take care of you or take you to the doctor if you needed it? |
| Question #6 | Were your parents ever separated or divorced? |
| Question #7 | Were any of your parents or other adult caregivers: Often pushed, grabbed, slapped, or had something thrown at them? Or sometimes or often kicked, bitten, hit with a fist, or hit with something hard? Or ever repeatedly hit over at least a few minutes or threatened with a gun or knife? |
| Question #8 | Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs? |
| Question #9 | Was a household member depressed or mentally ill, or did a household member attempt suicide? |
| Question #10 | Did a household member go to prison? |

*Note.* These questions were listed in the Adverse Childhood Experience (ACE) survey.

**Table 3**

*Personal Childhood Experiences of Agricultural Educators*

| | Yes | % | No | % |
|---|---|---|---|---|
| Question #1 | 28 | 24.1 % | 88 | 75.9 % |
| Question #2 | 12 | 10.9 % | 104 | 89.1 % |
| Question #3 | 9 | 7.8 % | 107 | 92.2 % |
| Question #4 | 14 | 12.1 % | 102 | 87.9 % |
| Question #5 | 4 | 3.4 % | 112 | 96.6 % |
| Question #6 | 23 | 19.8 % | 93 | 80.2 % |
| Question #7 | 6 | 5.2 % | 110 | 94.8 % |
| Question #8 | 15 | 12.9 % | 101 | 87.1 % |
| Question #9 | 27 | 23.3 % | 89 | 76.7 % |
| Question #10 | 0 | 0.0 % | 116 | 100.0 % |

***Research Objective Two***

**Table 4**

*Confidence of Agricultural Educators to Emotionally Support Students with ACEs*

| | No Confidence | Somewhat Confident | Moderately Confident | Very Confident | Extremely Confident |
|---|---|---|---|---|---|
| Question #1 | 6 (5.2%) | 36 (31.3%) | 46 (40.0%) | 21 (18.3%) | 6 (5.2%) |
| Question #2 | 13 (11.3%) | 35 (30.4%) | 44 (38.3%) | 18 (15.7%) | 5 (4.3%) |
| Question #3 | 33 (28.7%) | 36 (31.4%) | 28 (24.3%) | 15 (13.0%) | 3 (2.6%) |
| Question #4 | 6 (5.2%) | 38 (33.0%) | 39 (33.9%) | 26 (22.7%) | 6 (5.2%) |
| Question #5 | 6 (5.2%) | 37 (32.2%) | 40 (34.8%) | 26 (22.6%) | 6 (5.2%) |
| Question #6 | 4 (3.5%) | 19 (16.5%) | 38 (33.0%) | 38 (33.0%) | 16 (13.9%) |
| Question #7 | 20 (17.4%) | 35 (30.4%) | 40 (34.8%) | 16 (13.9%) | 4 (3.5%) |
| Question #8 | 9 (7.8%) | 42 (36.5%) | 34 (29.6%) | 24 (20.9%) | 6 (5.2%) |
| Question #9 | 7 (6.1%) | 35 (30.4%) | 44 (38.3%) | 20 (17.4%) | 9 (7.8) |
| Question #10 | 9 (7.8%) | 42 (36.5%) | 38 (33.0%) | 19 (16.5%) | 7 (6.1%) |

*Note*. The scales are listed by *f* (%).

The first research objective aimed to evaluate agricultural educator's personal experiences with ACEs (see Table 3) and the second research objective aimed to assess their confidence levels to emotionally support students that have high ACE scores (see Table 4). Of the 116 total responses, 50.9% of respondents had at least one ACE ($n = 59$) and 9.6% had at least four ACEs ($n = 11$). The most common ACE was Question #1 which states, "Did a parent or other adult in the household often: Swear at you, insult you, put you down, or humiliate you? Or, act in a way that made you afraid that you might be physically hurt?". Approximately 24.1% of agricultural educators had experience with this specific ACE question ($f = 28$). The second most common ACE was Question #9 which stated, "Was a household member depressed or mentally ill or did a household member attempt suicide?". Of the participating agricultural educators, 23.3% ($n = 27$) had personal experience with this ACE. The third most common ACE is Question #6 which stated,

"Were your parents ever separated or divorced?" and 19.8% percent ($n$ = 23) agricultural educators had experience with this ACE.

With each ACE, some variance appeared in the confidence levels of agricultural educators. The ACE that agricultural educators had the least confidence in emotionally supporting students with was Question #3, "Did an adult or person at least 5 years older than you ever: Touch or fondle you or have you touch their body in a sexual way? Or attempt or have sexual intercourse with you?". 60.1% of agricultural educators claimed to either have no confidence or be somewhat confident in emotionally supporting a student with this type of ACE, and only 15.6% of agricultural educators claimed to be either very confident or extremely confident. The ACE that agricultural educators had the second least amount of confidence in emotionally supporting students in was Question #7, "Were any of your parents or other adult caregivers: Often pushed, grabbed, slapped, or had something thrown at them? Or sometimes or often kicked, bitten, hit with a fist, or hit with something hard? Or ever repeatedly hit over at least a few minutes or threatened with a gun or knife?". Only 17.1% of agricultural educators claimed to be very confident or extremely confident in emotionally supporting students in these types of situations. Furthermore, 47.8% claim to either have no confidence or be somewhat confident in emotionally supporting these students.

## Conclusions and Recommendations

The agricultural education profession can be a rewarding vocation full on instilling leadership skills into secondary students and developing young passions for agriculture. While this scenario may be the traditional case for the agricultural educator, this study reinforces the drastic need to equip agricultural educators to emotionally support students who struggle with ACEs (Murphey & Sacks, 2019). Because students with high ACE scores are drawn to CTE courses (Houtepen et al., 2020), we further suggest increased program development to support emotional trauma. Furthermore, as individuals with high ACE scores can be more prone to violent crime, drug use, poverty, and unemployment (Petruccelli et al., 2019), we suggest building programming efforts in agricultural education courses to support teacher development.

The first research objective investigated agricultural educator's personal experiences with ACEs and the second research objective evaluated the agricultural educator's confidence in emotionally supporting these students. Overall, agricultural educators feel somewhat confident to moderately confident in emotionally supporting these students. Furthermore, agricultural educators felt the least confident in emotionally supporting students with issues in Questions #2, #3, and #7. Additionally, agricultural educators felt the most confident in assisting students with issues in Questions #6 and #9. This is consistent with findings within the published literature (Gallagher-Butler, 2021; Atwood et al., 2022). As a result, we recommend providing training opportunities to adequately support students with ACEs, specifically related to physical, emotional, or sexual abuse. While agricultural educators are not trained counselors or psychologists, they are often a comforting figure in the lives of these students. Finally, we also recommend investigating the benefits of CTE, both academically and emotionally, for students with high ACE scores.

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# What Challenges Will Arkansas School-based Agricultural Education Face Over the Next Decade? Thoughts from the Front Lines

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The school-based agricultural education (SBAE) profession has experienced numerous challenges (Myers et al., 2005), many of which are beyond the control of teachers (McKim & Sorensen, 2020). While these challenges vary, many have resulted in teacher shortages, the closure of SBAE programs due to lack of qualified teachers, the hiring of uncertified or underqualified teachers, and teachers leaving the profession (Boone & Boone, 2009; Bowling & Ball, 2018; Eck & Edwards, 2019; Solomonson et al., 2021). Accordingly, recruiting, retaining, and ensuring the effectiveness of quality SBAE teachers has been a major concern among agricultural teacher educators. Considering the challenges faced by SBAE and the need to help improve teacher retention in our state, we determined that a study examining the challenges faced by teachers in Arkansas would be advantageous. The results can help us proactively work with SBAE leaders in the state to address future challenges.

## Theoretical Framework

We used Chapman's (1983) model of teacher retention as the theoretical framework for our study. Chapman proposed that certain factors influence a teacher's attrition and categorized them as: (1) personal characteristics of the teacher, (2) the nature of teacher training and early teaching experiences, (3) the degree to which the teacher is socially- and professionally-integrated into the teaching profession, (4) the satisfaction teachers derive from their careers, and (5) the external environmental influences impinging on the teacher's career. Challenges faced by teachers can have a direct impact on teacher attrition (Chapman, 1983) and effectiveness (Eck et al., 2019). Thus, the goal of our study was to ascertain the perceived future challenges faced by Arkansas SBAE teachers. In the context of Chapman's (1983) model, this knowledge can help build an understanding of why teachers leave the classroom, influence policies set forth by administrators, and affect how pre-service teachers are prepared. Because our study was qualitative in nature, we used Chapman's model to guide the foundation and analysis of participants' responses.

## Purpose

Teacher recruitment, retention, and effectiveness have been important factors in SBAE (Eck & Edwards, 2019; Smith et al., 2022). Studies have revealed many challenges faced by SBAE teachers; however, much of the research has focused on professional development (PD) needs and other teacher-centric issues. To ensure the viability and longevity of SBAE, the future challenges facing the profession as a whole must be determined. Our study aligned with the American Association for Agricultural Education's National Research Agenda priority of creating efficient and effective agricultural education programs (Thoron et al., 2016). Therefore, the purpose of our study was to examine the challenges facing Arkansas SBAE over the next decade. The research question we used to guide our study was: What major challenges do SBAE teachers perceive as imminent in Arkansas SBAE over the next 10 years?

## Methods

During the Spring 2022 semester, we conducted three different focus groups to engage in-service Arkansas SBAE teachers in an open-ended discussion about challenges they perceive in the profession. Additionally, we provided participants with the opportunity to propose possible solutions to their concerns. We sent e-mail invitations via the Arkansas SBAE teacher e-mail listserv to recruit focus group participants and each teacher who responded was asked to select the focus group timeslot that best fit their schedule. Ten SBAE teachers representing different regions of the state participated in our study. Participants represented varying program, school, and community sizes and orientations. Further, all 10 teachers had taught for at least one academic year prior to participating in the study. We permitted each participant to participate in only one focus group.

We used Zoom™ video-conferencing software to conduct each focus group. We used a semi-structured interview format to conduct each focus group, during which we asked an initial question and followed-up with probing questions to encourage conversation and increase the richness of the data (Merriam, 2009; Seidman, 2006). Our initial question was, "What do you see as the biggest challenges facing Arkansas Agricultural Education over the next 10 years?" As the conversation evolved, we introduced a second question pertaining to how state staff, agricultural teacher educators, and the SBAE teachers as an entire body of professionals could help mitigate these challenges.

Upon the conclusion of all three of our focus groups, we compiled the transcripts from each focus group. We then sent the transcript from each participant's focus group back to them for member checking to ensure we were accurately portraying the meaning of the participants statements. We subsequently independently coded and categorized the statements within the transcripts and organized them into a series of emerging themes (Merriam, 2009). Once the emerging themes were assigned by each of us independently, we met as a group to determine the final themes that emerged from the analysis. To minimize threats to trustworthiness, we bracketed our personal biases through conversations with one another and we engaged in self-identification of biases prior to independently coding. All of us are involved in agricultural teacher education in various capacities. Three of us are agricultural teacher educators with over 10 years of combined prior experience as former SBAE teachers and one of us is a graduate student involved in agricultural teacher education at the University of Arkansas.

## Findings

We used inductive coding procedures to analyze our data, which revealed that twelve themes emerged from the transcripts of the three focus groups: (1) Changing Demographics, (2) Community Support, (3) Content Knowledge, (4) Interpersonal Relationships, (5) Pandemic / Recovery, (6) Professional Development / Resources, (7) Program / Class Culture, (8) Recruiting New Teachers, (9) Retaining Teachers, (10) School Structure / Administration, (11) Stress, and (12) Teacher Recognition / Appreciation. We found some areas of overlap among themes. However, there were specific ideas within the transcripts that we identified as deserving their own theme for further discussion rather than being grouped in overly broad themes.

### Changing Demographics

Discussion pertaining to this theme revolved around the shift from SBAE being a male-dominated profession to an increasingly-female profession. In particular, participants in our focus groups indicated that the early- and mid-career teachers are increasingly female. They further indicated that fewer males are choosing to enter agricultural teacher education programs. However, the participants indicated that good teachers are needed and that gender identity was not an indicator of one's ability to teach. One participant said:

> We are starting to be more female-dominated… I feel like we've worked really, really, really hard to recruit women into our profession, so we can be more diverse, so we had women representing us. I feel like we hardly have any males pursuing the degree.

Another participant noted, "I think good teachers are good teachers, whether they're female or male."

### Community Support

The participants frequently described community support as an essential part of a successful SBAE program. They described how building relationships with stakeholders in the community was a way to help overcome barriers with school structure and administration. However, the participants also discussed challenges overcoming traditional perceptions of SBAE and FFA that made it difficult to implement more progressive components in some of their programs. One participant said, "I don't know how to solve that solution or that problem but selling our programs and getting our programs supported administratively at the local level can have as much of an impact as anything, in my opinion." Another participant said:

> Speaking as kind of two different hats here, Farm Bureau and getting involved with those boards and making sure our community knows our programs, maybe… And then speaking as alumni, state [OFFICER TITLE], I know, for example, take [SCHOOL]. That's a really big school. They've had issues in the past with bad administration, or I shouldn't say bad, but you know, not as supportive and they've pulled the alumni card, that supporter card, and got the community involved, even though they're really a small group that supports their program.

### Content Knowledge

Our focus group participants reported that content knowledge was a chief concern for them. They frequently indicated that training in agricultural mechanics was lacking in many agricultural teacher education programs. One participant noted that "ag[ricultural] mechanics has been a huge thing that has changed in the last 10 years. Interns [are] coming out of college and then just [knowing] the basic knowledge of things in the shop." Another participant said, "So when we think about that, typically males are more of the ag[ricultural] mechanics-heavy and now all I teach is [agricultural] mechanics and so I'm worried."

### Interpersonal Relationships

The participants often discussed interpersonal relationships as well as the pandemic's impact on them, frequently indicating that the pandemic has limited their ability to meet in-person and develop interpersonal relationships. This theme included suggestions for formal and informal opportunities for teachers to meet and share ideas. Participants frequently discussed formal mentoring of early-career teachers. They further recommended that organically-growing mentoring through informal meetings and the use of panel discussions led by experienced teachers. Essentially, participants indicated a desire to simply reconnect with one another and build professional relationships. One participant said:

> So, I think when new things come out and even the old things, because us new teachers, we don't know how to do the old things. Providing [us with] support on how to meet the expectations of state staff and how to meet the expectations of universities, not that there's much you guys [agricultural teacher educators] are required from us, but how to actually accomplish what state staff is wanting from us. instead of just expecting us to know, would be really beneficial and the same with [the] National FFA [Organization] as well.

**Pandemic / Recovery**

Although participants indicated that interpersonal relationships were affected by the pandemic, there were additional aspects of dealing with the pandemic regarding teaching and learning. We thus determined that Pandemic / Recovery should be classified as its own theme. The participants indicated that their students have missed two years of "normal" education. In all three focus groups, there were discussions about how things have changed and what the "new normal" may look like. Participants frequently expressed concern regarding over-reliance on technology. Moreover, the participants described their need for students to close their computers on occasion and experience learning in a non-digital classroom environment. One participant said:

> Because, in the end, yeah, welding is learned a whole lot better when you pick up a rod, but I've, you know, we've had to teach two years virtually to kids that we're, if we don't teach it to them virtually, they're not going to get anything out of it and they're never going to know about it. So, I don't know what the solution to that problem is. I just know it is one and I know I'm not the only one struggling with it.

**Professional Development / Resources**

The participants often discussed the need for continuing education and the sharing of curriculum resources. In particular, participants desired continuing education from the state-level educational entities as well as from the universities. A participant said:

> So, um, you know I think one of the biggest things is like, at ag teacher in-service, we sit down together, and we just talk and we discuss things. I think that's the biggest way for us to kind of get through and figure out this stuff.

Another participant mentioned:

> But the things like [TEACHER'S] ladies-only ag. mech. workshop, I love that, or what I would have loved was [attending] Dr. Wells's Briggs and Stratton [small gas engines]

> workshop, but I got COVID… giving us more opportunities to break off into those areas where we're not as strong. As far as Team Ag. Ed. on the state level, making more of those opportunities known and, as far as [at the school] administrative level, just supporting us and [providing] more PD funds.

**Program / Class Structure**

Describing the structure of local programs, this theme included a need for pre-service and early-career teachers to be prepared for the non-academic responsibilities of a SBAE teacher. In particular, fundraising was mentioned as an area that needs to be addressed more thoroughly in agricultural teacher education programs. One participant said:

> And then I started thinking about it in a different light and showing them the behind-the-scenes of it. And taking those kids along with me on the Lowe's runs when I have to buy way too much stuff. Taking a student who wants to be an ag teacher to the fair, even though she's not showing animals. Just grabbing onto those students and giving them as many opportunities as possible, even if they're not necessarily involved in what's going on.

**Recruiting New Teachers**

Recruiting new teachers was a major concern among the participants. The participants mentioned established programs such as Teach Ag and suggested using FFA events as another way to recruit students into SBAE programs in general and into agricultural teacher education specifically. Essentially, the participants suggested using every opportunity to host students on university campuses. Additionally, the participants recommended that universities conduct recruiting visits to schools. The participants frequently mentioned that the welding schools are doing a great job recruiting students and, alarmingly, potentially recruiting students who may have instead become SBAE teachers. Beyond university recruiting, the participants also spoke about modeling the job of teaching. They mentioned taking students with them to purchase supplies and other routine tasks to give students a more complete picture of the job and what it entails.

**Retaining Teachers**

The participants reported that retaining teachers was challenging and was faced by teachers in all phases of their careers. The participants noted that specific challenges were faced by early-career teachers and well as experienced. However, the passion for teaching and helping students was most frequently cited by the participants as the core reasons they remained in the profession. Interestingly, participants also mentioned that those that do not love students and teaching should leave the profession. A participant noted, "We have a whole group of ag teachers in the, like, one, two, three-year range that are probably struggling right now." Another participant agreed:

> Like, I think there's probably some teachers in that group of teachers that are struggling in the same things that are brand new teacher or intern might be struggling with right now, like COVID has been hard on us. I think retention is a big deal. You see teachers getting out anywhere from beginning to, you know, not even finishing the full retirement. It's crossed, I think, a lot of our minds that I could be doing something else.

### School Structure / Administration

The participants frequently noted that school structure / administration serves as a challenge to operating a successful SBAE program. Participants indicated that there has been a large turn-over in administration in the past few years as well, noting that it is an on-going challenge to cultivate support from administrators. However, they also indicated that a supportive administration can make teaching more enjoyable and rewarding. One participant noted:

> The changeover in administrators in Arkansas has been a big shift… to attract female ag teachers. I feel like in all these years, [in] 15 years of teaching, I've seen the switchover of administrators barely coming into your classroom and barely worrying about what your students are doing and the whole "teaching bell-to-bell" at some schools, has not really been a thing. And then I come to a school, like, I've been at the last… six to 10 years and that is a big deal.

Another participant said:

> As someone who, I'm in my 23rd year, and I've worked for good administrators and bad administrators. Right now, I can't wait to go to work because I have an administration that loves what we do, supports what we do, and supports where we're at.

### Stress

The participants consistently discussed stress. Interestingly, when talking about stress, the participants mentioned the frequency of change and a lack of training when changes occur. Although pandemic-related change was in the background in this theme, participants were already stressed by changes at the state- and national-levels. A participant explained:

> Okay, don't change things. It's changing too much already, you know? Don't. If anything, you know, give us a chance to learn how to deal with what we're already dealing with… Change is probably, I don't want any more change for a little bit, okay? Let me get adjusted to where I'm at and what I'm doing and let me think for a while. You know, if anything, we just need more knowledge on how to get through what we're going through right now.

### Teacher Recognition / Appreciation

The participants noted that teacher recognition / appreciation was important. They mentioned that social media could be used to highlight the exceptional things teachers are doing in their programs. Additionally, they explained how some teachers do a good job promoting their students' activities. However, the participants also described the need to promote the teachers, show the profession in a positive light, and recognize the contributions of teachers who are doing great things but often go unnoticed. "I think one of the biggest struggles and biggest challenges is getting our programs to be supported in our own communities [and] in our own school, because that builds our esteem."

## Conclusions and Recommendations

Based upon our findings, we drew several conclusions: (1) our study's participants currently face numerous, varied professional challenges, (2) Arkansas SBAE likewise will face a barrage of challenges in the coming years, (3) many of these challenges can potentially be a least somewhat addressed by SBAE stakeholders (e.g., state staff, agricultural teacher educators, etc.), and (4) providing opportunities to better support teachers and recognize their efforts is crucial to the sustainability of SBAE both as a career path and as a profession. We recommend: (1) conducting additional research in the state to identify pragmatic ways to address the identified challenges and (2) impactfully and deliberately engaging with Arkansas SBAE stakeholders at all levels to confront the challenges that are within our control. While our findings cannot be generalized beyond the 10 teachers who participated in our study, we believe our data still hold practical implications for Arkansas SBAE stakeholders, particularly in the context of helping anticipate and tackle both the present and future challenges our profession faces. Teacher attrition is a factor too important to ignore (Chapman, 1983; Eck & Edwards, 2019; Solomonson et al., 2021). The long-term sustainability of SBAE depends upon the decisions we make today.

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## Can the State FFA Degree Be Used as a Career Readiness Indicator in Alabama?

### Introduction, Purpose, and Research Questions

CTE courses, like agricultural education, benefit students by incorporating industry credentials into the curriculum. Industry credentials, such as *Beef Quality Assurance*, are included in the college and career readiness report card for high schools across the nation (Dailey, 2019), reflecting how many career-readiness indicators (CRIs) high schools award their students. Several industry credentials fall into Alabama's course of study that agricultural education teachers follow (Mackey, 2020), counting as CRIs for students.

The three-circle model in agricultural education consists of classroom and laboratory instruction, experiential, work-based learning through supervised agricultural experiences (SAE), and leadership through the National FFA Organization (National FFA Organization, 2021). SAEs are student-led projects that take place outside of normal class time. These projects must be related to agriculture and may be paid or unpaid (The Council, 2017). Agricultural education students and FFA members use experiences from their SAEs to apply for degrees in FFA, including the State FFA Degree. The State FFA Degree is awarded to students who have completed at least two years of agriculture classes and satisfied other requirements for the degree (Hageman, 2019).

The requirements for the State FFA Degree in Alabama and most other states include having at least a 'C' average academically, giving a six-minute speech, attending at least five activities with members from other chapters present, passing a test on Parliamentary Procedure, and completing at least 25 hours of community service (Hageman, 2019). Students must additionally work 300 unpaid hours with their SAE, earn and invest $1000, or have some combination of money earned and unpaid hours. (Hageman, 2019).

Despite the effort necessary to earn the State FFA Degree, it does not count as a CRI for recipients in Alabama (Alabama FFA, 2021; Chamness et al., 2020; Dailey, 2019; Hageman, 2019). Many accepted CRIs demonstrate a moment in a student's academic career when he/she surpasses a benchmark on a test (Graziano & Aldeman, 2020). Using a passing test score to determine whether a student is career-ready allows for consistent and predictable outcomes (Graziano & Aldeman, 2020). Every student should have at least one CRI in order to graduate high school, but many schools are not reaching 100% career-readiness across the student population (Dailey, 2019). Copeland et al. (2020) found that many FFA members are already earning CRIs in other areas.

If the goal of high school is to prepare students for college or the workforce, then the prime indicator of career-readiness could be interpreted as employability skills (DiBenedetto & Myers, 2016). By focusing on skills employers seek, educators and school systems can better prepare students to find the right career for them (DiBenedetto & Myers, 2016). Students typically change their minds multiple times before they settle into a career path. General employability skills such as critical thinking, organization, and problem-solving will benefit students no matter what career path they choose to pursue (Copeland et al., 2020). Student organizations facilitate this critical leadership development in their members (Xing et al., 2019). The National FFA Organization is no exception (National FFA Organization, 2019b).

The purpose of this study was to determine the self-perceived career-readiness skills of postsecondary students who were FFA members and compare former FFA members who had earned the State FFA Degree to members who did not earn the State FFA Degree. Research questions that guided the study were: (1) How did FFA members who earned the State FFA Degree compare academically to FFA members who did not earn the State FFA Degree?, (2) Did FFA members who earned the State FFA Degree have more soft skills than FFA members who did not earn the State FFA Degree?, and (3) Were State FFA Degree recipients more college and career ready than non-recipients?

## Theoretical and Conceptual Frameworks

The two theoretical frameworks used in this study were Kolb's (1984) Experiential Learning Theory and Lent et al.'s (1994, 2002) Social Cognitive Career Theory. Experiential Learning Theory was crucial to this study and agricultural education because many agricultural educators use a learning by doing approach to classroom instruction. This theory fits into the three-circle model of agricultural education, particularly with experiential learning or hands-on learning one of the three circles in the model of agricultural education (National FFA Organization, 2021). Students participate in SAEs to practice experiential learning outside of the agriculture classroom (NV Ag Ed, 2021).

The Social Cognitive Career Theory (SCCT) contributes to the purpose of this study because an analysis of students' self-efficacy in various employability and leadership skills was conducted. The SCCT uses Bandura's (1986) Social Cognitive Theory as a foundation. These theories are based on student self-efficacy, expectations, and goals (Lent et al., 1994, 2002). Lent et al. (2002) defines self-efficacy as a student's belief in his or her ability to perform a certain task; it is noted that self-efficacy is malleable based on the type of activity.

The *Conceptual Model of Student Readiness in the 21st Century* was created by DiBenedetto and Myers (2016). This model shows the nine constructs found to be most commonly reported in career-readiness literature. These constructs are "learning skills, life skills, career skills, social skills, knowledge competencies, incidental learning skills, dispositions, experiences and interdisciplinary topics" (DiBenedetto & Myers, 2016, p. 31). The *Conceptual Model of Student Readiness in the 21st Century* shows how students' levels of college, career, and life readiness are influenced by their school, home, and community.

## Methods and Procedures

The population for this descriptive-correlational included undergraduate and graduate students enrolled in the College of Agriculture at Auburn University, including CTE – Agriscience majors ($N$ = 1,382). An online survey was developed by the researcher to collect data on academic variables, self-perceived communication competence (questions selected from McCroskey & McCroskey, 1988), critical thinking disposition (questions selected from Ricketts & Rudd, 2005), youth leadership life skills (questions selected from Seevers et al., 1995), and demographic variables.

Academic variables in the study consisted of unweighted high school GPA, ACT/SAT scores, and ACT WorkKeys Scores. Self-perceived communication competence was assessed

using the Self-Perceived Communication Competence Scale developed by McCroskey and McCroskey (1988). The Self-Perceived Communication Competence Scale asked participants a series of 12 questions where they responded with a value of 0 to 100 to represent how confident they were in a given situation. The EMI: Critical Thinking Disposition (Ricketts & Rudd, 2005) was used to assess critical thinking. Originally consisting of 33 prompts that was reduced to 7 prompts to summarize the entire assessment. The Critical Thinking Disposition questionnaire was scored on a Likert scale with 1 = strongly disagree, 2 = disagree, 3 = uncertain or neutral, 4 = agree, and 5 = strongly agree. The Youth Leadership Life Skills Development Scale (Seevers et al., 1995) is a 30-question assessment that was condensed using seven statements to assess how agricultural education had influenced participants' personal growth. The Youth Leadership Life Skills Development Scale was scored using a Likert-type scale. On this scale, 1 = strongly disagree, 2 = disagree, 3 = uncertain or neutral, 4 = agree, and 5 = strongly agree. Participants responded to seven statements.

Upon obtaining IRB approval, an email explaining the purpose of the study along with a survey link to share with students was sent to faculty members in the College of Agriculture (COA) mid-April 2022. The survey remained open until the last day of class in Spring Semester 2022. An email reminder was sent to COA faculty midway through data collection. When respondents completed the survey, they had the option to enter their email using an additional link for a chance to win an Amazon gift card valued at $25.

Of the 1,382 undergraduate and graduate students that could have responded to this study, 146 surveys were started. The first survey question was a description of the study where respondents provided their informed consent to be considered for the study. Question 1 yielded 144 respondents that wished to continue with the study, which represents a 10.5% response rate. The second question asked whether the student graduated from high school in Alabama. Respondents who indicated that they graduated from high school in another state were excluded from this study. Seventy-three respondents indicated that they graduated high school in Alabama, which represent a 9.1% response rate of Alabama residents in an agriculture major at Auburn University.

Data were analyzed by the Statistical Package for the Social Sciences (SPSS 27.0). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to describe and summarize data. The independent samples *t*-test was used to determine significance between those who received the State FFA Degree and those who did not. The alpha level was set at $p < 0.05$ for all statistical tests.

## Results and Findings

### Comparison on Academic Variables

Academic variables used to compare FFA members and non-FFA members were high school GPA, ACT/SAT score, and ACT WorkKeys score. There were 35 FFA members (19 who had received the State FFA Degree and 16 who did not receive the State FFA Degree) who were compared on these variables.

Over one-third of those who received the State FFA Degree ($f = 7$, 36.8%) and over one-

third of those who did not receive the State FFA Degree ($f$ = 7, 43.8%) had GPAs greater than 4.0. There was no significant difference between the high school GPA of State FFA Degree recipients and non-recipients, ($X^2$ (5, $n$ = 35) = 3.24, $p$ = .66).

On ACT/SAT scores, approximately one-third of those who received the State FFA Degree ($f$ = 6, 31.6%) had scores of 22-26 ACT / 1100-1250 SAT and scores of 27-31 ACT / 1260-1410 SAT. For those who were non-recipients of the State FFA degree, 37.5% ($f$ = 6) had scores of 17-21 ACT / 920-1090 SAT and scores of 22-26 ACT / 1100-1250 SAT. There was no significant difference between the ACT or SAT score of FFA members with the State FFA Degree and FFA members without the State FFA Degree ($X^2$ (4, $n$ = 35) = 9.48, $p$ = .05).

Regarding the ACT WorkKeys, 47.4% ($f$ = 9) of State FFA Degree recipients and 37.5% ($f$ = 6) of non-recipients did not take the ACT WorkKeys. Of those who did complete the ACT WorkKeys, 26.3% ($f$ = 5) of FFA members with the State FFA Degree and 31.3% ($f$ = 5) without the State FFA Degree received Platinum scores. There was no significant difference between ACT WorkKeys scores of State FFA Degree recipients and FFA members without the State FFA Degree ($X^2$ (4, $n$ = 35) = 1.5, $p$ = .83).

**Comparison of Soft Skills**

Soft skill data collected and compared in this study were self-perceived communication competence, critical thinking skills, and youth leadership life skills development. The Self-Perceived Communication Competence Scale has a range of 0 to 100 for each of the 12 scenarios. The overall mean on the Self-Perceived Communication Competence Scale for an FFA member with the State FFA Degree was 1087.8 ($SD$ = 135.4). FFA members who did not earn the State FFA Degree had a mean score of 941.6 ($SD$ = 256.3). The results of an independent samples $t$-test revealed there was a significant difference in communication competence between those who earned the State FFA Degree and those who did not received the State FFA Degree ($t$(33) = -2.156, $p$ = .038), resulting in a large effect size (Cohen's $d$ = .732).

The overall mean score for critical thinking skills for FFA members with the State FFA Degree was 30.72 ($SD$ = 4.31), with scores ranging from 16 to 35. The overall mean score for critical thinking skills for FFA members without the State FFA Degree was 29.00 ($SD$ = 2.95), with scores ranging from 24 to 35. The results of an independent samples $t$-test did not yield any significant results between groups on critical thinking ($t$ (31) = -1.31, $p$ = .20).

The mean score for youth leadership life development skills of FFA members who earned the State FFA Degree was 31.84 ($SD$ = 6.47), with scores ranging from 7 to 35. The mean score for youth leadership development skills for FFA members who did not earn the State FFA Degree was 31.38 ($SD$ = 3.61), with scores ranging from 25 to 35. The results for an independent samples $t$-test did not yield any significant results between groups ($t$ (33) = -.257, $p$ = .80).

**Comparison on College and Career Readiness**

To determine if FFA members who earned State FFA Degree were more college and career ready than FFA members that did not earn the State FFA Degree, the results from the first two research questions were examined to see if there were significant results on each of the variables measured between FFA members who received the State FFA Degree and those FFA members

who did not receive the State FFA Degree. Only one of the tests were significant: State FFA Degree recipients scored significantly higher on Self-Perceived Communication Competence than those who did not receive the State FFA Degree ($p = .038$).

## Conclusions/Discussion/Implications/Recommendations

FFA members who received the State FFA Degree and FFA members who did not receive the State FFA Degree were similar academically on overall high school GPA, ACT/SAT scores, and ACT WorkKey scores. State FFA Degree recipients and non-recipients had similar Critical Thinking Dispositions as well, based on scores of the EMI: Critical Thinking Disposition (Ricketts & Rudd, 2005). The same conclusion can be made on youth leadership development life skills.

FFA members with the State FFA Degree scored significantly higher on the Self-Perceived Communication Competence Scale than FFA members who did not have this degree. Scores were based on how competent the respondent feels in each situation. Hence, State FFA Degree recipients were generally more competent in communicating with friends, acquaintances, and strangers than non-recipients. High communication ability does not directly mean that students are career ready, but communication is a skill that many employers desire (Fajaryati & Akhyar, 2020).

Many of the FFA members in this study had a weighted high school GPA, indicating FFA members completing dual enrollment, AP, or IB classes. These college-level courses count as CRIs for students. In addition, FFA members who earned the State FFA Degree had higher ACT or SAT scores than FFA members who did not earn the State FFA Degree. Even though the difference was not statistically significant, a benchmark ACT score is a CRI in Alabama well. The majority of respondents in both groups of FFA members scored over a 21 on the ACT. The academic benchmark for ACT Composite score is approximately 22 based an average of the required scores for each of the four tests (Allen & Radunzel, 2017). The ACT WorkKeys scores reported in this study indicate that FFA members generally scored in the career-ready range of 4 to 7, which is another CRI. Mouser (2014) and Copeland (2019) found comparable results.

Overall, FFA members had a high aptitude for soft skills including communication, critical thinking, and life skills development. These results indicate that FFA members use their experiences to adapt when life changes. To support this claim, Bishop (2019) found that FFA members had a higher level of grit, which predicts success in unknown situations. In addition, the Experiential Learning Theory (Kolb, 1984), and the Social Cognitive Career Theory (Lent et al., 1994, 2002) predict higher levels of future success when students have positive experiences with FFA involvement. These experiences interact with academic variables to facilitate student growth (DiBenedetto & Myers, 2016; Copeland, 2019). Brown et al. (2008) also stated that positive past performance leads students to set higher expectations for themselves.

Many of the scores reported from this study meet the standard for college and career readiness as did those reported in the Copeland (2019) and Mouser (2014) studies. Therefore, FFA members who earned the State FFA Degree were as college and career ready as their peers without the State FFA Degree. The results of this study are consistent with the high levels of employability skills in postsecondary agriculture students found by DiBenedetto and Willis (2020) and Truax

(2020). In summary, employability skills are necessary for the personal aspect associated with a successful career (Fajaryati & Akhyar, 2020).

Agricultural educators should continue to focus on preparing students for life after high school by balancing each aspect of the three-circle model of agricultural education as much as possible. Truax (2020) addressed how being involved in FFA and other student organizations contributes to the personal growth of students. To elaborate, FFA advisors should encourage members to participate in CDEs, leadership conferences, and SAEs (Truax, 2020). Williams (2021) found that many times FFA conventions or contests spark an interest in students to be more involved. Events, such as conventions, are also necessary for FFA members to progress through the degree ladder (Hageman, 2019). In conjunction, Norris (2021) recommended that agricultural educators emphasize qualities, such as critical thinking, that CTE administrators value. Clemons et al. (2018) supported this claim by classifying critical thinking as a 'best practice in agricultural education' (p 96).

Further research using a larger population of FFA members may yield more diverse results based on highest degree earned while in FFA. Additionally further research should include employment opportunities for FFA members with multiple CRIs as well as an industry's preference for hiring a State FFA Degree recipient. It is also suggested that a mixed-method study be used to describe an employer's preference for hiring State FFA Degree recipients as well.

It is also recommended that further research use high school FFA members at the end of their senior year instead of collegiate agricultural students. State FFA Degrees must be submitted by mid-February of the student's senior year in Alabama (Alabama FFA, 2021b). In order to get an accurate description of employability skills present at the time of high school graduation or earning the State FFA Degree, future studies should take place when degree applications are submitted during the school year. The researcher also recommends expanding the questionnaire to include specific CRIs, such as industry credentials, to determine how many FFA members are earning CRIs in other areas. This information could additionally be used in future research regarding preferential hiring for students with multiple CRIs.

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# Inclusion for All? Opportunities and Challenges of Including Students with Diverse Needs in FFA Activities

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## Introduction

The Individuals with Disabilities Education Act (IDEA) mandates that the right to a free and public education is extended to eligible students with disabilities, including access to special education and related services (U.S. Department of Education, 2021). Students receiving these services are students who have been identified by educational and medical professionals as having a disability that impacts their ability to perform academically. Currently, the national average indicates 14% of all students enrolled in public schools across the US are identified as having a diverse need (Riser-Kositsky, 2021). In 2006, a study of agricultural education students in New Mexico classified 19% of students enrolled in agricultural education as students with diverse needs (Dormody et al., 2006). In North Carolina, Stair et al. similarly found that 56.1% of students with a disability completed CTE courses (Stair et al., 2010.)

Educational research has reported various benefits and challenges to inclusion of students with special needs in the mainstream classroom. Many teachers feel as though students with disabilities are a valuable part of the classroom community and are enjoyable to teach (Eiken, 2015; Giangreco et al., 1993). Additionally, teachers reported greater personal satisfaction when employing inclusionary practices and that children learn better overall when students with disabilities are included in the classroom (Davis & Layton, 2011; Eiken, 2015). However, having students with diverse needs in general education courses can cause teachers to feel more stressed and may require additional planning time (Eiken, 2015).

Specific to agricultural education, research reports mixed findings as to teachers' preparation and efficacy in working with students with special needs. Several studies found that many teachers have not received pre-service or in-service training opportunities related to working with students with diverse needs (Dormody et al., 2006; Fondren, 2019; Giffing, 2009; Greaud, 2021; Johnson et al., 2012; Ramage, 2021; Stair et al., 2010; Stair et al., 2016; Teixeira & Edwards, 2020). In contrast, Stair et al. (2016) reported that teachers feel confident about their ability to work with students with diverse needs, agreeing that they can incorporate various inclusion strategies within their program. Giffing (2009) found that a large majority of teachers understood the concept of inclusion, are in favor of inclusion of students with disabilities, and have had a positive experience working with students with diverse needs.

Research examining the inclusion of students with special needs in the experiential learning (SAE) and leadership development (FFA) components is limited. Specific to SAE, Schwager and White (1994) determined teachers recognized the benefit to students with special needs and additional encouragement for participation was needed. However, it was concluded that record keeping was an area for improvement and students with special needs rarely were recognized for their SAE programs. Other challenges included lack of parental support, socio-economic status, time needed for supervision, and students' abilities and behaviors.

With a dearth of research specific to inclusion of students with special needs in FFA events and activities, this research was guided by the following research questions:

1. What are inclusionary practices used by teachers to encourage the participation of students with diverse needs in FFA?
2. What are the challenges with incorporating students with diverse needs in FFA?

## Theoretical Framework

The Theory of Planned Behavior, developed by Icek Ajzen (1991), was used as the theoretical framework to guide this study. This framework provides understanding of the factors that contribute to behavioral intentions. According to the theory, an individual's intentions are the product of three processes: attitudes toward the behavior, subjective norms, and perceived behavioral control. Derived from Ajzen's earlier Theory of Reasoned Action, this theory is based on the premise that our intentions predict our behavior. In this model, intention serves as the cognitive function of readiness to perform a behavior.

The first predictor of intentions is one's attitude towards the behavior (Ajzen, 1991). This encompasses how one thinks or feels about the behavior, which can be positive or negative, as well as their expectations about the behavior. Subjective norms refer to the amount of social pressure felt to perform a behavior (Ajzen, 1991). Perceived behavioral control refers to how well the individual believes they can perform the behavior. Attitude and subjective norms only affect behavior through intention, however behavioral control can affect behavior independently and through the vehicle of intention.

## Methods

In order to gain better understanding of the experiences of agricultural educators regarding the incorporation of students with diverse needs in FFA, a phenomenological approach was utilized for this research. Phenomenological research focuses on questions about the common human experience through the lens of a particular phenomenon (Ary et al., 2017; Creswell & Poth, 2018). Purposive sampling was utilized for this study. Criterion sampling was utilized to select seven North Carolina high school agriculture teachers who had experience incorporating students with diverse needs in FFA (Creswell & Poth, 2018). Interviews were conducted via Zoom due to impacts of the COVID-19 pandemic as well as the increased flexibility Zoom offered the participants and the researcher. The interview guide utilized by the researcher was pilot tested and revised based on feedback from the pilot study participants. The use of in-depth interviewing is common in phenomenological studies. Seidman (2019) proposed a phenomenological interviewing technique utilizing a three-interview strategy; however, due to accessibility of participants, two interviews were used. The interview guide was divided into two sections, one section focused on teachers' backgrounds and their experiences in the agricultural education classroom, and the other focused on teachers' experiences within FFA.

Once an interview had concluded, the researcher transcribed the interview verbatim. The researcher also gave pseudonyms to each participant when transcribing the data as to protect participants' anonymity. Once all interviews had been completed, the researcher coded the data, searching for common themes between interviews. For the credibility of the data collected, the researcher utilized member-checking procedures, sending participants their interview transcripts, as well as the common themes found through the coding process (Creswell & Poth., 2018). Open and axial coding were completed on all sixteen transcripts, two for each of the eight participants.

Specifically, the highlighting feature and the ability to create tables within the documents were helpful to the researcher in coding and assigning meaning to the data collected. This coding process allowed the researcher to determine central themes across data sets that defined the experiences of the participants in this study, thus, allowing the researcher to draw conclusions. As a method of triangulation, document analysis focused on text-based artifacts to provide insight on the subject matter (Ary et al., 2017). More specifically, interview findings were triangulated and verified through North Carolina FFA Association policies and registration materials.

## Results/Findings

When sharing about inclusionary practices used to encourage the participation of students with diverse needs in FFA, the value of relationship building emerged as a theme. Participants discussed the value of establishing and maintaining rapport with students and fellow educators.

Rachel had many students with diverse needs participate in FFA events above the chapter level. She shared many great strategies for the inclusion of students with diverse needs, including establishing class officers and encouraging participation in contests based on students' strengths. However, she explained all of her strategies and all of her inclusion efforts came back to the same idea, the value of building rapport and relationships with all students, but especially students with diverse needs:

> "I think you build the rapport with them on the chapter level and then that makes them feel comfortable enough to go on other field trips or opportunities at the, like I said, the federation level, the state level and even, you know, potentially attending National Convention…. So I think just building that foundation then sets them up to say, "Okay well, if I can do this in class, then I can, you know, participate in these activities on a federation, where I do feel comfortable enough to go with Ms. Rachel to state Convention and those types of things," so I think, once again it all comes back to the relationship and how you know your students." (Ra8)

Building relationships was also important to Regina, but her greatest strategy is persistence in attempting to build those relationships. She spoke of the value of individually inviting students to participate, not just providing a blanket invitation for students. She explained her strategy for including students with diverse needs in FFA:

> "And then just like relationships, of like knowing my students, being like "Hey, why don't you like come for the holiday party we're having tomorrow?" like "Sugar cookies. You should come decorate sugar cookies with us." Um, and that was how we worked on like, building our FFA up. Every year it's gotten better and it's gotten bigger, and I'm just like, "Let's get going!" (Re4)

Specific to collaborating with fellow teachers, Rachel explained the importance of the EC teachers in encouraging student involvement. One of Rachel's favorite events is an event held at the local level called Agriculture Day, where the FFA chapter hosts all of the third graders in the county, sharing about different topics in agriculture through fun and engaging stations. She wants EC students to be able to participate in this event, so she relies on the EC teachers to make sure students with diverse needs can be a part. She stated, "…and even for my severe students, we have such a great working relationship with the EC department, we will pair an EC teacher with those kids so that they can also be a part of ag day and help as well." (Ra9)

Rachel also shared that the region in which she teaches is working to develop a career development event strictly for OCS students. She shared her excitement for this event and how the relationships built between the agriculture program and EC department will help encourage student success:

> "…And then, it allows me to work with the EC teacher, because you know I went to the EC teacher and I'm like, "Okay, this is what we're going to be doing in the spring. These are the kids we have. This is what that competition is going to look like," and they are on board, because they want their kids to be successful, so not only do you have me working with them, now, I have the EC teacher working with them to help train a career development event team." (Ra6)

When describing difficulties of incorporating students with diverse needs in FFA, participants identified the need for additional preparation and challenges with competition, leading to their development as themes in this study. Phoebe was very blunt when sharing her lack of preparation. When asked about the training she had received, she stated:

> "As it relates to ag nothing… I just didn't… my master's was in ag ed. I don't even think I took a special ed class for my master's. I had one special ed class to get my teaching certification." (P5)

Monica's formal training on working with students with diverse needs was also very limited. She shared her training experiences by stating:

> "In all honesty, in undergrad, I don't remember having any classes as an undergraduate student on anything about IEPs or 504s, and how to reach those modifications. In graduate school, because I do have my masters, one of our master's classes was that we had to write out an IEP plan and go through the processes of a student… but I really don't remember anything from the Department of Ed or from Ag Ed that really highlighted those pieces…" (M6)

Joey graduated from [University] and discussed how his experience in [Class] prepared him to teach diverse learners better than most other teachers. However, he did mention a few things he wished he had more guidance on. Setting up tools used in class differently was one thing in particular, "Maybe I could set up this tool this way for this kid to use," he said (J18). He also shared he is becoming "more aware on certain accommodations that I could do," (J18).

Career and Leadership Development Events (CDEs and LDEs) are competitive events where students can showcase their agricultural knowledge and agricultural/leadership skills to the test, competing against other students from other agricultural education programs. These CDEs and LDEs are often some individuals' favorite parts of FFA, but are also by nature very competitive. The inclusion of students with diverse needs in this high-pressure environment comes with many experienced and perceived challenges as shared by the participants.

Chandler shared his experiences with students with diverse needs competing in CDEs and LDEs. While this experience was limited, it was something he considered himself open to. As far as other teachers involving students with diverse needs, he had this to say, about the competitive pressure that comes from FFA advisors:

> "Um, I'd say probably a lot of teachers are hesitant to bring a kid that has IEPs to a CDE event, that mindset, "If you're not first, you're last," so to speak." (C8)

Based on the response from Joey, the competitive culture stems from the top down. Joey shared the story of a student that wanted to compete in a Career Development Event but had recently been diagnosed with a health condition that could cause him to faint. Because of the student learning how to deal with this newly developed condition, medical professionals had determined that for him to compete and go on this trip, Joey needed to be within sight distance of the student. Joey emailed the individual in charge of the event to work out this accommodation so the student could compete. He shared this about the experience:

> "I emailed him and he's like, "Well I don't know about this," and he said, "Let me see what I can do," and like the student's family was like super involved, wanting updates and all that. I said, "Well, he don't know about it," and you know, "He's trying to find out some stuff," and where that response weren't that quick, they already reached out to the specialist for the school system. They reached out to a lawyer, and they was wanting to file a case against the North Carolina FFA, because there for a while… someone in leadership said, when I talked to them about it, "Well you need to do whatever you can to make sure that youngin' don't go." And I said "well, no, if he wants to go, he's gonna be there. We're going to have to work something else out," and I tell them I said, "You know, given the situation, this family's already talking about legal charges, I think it's in everybody's best interest that we get him there. I sure as heck ain't telling him he ain't going on account of his situation…" So like that was a hurdle, but anyhow… you know, like accommodations… you know, it's easy to get accommodations like here regionalized, but like when it gets to state, especially state contest, that's when it gets a little tougher and the biggest thing is just trying to tell parents, sometimes… the state staff is not, they're not miracle workers." (J17)

A concern that Monica emphasized was that accommodations and modifications were not guaranteed to students with diverse needs. In the past, she has had students compete that have diverse needs and she has had their needs met in local and regional contests. However, at the state level, she told these students, "… if you have a written test, you may have a modification in the classroom, but you may not receive that modification at the state test," (M8).

## Conclusions/Discussion/Implications/Recommendations

While each participant of this study has their own unique style of teaching and relating to students, one common theme among inclusionary practices utilized in the classroom was the value of relationship building. This claim for value in relationship building is substantiated by a study from Berry (2011). Seven of the eight participants indicated the importance of relationships built among three groups, students, fellow educators, and parents.

Relationships built between the agriculture teacher and the student were most commonly mentioned as being valuable to encourage participation in FFA (P7, P8, M3, M8, Re4, Ra10, Ra8). By building rapport with students, students will be more likely to trust teachers and in turn will participate in more FFA events (Ra8). Another valuable relationship with increasing participation of students with diverse needs in FFA exists between the agriculture teacher and the teacher of exceptional children. With the number of students with diverse needs involved in agricultural education, a strong relationship between the agricultural education teacher and the exceptional children's teacher can provide valuable insight into how to best meet the needs of students with diverse needs (P5). Additionally, there is value in having a team to support the student who has diverse needs so that they can participate in FFA to the fullest extent (Ra6). Relationships between

teachers and the parents of students with diverse needs should also be developed and maintained to increase involvement of students with diverse needs. Parental involvement helps minimize parent concerns and helps encourage involvement of the student with diverse needs (C8; P8).

Each of the eight participants indicated a need for training on working with students with diverse needs. This need for training indicated by teachers is supported by the literature (Dormody et al., 2006; Fondren, 2019; Giffing 2009; Greaud, 2021; Johnson et al., 2012; Ramage, 2021; Stair et al., 2010; Stair et al., 2016; Teixeira et al., 2020). No participant indicated any type of training related to the other two components of the three-circle model of agricultural education, FFA and SAE. Participants indicated a desire for more professional development related to working with students with diverse needs in all facets of agricultural education.

Three-quarters of participants indicated challenges including students with diverse needs in FFA competitive events, CDEs and LDEs. Teachers described a competitive culture that discourages teachers to not bring students with diverse needs to participate in these events (C8). Additionally, participants spoke of the difficulty getting their students accommodations, especially at the state level and how sometimes those accommodations are not always met (M8; J17). Document analysis supported this idea as little to no information was found about how modifications and accommodations will be handled within FFA competitive events in North Carolina further emphasizing a need for information related to how students with diverse needs can participate. Stair (2010) stated that ensuring modifications are provided even within FFA is especially important for inclusion of students with diverse needs in FFA.

There have been many previous studies focused on the experiences of agriculture teachers incorporating students with diverse needs in the agricultural education classroom (Dormody et al., 2006; Giffing, 2009; Killingsworth, 2011; Ramage, 2021; Richardson, 2005; Stair, 2009; Stair et al., 2016; Stair et al., 2010; Teixeira & Edwards, 2020). Fewer studies have focused on students with diverse needs' involvement in FFA (Johnson et al., 2012). Due to the lack of research on agriculture teachers' experiences including students with diverse needs in the leadership development component of agricultural education, FFA, this study serves to help fill the gap in the research, specifically answering the call in Johnson's study for qualitative research to be done on the topic of including students with diverse needs in FFA (2012).

Based on the conclusions of this study, the researcher recommends that pre-service and in-service training should be implemented on the inclusion of students with diverse needs as it relates to all three circles of the agricultural education model. Additionally, North Carolina FFA State Staff should also create a task force to evaluate the inclusivity of North Carolina FFA events. This study has shown a need for more resources related to the inclusion of students with diverse needs in the complete agricultural education program. Research related to creating content and resources to be provided would fill a need. To ensure the specific needs of these students with IEPs and 504s are being met, the researcher recommends another phenomenological study with students with diverse needs as the participants of the study. Observations of students with diverse needs as they participate in FFA competitive events could provide valuable insight as well.

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# Examining Sense of Belonging Among Freshmen College of Agriculture Students

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## Introduction

Identifying the factors contributing to undergraduate student retention is imperative, as institutions of higher education have continually grappled with this issue (Reason, 2009). Reports have shown that nearly a quarter of new college freshmen did not return for their sophomore year (Gardner, 2022), and only 64% of students who began a college degree finished within six years (National Center for Education Statistics, 2022). Numerous researchers have tried to predict whether undergraduate students will retain based on pre-college variables, such as age, gender, race, ethnicity, socioeconomic status, high school GPA, and ACT scores, as prior research has revealed that many of these variables contribute to students' persistence and retention (Huang et al., 2017; Reason, 2009). Similar studies with congruent findings have been conducted in colleges of agriculture (Estepp et al., 2019; Garton et al., 2000; Garton et al., 2002; Koon et al., 2009), with the exception of Dyer et al. (2002), who reported that prior agricultural experience and enrollment in high school agriculture programs were better predictors of retention than conventional pre-college academic and demographic variables. Nonetheless, Pritchard and Wilson (2003) suggested that in addition to academic and demographic variables, researchers must examine affective variables, as "students who are emotionally and socially healthy have a greater chance to succeed in college" (p. 18). One affective variable that has shown much promise in predicting undergraduate student success has been students' sense of belonging (Hausmann et al., 2007; Rhee, 2008; Strayhorn, 2018).

## Literature Review/Conceptual Framework

Strayhorn (2018) defined sense of belonging as the, "feeling or sensation of connectedness, and the experience of mattering or feeling cared about, accepted, respected, valued by, and important to the campus community or others on campus such as faculty, staff, and peers" (p. 4). He further theorized that seven core elements are essential to college students' sense of belonging: (1) belonging is a universal human need; (2) the need for belonging is a strong motive capable of driving behaviors; (3) the importance of belonging is contextual, time-dependent, and can vary among different populations; (4) sense of belonging is associated with and a result of mattering to others; (5) intersectionality of social identities affects college students' sense of belonging; (6) sense of belonging stimulates positive student outcomes; and (7) sense of belonging is temporal and needs to be continually satisfied as a student's circumstances change.

College student sense of belonging has been proffered as a powerful influence on undergraduate student persistence, retention, success, and achievement (Hausmann et al., 2007; Maestas et al., 2007; Pedler et al., 2022; Strayhorn, 2008; 2018). Sense of belonging can be fostered through interactions involving peers, faculty, and staff where strong social support networks are created, thus leading to increased campus commitment and retention (Maestas et al., 2007). Strayhorn (2018) suggested that in the absence of sense of belonging, students become disengaged with education-related activities, can feel isolated, and are at increased risk of leaving

the institution. Sense of belonging could potentially be an important student retention factor to consider for colleges of agriculture, because reports have shown that the demand for agricultural graduates is increasing as job opportunities increase (Fernandez et al., 2020). However, there has been little research examining sense of belonging among students in a college of agriculture, thus, the need for this study is warranted.

In addition to the positive outcomes of sense of belonging, scholars have also examined the determinants. Scholars (Hoffman et al., 2002-2003; Strayhorn, 2018) have posited that student-peer interactions, faculty support and empathy, providing opportunities for student involvement, and campus climate are all important factors contributing to college students' sense of belonging; empirical evidence has confirmed this notion. Studies have found positive relationships among students' sense of belonging and interactions with peers; participation in Greek life, religious clubs, and other student organizations (Hurtado & Carter, 1997), as well as living in residence halls and socializing with students from varying racial/ethnic backgrounds predicted students' sense of belonging (Maestas et al., 2007; Strayhorn, 2008). Furthermore, student/faculty interaction and faculty members' interest in student development (Hurtado & Carter, 1997; Maestas et al., 2007); participation in intramural sports (Hurtado & Carter, 1997); ease of adjustment to campus culture (Museus & Maramba, 2011); and time spent studying (Strayhorn, 2008) have all been associated with higher levels of sense of belonging.

The conceptual framework guiding this study was Strayhorn's (2018) Model of College Students' Sense of Belonging. This model was grounded in Maslow's (1954) needs hierarchy, which postulated that human needs vary from basic physiological needs to higher order psychological needs. Maslow (1954, p. 20) stated that, "If both the physiological and safety needs are fairly well gratified, there will emerge the love and affection and belongingness needs. . ." The model (Figure 1) situates physiological needs such as air, water, food, shelter, sleep, and sex at the baseline status for an individual, and self-actualization, which consists of creativity, innovation, and morality, as the pinnacle. As needs are met, the individual moves upward through the various need layers on the way to reaching their fullest potential. Additionally, the model illustrates that the basic functions of the institution start by helping students meet physiological needs and the educational mission is reached as students achieve self-actualization (Strayhorn, 2018).

**Figure 1**

*Model of College Students' Sense of Belonging (Strayhorn, 2018)*


## Purpose

College student sense of belonging has been shown to be an important predictor of undergraduate student success and retention. However, little research has been conducted with

students in colleges of agriculture. Therefore, the purpose of this study was to examine freshmen students' perceived sense of belonging in the College of Agricultural, Food, and Life Sciences (AFLS) at the University of Arkansas. The objectives guiding this study were:

1. Describe freshmen students' perceptions of their sense of belonging to the University of Arkansas, sense of belonging to AFLS, peer support, faculty support/comfort, classroom comfort, isolation, and empathetic/understanding faculty.
2. Determine the intercorrelations among the constructs of freshmen students' perceived sense of belonging, and demographic variables.

## Methods

The population of interest for this descriptive correlational study was all AFLS freshmen students at the University of Arkansas during the fall 2022 ($N = 503$) semester. After IRB approval, an invitation email was sent to instructors of all AFLS sections of UNIV 1001, *University Perspectives*, which is a required course for all freshmen students. All instructors agreed to allow their classes to participate, and the in-person survey administration occurred in each course during the seventh week of classes. All students who attended class were provided a QR code and URL to the survey instrument and time was allowed for students to complete the survey during class. Data were collected using Microsoft Forms. A total of 233 students responded to the survey, giving a response rate of 46.3%. Due to the response rate, the results of this study are not generalizable to the whole population, however, as stated by Johnson and Shoulders (2017, p. 310-311), "Studies yielding valid results of interest to the profession from a specific groups [sic] of respondents, regardless of their generalizability, can add to the body of knowledge and assist researchers as they design and conduct research."

Instrumentation for this study included the Sense of Belonging Scale (Hoffman et al., 2002-2003), which consisted of 26 Likert-type items measuring five constructs: (1) perceived peer support ($\alpha = .93$), (2) perceived faculty support/comfort ($\alpha = .90$), (3) perceived classroom comfort ($\alpha = .94$), (4) perceived isolation ($\alpha = .86$), and (5) empathetic/understanding faculty ($\alpha = .85$). Additionally, 10 Likert-type items measuring sense of belonging to the campus community (Hurtado & Carter, 1997) were utilized to measure students' sense of belonging to the overall university community and the AFLS community. Five of the items measured sense of belonging to University of Arkansas ($\alpha = .90$), while the other five items measured sense of belonging to AFLS ($\alpha = .91$). A sample item measuring sense of belonging to campus community was, "I see myself as part of the University of Arkansas (or AFLS) community." Lastly, 16 items on the instrument measured student demographics. Data were analyzed using SAS v.9.4 and analyses included descriptive statistics (summated means and frequencies) and correlations.

## Results

A majority of AFLS freshmen identified as female (75.5%) and Caucasian (78.9%), with 59.0% majoring in agriculture and 41.0% majoring in human environmental sciences. Over one-third (35.0%) of respondents reported a high school weighted GPA (HSGPA) of 4.0 or higher, 47.6% reported HSGPAs in the 3.50 – 3.99 range, 15.4% in the 3.00 to 3.49 range, and 1.7% reported HSGPAs of less than 3.00. More than three-fourths (76.8%) reported having at least one parent who was a four-year college graduate.

Almost two-thirds of respondents (64.8%) reported never traveling home (22.3%) or once per month (42.5%), while the remaining students reported traveling home twice per month (16.7%), once per week (7.3%), or more than once per week (27.9%). Based on home ZIP code

data provided by the respondents, the median driving distance from campus to home was 240 miles.

Freshmen reported a range of college and campus involvement. Most students were members of one or more campus organizations (76.4%), had attended at least one student organization meeting (60.9%), and had attended a University of Arkansas sporting event (82.8%). In addition, a majority (76.0%) reported they had attended the AFLS welcome event. Overall, students were committed to majors within AFLS, 65.1% indicating they were very or somewhat unlikely to change to a major outside the college.

Summated means of the seven sense of belonging constructs are reported in Table 1. Based on mean scores, the respondents strongly agreed they felt a sense of belonging to the University of Arkansas and AFLS, with means of 4.45 and 4.30, respectively. They somewhat agreed that faculty were empathetic ($M$ = 4.03) and supportive ($M$ = 3.81), and that peers were supportive ($M$ = 3.58). Freshmen were neutral in their perceptions of class comfort ($M$ = 3.34) and isolation ($M$ = 3.04).

**Table 1**

*Freshmen Agricultural, Food and Life Sciences Students' Perceptions of Belonging, Comfort, Support, and Isolation*

| Construct | *n* | Strongly Disagree (%) | Somewhat Disagree (%) | Neutral (%) | Somewhat Agree (%) | Strongly Agree (%) | *M* | *SD* |
|---|---|---|---|---|---|---|---|---|
| University | 233 | 0.9 | 0.4 | 6.9 | 25.3 | 66.5 | 4.45 | 0.60 |
| AFLS | 232 | 0.4 | 2.2 | 8.6 | 35.3 | 53.4 | 4.30 | 0.68 |
| Faculty Support | 232 | 2.6 | 7.3 | 19.8 | 35.4 | 34.9 | 3.81 | 0.89 |
| Empathetic Faculty | 231 | 0.9 | 1.7 | 15.2 | 40.3 | 41.2 | 4.03 | 0.72 |
| Class Comfort | 233 | 10.3 | 18.5 | 19.3 | 25.3 | 26.6 | 3.34 | 1.15 |
| Peer Support | 233 | 9.0 | 9.0 | 20.6 | 28.3 | 33.0 | 3.58 | 1.08 |
| Isolation [a] | 233 | 16.3 | 21.0 | 25.3 | 20.2 | 17.2 | 3.04 | 1.10 |

*Note.* The percent columns are based on mean limits of 1.00 – 1.80 = strongly disagree, 1.81 – 2.60 = somewhat disagree, 2.61 – 3.40 = neutral, 3.41 – 4.20 = somewhat agree, and 4.21 – 5.00 = strongly agree. [a] Items in the isolation construct were negatively worded so higher agreement indicates higher perceived isolation.

A majority of freshmen agreed (combination of strongly agree and somewhat agree) they felt a sense of belonging to the University of Arkansas (91.8%) and AFLS (88.7%). However, sizeable minorities of students disagreed that (combination of strongly disagree and somewhat disagree) they were comfortable speaking or asking questions in class (28.8%) and had peer support (18.0%) from students in their classes. Finally, over one-third (37.4%) of freshmen agreed (combination of strongly agree and somewhat agree) they felt a sense of isolation.

Using descriptors suggested by Davis (1971), the correlations between student characteristics and perceptions of the seven sense of belonging constructs were negligible to moderate. Being a minority student had low, negative associations with sense of belonging to the University of Arkansas ($r$ = -.14) and peer support ($r$ = -.23), and a low positive association with isolation ($r$ = .11). Being an agriculture student had low, negative associations with sense of belonging to the University of Arkansas ($r$ = -.14) and peer support ($r$ = -.14). Being a member of a campus organization and having attended a student organization meeting both had low, negative

correlations with isolation ($r$ = -.13 and $r$ = -.16), respectively. Having attended a university sporting event had a moderate, positive correlation ($r$ = .30) with perceived belonging to the University of Arkansas, while sense of belonging in AFLS had a low, negative association ($r$ = -.29) with the likelihood of changing to a major outside the College.

Finally, there were low to substantial intercorrelations (Davis, 1971) between the seven sense of belonging constructs (Table 2). Each of the belonging constructs had a low to substantial negative correlation (Davis, 1971) with isolation, with peer support having the largest negative correlation ($r$ = -.62). Also of note, were the substantial, positive intercorrelations between faculty support, empathetic faculty, and class comfort.

**Table 2**

*Intercorrelations Between Students' Perceptions of Belonging, Comfort, Support, and Isolation*

| Construct | X1 | X2 | X3 | X4 | X5 | X6 | X7 |
|---|---|---|---|---|---|---|---|
| University belonging (X1) | 1.0 | .49 | .38 | .47 | .38 | .34 | -.30 |
| AFLS belonging (X2) | | 1.0 | .35 | .46 | .40 | .39 | -.25 |
| Peer support (X3) | | | 1.0 | .38 | .29 | .51 | -.62 |
| Faculty support (X4) | | | | 1.0 | .61 | .61 | -.23 |
| Empathetic faculty (X5) | | | | | 1.0 | .39 | -.19 |
| Class comfort (X6) | | | | | | 1.0 | -.33 |
| Isolation (X7) | | | | | | | 1.0 |

## Conclusions/Discussion/Implications/Recommendations

When examining the findings from this study, several conclusions can be drawn. First, respondents generally perceived they had a strong sense of belonging to both AFLS and the University of Arkansas, however, their sense of belonging was lower for all other constructs. While most students perceived faculty to be empathic and understanding, they also reported slightly lower levels of comfort when seeking help from faculty. Most students were neutral in their perceptions of classroom comfort, meaning they may be less confident speaking in class, volunteering ideas, asking questions, and contributing to discussions. Just over half of respondents agreed they had peer support, while about a third perceived feeling isolated. Respondents' perceived sense of belonging indicated that while some students were on a trajectory for success as described by Strayhorn (2018), others may be at risk. Students' lack of confidence and isolation might indicate that some students are not fully within Strayhorn's (2018) level of belongingness. This should compel AFLS to further examine students' sense of belonging and provide opportunities to help impact sense of belonging and subsequent undergraduate success (Hoffman et al., 2002-2003; Strayhorn, 2018).

Demographic correlations with belonging, comfort, support and isolation yielded a few notable relationships worthy of further examination. Minority students reported a lower sense of belonging with the University of Arkansas and peer support, along with higher levels of isolation, which was congruent with Strayhorn (2008) and Maestas et al. (2007). These findings suggest that this group might benefit from additional support. Students who were involved in campus organizations reported lower levels of isolation. Likewise, students who attended a university sporting event had a greater sense of university belonging. At the college level, a positive sense of belonging was associated with a lower reported likelihood of changing to a major outside of the college. These descriptive findings align with conclusions of previous studies indicating

participation in campus organizations and activities is related to higher sense of belonging (Hoffman et al., 2002-2003; Hurtado & Carter, 1997; Maestas et al., 2007; Strayhorn, 2018).

Intercorrelations between sense of belonging constructs revealed several interesting associations. Fewer students who possessed a sense of belonging to the university indicated as strong of a sense of belonging to AFLS. While the reason for this is unknown, this supports Strayhorns's (2018) core element that sense of belonging is temporal, contextual, and must be continually satisfied as students' circumstances change. Students who felt supported by faculty also reported a greater sense of belonging with the university and AFLS, which is congruent with prior research (Maestas et al., 2007; Strayhorn, 2018). Correlations revealed that faculty members who exhibit empathy are perceived as providing more support, which can help bolster students' sense of belonging (Hurtado & Carter, 1997). Students who perceived faculty and peers as supportive reported being more comfortable and confident interacting in the classroom. This finding aligns with Strayhorn's (2018) core element number four, which posited that support and mattering positively affect sense of belonging. As expected, students who experienced isolation reported lower levels of sense of belonging among all constructs, however, one noteworthy finding was the lowest sense of belonging was among those who perceived less peer support. Strayhorn (2008) posited that students' social engagement among peers influences their sense of belonging, thus those students in this study who failed to connect with their peers could become more disengaged socially and academically and potentially leave the University of Arkansas (Maestas et al., 2007).

Based on Strayhorn's (2018) Model of College Students' Sense of Belonging, the conclusion can be made that many students have their physiological and safety needs met. However, not all students indicated a strong sense of belonging, and while this study did not assess physiological and safety needs, it is possible those who reported lower sense of belonging may have physiological and safety needs. When lower level needs are unmet, students are prevented from reaching their fullest potential and the educational mission of the institution cannot be met, as indicated in Strayhorn's (2018) model.

One practical recommendation emerging from this study was faculty in AFLS should provide opportunities for positive peer interaction in class and create a classroom environment conducive to peer collaboration. This would provide an opportunity for freshmen to build new peer relationships (Pritchard & Wilson, 2003), which could decrease their sense of isolation as they enter the unfamiliar social environment of college. AFLS should also continue to provide and expand opportunities for participation in student organizations to allow for greater opportunities for student and faculty interaction. Due to their lower sense of belonging, additional support for minority students by AFLS may be warranted. Further research should be conducted to study the relationships between belonging, support, comfort, and isolation. These variables are worthy of evaluation in a larger sample and across a wider variety of college locations. Future plans include data collection from this group over time to yield longitudinal results related to predicting academic performance and retention within AFLS. Finally, additional studies collecting data at all levels of Strayhorn's (2018) hierarchy may yield more impactful results on college retention.

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# The Effects of Reflection and Transfer on Students' Post-Course Retention While Learning Experientially

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Experiential learning is widely used at the post-secondary level to achieve powerful, goal-oriented, academic learning (Eyler, 2009; Kolb, 2015; Nilson, 2016). Experiential learning is also a foundational educational theory and pedagogical approach within agricultural education settings (Baker et al., 2012; Estepp & Roberts, 2011; Hughes & Barrick; 1993; Knobloch, 2003; Phipps et al., 2008). Over time, researchers who have studied the effects of experiential learning in higher education settings have suggested that it can be an effective approach to foster students' deep understanding of concepts and improve their retention of knowledge (Eyler, 2009; Eyler & Halteman, 1982; Specht & Sandlin, 1991; Van Eynde & Spencer, 1988). However, in order for meaningful instruction to occur, experiential learning must be implemented effectively and holistically (Baker et al., 2012). In colleges of agriculture, faculty have highly ranked needs for pedagogical skills related to questioning strategies, active learning strategies, fostering environments for critical thinking, and student engagement (Harder et al., 2009), which are all attainable using experiential learning (Eyler, 2009; Phipps et al., 2008).

This study will examine two critical components that are necessary for the holistic implementation of experiential learning: reflective observation and active experimentation. Both components are often overlooked by agricultural educators (Shoulders & Myers, 2013). In this study, we will refer to these components as reflection mode and transfer level. We will examine their effects on students short-term, post-course knowledge retention after the completion of an undergraduate, introductory, animal science laboratory course within a college of agricultural and life sciences. This research is needed for the following reasons: (a) to determine the most effective approaches by which to implement holistic and intentional experiential learning; (b) to inform the practice of college faculty, especially those who wish to implement effective experiential learning in their teaching; and (c) to contribute to the paucity of literature that tests experiential learning effects in post-secondary agricultural education settings.

## Theoretical Framework and Related Literature

This study was framed using experiential learning theory (Dewey, 1938; Joplin, 1981; Kolb, 1984; Roberts, 2006). Kolb (1984; 2015) offered a process of experiential learning that included four critical components: (a) concrete experience, (b) reflective observation, (c) abstract conceptualization, and (d) active experimentation. This study focused specifically on the effects of differing modes of reflection and application. Reflection is a critical component to the experiential learning process (Dewey, 1938; Kolb, 2015; Roberts 2006). Reflection is the connecting bridge between theory and practice, or abstract thought and action (Schön, 1983; Zull, 2002). Schön's (1983) two modes of reflection, reflection-in-action versus reflection-on-action, have been tested in agricultural education, and the results have varied (Baker et al., 2014, Blackburn et al., 2015; Coleman et al., 2020; Coleman et al., 2021a; DiBenedetto et al., 2017). Other researchers and

practitioners have suggested reflection strategies that focus less on when reflection occurs and more on how reflection occurs. Wright et al. (2013) found positive results from the use of hevruta, a reflection strategy that emphasizes verbal dialogue with a class peer. Additionally, numerous researchers have found positive results with the use of written reflection (Hubbs & Brand, 2005; Lamm et al., 2011; Loo & Thorpe, 2002; Thorpe, 2004; Yancey et al., 2013). Therefore, this study will focus on testing the effects of two modes of reflection (peer verbal and written journal) on students' post-course knowledge retention.

In Kolb's (1984, 2015) model of experiential learning, application is represented as active experimentation, which is the act of testing out knowledge in similar or new settings. Unless a learner can transfer the concepts they have learned to other experiences and settings, it is argued that their experience was not an educative one (Dewey, 1938; Haskell, 2001; Kolb, 2015; Roberts, 2006; Zull, 2002). There are, however, multiple levels at which learning transfer can occur (Haskell, 2001; Macaulay, 2000). Macaulay (2000) suggested that there were two primary levels of transfer: near and far transfer. Near transfer is the application that occurs in same or similar settings in which the concept was learned, while far transfer occurs when the concept is applied in a completely different context. Haskell (2001) offered six levels of transfer: (a) nonspecific transfer, (b) application transfer, (c) context transfer, (d) near transfer, (e) far transfer, and (f) displacement or creative transfer. As such, we have merged the two theorists' transfer levels into three categories: (a) same transfer, (b) near transfer, and (c) far transfer. These will serve as the three levels of the independent variable of transfer level in this study.

Remembering and recalling information is a critical component to the learning process (Kolb, 2015; Zull, 2002). In their taxonomy of learning levels, Bloom et al. (1956) recognized that the *knowledge* classification of learning, or remembering information, was not the most complex learning; however, they purported it was foundational. Anderson and Krathwohl (2001) revised the learning taxonomies presented by Bloom et al. (1956) and renamed the knowledge classification to *remembering*. Numerous researchers, in and out of agricultural education, have tested various pedagogical approaches and their effects on knowledge retention (Baker & Robinson, 2017; Flowers & Osborne, 1987; Spect & Sandlin, 1991; Tran, 2014; Van Eyde & Spencer, 1988), and results have varied across studies. For the purpose of this study, post-course knowledge retention will serve as the dependent variable.

## Purpose and Hypotheses

The purpose of this study was to examine the effects of reflection mode and transfer level on students' post-course knowledge retention in an undergraduate laboratory course. This research was guided by the following null hypotheses:

- $H_0$ 1: There is no variance in overall mean post-course knowledge retention scores due to the interaction of reflection mode and transfer level.
- $H_0$ 2: There is no difference in the overall mean post-course knowledge retention scores between reflection groups.
- $H_0$ 3: There is no difference in the overall mean post-course knowledge retention scores between transfer level groups.

## Methodology

### Research Design

This research is part of a large-scale research project on the effects of experiential learning in a post-secondary agricultural education setting (Coleman, 2022). A quasi-experimental, two-way, analysis of covariance (ANCOVA) design was utilized for this work (Kirk, 1995; Terrell, 2012). This 2x3 factorial design was utilized to test the main and interaction effects of two independent variables on one dependent variable (Terrell, 2012). The first independent variable was the method of reflection, and it had two levels: written journal reflection or peer verbal reflection. The second independent variable was the level of transfer, and it had three levels: (a) same transfer, (b) near transfer, or (c) far transfer. The dependent variable measured in this study included students' post-course knowledge retention. A pre-test score was also included as a covariate to control for students' prior knowledge.

**Participants and Procedures**

This quasi-experimental study employed a non-probability convenience sample in which students were enrolled in one of six pre-existing laboratory sections (Ary et al., 2010; Dooley, 2001). Specifically, the research was conducted with students enrolled in *ANS3006L: Introduction to Animal Science Laboratory* in the fall 2021 semester at the University of Florida. This course was selected because it is a commonly taught, post-secondary, agricultural education course, and enough students enroll in this course each semester to have a large sample for conducting this type of research. The course is laboratory focused, which is not only experiential in nature, but the laboratory sections also have students naturally divided into six, equally distributed, physically separated groups which was beneficial for the current research design.

A total of 123 students were enrolled in the course, and all students agreed to participate in this study. However, nine students did not complete the post-course knowledge assessment necessary to measure the dependent variable, so there were 114 individuals included in this study. The participants were mostly female ($n$ = 93) and white ($n$ = 60). The six treatment groups were drawn from the six preexisting laboratory course sections. As such, selection bias was a recognized threat to internal validity, and was a limitation of this study (Ary et al., 2010). While the selection of participants was not completely randomized, the treatments were randomly assigned by the researchers to the six preexisting groups. In addition to selection bias, there were 10 other threats to internal validity listed by Ary et al. (2010), nine of which were controlled for by the design of this study. As previously mentioned, nine students did not complete the post-test, so it is possible that experimental mortality could be a threat; however, this attrition rate was only 7%, so it is not likely. No students dropped out of the study, and the average attendance for the course was 93%. Field notes that included researcher observations were recorded to assist in controlling for any deviations from protocol that could have been a threat to validity. All experimental treatments were administered by the course instructors during the 12 face-to-face class meetings. The same instructors taught all six sections of the course, so instructional delivery was consistent across treatment groups and instructor effect was controlled for.

For the independent variable of reflection mode, each lab answered up to five content-related reflection questions. The reflection treatment was administered once weekly during 11 of the 12 weeks of instruction. All treatment groups were prompted with the same reflection questions, but the method by which the groups were prompted to reflect varied. The three groups who were assigned written journal reflection were given a bound journal at the beginning of the semester.

Students were given the reflection questions and asked to independently write their thoughts about each question in their journal. The three groups who were assigned verbal peer reflection were given the reflection questions and asked to discuss them with a partner. Time allotted for reflection varied each week due to the varying number of reflection questions (approximately 7–10 minutes) but did not vary across treatment groups.

For the independent variable of transfer level, students were administered an exercise that included a case vignette problem or situation in which students were to apply the animal science concepts being discussed that week. Macaulay (2000) recommended the use of case studies or problem scenarios to facilitate transfer of learning. Students were broken into small groups and were asked to work through the vignette with their group members. Two treatment groups received a vignette that prompted same transfer, two groups received a vignette that prompted near transfer, and two groups received a vignette that prompted far transfer. The transfer level treatment was administered once weekly during eight of the 12 weeks of instruction.

**Instrumentation**

A pre-test was used as a covariate to control for students' prior knowledge as a threat to validity. Twenty-six questions, selected from the course quizzes, were randomly selected to be included in the pre-test. Face and content validity was evaluated by an expert panel consisting of two animal science faculty, two agricultural education faculty, and one doctoral graduate student of agricultural education. Nine of the questions were adjusted for readability, grammar, spelling, and clarity. Other assumptions about the covariate (linearity and homogeneity of regression slopes) were tested using SPSS and were met. The instrument used to measure students' post-course knowledge retention (dependent variable) was the same 26-question test described above. The test was administered via the Canvas learning management system during the week after the last week of instruction and treatments. When reviewing the previously listed studies around knowledge retention, there was a wide spectrum of time that researchers have used to measure learners' knowledge retention that ranged from one week to six months. We administered the post-course assessment one week following instruction for two reasons. The first reason was to limit mortality. Even just one week following instruction, we saw a loss of nine participants. Secondly, since this was a cumulative assessment, test items focused on course content from the entire semester. This included content that ranged in exposure from 14 weeks to one week prior.

**Data Analysis**

A factorial ANCOVA was utilized for determining the main and interaction effects of the two independent variables (Field, 2018; Terrell, 2012). Assumptions regarding the ANCOVA that were not necessarily met by the design of this study (normality and homogeneity) were examined prior to conducting the procedure (Terrell, 2012). Assumptions of normality were analyzed within each of the six treatment groups, first by using the Kolmogorov-Smirnov (K-S) tests. The knowledge scores for each of the treatment groups did not deviate significantly from normal. Levene's test was conducted to measure homogeneity of variance, and this yielded a result of $F(5, 108) = 0.35$, $p = .881$. An *a priori* alpha level of .05 was set for measuring statistical significance. Significant and practical effects were reported as findings. The researchers either rejected or failed to reject the null hypotheses based on their statistical significance (Ary et al., 2010). The practical significance of measures that were deemed statistically significant were reported as a function of partial $\eta^2$ with

the following sizes: (a) 0.01 – small effect size, (b) 0.06 – medium effect size, and (c) 0.14 – large effect size (Cohen, 1988; Miles & Shevlin, 2001).

## Results

Means, standard deviations, adjusted means, and standard errors are presented in Table 1, and the results of the ANCOVA are presented as Table 2. The covariate of prior knowledge (pretest scores) was significantly related to the participants' post-course knowledge retention, $F(1, 107) = 8.15$, $p = .005$, partial $\eta^2 = .071$ and observed power = .81. After adjusting for prior knowledge scores, there was no statistically significant interaction effect between the two independent variables, $F(2, 107) = 0.99$, $p = .376$. Therefore, the first null hypothesis failed to be rejected. After analyzing the main effect of reflection mode, there was no statistically significant effect, $F(1, 107) = 0.45$, $p = .503$. There was no statistical significance for the main effect of transfer level, $F(2, 107) = 0.64$, $p = .530$. The second and third null hypotheses also failed to be rejected.

**Table 1**

*Pretest, Post-Course Retention, and Adjusted Post-Course Retention Scores*

| | Pretest (Covariate) | | Post-Course Retention | | Adjusted Post-Course Retention | |
|---|---|---|---|---|---|---|
| Source | *M* | *SD* | *M* | *SD* | *M* | *SE* |
| Same Transfer | | | | | | |
| Written Reflection | 12.56 | 3.35 | 20.51 | 3.08 | 20.41 | 0.72 |
| Verbal Reflection | 12.19 | 3.69 | 19.17 | 3.25 | 19.22 | 0.73 |
| Near Transfer | | | | | | |
| Written Reflection | 11.21 | 3.56 | 19.78 | 3.48 | 19.78 | 0.74 |
| Verbal Reflection | 10.95 | 2.84 | 20.44 | 3.16 | 20.75 | 0.76 |
| Far Transfer | | | | | | |
| Written Reflection | 12.19 | 2.62 | 19.93 | 3.64 | 19.92 | 0.73 |
| Verbal Reflection | 13.74 | 4.23 | 19.54 | 3.19 | 19.23 | 0.75 |

**Table 2**

*Analysis of Covariance for Post-Course Retention Mean Scores*

| Source | *df* | *SS* | *MS* | *F* | *p* | $\eta^2$ |
|---|---|---|---|---|---|---|
| Covariate | 1 | 83.32 | 83.32 | 8.15 | .005 | .071 |
| Reflection | 1 | 4.62 | 4.62 | 0.45 | .503 | .004 |
| Transfer | 2 | 13.05 | 6.53 | 0.64 | .530 | .012 |
| Reflection x Transfer | 2 | 20.20 | 10.10 | 0.99 | .376 | .018 |
| Error | 107 | 1,093.82 | 10.22 | | | |
| Total | 114 | 46,334.06 | | | | |

## Conclusions, Implications, and Recommendations

The lack of interaction effect supports that reflection mode and transfer level are independent of one another when analyzing post-course knowledge retention scores. The lack of significant main

effects also suggests that neither mode of reflection nor any of the three transfer levels were significantly more effective in increasing students' post-course knowledge retention scores. When considering reflection mode, this finding is congruent with Blackburn et al. (2015), who found no statistically significant difference between written and verbal reflection modes. While no treatment group was statistically significant, this does not mean that the mode of reflection or level of transfer were not effective practices. Rather, no reflection mode, transfer level, or combination thereof was more effective than the others. We recommend practitioners use either verbal reflection (Wright et al., 2013), written reflection (Hubbs & Brand, 2005; Lamm et al., 2011; Loo & Thorpe, 2002; Thorpe, 2004; Yancey et al., 2013), or even combinations of both when aiming for effective post-course knowledge retention. It is possible that a one versus the other approach to reflection may not be the most effective when designing experiential learning instruction.

While no transfer level was significant, the inclusion of application opportunities through which learners can transfer concepts to practical settings are still critical for the learning process (Haskell, 2001; Kolb, 2015; Macaulay, 2000; Zull, 2002). In addition to case studies, Macaulay (2000) also recommended the use of a variety of methods and tools for practitioners to consider when teaching for transfer ability. These methods included role playing, workshops, expert consultants and lectures, and supportive content literature and resources (Macaulay, 2000). However, these variables alone are not the only tools needed to teach for transfer ability. In fact, Haskell (2001) suggested that designing instruction in sequential, minute-by-minute steps, especially as we do for experimental design studies, is not the most effective model for teaching and learning. So, while there are methods and variables of transfer learning that can be tested experimentally for theory, this does not mean it should set an exact formula for how we approach real-life education (Haskell, 2001). The reality is, practitioners should also recognize that teaching for transfer requires a well-taught and educative learning experience, the integration of previous and necessary contextual knowledge, and methods that encourage learners to draw connections and put their learning into practice (Haskell, 2001; Macaulay, 2000).

This study measured post-course knowledge retention in the week following the final instructional week of the course, a practice similar to Flowers and Osborne (1987). However, future replications of this or similar studies could measure knowledge/post-course knowledge retention at longer observation intervals, but experimental mortality will likely be a challenge for studies that do so. Finally, this study focused on the effects of only two components of experiential learning – reflection and application. While replication of this study is recommended, future research should also analyze the effects of other experiential learning components (experience and conceptualization). Agricultural education at the post-secondary level is well-positioned to include effective experiential learning. In order to do this, practitioners should strive to implement holistic models of experiential learning, which includes the four components of experience, reflection, conceptualization, and reflection, to foster an educative experience (Dewey, 1938; Joplin, 1981; Kolb, 2015; Roberts, 2006). This study is a testament that regardless of the specific method used for each of the components, when educators are intentional about their instructional planning and practice, experiential learning becomes an effective educational tool that leads to powerful, goal-oriented, academic experiences (Baker et al., 2014; Eyler, 2009; Roberts, 2006).

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# Evaluating Agricultural Faculty's Virtual Reality Technology Behavioral Intention: Implications for 5G Instructional Technology Adoption

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## Introduction, Purpose and Objectives

Virtual reality (VR), according to Howard and Van Zandt (2021), is a multi-dimensional digital portrayal of an authentic or fictional location. Goh and Sandars (2020) acknowledged that VR immersive experiences are intended to replicate real-life experiences while being disseminated through headsets or mobile technologies. Sarkady et al. (2021) determined that perceived usefulness had a hand in determining participant's behavioral intentions of using VR as a travel substitute during the pandemic. VR can provide training exercises for emergency services or military tactics and provide a non-traditional educational opportunity. Within the realm of medicine, Barteit et al. (2019) discerned that advantages VR Head Mounted Displays (HMDs) provide are a repeatable, real-life training without a real patient, a new way to disseminate medical knowledge, and a way to lessen financial or ethical burdens by virtually providing cadavers and other equipment. Educationally, VR technologies can provide new realms that allow for new immersive experiences across formal and non-formal education.

Digital, online, or cyber learning, according to the literature is here to stay and growing in demand. Palvia et al. (2018) reported that online enrollments in the U.S. had increased for fourteen consecutive years regardless of economic status or overall college enrollment. 5G networks have enabled the proliferation of artificial intelligence, machine learning, virtual and augmented reality, and IoT systems in agricultural learning environments (Strong et al., 2022). Lindner et al. (2016) recommended in the *National Research Agenda* to assess adoption decisions of new innovations. The purpose of this study was to assess college of agriculture and life sciences faculty's behavioral intentions regarding adopting VR. This study's objectives were:

1. Describe faculty behavioral intentions, performance expectancy, effort expectancy, social influence, self-efficacy, and facilitating conditions of virtual reality adoption.

2. Examine the differences between performance expectancy, effort expectancy, social influence, facilitating conditions, self-efficacy, gender, age, academic rank, and years of teaching experience on faculty behavioral intentions to adopt VR in a courses.

## Theoretical Framework

Venkatesh et al. (2003) developed the unified theory of acceptance and use of technology (UTAUT). This model was developed to combine relative known theories concerning technology acceptance and formed one central theory. Venkatesh et al. (2003) recognized that researchers are

presented a choice of theories when evaluating literature and conducting studies, with models such as the theory of planned behavior (Fishbein & Ajzen, 1975) and technology acceptance model (Davis, 1989). Venkatesh et al. (2003) identified a necessity for an amalgamated theory, and developed a comprehensive framework named the unified theory of acceptance and use of technology (UTAUT). The UTAUT was invented upon the recognition of seven statistically significant constructs, out of thirty-two total constructs, in predicting intention, adoption, and use of technology. Venkatesh et al. (2003) postulated four of the seven variables are substantial predictors of individual adoption of new educational or informational digital technologies. Those four identified constructs are performance expectancy, effort expectancy, social influence, and facilitating conditions. According to Venkatesh et al. (2003), performance expectancy can be the strongest predictor of intent to adopt the technology. The extent a faculty member believes virtual reality technologies will assist in their achievement of professional objectives is referred to as performance expectancy (Venkatesh et al., 2003). Effort expectancy can be described as the perception of how effortless the technology can be used. Three sub-paradigms of effort expectancy were the perceived ease of use, complexity of use, and the overall ease of use (Venkatesh et al., 2003).

## Methods

This research was built upon quantitative cross-sectional survey research methodology (Field, 2013), utilizing an online survey for data collection. Cross-sectional surveys are assessments which collect data on a predetermined population at one instance of time (Fraenkel et al., 2019). The population of the research study encompassed Texas A&M University, The Ohio State University, and the University of Florida's colleges of agriculture and life sciences. The independent variables of the study were perceived performance expectancy, effort expectancy, social influence, facilitating conditions, self-efficacy, gender, race, age, academic rank, tenure and non-tenure track, percentages of appointment, and years of teaching experience. The dependent variable was faculty behavioral intentions of using VR in academic classes.

This study applied a stratified random sampling technique to quantify the sample population. Fraenkel et al. (2019) determined that an advantage of utilizing stratified samples in research is the enhanced representativeness of the sample. Due to unequal faculty numbers between the three institutions, a random sample would not be appropriate for the study (Ary et al., 2019). A total of one thousand twenty-five faculty members between all three institutions were identified as suitable for the sample population.

The tailored design method was implemented for electronic data collection (Dillman et al., 2014). A digital survey, developed in Qualtrics, consisted of 42 items and was distributed electronically to the population's random sample via email. Venkatesh et al.'s (2003) UTAUT model and Irby and Strong's (2013) approach for measuring self-efficacy, derived from Tschannen-Moran and Woolfolk Hoy's (2001) scale, were the applied instruments used in this study. Cronbach's (1951) recommendations established the acceptable internal consistency coefficients for each construct. Alpha coefficients for each construct were first established by Venkatesh et al. (2003) and identified in the UTAUT model. To increase response rate, the researcher adhered to Dillman et al.'s (2014) tailored design method for preparation, implementation, and follow-up. Lindner et al. (2001) suggested further precautions for research with less than an 85% response rate. The response rate was 21.27%. Researchers compared early and late responses suggested by Lindner et

al. (2001). No significant differences existed. Therefore, we are able to generalize findings to the population.

SPSS version 27 was used to analyze the descriptive and regression data. Objective two was addressed with the implementation of a multiple regression to understand the variance between independent variables on faculty behavioral intentions to adopt VR in academic courses. Multiple regression analyses enable researchers to establish a correlation between criterion variables and predictor variables (Fraenkel et al., 2019). The multiple regression equation for this research is: Y' = a + b1x1 + b2x2 + b3x3 + b4x4 + b5x5 + b6x6 + b7x7 + b8x8 + b9x9.

## Findings

The first research objective aimed to derive descriptive statistics for Venkatesh et al.'s (2003) UTAUT constructs. The highest mean score for performance expectancy involved using VR for quick task accomplishment ($M$ = 2.29, $SD$ = 0.75). The lowest mean score reported concerned using VR for completing more work ($M$ = 2.17, $SD$ = 0.78). Participants disagreed that Venkatesh et al.'s (2003) performance expectancy construct concerning VR would enhance their work performance ($M$ = 2.23, $SD$ = 0.77) (see Table 1).

**Table 1.**
*Descriptive Statistics of Performance Expectancy*

| Items | *n* | *M* | *SD* |
|---|---|---|---|
| Using VR enables me to accomplish tasks more quickly. | 228 | 2.29 | 0.75 |
| Using VR makes it easier to do my work | 215 | 2.25 | 0.82 |
| Using VR enhances the quality of my work | 218 | 2.22 | 0.74 |
| Using VR, I can do much more work | 217 | 2.17 | 0.78 |

*Note. Overall. M =2.23, SD =0 .78, Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Agree; 4 = Strongly Agree*

Respondents disagree that VR is easy to operate ($M$ = 2.25, $SD$ = 0.79). The highest mean score for effort expectancy involved perceiving VR technology as easy to use ($M$ = 2.32, $SD$ = .81). The lowest mean score for effort expectancy concerned faculty perceptions of VR ease of use in relation to performing tasks they intend to do ($M$ = 2.15, $SD$ = 0.76) (Table 2).

**Table 2.**
*Descriptive Statistics of Effort Expectancy*

| Items | *n* | *M* | *SD* |
|---|---|---|---|
| I find it easy to use VR. | 207 | 2.32 | 0.81 |
| I intend to use VR more to keep in touch with my students. | 207 | 2.29 | 0.81 |
| I intend to use VR more in training sessions with my students. | 210 | 2.27 | 0.82 |
| I find it easy for me to become skillful using VR. | 210 | 2.23 | 0.76 |
| I intend to use VR more to get information out of my students. | 204 | 2.21 | 0.80 |
| I find it easy to use VR to do what I want to do. | 215 | 2.15 | 0.76 |

*Note. Overall. M = 2.25, SD = 0.79, Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Agree; 4 = Strongly Agree*

The highest mean score for facilitating conditions involved having necessary resources available to use VR ($M$ = 2.79, $SD$ = 1.33). The lowest mean score for facilitating conditions involved having

the knowledge necessary to use VR (*M* = 2.66, *SD* = 1.32). Overall, survey respondents did not agree that their respective institutions have the VR infrastructure necessary for students' academic success (*M* = 2.75, *SD* = 1.21) see Table 3.

**Table 3.**
*Descriptive Statistics of Facilitating Conditions*

| Items | *n* | *M* | *SD* |
|---|---|---|---|
| I have the resources necessary to use VR | 208 | 2.79 | 1.33 |
| A specific person (or group) is available for assistance with system difficulties | 205 | 2.78 | 1.30 |
| VR is not compatible with other technologies I use. | 207 | 2.76 | 0.90 |
| I have the knowledge necessary to use VR | 208 | 2.66 | 1.32 |

*Note. Overall. M = 2.75, SD = 1.21*, *Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Agree nor Disagree; 4 = Agree; 5 = Strongly Agree*

The highest mean scores for social influence were for the items "People who I work with think I should use VR in my teaching" (*M* = 2.20, *SD* = 0.75) and "People who are influential in my field think I should use VR in my teaching" (*M* = 2.20, *SD* = .75). The lowest mean score was for the item corresponding to "I find it easy to use VR to do what I want to do" (*M* = 2.16, *SD* = 0.74). Participants disagreed that faculty (e.g., peers, department heads) think they should adopt and use VR (*M* = 2.19 and *SD* = 0.75) see Table 4.

**Table 4.**
*Descriptive Statistics of Social Influence*

| Items | *n* | *M* | *SD* |
|---|---|---|---|
| People who I work with think I should use VR in my teaching | 205 | 2.20 | 0.75 |
| People who are influential in my field think I should use VR in my teaching | 204 | 2.20 | 0.75 |
| My department head thinks I should use VR in my teaching | 200 | 2.19 | 0.77 |
| My department faculty think I should use VR in my teaching | 204 | 2.16 | 0.74 |

*Note. Overall. M = 2.19, SD = 0.75,* Scale: *1= Strongly Disagree; 2 = Disagree; 3 = Agree; 4 = Strongly Agree*

The highest mean score for behavioral intentions was concerning using VR for knowledge enhancement (*M* = 2.38, *SD* = 0.91). Respondents strongly disagree in using VR to contact farmers (*M* = 1.82, *SD* = 0.76). Faculty disagreed that they intend to adopt VR in academia (*M* = 2.20, *SD* = 0.84) see Table 5.

**Table 5.**
*Descriptive Statistics of Behavioral Intentions*

| Items | *n* | *M* | *SD* |
|---|---|---|---|
| I intend to use VR for enhancing my knowledge. | 196 | 2.38 | .91 |
| I intend to use VR more for preparing for training materials | 199 | 2.31 | .81 |
| I intend to use VR more to store teaching materials | 204 | 2.30 | .85 |
| I intend to use VR more to acquire the knowledge I need to enhance my training | 201 | 2.28 | .84 |
| I intend to use VR more in the future in all of my work. | 197 | 2.26 | .86 |

| | | | |
|---|---|---|---|
| I intend to use VR more to search for information when preparing my programs | 197 | 2.20 | .87 |
| I intend to use VR more for personal contact. | 197 | 2.16 | .85 |
| I intend to use VR for more my personal tasks. | 197 | 2.09 | .82 |
| I intend to use VR more to contact farmers | 193 | 1.82 | .76 |

*Note. Overall. M = 2.20, SD = 0.84, Scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Agree; 4 = Strongly Agree*

The highest mean score for self-efficacy correlated to the question "How well can you respond to students through VR?" (*M* = 4.45, *SD* = 2.42). The lowest mean score was for the item corresponding to "How comfortable are you using evaluation strategies for VR use?" (*M* = 3.61, *SD* = 2.09). Respondents perceived self-efficacy to have little influence on their adoption of VR for academic purposes (*M* = 3.97, *SD* = 2.11) see Table 6.

**Table 6.**

*Descriptive Statistics of Self-Efficacy*

| Items | *n* | *M* | *SD* |
|---|---|---|---|
| How well can you respond to students through VR? | 196 | 4.45 | 2.42 |
| To what extent can you provide alternative explanation, through VR, when students are confused about your teaching? | 187 | 4.03 | 2.05 |
| How well can you implement alternative strategies in your teaching when using VR to teach? | 184 | 4.02 | 2.10 |
| To what extent can you craft good questions through VR? | 187 | 4.02 | 1.99 |
| How much can you gauge student comprehension of what you taught through VR? | 192 | 3.70 | 1.99 |
| How comfortable are you using evaluation strategies for VR use? | 190 | 3.61 | 2.09 |

*Note. Overall. M = 3.97, SD = 2.11, Scale:* 1 = *Nothing*; 3 = *Very Little*; 5 = *Some Influence*; 7 = *Quite a bit*; 9 = *A great deal*

Our second objective was to examine the differences between performance expectancy, effort expectancy, social influence, facilitating conditions, self-efficacy, gender, age, academic rank, and years of teaching experience on faculty behavioral intentions to adopt VR in a courses. One hundred twelve respondents did not answer or did not provide answers that were able to be used to determine the regression analysis. The total number of respondents (*n* = 173) was used in the multiple regression analysis. Age, appointment, academic rank, and gender did not produce significant variances on behavioral intention. The multiple regression model coefficient is illustrated as: (Y) = a + b1x1 + b2x2 + b3x3 + b4x4 + b5x5 + b6x6 + b7x7 + b8x8 + b9x9.

When self-efficacy increased one unit, the loge of behavioral intentions to adopt VR increased .18. When performance expectancy increased one unit, the loge of the behavioral intentions to adopt VR increased .31. When social influence increased one unit, the loge of the behavioral intentions to adopt VR increased .23. When facilitating conditions increased one unit, the loge of the behavioral intentions to adopt VR increased .18. The multiple regression model for this study was illustrated as: Behavioral intentions to adopt VR in colleges of agricultural and life sciences programs = .49 + .31 Performance expectancy + .23 Social influence + .18 Facilitating conditions + .18 Self-Efficacy. The multiple regression model explained 58% of the variance on behavioral intentions in [university], [university], and [university] faculty (see Table 7).

**Table 7.**
*Summary of Multiple Regression Analysis of Independent Variables on Behavioral Intention*

| | *B* | *SE B* | *p* |
|---|---|---|---|
| Intercept | .49 | .29 | |
| Effort expectancy | .51 | .05 | .54 |
| Performance expectancy | .31 | .29 | .00* |
| Social influence | .23 | .18 | .00* |
| Self-efficacy | .18 | .47 | .00* |
| Facilitating conditions | .18 | .47 | .00* |

**Note. $p < .05$; $R^2 = .59$; Adjusted $R^2 = .58$*

## Conclusions/Discussions/Implications/Recommendations

Participants' mean scores for each of the constructs of the UTAUT model demonstrated disagreement relative to faculty perceptions. The regression model provided the four crucial predictors to explain behavioral intentions: performance expectancy, self-efficacy, social influence, and facilitating conditions. This model highlighted how effort expectancy, age, gender, and appointment play no significant role in influencing faculties' behavioral intentions.

Other 5G instructional technologies adoption by teachers or change agents needs investigating. Performance expectancy had the highest significant beta and the most influence on behavioral intentions, which aligns with the research of Venkatesh et al. (2003). It is important to consider that VR technologies can achieve greater adoption rates when faculties' perceptions of adopting VR for preparing students for post-graduation success is higher.

Social influence was confirmed to have significant implications on faculties' behavioral intentions. This indicates that faculty peers hold power in promoting VR adoption through interpersonal channels. Through greater levels of communication (Rogers, 2003), VR can be adopted successfully in academia, as faculty recognize the innovation's attributes for user ease and improved student learning outcomes

Self-efficacy proved to have the third highest beta among the significant variables derived from the regression model. Efficaciousness is a construct constantly seen within the data regarding influencing behavioral intentions. Administrators should recognize this phenomenon and may identify ways to increase VR self-efficacy in order to provide faculty with experiences to better understand their levels of confidence using this technology. This difference indicates that this sample populations' intentions are significantly affected by their confidence in using VR. The facilitating conditions findings identified how important existing VR infrastructure is for collegiate agricultural and life sciences programs as a foundation for future faculty adoption.

VR instruction should be trialed in different programs to understand how students perceive these technologies in relation to educational gains (Strong et al., 2022b). If students feel that these technologies help provide them with educational value for post-graduation success, faculty need to

be aware. The further inquiry would develop our understanding of 5G and Industry 4.0 instructional technologies from a student-to-student collaborations, teacher to student experiences, and student to content activities (Mikwamba et al., 2021; Olsovsky et al., 2021; Strong et al., 2022a). The regression model provides a way to measure levels of behavioral intentions using each significant construct, but student perceptions can aid in understanding faculties' intentions to adopt VR (Venkatesh et al., 2003).

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# Examining Student Retention and Attrition in the College of Agricultural and Environmental Sciences at the University of Georgia

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## Introduction

In recent years, the number of undergraduate graduates in science, technology, engineering, and math (STEM) has seen a notable decrease in relation to overall undergraduate population (National Board of Sciences, 2010). Chen (2013) indicated that 48% of undergraduate students transferred from STEM fields to non-STEM related majors or dropped out altogether. Stereotypes surrounding STEM belonging, self-efficacy in completing coursework in STEM fields, and overall student interest in STEM all play a role in the decline of students within STEM undergraduate programs (Kennedy et al., 2018; Lytle & Shin, 2020). Thus, increasing interest in STEM fields and mitigating the decline of enrollment begins as high school students make their choice on college major and future career plants (Sithole et al., 2017). Even with a growing number of STEM related careers in today's workforce, the number of students with an interest in STEM continues to remain low (Chen, 2013; Lytle & Shin, 2020). Furthermore, while there are students entering into STEM majors, there are indications that a significant number of STEM majors do not complete their degrees in a STEM related field, demonstrating the need for better understanding in why it is difficult to retain students in STEM fields (Toven-Lindsey et al., 2015; Sithole et al., 2017; Lytle & Shin, 2020). With recent attempts to better understand the influences on student interests and choice of major, there is still a need to research what factors are leading to a deficiency in students pursuing STEM majors, especially those pursuing majors in colleges of agriculture.

Within colleges of agriculture, student attrition rates are also increasing, and it is becoming more difficult to retain and recruit students into agricultural and natural resource pathways, leading to a shortage of graduates capable of entering the workforce (Goecker, 2015; Johnson et al., 2018). Additionally, student retention and attrition rates within colleges of agriculture also impact funding opportunities and nationwide rankings, and as students leave these programs, it becomes more difficult for the college to achieve goals and standards (Johnson et al., 2018; Thammasiri et al., 2013). Often, universities implement protocols to recruit and retain students, such as GPA requirements and test scores, however, there are other external factors that influence student retention rates within programs (Johnson et al., 2018). Furthermore, discussion with the Associate Dean for Academic Affairs in the College of Agricultural and Environmental Sciences (CAES) at the University of Georgia, expands upon these issues and questions, as the number of students changing majors within and out of the college has continued to increase due to unknown factors (J. Broder, Personal Communication, February 22, 2022).

## Conceptual Framework

This study was guided by the conceptual framework established by Mattern et al. (2015), which established, *"With so many student-level, institution-specific, and environmental variables influencing retention in unique and complex ways, it becomes difficult for colleges and universities*

*to synthesize all research findings on the factors related to retention"* (p. 19). These factors include intention to leave, academic performance, attitudes, social and bureaucratic factors, environment, student background, and finances (Mattern et al., 2015). As mentioned, retaining students in the college of agriculture has become more critical, as the agricultural workforce continues to grow. Previously, high school GPA and ACT scores were thought to be the best predictors of retention (Garton et al., 2002; Mattern et al., 2015). However, throughout the past two decades, these predictors have continued to change, and there has been a continual recommendation for research to establish predictors of success and retention in colleges of agriculture (Garton et al., 2002). In identifying the variables associated with attrition and retention in the College of Agricultural and Environmental Sciences at the University of Georgia, college administrators can target student populations that continually leave the college and establish a groundwork for continued student success throughout undergraduate education.

## Purpose & Research Questions

The purpose of this study is to examine current student data within the CAES at the University of Georgia for relational variables or characteristics that may predict whether students transfer into or out of the CAES. Researchers prefer to examine data within the college of students who began in the Fall of 2020 and will graduate within four to six years. This study was guided by the following research questions:

1. What variables influence undergraduate students in CAES to complete a major within the college?
2. What variables influence undergraduate students in CAES to transfer out of their intended major?

## Methods

The sample in this study included undergraduate students enrolled in the College of Agricultural and Environmental Sciences at the University of Georgia in the Fall of 2020 and planned to complete their degree within four to six years. Researchers sought to examine student information including their residency status, class identification (year in school and credit hours), student major as of Fall 2020, academic standing, and change of major into or out of the CAES (including change of major within each department).

To analyze student enrollment information and the factors that potentially influence student attrition and retention rates, researchers collected enrollment data from the admissions office in the CAES, with approval from the Associate Dean in the Office of Academic Affairs. Researchers were also trained by academic advisors within their departments on how to view and collect relevant data. Enrollment data that was provided from the Fall of 2020 included all undergraduate and graduate students within the college, thus researchers first removed all graduate student information from the data set. Researchers then coded all information into numerical codes for ease of analysis. Information that could be traced to individual students was removed from the data set for anonymity. Upon removing personal information and graduate students, researchers determined there were 1504 undergraduate students enrolled in the Fall of 2020.

Researchers also retrieved data from the college which indicated the total number of curriculum changes that had occurred beginning in the Fall semester of 2020. This data set also included undergraduate and graduate students, major, minor, certificate, and concentration changes.

Therefore, researchers removed all graduate student information, minor, certificate, and concentration changes, as well as all personal information. Data were also coded using numerical codes different from those used in the enrollment data set.

Upon completion of numerical coding and removal of any un-needed data, researchers then utilized SPSS 28 statistical software to analyze the data for descriptive statistics and relevant information regarding attrition and retention within the college.

## Results

Within data analysis, researchers first examined student residency and class identification. Undergraduate students enrolled in CAES were determined to primarily be in-state students (91.6%) (Table 1). When in examining data from students who were enrolled in agricultural and environmental sciences in Fall 2020, a majority of students were female (64.2%) as seen in Table 2, and seniors comprised the greatest percentage of undergraduate enrollment (33.4%), while freshmen comprised the least (15.9%) (Table 3).

Table 1

*Student Residency (N = 1504)*

| Residency Status | *n* | % |
|---|---|---|
| In-State | 1378 | 91.6 |
| Out-of-State | 120 | 8.0 |
| International | 6 | 0.4 |

Table 2

*Student Gender (N = 1504)*

| Gender Identification | *n* | % |
|---|---|---|
| Female | 966 | 64.2 |
| Male | 535 | 35.6 |
| Unreported | 3 | 0.2 |

Table 3

*Student Class Identification (Year in School) (N = 1504)*

| Class Identification | *n* | % |
|---|---|---|
| Freshman | 239 | 15.9 |
| Sophomore | 343 | 22.8 |

| | | |
|---|---|---|
| Junior | 415 | 27.6 |
| Senior | 502 | 33.4 |
| Unidentified | 5 | 0.3 |

After analyzing student enrollment in majors within the CAES and student academic standing, researchers then examined student change of major beginning in the Fall of 2020 to the Fall of 2022. Within the college, 886 students either added or removed a major from their degree plan. 190 students added a major within the CAES, and 193 students removed a CAES major (Table 4). Furthermore, students who are changing their major are transferring into or out of the College of Arts and Science or the College of Business. It should be noted that there are more additions than removals of majors within the colleges available due to students adding secondary majors to their curriculum plan.

Table 4

*Major Changes Across Colleges (N =886)*

| College | Add (*n* = 432) | % | Remove (*n* = 454) | % |
|---|---|---|---|---|
| College of Agriculture | 190 | 43.98 | 193 | 42.51 |
| College of Arts and Sciences | 78 | 18.06 | 80 | 17.62 |
| College of Business | 56 | 12.96 | 77 | 16.96 |
| College of Education | 17 | 3.94 | 15 | 3.30 |
| College of Engineering | 5 | 1.16 | 22 | 4.85 |
| College of Env and Design | 4 | 0.93 | 2 | 0.44 |
| College of Fam and Consumer Sci | 23 | 5.32 | 15 | 3.30 |
| College of Jour and Mass Comm | 20 | 4.63 | 14 | 3.08 |
| College of Pharmacy | 0 | 0.00 | 6 | 1.32 |
| College of Public Health | 8 | 1.85 | 9 | 1.98 |
| College of Veterinary Medicine | 0 | 0.00 | 0 | 0.00 |
| No College Designated | 2 | 0.46 | 2 | 0.44 |
| School of Ecology | 9 | 2.08 | 5 | 1.10 |
| School of Forestry and Nat Res | 9 | 2.08 | 10 | 2.20 |
| School of Pub and Intl Affairs | 10 | 2.31 | 3 | 0.66 |
| School of Social Work | 1 | 0.23 | 1 | 0.22 |

| | | | | |
|---|---|---|---|---|
| Unreported | 0 | 0.00 | 0 | 0.00 |

Researchers then analyzed the percentage of students that either added or removed a major within specific departments in the college of agriculture. Of the nine departments, 33.16% of students added a major in Agricultural and Applied Economics, and 26.84% of students enrolled into a major within Poultry Science. However, 50.26% of students removed a major from Poultry science, 15.03% of students removed a major within Agricultural and Applied Economics, and 13.47% of students removed a major in Animal Science (Table 5).

Table 5

*College of Agriculture Departmental Major Changes (N =886)*

| Department | Students Added Major (*n* = 190) | % | Students Removed Major (*n* = 193) | % |
|---|---|---|---|---|
| Ag. Leadership, Educ, & Comm. | 12 | 6.32 | 10 | 5.18 |
| Ag. & App. Econ | 63 | 33.16 | 29 | 15.03 |
| Animal Science | 16 | 8.42 | 26 | 13.47 |
| College of Ag. Undecided | 1 | 0.53 | 5 | 2.59 |
| Crop & Soil Sciences | 13 | 6.84 | 10 | 5.18 |
| Entomology | 23 | 12.11 | 10 | 5.18 |
| Food Science & Technology | 3 | 1.58 | 3 | 1.55 |
| Horticulture | 8 | 4.21 | 3 | 1.55 |
| Poultry Science | 51 | 26.84 | 97 | 50.26 |

Researchers then continued further analysis to examine the percentage of students who were either adding or removing a major within the CAES by their class identification. From this analysis, researchers were able to determine that a majority of students either adding or removing a major were seniors when this change occurred (Table 6).

Table 6

*Major Add or Remove by Class Identification (N =886)*

| Class Identification | Added Major (n = 432) | % | Removed Major (*n* = 454) | % |
|---|---|---|---|---|
| Freshman | 2 | 0.46 | 1 | 0.22 |
| Sophomore | 10 | 2.31 | 12 | 2.64 |
| Junior | 83 | 19.21 | 81 | 17.84 |

| | | | | |
|---|---|---|---|---|
| Senior | 337 | 78.01 | 360 | 79.30 |

Upon analysis of how many students changed major by class identification, researchers then examined what colleges students within the CAES either entered or exited throughout data collection. As seen above, most students changing majors were seniors, and as seen in Table 7 and Table 8, seniors were more commonly adding (34.72%) and removing (34.14%) majors in the CAES. Further analysis revealed that seniors and juniors were then adding or removing majors in the College of Arts and Sciences and the College of Business.

Table 7

*Addition of Major by Year per College (N =432)*

| College | Fresh. (*n*=2) | % | Soph. (*n=10)* | % | Jun. (*n*=83) | % | Sen. (*n*=337) | % |
|---|---|---|---|---|---|---|---|---|
| Agriculture | 0 | 0.00 | 4 | 0.93 | 36 | 8.33 | 150 | 34.72 |
| Arts and Sciences | 1 | 0.23 | 1 | 0.23 | 17 | 3.94 | 59 | 13.66 |
| Business | 0 | 0.00 | 3 | 0.69 | 7 | 1.62 | 46 | 10.65 |
| Education | 0 | 0.00 | 0 | 0.00 | 2 | 0.46 | 15 | 3.47 |
| Engineering | 0 | 0.00 | 0 | 0.00 | 3 | 0.69 | 2 | 0.46 |
| Env and Design | 0 | 0.00 | 0 | 0.00 | 1 | 0.23 | 3 | 0.69 |
| Fam and Consumer Sci | 1 | 0.23 | 1 | 0.23 | 4 | 0.93 | 17 | 3.94 |
| Jour and Mass Comm | 0 | 0.00 | 1 | 0.23 | 4 | 0.93 | 15 | 3.47 |
| Pharmacy | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| Public Health | 0 | 0.00 | 0 | 0.00 | 1 | 0.23 | 7 | 1.62 |
| Vet Med | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| No College Designated | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 2 | 0.46 |
| Ecology | 0 | 0.00 | 0 | 0.00 | 1 | 0.23 | 8 | 1.85 |
| Forestry and Nat Res | 0 | 0.00 | 0 | 0.00 | 2 | 0.46 | 7 | 1.62 |
| Pub and Intl Affairs | 0 | 0.00 | 0 | 0.00 | 4 | 0.93 | 6 | 1.39 |
| Social Work | 0 | 0.00 | 0 | 0.00 | 1 | 0.23 | 0 | 0.00 |

Table 8

*Removal of Major by Year per College (N =454)*

| College of | Fresh. (*n*=1) | % | Soph. (*n*=2) | % | Jun. (*n*=81) | % | Sen. (*n*=360) | % |
|---|---|---|---|---|---|---|---|---|
| Agriculture | 1 | 0.22 | 3 | 0.66 | 34 | 7.49 | 155 | 34.14 |
| Arts and Sciences | 0 | 0.00 | 2 | 0.44 | 15 | 3.30 | 63 | 13.88 |
| College of | Fresh. (*n*=1) | % | Soph. (*n*=2) | % | Jun. (*n*=81) | % | Sen. (*n*=360) | % |
| Business | 0 | 0.00 | 4 | 0.88 | 9 | 1.98 | 64 | 14.10 |
| Education | 0 | 0.00 | 0 | 0.00 | 3 | 0.66 | 12 | 2.64 |
| Engineering | 0 | 0.00 | 0 | 0.00 | 8 | 1.76 | 14 | 3.08 |
| Env and Design | 0 | 0.00 | 0 | 0.00 | 3 | 0.66 | 2 | 0.44 |
| Fam and Consumer Sci | 0 | 0.00 | 1 | 0.22 | 3 | 0.66 | 11 | 2.42 |
| Jour and Mass Comm | 0 | 0.00 | 0 | 0.00 | 1 | 0.22 | 11 | 2.42 |
| Pharmacy | 0 | 0.00 | 0 | 0.00 | 3 | 0.66 | 5 | 1.10 |
| Public Health | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 6 | 1.32 |
| Vet Med | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 |
| No College Designated | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 2 | 0.44 |
| Ecology | 0 | 0.00 | 1 | 0.22 | 0 | 0.00 | 4 | 0.88 |
| Forestry and Nat Res | 0 | 0.00 | 1 | 0.22 | 0 | 0.00 | 9 | 1.98 |
| Pub and Intl Affairs | 0 | 0.00 | 0 | 0.00 | 2 | 0.44 | 1 | 0.22 |
| Social Work | 0 | 0.00 | 0 | 0.00 | 0 | 0.00 | 1 | 0.22 |

## Conclusions

Based on the results of the study, it is evident that there are students continually adding and removing majors within the CAES and transferring into other programs throughout the University of Georgia later in their education. While there were over 1500 students enrolled in the college in the Fall of 2020, over 50% of students have changed their major, with almost half of those students leaving the college altogether for programs in the College of Arts and Sciences or the College of Business. Additionally, in examining the number of students enrolled in CAES majors in the Fall of 2020, with respect to the two departments with the greatest attrition, most students are leaving these programs, either for other departments within the CAES or across the University of Georgia as a whole. Due to these factors, researchers determined there are underlying variables that influence students to change majors within the CAES leading to a greater percentage of attrition as opposed to students being retained within the college.

Retaining students in colleges of agriculture across the country has become more critical in recent years, as there is a continued shortage of graduates with the knowledge and skills required to enter the agriculture workforce (Goecker, 2015; Johnson et al., 2018). With the percentage of students changing majors in the CAES reaching close to 50% since the Fall of 2020, it is evident that the pathways are becoming more difficult to fill and fewer students are entering the workforce.

## Recommendations

From the results of the study, researchers identified recommendations for future studies, including:

1. Examine the retention and attrition rates within Colleges of Agriculture across the country, and,
2. To conduct qualitative or quantitative analysis to examine the reasons that students leave Colleges of Agriculture.

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## Critical Issues Facing the Agriculture, Forestry, and Natural Resources Industries in the State of Georgia: A Delphi Analysis

### Introduction

Throughout the United States, the agricultural, forestry, and natural resource industries are facing multiple challenges (e.g. Lamm et al., 2021). For example, the USDA Forest Service has identified many challenges facing forests on a national level. Items such as a growing metropolitan population, the loss of forest land due to urban growth and development, the spread of invasive species, changing climate, and worsening fire seasons are all macroscopic challenges facing the forestry industry (Tooke, n.d.). Similarly, Lamm et al. (2021) found seven areas of issues on a national scale facing the animal and food industry, ranging from industry image and relationship with the public to animal and human health/well-being. While each industry is facing unique challenges on a national level, such challenges are not necessarily generalizable to smaller geographic areas (Jennings & Moore, 2000). Identifying challenges at a more local level can help inform more appropriate outreach, communication, and educational efforts. Within the United States, Georgia has unique characteristics with five discrete geographic regions and distinctive

agricultural, forestry, and natural resource industries. Within the state, agriculture has been identified as the oldest and largest industry contributing over 69.4 billion dollars to the state economy each year (Georgia Farm Bureau, n.d.). Although there are national level studies identifying critical issues facing many agriculture related industries (see Lamm et al., 2021), there are a limited number of studies specifically focused on regionally specific agriculture, forestry, and natural resource industry related issues.

Previous research has found the use of agricultural opinion leaders to be an effective conduit to elicit industry related perspectives. For example, Lamm et al. (2015), found agricultural opinion leaders to have significantly different opinions and awareness of water related issues relative to the general public. Advancing Georgia's Leaders in Agriculture and Forestry (AGL) is an adult leadership development program which "educates, empowers, and connects professionals in agriculture, forestry, natural resources, and allied sectors to be dynamic industry leaders" (AGL, n.d., para. 1). Program participants are emerging or established leaders within the state agricultural and forestry industries in Georgia, "Individuals within AGL become more effective spokespeople for their industries, establish strong allegiances across the state and nation, and further develop their leadership skills" (AGL, n.d., para. 1). During the 16-month program, members attend five in-state institutes, a national institute, and an optional week-long international experience. Program participants are exposed to range of industry related issues as well as leadership development opportunities. The program participants are generally considered to represent opinion leaders within their respective industries based on their selection and participation in the program (Lamm et al., 2020).

## Conceptual Framework

The current study is based on the theories of opinion leadership (Lazarsfeld et al., 1948) and consensus building (Innes & Booher, 1999). Opinion leaders are credible and trustworthy individuals who frequently serve as the head of a communications network (Weissman et al., 2020). Opinion leaders tend to have members of their network look to them as a resource and source of information based on their expertise and insights. Previous research has examined the role of opinion leaders in agricultural contexts (see Lamm et al., 2020) and found this group to have unique characteristics and insights relevant to the industry. In addition to opinion leadership, this research also engages consensus building theory. The consensus building theory is an approach which requires key stakeholders of a group to make a good-faith effort to reach an agreement amongst all members of the group (Consensus building, n.d.). The consensus building theory has been used previously in environmental and public policy contexts (Innes & Booher, 1999); however, the theoretical approach has also been applied across a range of uncertain, complex, and controversial planning and policy tasks (Burgess & Spangler, 2016). Linking the insights and awareness from opinion leadership with the intended outcomes from consensus building theory provides a robust framework within which to examine unique and complex agricultural related topics (Innes & Booher, 1999).

## Purpose and Research Objectives

The purpose of this study, informed by the following research objectives, was to identify critical issues in facing the agriculture, forestry, and natural resources industries in the state of Georgia. The research objectives were:

1. Create a comprehensive list of potential critical issues facing the agriculture, forestry, and natural resources industries in the state of Georgia.
2. Generate a consensus on the specific critical issues facing the agriculture, forestry, and natural resources industries in the state of Georgia.
3. Develop a heuristic thematic grouping of critical issues facing the agriculture, forestry, and natural resources industries in the state of Georgia.

## Methods

This study was conducted using the Delphi technique. "The Delphi Technique was originally used to help make predictions about the future" (Gross, 1981, p. 23). According to Andranovich (1995), there are three preliminary steps to proceed with the Delphi method, specifically, researchers must: 1) develop the initial Delphi questions with a clear purpose of the study, 2) identify who are the experts to participate in the study, and 3) determine the number of participants. Consistent with recommendations within the literature, the current study included a three-round Delphi process to arrive at consensus amongst the panelists (Andranovich, 1995; Gross, 1981; Pollard & Pollard, 2004; Polush et al., 2016).

In this study, twenty-four opinion leaders participated in a three-round Delphi process and were identified as experts based on their role in agriculture, forestry, and/or natural resources from around the state of Georgia and their participation on the AGL advisory board. Data collection for rounds one and two of the Delphi process were conducted online using the Qualtrics online survey tool, round three was administered in person using a paper-based instrument at an advisory board meeting.

In the first round of the process, panelists were asked to provide up to five open-ended responses to the question, "What are the most critical issues facing the agriculture, forestry, and natural resources industries in Georgia?" There were 21 respondents for an 87.5% response rate, and a total of 80 critical issues were identified. The issues were then cleaned with duplicates removed, resulting in 67 unique critical issues. The results from the first round of the process were used to develop the second-round survey. During the second round of the process, participants were asked to indicate their level of agreement or disagreement with each of the 67 critical issues through the Qualtrics survey using a five-point Likert-type scale ranging from *1 – Not at all important* to *5 – Extremely important*. The SPSS v26 software package was used to analyze the survey results of the second round. A mean score for retention of 3.75 was established *a posteriori*, a total of 47 items were retained. Round three of the process was conducted in person using a paper-based survey with a sub-set of 11 of the original 24 individuals attending the annual advisory board meeting, a 100% response rate was obtained. The round three survey asked panelists to indicate whether each issue should be retained or not using a dichotomous *yes* or *no* variable. A minimum level of consensus was established at 70% *a posteriori*. The panel achieved consensus on 40 specific critical issues facing agricultural, forestry, and natural resource industries. A total of 21 items achieved a level of consensus between 90% and 100%, with eight of those achieving 100% consensus.

Following the Delphi process the research team then thematically analyzed the retained issues using the constant comparative method. According to Glaser (1965), "this method of analysis allows researchers to generate a heuristic thematic grouping of items through repeated

comparison" (p. 439). Data were reviewed and coded into categories for analysis at the initial stage. During the coding process, Glaser (1965) identifies that "the researcher compares the items with previous coded into the same category to generate themes" (p. 439). Higher-order categories emerge through these repeated comparisons, leading the researchers to gain more insight into the data's theoretical ideas (Glaser, 1965). To reduce bias and improve the trustworthiness of the analysis, peer debriefing, and member checking were used amongst the research team (Glaser, 1965).

## Results

The first round of the study produced 67 unique responses following item consolidation. The list of 67 items was then presented to the panel in round two of the process. The mean scores observed for the critical issues in round two ranged from 3.64 to 4.46. A total of 47 items were retained. The critical issue gaining the highest level of agreement was related to water quantity. The remaining top ten critical issues were related to labor, regulation, and cost and profit. In the third round, participants were given the opportunity to share their level of agreement about the remaining 47 items. Levels of agreement ranged from 50% to 100%. There were seven critical issues which fell below the 70% cutoff point, with 40 critical issues retained. An agreement of 100% was reached for eight critical issues including: public perception issues, communication of agriculture importance, shifting political alliances - rural to urban, long term - urban voters and perspectives, fewer voters and legislators understanding the industry, advocacy, access to markets, and access to labor.

Following the completion of the Delphi process the remining 40 items were analyzed using the constant comparative method (CCM). A total of six overarching themes were identified, each theme had between five and eight individual issues. The results of the CCM analysis are presented in Table 1. The emergent themes included (in alphabetical order): economic considerations, operations and infrastructure, policy, public perceptions, regulations, and workforce.

**Table 1**

*Core Categories and Corresponding Critical Issues of Agriculture, Forestry, and Natural Resources Industries*

| Categories | Number of Critical Issues |
|---|---|
| *Economic Considerations* | 5 |
| Commodity prices; Cost of Production; Farm viability; Input cost; Profitability | |
| *Operations and Infrastructure* | 6 |
| Access to markets; Internet services in rural areas are too slow; Irrigation rights; Technology; Water quality; Water quantity | |
| *Policy* | 7 |
| Advocacy; Fair trade; Fewer voters and legislators understand the industry; Long term - urban voters and perspectives; Shifting political alliances - rural to urban; State leadership; Trade policy | |

| | |
|---|---|
| *Public Perceptions* | 7 |
| Combating negative information on agriculture production practices; Communication of agriculture importance; Consumer perception of agriculture and forestry; Lack of public awareness of importance; Public and consumer acceptance; Public perception issues; Social awareness of issues farmers face | |
| *Regulations* | 7 |
| Government regulation – Local; State; National; Regulatory issues; Regulatory reform and relief; Regulatory restrictions increasing operating costs; Restrictive Laws | |
| *Workforce* | 8 |
| Access to labor; Affordable labor; Aging workforce in the agricultural sectors; CDL drivers; Generational transition in production agriculture; Immigration issues; Labor for production facilities; Vocational training in our high schools | |

## Conclusions, Implications, and Recommendations

Based on the results of the current study there were eight critical issues with 100% consensus. The eight critical issues were subsumed across six core themes which were identified through the CCM and included: economic considerations, operations and infrastructure, policy, public perceptions, regulations, and workforce. These core categories are interrelated and represent many issues across the consensus spectrum. These data indicate the issues of accessibility of jobs, immigration issues, and vocational training highly impact agriculture, forestry, and natural resources industries and are perceived as critical issues in the state of Georgia. Although the results of the study are intended to provide insights regarding the critical issues facing agriculture, forestry, and natural resource industries in the state of Georgia there are several limitations which should be acknowledged. First, as a Delphi study the results are limited to the insights and perspectives of the expert panel. Although selection of the panel was done purposively with recognized leaders within the industry there is the potential for limited awareness of potential issues. Additionally, the interpretation of items generated throughout the process may have different working definitions among respondents, consequently there is no way to ensure a common definition of concepts such as water quantity or fair trade. Despite these limitations the results of the study are further analyzed with associated implications and recommendations provided.

The results of the current study provide a unique perspective from which agricultural, forestry, and natural resource industry related initiatives may be informed. Using the six primary themes which emerged from the analysis as a working framework, additional conclusions, implications, and recommendations are provided. Beginning with the **economic considerations** theme there are several items which are likely anticipated and well established within the literature. For example, the unpredictability of commodity prices coupled with the cost for production inputs can significantly impact profitability and subsequent viability of operations. Based on these results, a recommendation would be to continue to examine both the input and market sides of the industry. From an agricultural education perspective, a recommendation would be to ensure future

industry professionals have the requisite economic and managerial capacities necessary to navigate the environment.

As it relates to the **operations and infrastructure** theme there are both anticipated and somewhat unanticipated items which emerged. For example, many of the macro level issues related to water quantity and quality are consistent with previous research. These observations are somewhat related to the additional issue observed related to irrigation rights. However, there were items related to both technology, generally, as well as the very specific challenge of slow Internet service in rural areas which was somewhat unexpected. From this perspective, it may be important to address both general challenges as well as very specific, localized challenges which may impact producers. For example, many of the newest irrigation technologies require either Internet connectivity or cellular service to function properly and provide maximum benefit and utility. However, without sufficient Internet service in some rural areas, the benefits of such technologies are limited, which may in turn impact the efficient use of irrigation water. A recommendation would be to ensure innovations intended to address critical issues are implemented using a systems-based approach. Specifically, not only looking for linear cause-and-effect type relationships, but also antecedent conditions which may impact the applicability of such solutions.

The **policy** theme was identified based on a number of items which were related to conditions within which agriculture, forestry, and natural resource industries tend to operate. For example the shift in rural to urban voting patterns was unanticipated as a critical issue across respondents, additionally, the need for representation relating to trade related decisions was also emergent. Consistent with the advocacy item within the policy theme, a recommendation would be to ensure industry leaders are aware of, and engaged in, the policy process. Providing support and training necessary to equip such leaders would be a role which agricultural education may be well positioned to support.

As it relates to **public perceptions**, there are several items which are similar, yet distinct from the policy thematic area. For example, policy may be conceptualized as of the interface between perception and direct impact on agriculture, forestry, and natural resource industries; however, public perception may serve as a logical entry condition to such policy consequences. There were several issues identified which relate to a general lack of consumer and public awareness gaps associated with agriculture, forestry, and natural resource industries. Awareness gaps may in turn lead to potential negative perception is of the industry. A recommendation based on these findings would be to continue to look for opportunities to educate and empower producers to better communicate with both consumers as well as the general public.

Another thematic area which had conceptual similarities to a previous theme was **regulations**. Although similar to policy, regulations may be considered as more of the functional rules under which agriculture, forestry, and natural resource industries must operate. The results of the study indicate the number of regulations under which industries must operate and adhere potentially have a deleterious effect on the productivity of producers. Based on these identified issues within the thematic area, a recommendation would be to look for opportunities to provide education and support to producers as it relates to regulation adherence. For example, providing guidance on implementing best management practices may help to lower the perceived challenges and costs associated with making such changes. From an agricultural education perspective there

may be opportunities to assist in developing supplementary materials related to regulation communicating the most salient information more effectively to producers.

Lastly, the **workforce** thematic area also had items which were both anticipated and unanticipated based on previous themes within the literature. For example, the aging workforce within agricultural sectors and generational transitions in production agriculture are generally well established. However, some of the issues related to labor affordability and immigration maybe more localized in nature. Another unexpected issue was the very functional lack of commercially licensed drivers available to support the industry. This finding again highlights the importance of considering the entire agricultural, forestry, and natural resource industries from a systems-based perspective. For example, without CDL drivers to take commodities to markets there is a gap in the supply chain which may have a direct and material impact on producers. A recommendation would be to continue to look for opportunities, particularly within agricultural education and associated disciplines, to educate the next generation of the workforce and encourage the development of skills directly applicable to industry related needs.

An additional recommendation is for the six themes identified in the study to serve as a heuristic framework for categorizing and addressing critical issues facing Georgia's agriculture, forestry, and natural resources industries. A common framework may help to focus efforts and plans to address identified issues. The results of the study also provide a benchmark and foundation upon which to analyze critical issues facing such industries from the local level (e.g., in the state of Georgia) to the macro level (e.g., nationwide). Future studies derived from the outcome of this study may be used as case studies in other states or even outside of the U.S.

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**Mind the skills gap: Understanding limitations new hires according to agricultural industry professionals**

## Introduction, Purpose and Objectives

The need for strong communication skills grows as agricultural industry needs rapidly change. Global growth, a diversifying workforce, and preparedness gaps, create challenges and opportunities that influence the expectations of individuals in the agricultural industry. University professors and industry professionals look for ways to prepare the incoming agricultural workforce to meet these demands. The *American Association of Agricultural Education (AAAE) National Research Agenda 2016-2020* address these challenges by offering direction for academic research. This project focuses on addressing AAAE research priority three: Sufficient Scientific and Professional Workforce that Addresses the Challenges of the 21st Century (Roberts et al., 2016). This study is part of Teaching Agricultural Communications for Career Success, a research project funded by the USDA Higher Education Challenge Grant.

The purpose of this research is to strengthen the communication related employability skills in agricultural industry by examining industry perspectives on the changing needs of the industry, leading to curriculum development recommendations. The objectives for this research examined the perspectives of industry professionals. Specific objectives included 1) Determine changes in the agricultural industry impacting incoming agricultural employees, 2) Determine challenges incoming agricultural employees will face, 3) Compare APLU employability needs with industry perspectives and, 4) Determine agricultural curriculum recommendations in terms of employability needs.

Industry relationships and evaluation are a key part of strong curriculum, academic development, and student preparedness (Easterly et al., 2017; Stripling & Ricketts, 2016). The Association of Public and Land Grant Universities (APLU) placed a focus on examining preparedness gaps within the agricultural industry by releasing a 2020 report to identify curriculum gaps. “College faculty and administrators determined gathering perceptions at a national scale across stakeholder groups was critical to unearthing curricular and co-curricular implications that could be accepted by diverse universities” (Crawford & Fink, 2020, p. 2). The APLU report found four employability skills as areas of concern for incoming employees. Those skills include, 1) Ability to persist in a new job, 2) Dealing with ambiguity in job tasks and workplace expectations, 3) Dealing with the pace and content of change in the workplace, and 4) Managing conflict in the workplace (Crawford & Fink, 2020). Formerly known as competency gaps, preparedness gaps are graduate skill areas where improvement in curriculum development and delivery is needed. These gaps showcase where universities need to improve their curriculum to better prepare graduates for the industry (Crawford & Fink, 2020).

Today’s incoming employees are mostly members of Generation Z born in or after 1997. Gen Zers are expected to be the most educated generation with 57% of college aged (18-21 years old) enrolled in two-year or four-year institutions. That is a 4% increase over Millennials and a 14% increase over Gen Xers. However, Gen Zers are entering the workforce with less job experience because they are less likely to work during their teen and young adult years (Parker & Igielnik, 2021). The Wharton School of the University of Pennsylvania discusses how Millennial entitlement has developed in Gen Zers as well. Therefore, instead of focusing on working

through entitlement challenges, employers are increasing focus on skillsets, specifically employability or preparedness skills (University of Pennsylvania, 2019). Gen Zers with jobs and internships, credit these experiences with preparing them for showing up on time, working on a team, hitting project deadlines, and working with customers (Wilkie, 2019). In fact, 34% of Gen Zers believe their education did not adequately prepare them for the workforce which results in decreased confidence and increased anxiety. In the U.S., 40% of Gen Zers believe their anxiety toward work expectations is impeding their career success (Wilkie, 2019). Emotional intelligence and soft skills such as interpersonal communications and self-awareness are needed for graduate confidence (Bradberry & Greaves, 2009).

Researching industry perspectives and conducting curriculum evaluation help decrease the divide between learning and applying employability skills. Industry professionals recommend providing students with real world experiences to be effective in the workforce and crisis scenarios (Easterly et al., 2017; Steede et al., 2016). Some industry experts believe curricula was not providing students with the hands-on, practical skills valued by professionals (Todd, 2009). Doerfert and Miller (2006) identified four general themes impacting employability skills: 1) Rapidly changing needs, wants, and expectation of the agricultural communications industry, 2) New agricultural stakeholder groups and an increasing diverse set of related needs, wants, and preferences, 3) Decreased response time for communication related activities, and 4) Increased importance of the agricultural industry's image in relation to agricultural communications. Effective curriculum is necessary to increase productivity and economic success (Easterly et al., 2017; Roberts et al., 2016).

## Theoretical and Conceptual Framework

This research followed the theoretical frameworks of Human Capital Theory and the Program Systems Model. Including perspectives from professionals in the agricultural communications industry environment coincides with the Human Capital Theory because of how the theory benefits society. This theory looks at all investments benefitting humans. Education is viewed as an investment within human capital, and employability skills are viewed as factors that increase productivity (Tan, 2014). The Program Systems Model examines students, faculty, and industry as three key players of program development (Finch & Crunkilton, 1999). The model demonstrates an educational process where the input is students and the output is graduates, with industry as the environment they enter. For graduates to be prepared to enter the workforce, the industry must influence the educational process (Finch & Crunkilton, 1999).

## Methods

This study used convenience sampling, which saves time and economic resources by sampling individuals within easy access of the researcher (Creswell & Poth, 2018). The sample included agricultural industry professionals with connections to University of Arkansas through the Bumper's College Career Services provided an industry contact list. The population consisted of agricultural industry professionals in the U.S. who potentially work with recent graduates. From the 121 initial survey contacts, six emails bounced, leaving 115 contacts in the survey audience. Thirty-one individuals began the survey, and 18 individuals completed the survey, making the response rate 15.7%. Eight of the 18 individuals agreed to participate in follow-up interviews. Survey participants had a range of less than 5 to over 20 years of industry experience.

Two survey recruitment emails were sent by the researcher, and a third follow-up email was sent by the career services personnel. The survey instrument was developed in Qualtrics to help inform the researcher about respondents' perspectives (Dillman et al., 2014). The survey was composed primarily of closed-ended with some open-ended responses utilized to maintain respondent motivation (Dillman et al., 2014). Closed-ended questions, rating graduate preparedness, were based on APLU findings (Crawford & Fink, 2020). Individuals were asked if they would participate in follow-up interviews and provided their email. Interview participants were incentivized with gift cards through recruitment emails. Semi-structured interviews were used because they reveal experience-based knowledge through a social interaction between the interviewer and the interviewee (Creswell & Poth, 2018). Open-ended questions were used to facilitate discussion (Creswell & Poth, 2018). Interviews were conducted on Zoom and lasted approximately one hour.

Survey data was collected and saved through Qualtrics. The open-ended questions were hand-coded into themes by the researcher, then coded and cross-checked with NVivo. Graduate students within the researcher's department provided additional cross-checking to ensure validity (Miles et al., 2020). Interviews were recorded and transcribed through Zoom. The researcher and a student worker checked transcriptions for errors before submitting them into NVivo to identify themes, then checked the coding until no new themes emerged (Miles et al., 2020). The research demonstrated credibility and trustworthiness through triangulation of an extensive literature review, survey responses, and follow-up interviews. A panel of faculty and industry experts reviewed the data collection materials. Extensive notetaking was part of the research process, and a reflexivity statement described the researcher's role in the study (Creswell & Poth, 2018).

## Results/Findings

Through the survey instrument, industry professionals provided their perspective on the biggest challenges faced by individuals entering the agriculture industry. While career expectations was the top referenced challenge, skills gap followed with seven references. Industry professionals were asked how well-prepared they believed recent agricultural graduates were to deal with each concern area on a five-point scale: not well at all, slightly well, moderately well, very well, and extremely well. "Not well at all" responses aligned with the APLU findings, indicating an employability skill concern area. None of the responses fell within the "extremely well" category for this series of questions. Out of 27 responses, no individuals rated success preparedness as "not well at all" or "extremely well". The majority of respondents rated individuals as "moderately well" (59.26%). An additional 7.41% rated graduate preparedness for job success as "slightly well" and 33.33% rated preparedness as "very well".

Respondents also rated recent agricultural graduates' skill levels in emotional intelligence (EI), business etiquette, and grammar and writing skills to provide recommendations on the level of focus that should be place on those areas in curriculum. A total of 56% of industry professionals indicated recent agricultural graduates are somewhat competent in EI. Four percent indicated recent agricultural graduates are extremely competent in EI, and the remaining 40% percent believed recent agricultural graduates were neither competent nor incompetent (24%) or somewhat incompetent (16%).

In the area of business etiquette, none of the respondents indicated recent agricultural graduates were extremely incompetent. Twenty percent of industry professionals believe recent agricultural graduates are somewhat incompetent while 16% believe they are neither competent nor incompetent, 44% believe they are somewhat competent, and 20% believe they are extremely competent. Finally, over 70% of respondents believe recent agricultural graduates are somewhat competent (50%) or extremely competent (20.83%) in their grammar and writing skills. Twenty-five percent rated graduates as somewhat incompetent and 4.17% as neither competent nor incompetent. The survey asked for agricultural curriculum recommendations. Five individuals referenced communication skills as an important curriculum component, which aligns with the previous results for needed competencies in curriculum.

Interview responses expanded on the initial surveys and compared the industry skill needs identified by APLU with those shared by industry professionals. Cultural alignment proved to be a success factor for incoming employees. Some industry professionals said finding an employee who is the right fit for the company can be more important than the knowledge he/she brings to the workplace. Multiple respondents shared cultural or organizational alignment as being one of their biggest concerns because it can determine the success of the employee.
Looking at cultural alignment and growth potential, one participant said diversity of thought was his main consideration: "I'm one of those [individuals who] it shouldn't matter your skin color. What should matter is your diversity of thought and how you think through things. Emotional intelligence, the leadership initiative, the communication side—just that whole skill set." Another factor contributing to the success of a team and navigating cultural or generational differences involves taking ownership. One participant said, "When I teach people that come in, I go, okay, one thing we're never going to say is, 'that's not my job.' We can say, 'Hey, so and so knows more about that than I do. I don't know, but I'll find out.' Different things like that—that builds a stronger team, especially when you've got people of different ages, different ethnicities, different backgrounds." Ownership and being a self-starter continued to be discussed as skills necessary for career success: "Thriving in ambiguity is actually what I look for. Can they take instructions and run with it? I want them to follow up, but do you have to hold their hand through each step? How often will they need to check in for guidance? I look for the self-motivated."

Ownership and time management coincide to meet personal and business objectives, contributing to the success of the individual and the company. Showing up on time may seem very basic; however, it is foundational, and the need to train individuals for basic competencies made one professional question the time investment required to bring on a recent graduate. "When hiring recent grads there's this freshness about them that's essentially teaching them." Furthermore, professionals believe time management can determine an individual's success, specifically from an etiquette standpoint of letting someone know when you saw their email, even if your answer to the question or project may take a few days. Communication remained a focal point. One individual shared the importance of being aware of other's time which complimented the idea of putting others first. First communication is, "what [recent graduates] need to concentrate on…effectively communicate with people—talk to them, listen. You've got two ears one mouth. Listen first and then speak." When discussing business etiquette, one individual said, "You're making life skills and life contacts. Being respectful of everyone's individual items, knowing that everybody's got family and things that are going to come up. Also, you just have to respect those." One professional shared putting your phone down can lead

to leadership advancement: “Listen, watch people, observe people because, as a leader here at [company] you have to be an expert at observing…and if you're on your phone, if you're doing other stuff and you're not observing the team you’re in, you're not going to advance that quickly.”

As with the survey, interview participants were asked about their skill level perceptions and curriculum recommendations for emotional intelligence, business etiquette, and writing and grammar skills. Industry professionals attributed job success and conflict management to emotional intelligence. Many said the industry teaches technical skills, but the soft skills are the mark of success and emotional intelligence can and should be learned. Strong emotional intelligence includes understanding your strengths and weaknesses because, “Self-assessment is so important if you want to be good at your job.” One professional said navigating boss and employee relationships and seeking feedback is beneficial because, “The more you do to increase your exposure to learning and working, the more you'll gain emotional intelligence skills.” Professionals noted emotional intelligence trainings in college would be beneficial and many said their companies work to build emotional intelligence in their employees.

Industry professionals were asked about business etiquette skills and timeliness frequented the discussion as needed for success. Other business etiquette requirements included good eye contact, shaking hands, minding your manners at the table, and avoiding filler words. The two themes involving communication included reading a room and writing proper emails. They described reading the room as being aware of where an individual fits within the business dynamics, saying, “Always lean on the side of being formal until you build a central rapport on when to start reducing your formality and language.” Professionals suggest recent graduates do more listening than speaking at the beginning. For email etiquette, participants believed the increased use of cellphones has resulted in a decline in proper email usage, making them seem more akin to texts, and recommend recent graduates refrain from spending too much time on their phones. Some professionals said their organization invested in writing training for its employees because of this, and believed email etiquette in curriculum would be beneficial. Knowing how to write a proper email with no grammatical errors is imperative with one professional saying, “communication skills will advance you faster than anything.” Looking at upward mobility, or job placement in general, one individual said grammar and writing skills play a valuable role, especially because they had witnessed leaders immediately reject job candidates because of spelling errors, saying. “We have to focus on good, clear communications.

Curriculum design perspectives served as the main goal for this study’s findings. Communication received the most attention of all desired skill sets, accounting for over fifty industry perspective references. Professionals value communication as an employability skill and believe curriculum should focus on this because, “As you look to hire people, I want people who can connect to me.” The most significant ways professionals believe curriculum can instill strong communications skills in students were through leadership, cross-functional teams, real-life scenarios, project management, and industry interaction. Leadership received thirty references throughout industry leaders’ interviews and many believed it should be at the core of curriculum because, “Leadership and communication. I'm probably going to say that 50 times. Those two go hand in hand. You can't learn to be a leader if you can't communicate.” Team building in general was recommended, and one individual suggested changing up team leadership midway through a

semester in order to create volatility and simulate a real-world situation outside of student's control. To create cross-functional curriculum, this individual recommends pulling in agricultural business curriculum into agricultural communications curriculum and vice versa to create real life work experiences. For real-world experiences, one individual believes team projects are the best way to encourage authentic interactions. Project management and project-based learning was considered essential by industry professionals because it teaches ownership, critical thinking, and conflict management. Professionals noted hands-on learning in the classroom or gained through internships set students apart in the job market because they had tangible assets to showcase. Personal development seminars for students were highly recommended as an opportunity to bring industry leaders into the classroom to teach leadership or other skill sets.

## Conclusions/Discussion/Implications/Recommendations

Professionals said employees thrive best in a company culture where they fit, which involves aligning values and motives. When looking at diversity, professionals desire diversity of thought, and believe conflict management and communication help individuals to adapt to cultural and generational differences. Industry professionals encouraged individuals to take ownership of their success, which may involve navigating freedom within their role, managing a project, or communicating upward to clarify information. Time management emerged as a needed skill for recent graduates. Recent graduates should understand the need to put others first through listening, observing, and humility, which increase emotional intelligence development. Industry professionals encouraged individuals to put their phones down to make observations easier. Graduates are encouraged to draft and reread emails before sending them out. More important than the grammatical structure of the email, is clear and concise communication. Professional communication and leadership classes with hands-on, real-world projects were valued because of the important role these play in the success of the individual and the industry.

Time management is an important skill. Gen Z can learn time management through jobs and internship experiences more so than high school or college education (Wilkie, 2019). Emotional intelligence is a desired skill and industry professionals recommend universities look at ways to incorporate it into curriculum (Crawford & Fink, 2020). The curriculum recommendations of communication, leadership, cross-functional teams, project management, and industry interactions are all supported by literature and provide implications for working through many of the concern areas identified by APLU (Crawford & Fink, 2020; Todd, 2009). Leadership courses should teach students to be active listeners who are able to engage in genuine conversation, work effectively on a team, and engage in critical thinking and strategic planning, as these competency needs were voiced by both industry perspectives and literature (Easterly et al., 2017; Steede et al., 2016). As educators and employers navigate working with Gen Z, instilling confidence in skillsets will be necessary for individuals to be successful (Wilkie, 2019). Confidence can be developed through the curriculum recommendations suggested in this study, but underneath those components are the emotional intelligence elements of self-awareness and social awareness (Bradberry & Greaves, 2009; Crawford & Fink, 2020). Additional studies on competencies needed among recent agricultural graduates are warranted. This research should be conducted with other institution employer lists to accurately represent the needed competency areas. The agriculture discipline would benefit from exploring emotional intelligence, especially in regard to how individuals can best learn it through curriculum coursework.

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## Meaningful Skills for the Agricultural Workforce: Assessing the Confidence Levels of Agricultural Educators to Integrate STEM into their Curriculum

### Introduction, Purpose, and Objectives

Over the last 100+ years, the agricultural industry has become more technologically advanced and has developed a focus on Science, Technology, Engineering, and Mathematics (STEM) (Swafford, 2018). As the world population grows, the agricultural industry will need to continue to increase the use of technology to produce more food with less resources. As the agricultural industry advances and STEM skills become essential for successful employment, agricultural education will need to place a heavier focus on integrating STEM skills into the curriculum (Wang & Knoblock, 2020). According to Scherer et al. (2019) "[p]rogress and prosperity within the United States, as well as its global competitiveness, cannot remain strong if young people are not STEM-literate and well prepared to enter the workforce of STEM professionals" (p. 29). This demonstrates the imperative nature of successful STEM integration to produce a competent workforce. Since agricultural education's inception, ensuring a prepared workforce for the agricultural industry has been a top priority (Fristoe, 2017; Martinez, 2007).

While the need for STEM skills in the agricultural industry is well documented in the published literature, industry reports that students exiting secondary education are deficient in STEM skills (Casner-Lotto et al., 2006). In fact, 53% of employers report that employees coming directly from secondary education have a mathematics deficiency (Casner-Lotto et al., 2006). In addition, 62.8% of employers rated employees coming directly from secondary education "adequate" in information technology skills (Casner-Lotto et al., 2006). To reduce the gap between employees STEM skills and employer's expectations in the agricultural industry, STEM integration into the agricultural education curriculum must become a top priority.

While the importance of STEM integration is apparent, agricultural education has not been adequately successful in integrating STEM. There have been mixed results in the success of students enrolled in agricultural education. Some researchers have found that success in science is significantly higher in students enrolled in agricultural education (Chiasson & Burnett, 2001; Theriot & Kotrlik, 2009). Some other studies show there is no statistical difference or that achievement in science is lower in students enrolled in agricultural education (Clark et al., 2013; McKim et al., 2017). Recent research has concluded that achievement in mathematics is higher in students enrolled in agricultural education (Nolin & Parr, 2013), but some researchers suggest that differences in math achievement are not statistically significant or lower in agricultural education students (Plank, 2001). These conclusions are troubling for agricultural educators, considering the importance placed on STEM in today's educational environment.

With STEM integration into agricultural education becoming more of a priority, successful methods of integration must be developed. Scherer et al. (2019) stated that "[o]nce again, the education community has embraced a slogan without really taking the time to clarify what the term might mean when applied beyond a general label" (p. 28). To increase the clarity behind STEM integration into agricultural education, understanding the confidence levels of agricultural educators to integrate specific STEM-based Agriculture, Food, and Natural Resource (AFNR) standards into the curriculum is vital.

The purpose of this study was to assess the confidence levels of agricultural educators in Alabama, Georgia, and Florida on integrating STEM into their curriculum. The following research objectives were assessed:

1.) Describe the demographic characteristics of participating agricultural educators in Alabama, Georgia, and Florida.

2.) Determine the confidence levels of agricultural educators to integrate specific STEM skills into various pathways of AFNR curriculum.

## Theoretical Framework

In 2002, Lent et al. modified Albert Bandura's Social Cognitive Theory to create the Social Cognitive Career Theory (SCCT) which aimed to portray (1) "how basic academic and career interests develop", (2) "how educational and career choices are made", and (3) "how academic and career success is obtained" (p. 751). The theory depicts that career and academic interests, and career success is a function of three main areas including self-efficacy, outcome expectations, and goals. The formation of these three areas are closely related to the STEM skills sought after by industry leaders. Ascertaining confidence levels of agricultural educators to integrate STEM into the agricultural education curriculum will help further the knowledge of "how academic and career success is obtained".

## Methods

The instrument utilized in the study was delivered by Qualtrics and consisted of two sections. The first section of the instrument surveyed the confidence levels of agricultural educators on the integration of specific STEM-based AFNR standards into agricultural education and the second section collected demographic data. The statements regarding the confidence levels of agricultural educators on the integration of STEM standards were developed from the Agriculture, Food, and Natural Resources (AFNR) standards crosswalk produced by The National Council for Agricultural Education (2015). These AFNR standards were cross walked with the Common Core Mathematics standards, Next Generation Science Standards, and the STEM sections of Green/Sustainability Knowledge and Skill Statements. These cross walked standards were included in the instrument. The standards that were included in the instrument are listed in Table 1 by pathway. The standards have been abbreviated from their original form, but effort has been made to maintain the intent of the original statement. Each statement that surveyed STEM skills utilized a Likert type scale that ranged from 1 = "Not Confident at All" to 5 = "Extremely Confident".

Instrument reliability was assessed post hoc. A Cronbach's alpha reliability test was used on each subsection of the instrument. According to Gliem and Gliem (2003), a reliability coefficient greater than .7 is considered an acceptable level of reliability. All sections of the instruments met this threshold, and reliability scores ranged from .895 to .985. Bluman (2004) suggested that samples should be randomly assigned to avoid any sampling bias. To address this

concern, systematic sampling was used to collect data and every third agricultural educator was chosen in each state. On the completion of the survey, one partial response was retained.

A list of agricultural educators was collected using resources from online agricultural educator directories. A spreadsheet of agricultural educators and their email addresses was compiled. This led to a list of 99 viable emails in Alabama, 185 viable emails in Georgia, and 115 viable emails in Florida ($N = 399$). According to Gay and Diehl (1992), a response rate of 10% is necessary for quality descriptive research. In this study, a response rate of 16.04% ($n = 64$) overall was achieved.

According to Lindner et al. (2001), late responders and non-responders are very similar. To assess non-response bias and early/late response bias, a Multivariate Analysis of Variance (MANOVA) was used to compare differences among early responders and late responders. Overall, four emails were sent to each agricultural educator. For the purposes of determining nonresponse bias, participants that responded to the first two emails were considered early respondents ($n = 47$) and participants that responded to the third and fourth email were considered late respondents ($n = 17$). After analyzing for non-response bias and early/late response bias, no statistical differences were found. The analysis of all data occurred using SPSS Version 28.0.

## Results

### *Research Objective One*

**Table 1**

*Personal Demographics of Agricultural Educators in Alabama, Georgia, and Florida*

| | | *f* | % |
|---|---|---|---|
| Gender | Female | 28 | 43.8 |
| | Male | 36 | 56.2 |
| Race | White | 56 | 87.5 |
| | African American | 7 | 10.9 |
| | Other | 1 | 1.6 |
| Highest Degree Earned | Bachelors | 20 | 31.3 |
| | Masters | 26 | 40.6 |
| | Specialist | 12 | 18.8 |
| | Doctoral | 6 | 9.4 |
| Teacher Certification | Traditional Certification | 52 | 81.3 |
| | Alternative Certification | 12 | 18.8 |
| | Other | 0 | 0.0 |
| Agriculture Department Size | 1 Teacher | 34 | 53.1 |
| | 2 Teachers | 17 | 26.6 |
| | 3 Teachers | 4 | 6.3 |
| | 4+ Teachers | 9 | 14.1 |

Note. 1 = Not Confident at All, 2 = Somewhat Confident, 3 = Moderately Confident, 4= Very Confident, and 5 = Extremely Confident

Of the most notable demographic information collected, 56.2% of participating agricultural educators were male and 43.8% were female. Approximately 87.5% were white and 10.9% were African American. Additionally, 59.4% of participates have a masters degree or higher and 81.3% are traditionally certified. Furthermore, 53.1% of participants teach in a one teacher program.

***Research Objective Two***

**Table 2**

*Standards Assessed by Agricultural Educators in the STEM Instrument*

| |
|---|
| **Agribusiness Pathway** |
| Apply micro- and macroeconomic principles…manage inputs and outputs... |
| Apply accounting principles…track and audit AFNR business transactions. |
| Assemble, interpret and analyze financial information… |
| Develop, assess and manage cash budgets to achieve AFNR business goals. |
| Analyze credit and manage credit budgets to achieve AFNR business goals. |
| **Animal Science Pathway** |
| Assess and select animal production methods for use in animal systems. |
| Analyze and apply laws and sustainable practices to animal agriculture. |
| Demonstrate management techniques that ensure animal welfare. |
| Analyze procedures to ensure that animal products are safe for consumption |
| Apply scientific principles to select and care for breeding animals. |
| Design animal housing, equipment and handling facilities… |
| Apply principles of comparative anatomy and physiology… |
| Select and train animals for specific purposes… |
| Design programs to prevent animal diseases, parasites and other disorders… |
| Design and implement methods to reduce the effects of animal production… |
| Evaluate the effects of environmental conditions on animals… |
| **Biotechnology Pathway** |
| Apply operating procedures for the safe handling…materials in a laboratory. |
| Examine and perform scientific procedures using… in a laboratory. |
| Apply biotechnology… to create… species through genetic engineering |
| Apply biotechnology… to enhance plant and animal care and production. |
| **Environmental Services Pathway** |
| Analyze laboratory and field samples… |
| Interpret the impact of laws, agencies, policies and practices… |
| Apply meteorology principles to environmental service systems. |
| Apply soil science and hydrology principles… |
| Apply chemistry principles to environmental service systems. |
| Apply microbiology principles… |
| Apply ecology principles to environmental service systems. |
| Use pollution control measures to maintain a safe facility… |
| Manage safe disposal of all categories of solid waste… |
| …ensure a safe supply of drinking water and… wastewater… |

**Table 2 (Continued)**

| |
|---|
| **Environmental Services Pathway (Continued)** |
| Compare and contrast the impact of… energy sources…. |
| Use… tools to map land, facilities and infrastructure…. |
| Perform assessments of environmental conditions… |
| **Food Products and Processing Pathway** |
| Implement…techniques to ensure safe and quality food products. |
| Create food distribution plans to ensure safe delivery of food… |
| Examine the scope of the food industry… |
| Evaluate…changes and trends in the… industry… |
| Identify… industry organizations and regulatory agencies… |
| Apply methods of classification to examine… function in a particular region. |
| **Natural Resources Systems Pathway** |
| Classify…natural resources…to enable protection, conservation… |
| Apply…concepts and principles to atmospheric natural resource… |
| Apply… concepts and principles to aquatic natural resource… |
| Apply… concepts and principles to terrestrial natural resource... |
| Apply… concepts and principles to living organisms in natural... |
| Examine…laws and agencies related to natural resource… |
| Assess the impact of human activities on… natural resources. |
| Examine…how economics affects the use of natural resources. |
| Communicate information…related to…natural resources. |
| Sustainably produce, harvest, process and use natural resource products. |
| Demonstrate natural resource…techniques. |
| **Plant Systems Pathway** |
| Diagnose plant and wildlife diseases… |
| Diagnose plant and wildlife diseases… and prevent their spread. |
| Develop and implement a fertilization plan for specific plants or crops. |
| Apply knowledge of plant anatomy…to activities associated with plant systems. |
| Apply knowledge of plant physiology and energy conversion to plant systems. |
| Apply principles and practices of sustainable agriculture to plant production. |
| Create designs using plants. |
| **Power Structural and Technical Systems Pathway** |
| Apply…engineering principles to…energy sources… |
| Apply… engineering principles to…mechanical systems… |
| Apply electrical wiring principles in AFNR structures. |
| Apply computer and other technologies to solve problems… |
| Apply geospatial technologies to solve problems… |

Note: Standards have been abbreviated.

Overall, agricultural educators reported being "Moderately Confident" to "Very Confident" in integrating these STEM-based AFNR standards into their curriculum. Of the pathways assessed, agricultural educators were the least confident in implementing the Power, Structural, and Technical Systems STEM standards with 45.4% of participating educators claiming to have no confidence to being somewhat confident in implementing these STEM standards. Additionally, 40.6% of agricultural educators claimed to have no confidence or be somewhat confident in implementing the Biotechnology STEM standards. Furthermore, 59.3% and 53.1% of participating agricultural educators claim to be very confident or extremely confident in implementing the STEM-based standards in the Plant Systems and Animal Science pathways.

**Table 3**

*Confidence of Agricultural Educators to Integrate STEM into their Curriculum*

| | No Confidence | Somewhat Confident | Moderately Confident | Very Confident | Extremely Confident |
|---|---|---|---|---|---|
| Agribusiness | 6 (9.4%) | 16 (25.0%) | 21 (32.8%) | 16 (25.0%) | 5 (7.8%) |
| Animal Science | 2 (3.1%%) | 9 (14.1%) | 19 (29.7%) | 21 (32.8%) | 13 (20.3%) |
| Biotechnology | 8 (12.5%) | 18 (28.1%) | 21 (32.8%) | 13 (20.3%) | 4 (6.25%) |
| Environmental Services | 6 (9.45%) | 13 (20.3%) | 23 (35.9%) | 19 (29.7%) | 3 (4.7%) |
| Food, Products, and Processing | 8 (12.5%) | 13 (20.3%) | 17 (26.6%) | 17 (26.6%) | 9 (14.1%) |
| Natural Resource Systems | 5 (7.8%) | 13 (20.3%) | 18 (28.0%) | 19 (29.7%) | 9 (14.1%) |
| Plant Systems | 1 (1.6%) | 8 (12.5%) | 17 (26.6%) | 24 (37.5%) | 14 (21.8%) |
| Power, Structural, and Technical | 12 (18.8%) | 17 (26.6%) | 12 (18.8%) | 16 (25.0%) | 7 (10.8%) |

## Conclusions

Throughout agricultural education's history, ensuring a prepared and competent workforce has been a major objective (Fristoe, 2017; Martinez, 2007). It is noted throughout the published literature that STEM skills are a critical component of workplace success in the agricultural industry (Casner-Lotto et al., 2006; Scherer et al., 2019; Swafford, 2018). While STEM skills are vital to success, industry currently claims that students exiting secondary education are not adequately prepared in the areas of STEM (Casner-Lotto et al., 2006). This study aimed to assess the confidence levels of agricultural educators to integrate various STEM standards by pathway.

The first objective aimed to assess the demographic data on agricultural educators in Alabama, Georgia, and Florida. It was determined that the average participating agricultural educator was a white male with a Bachelors or Masters degree and traditional teaching certification. Furthermore, the average participating agricultural educator teaches in a one teacher program.

Overall, participating agricultural educators reported being the least confident in implementing the STEM standards in the Power, Structural, and Technical Systems pathway and the Biotechnology pathway. This is consistent with the published literature that agricultural educators are less confident in implementing STEM into these pathways (Scherer et al., 2019; Smith et al., 2015; Stubbs & Myers, 2016; Wang & Knoblock, 2020).

A recommendation for future practice would be to provide agricultural educators with professional development on STEM integration within the Power, Structural, and Technical pathway and the Biotechnology pathway. Recommendations for future research include evaluating teacher preparation program's STEM integration training and assessing current professional development options for agricultural educators.

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## Educational Law: How do Superintendents Perceive the Relevance of Educational Law Issues to Agricultural Educators

### Introduction, Purpose, and Objectives

Agricultural educators are tasked with the daunting undertaking of training youth on a myriad of agricultural topics. While this profession can be fulfilling, the constant immanence of liability and legal repercussions can often overshadow the rewarding nature of the vocation. Over the past few decades, education has become increasingly more litigious for classroom teachers (Hainline et al., 2019; Redfield, 2003; Wagner, 2008; Walsh et al., 2014; Zirkel, 2006). As educational law has evolved, its impact on the local school system has continued to grow. To avoid legal issues, it is critical that practicing educators have a firm understanding of educational law (Hainline et al., 2021; Schimmel et al, 2011; Wagner, 2008).

Developing insights toward educational law and its effect on teachers is a major point of interest for educators (Bon et al., 2008; Hainline et al., 2019; Littleton, 2008). While many educators are interested in learning more about educational law, many studies show that classroom teachers have a lack of knowledge on the subject (Andreasen et al., 2007; Cotton, 2000; Fischer et al., 2007). In many cases, teacher preparation programs do not adequately educate pre-service teachers on educational law (Gajda, 2008). This lack of understanding could be detrimental to the career of an educator due to the financial and professional ramifications. According to Schimmel et al. (2011), "Educators ignore the law at their peril since the U.S. Supreme Court has ruled that teachers and administrators may be held personally liable… for violating students clearly established constitutional rights" (p. xii). This liability in the classroom can be particularly fastidious for agricultural educators due to the experiential nature of agricultural education. Experiences provided in the agricultural mechanics shop, greenhouse, on-campus livestock facilities, etc. delivers another layer of potential liabilities to the agricultural educator (Chumbley et al., 2018; Dyer & Andreasen, 1999; Saucier et al., 2014).

In most educational litigation, the process often flows through the district leaders and administrators. Often, educational administrators understand educational law better than classroom teachers (Gajda, 2008). As a result, understanding the perception of local district superintendents on the most impactful and relevant legal issues facing agricultural educators will shed light on issues that are the most important to agricultural educators.

The purpose of this study was to assess the perceptions of superintendents in Kentucky, South Carolina, Arkansas, Louisiana, Florida, Virginia, Georgia, and Mississippi on the importance/relevance of various educational law issues to agricultural educators. The following research objectives were assessed:

1. Describe the demographic characteristics of superintendents in Kentucky, South Carolina, Arkansas, Louisiana, Florida, Virginia, Georgia, and Mississippi using central tendencies.

2. Assess the principal component analytic properties of the assessed educational law issues and determine any correlational relationships between each educational law issue in the components.

## Theoretical Framework

The protection motivation theory served as the theoretical guide for this study. The protection motivation theory aims to predict an individual's reaction to a threat and their process of managing the risk associated with the threat. According to Rogers (1983), "[t]he emotion of fear has been of interest because of its role in mediating attitude and behavior change." (p. 4) In this study, agricultural educators perceive educational litigation as a threat due to the potential financial and professional ramifications. While agricultural educators perceive educational litigation and educational law issues as an imminent threat, research shows that their overall understanding of educational law is lacking (Andreasen et al., 2007; Cotton, 2000; Fischer et al., 2007). As the chief administrator of the school district, understanding the perceptions of school district superintendents will assist in determining the most important and relevant educational law issues to agricultural educators. This will further the knowledge of exactly what educational law issues are the most threatening and relevant to agricultural educators in the classroom.

## Method

We used a descriptive correlational research design for this study. The research instrument consisted of two sections: section one measured the perceptions of superintendents on the importance/relevance of various educational law issues to agricultural educators, and section two outlined demographic data. Perceptions of the importance and relevance of various educational law issues to agricultural educators utilized a five-point Likert-type scale ranging from 1 = "Not Important at All" to 5 = "Extremely Important".

We measured the reliability of the survey instrument post hoc, and deemed the instrument suitable for the purpose of the study. Reliability coefficients (Cronbach's alphas) for scales measuring the importance and relevance of general educational law issues was .936 and the reliability coefficient for agricultural education specific educational law issues was .951. These figures indicate that the scales are extremely reliable (Gliem & Gliem, 2003). The instrument is a modification of the instrument developed by Hainline et al. (2019). The instrument developed by Hainline et al. (2019) was also assessed using a Cronbach's alpha and was deemed appropriate.

We compiled a list of superintendent's emails. Frame error is a possible limitation of the study. This list contained viable emails for 169 superintendents in Kentucky, 75 in South Carolina, 260 in Arkansas, 54 in Louisiana, 62 in Florida, 128 in Virginia, 191 in Georgia and 135 in Mississippi ($N$ = 1,074).

We used a census approach to collect data and alleviate sampling bias. According to Gay and Diehl (1992), a response rate of 10% is necessary for quality descriptive research. In this study, a response rate of 11.45% ($n$ = 123) overall was achieved. Overall, we retained partial responses that completed the instrument, but not all the demographics. Overall, there were ($n$ = 109) full responses and ($n$ = 14) partial responses.

The analysis of all data occurred using SPSS Version 28.0. We used frequencies, percentages, means, and standard deviations to analyze research objective one and a Principal Component Analysis (PCA) for research objective two.

According to Lindner et al. (2001), late responders and non-responders can be very

similar. To assess non-response bias and early/late response bias, a Multivariate Analysis of Variance (MANOVA) was used to compare differences among early responders and late responders. Overall, we sent four emails to each superintendent. For the purposes of determining nonresponse bias, participants who responded to the first two emails were considered early respondents ($n$ = 92), and participants who responded to the third and fourth emails were considered late respondents ($n$ = 31). After analyzing for non-response bias and early/late response bias, no statistical differences were found. The analysis of all data occurred using SPSS Version 28.0. We used frequencies, percentages, means, and standard deviations to analyze research objective one and a Principal Component Analysis (PCA) for research objective two.

## Results

### *Research Objective One*

The first research objective aimed to describe the demographic characteristics of participating superintendents. The full demographic information of the participants is listed in Table 1. The average years of classroom teaching experience was 9.3 ($SD$ = 5.4) years and the average total years of experience in education was 28.6 years ($SD$ = 7.7). Among other notable demographics, 89.7% of superintendents led a district with 9,000 or less students ($f$ = 198), 86.2% offered agricultural education in their district ($f$ = 106), 68.5% of participating superintendents were female ($f$ = 76), and 86.5% were white ($f$ = 96).

**Table 1**

*Personal Demographics of Superintendents*

| | | *f* | % |
|---|---|---|---|
| Gender | Female | 76 | 68.5 |
| | Male | 35 | 31.5 |
| Race | White | 96 | 86.5 |
| | African American | 13 | 11.7 |
| | Other | 2 | 1.8 |
| Highest Degree Earned | Bachelors | 1 | 0.9 |
| | Masters | 15 | 13.8 |
| | Specialist | 38 | 34.8 |
| | Doctoral | 55 | 50.5 |
| School District Size | 0–3,000 Students | 70 | 61.9 |
| | 3,000–9,000 Students | 28 | 24.8 |
| | 9,000–25,000 Students | 9 | 8.0 |
| | 25,000+ Students | 6 | 5.3 |
| School System Type | City School System | 31 | 27.9 |
| | County School System | 67 | 60.4 |
| | Charter | 1 | 0.9 |
| | Other | 12 | 10.8 |
| Agricultural Education | Offered | 106 | 86.2 |
| | Not Offered | 17 | 13.8 |

| | | | |
|---|---|---|---|
| Educational Background in CTE | Yes | 17 | 15.3 |
| | No | 94 | 84.7 |

*Note*. Retained partial responses causes the *n* to vary on some demographic categories.

***Research Objective Two***

**Table 2**

*Principal Component Analysis Factor Loadings*

| | Component | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Proper accommodation of curriculum for students with disabilities. | .61 | .33 | .03 | .46 | -.23 |
| Properly dealing with students' behavioral issues. | .70 | .21 | .12 | .55 | .03 |
| Inappropriate communication with parents and students via texts. | .77 | .19 | .07 | -.04 | -.10 |
| Inappropriate contact between educators and students. | .76 | .26 | -.03 | -.26 | -.02 |
| Student discipline in school. | .67 | .19 | .33 | .25 | -.15 |
| Complying with special education mandates (IEPs). | .60 | .52 | .00 | .36 | .11 |
| Understanding teacher employment contracts and compensation. | .68 | -.18 | .39 | .16 | .33 |
| Teacher contract rights. | .63 | -.19 | .57 | .11 | .31 |
| Educator code of ethics. | .60 | .29 | .30 | -.23 | -.02 |
| Sexual harassment. | .69 | .30 | .27 | -.37 | -.01 |
| Student confidentiality (FERPA). | .65 | .46 | .17 | -.17 | -.17 |
| Duty to report suspected child abuse and neglect under state law. | .63 | .50 | -.08 | -.21 | -.15 |
| Harassment issues based on sex, race, color, religion, etc. | .79 | .35 | -.09 | -.16 | .07 |
| Title IX complaints. | .75 | -.06 | .07 | -.18 | .30 |
| Understanding school district/board policy. | .64 | -.12 | .12 | .04 | .40 |
| Liability of dealing with hostile students. | .83 | -.11 | .20 | -.08 | .06 |
| Supervising students on an overnight stay. | .65 | -.13 | -.45 | -.01 | -.03 |
| Communication with parents. | .75 | .07 | -.22 | .21 | -.16 |
| Financial literacy regarding the proper handling of money. | .77 | -.23 | -.20 | .21 | .05 |
| Mishandling State and Federal CTE Funds (EX. Perkins Funding). | .86 | -.08 | -.18 | -.22 | .06 |
| Student safety in the agricultural mechanics shop. | .61 | .08 | -.41 | .08 | .30 |
| Student supervision at extracurricular events (FFA Convention, etc.). | .74 | .13 | -.38 | .16 | .03 |
| Student transportation using personal vehicle. | .82 | -.10 | -.23 | -.20 | .07 |
| Student transportation using other methods. | .82 | -.14 | -.10 | -.26 | .04 |
| Communication with supervisors and administrators. | .79 | -.12 | -.02 | -.12 | -.15 |
| Liabilities associated with the handling of livestock animals. | .77 | -.26 | -.02 | -.09 | -.18 |
| Student discipline on extracurricular activities. | .80 | -.28 | -.12 | -.01 | -.14 |
| Student safety at school farm. | .68 | -.15 | -.32 | .16 | .12 |
| Student supervision at livestock shows. | .71 | -.27 | -.17 | .05 | -.01 |
| Dealing with booster club/support organizations. | .60 | -.43 | .15 | .12 | -.29 |
| Operating and maintaining a motorized vehicle. | .70 | -.40 | .23 | -.13 | -.15 |

| | | | | | |
|---|---|---|---|---|---|
| Supplemental duties as an extracurricular sponsor. | .66 | -.40 | .25 | .11 | -.31 |

*Note*. Extraction method was Principal Component Analysis (PCA) with promax rotation.

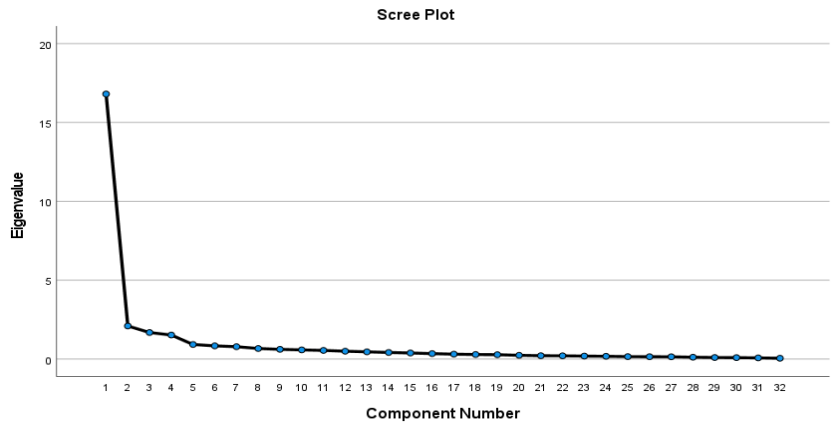
**Table 3**

*Statistics for Five Retained Components*

| Components | Eigenvalues | % of Variance | Cumulative % |
|---|---|---|---|
| #1- General Educational Law Issues | 16.30 | 50.93 | 50.93 |
| #2- Student Interaction Issues | 2.31 | 7.23 | 58.16 |
| #3- Extracurricular Duties/Teacher Contract Rights | 1.85 | 5.79 | 63.95 |
| #4- Special Education Issues | 1.51 | 4.71 | 68.66 |
| #5- District Policy | 1.02 | 3.19 | 71.85 |

**Figure 1**

*Scree Plot for Eigenvalues within the Principal Component Analysis (PCA)*




The extraction method used in research objective two was Principal Component Analysis (PCA). The data were rotated using promax rotation with Kaiser normalization for the 32 originally assessed educational law issues (Kaiser, 1958). According to Tabachnick and Fidell (2001), "PCA is the solution of choice for the researcher who is primarily interested in reducing a large number of variables down to a smaller number of components" (p. 612).

To reduce error, a sample size of 100 or more subjects is suggested (Hair et al., 1998). The sample size of this study was 118 subjects which satisfies this requirement. Furthermore, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was .911 which meets the standard of a KMO value of .6 or higher for a quality factor analysis (Shrestha, 2021). The main methods to screen the original 32 variables include eigenvalues greater than or equal to one and a scree plot to evaluate slope changes in eigen values (Figure 1; Tabacknick & Fidell, 2001).

In addition, factor loadings of ± .40 were used to further screen variables in each component. The factor loadings for each component are listed in Table 2 while the eigenvalues, the percentage of variance explained by each component, and the cumulative percentage of the variance explained is displayed in Table 3. The components retained in the PCA were named #1- General Educational Law Issues, #2- Student Interaction Issues, #3- Extracurricular Duties/Teacher Contract Rights, #4- Special Education Issues, and #5- District Policy.

## Conclusions and Recommendations

As educational litigation becomes more prevalent in modern schools, the burden on agricultural educators will continue to increase. Even with the imminence of negative financial and professional ramifications, research shows that educators do not have an adequate understanding of educational law (Andreasen et al., 2007; Cotton, 2000; Fischer et al., 2007). This lack of understanding is largely due to the absence of undergraduate educational law preparation for pre-service educators (Gajda, 2008). Traditionally, because the superintendent serves as the chief administrator and leader of the school system, most educational litigation decisions flow through them. Evaluating superintendent's perceptions of which educational law issues are the most important and relevant to agricultural educators will aid in identifying which issues educators need to understand the most.

In analyzing the participant's demographics, the average superintendent was a white female with a doctoral degree and leads a school district of less than 3,000 students. Furthermore, the average responding superintendent leads a county school district that offers agricultural education. We recommend replicating this study in additional regions to investigate if different demographics could influence variables.

The second research objective aimed to determine the principal component analytic properties of the assessed educational law issues. The PCA extracted five principal components that were named #1- General Educational Law Issues, #2- Student Interaction Issues, #3- Extracurricular Duties/Teacher Contract Rights, #4- Special Education Issues, and #5- District Policy. This analysis reduced the original 32 educational law issues down to the five principal components by determining correlations in the responses of the superintendents. The correlating educational law issues primarily consisted of special education law, liabilities of extracurricular activities, and liabilities of not complying with district policy. This is consistent with the findings of Hainline et al. (2019), which found that 90–100% of superintendents came to a consensus of the importance of similar issues.

After conducting this study, recommendations for future research would be to investigate the level of understanding that practicing agricultural educators have regarding educational law. Furthermore, we recommend investigating if any differences exist between the demographics of educational professionals and superintendents, such as age, education level, teaching experience, etc. For future practice, we recommend implementing comprehensive professional development on educational law and its implications for agricultural education. In addition to increasing awareness, noting that many educators may be unfamiliar with educational law, we also recommend teacher preparation programs consider adding coursework or training related to educational law prior to a student graduating with an educational degree.

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# Gender Representation and Re-Alignment in Agricultural Education: A Historical Analysis of Structural and Cultural Changes

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## Introduction and Literature Review

Public schools throughout early history were extremely male dominated, with minimal inclusion of female individuals in traditional education settings (Houston, 2009). However, today education has shifted to be comprised of over 76% female teachers in public schools (NCES, 2022). This shift in gender representation occurred from over-recruitment of females into education because of discriminatory practices that restricted opportunities in other careers for women (Houston, 2009). Although the teaching demographic has shifted, institutional power is still held by men who comprise the higher-paying administration roles (Houston, 2009; Lyon & Saario, 1973). Career and Technical Education (CTE) also began as male dominated through apprenticeships and access to educational programming (Gordon, 2014). At its inception, male students were able to enroll in CTE, specifically school-based agricultural education (SBAE), while female students were only able to enroll in home economics courses (Gordon, 2014). The establishment of these gender-based pathways furthered the stereotype where men held careers and earned household income, while women took care of the home (Gordon, 2014).

Women began to gain agency in education through the Equal Pay Act of 1963 and the Civil Rights Act of 1964, where discrimination based upon gender, race, and ethnicity were outlawed. Equal access to CTE programming followed in 1972 with the passing of the Patsy Mink Equal Opportunity in Education Act (Title IX), banning gender discrimination in education. Even after liberating legislative acts, females are still largely underrepresented in many of the traditionally male dominated CTE pathways (Toglia, 2013). Following this legislation, the National FFA Organization voted to allow female students to hold membership in 1969 (National FFA Organization, 2022). Since this historic vote, the percentage of female students and teachers has largely increased throughout SBAE. In 2010, in-service agricultural educators were 3:1 male to female (Kantrovich, 2010). However, current supply and demand data reflect a nearly 1:1 ratio of female to male teachers (NAAE, 2021).

Looking to the future, SBAE appears to be growing in gender equity and garnering more female representation. As of 2021, the ratio of female to male undergraduate students seeking certification in agricultural science was 3:1 female to male (Smith et al., 2022). While the ratio of practicing agricultural teachers did not represent gender equality within the profession historically (Kantrovich, 2010), the ratio of newly certified teachers in SBAE has shifted the trend in the opposite direction. This shift in gender demographics of SBAE teachers would then reflect the trends of the education system holistically (NCES, 2022). Supply and demand data of agricultural educators shows pre-service gender ratios have flipped between the years of 2001 to 2021 (Camp et al., 2002; Smith et al., 2022). Pre-service agricultural educator data shows that females broke the 50% barrier between 2001 and 2006 and ratios of females to males remained nearly 1:1 male to female through 2009 (Camp et al., 2002; Kantrovich, 2007; Kantrovich, 2010). However, data from recent years shows that female enrollment in teacher preparation

programs has increased and male enrollment has decreased (Foster et al., 2015, 2016, 2020, 2021). The National Agricultural Education Supply & Demand Study was not published between 2009-2014. This study aims to determine pivotal events in history that may explain this gender shift in the unreported years of the supply and demand study.

## Conceptual and Theoretical Framework

The concept of gender gap is a frequently cited phrase that is found in many different disciplines (Legewie & DiPrete, 2012). Gender gap is typically assigned to label measurable differences between males and females regarding achievement, ideologies, or behaviors (Legewie & DiPrete, 2012). In educational studies, the term gender gap often refers to academic achievement differences between males and females (Buchmann et al., 2008; Esteve et al., 2012). A non-traditional gender gap can now be found within agricultural education teaching preparation programs. The latest findings of the National Agricultural Education Supply & Demand Study (Smith et al., 2022) show that 76% of newly qualified agriculture teachers are female.

The Theory of Gender Re-Alignment (TGRA) helps to explain the gender gap and stems from an initial study which again analyzed a gender gap amongst voters in the United States (Inglehart & Norris, 2000). From their findings, the TGRA was developed to explain anticipated changes in sex roles and reversal in gender-based voting habits in post-industrialized societies. The TGRA outlines three reasons for re-alignment of gender-based values: (a) level of political and economic development, (b) effects of generational cohorts, and (c) structural and cultural changes. As many western nations progress, job markets and opportunities for both sexes increase which creates cultural changes to reflect a more diverse workforce (Inglehart & Norris, 2000). As educational institutions adjust to structural and cultural changes, more career opportunities aside from traditional feminine roles are created for females with higher education degrees. TGRA allows for an explanation about how structural and cultural changes in society are reflected in SBAE. Analyzing the structural and cultural components of SBAE and external factors can help explain the decline in male pre-service agricultural teachers.

## Purpose and Objectives

The deficit of qualified teachers in agricultural education has been well documented. However, there has been a decline in pre-service male agricultural educators. Additionally, a gap in supply and demand statistics exists between 2009 and 2014, giving little insight into why the female to male ratio of pre-service teachers has changed. This work was guided by three overarching research objectives: (1) identify changes that have occurred in Agricultural Education between 2009- 2014, (2) identify changes that have occurred outside of Agricultural Education between 2009-2014, and (3) describe how these events could have played a role in the decrease of male pre-service agricultural educators.

## Methodology

This study used qualitative historical research methods to advance the research objectives (Borg & Gall, 1983). Primary sources of data for this study included articles published in the *Agricultural Education Magazine*, articles published in the *Journal of Agricultural Education*, research agendas of the American Association for Agricultural Education, communication documents within the National Association of Agricultural Educators, and policy documents of the National FFA Organization. Secondary sources included various documented communication including newspaper articles, books, and governmental publications as a method of filling in the gaps left by primary sources.

## Validity and Reliability

The validity of the data collected was analyzed to ensure credible and authentic information is used. Data collected in this study were subjected to external criticism as well as triangulation. The use of external criticism allowed the researcher to select both appropriate and quality documents that advanced the research. In addition to external criticism, the researchers followed principles of triangulation via the use of various sources of data to produce trustworthy findings and results (Creswell, 2014). Finally, peer debriefing of documents by social science and agricultural education scholars was utilized to clarify themes and findings within the study (Creswell, 2014). After ensuring the validity and reliability of the data collected, data was coded to identify the major themes emerging from the historical data.

## Data Collection and Analysis

The study analyzed the changes in agricultural education and public education between the years of 2009 through 2014 due to lack of supply and demand census data. Due to the lack of census data, the study examined documents between this period to evaluate structural and cultural changes in education. Documents outside of the five-year span were considered to better explain the starting characteristics of both agricultural education and public education. Articles from the *Journal of Agricultural Education* (JAE) and the *Agricultural Education Magazine* (AEM) were utilized to answer research objective one. Articles were organized chronologically by source and read to determine validity and reliability of the document. Governmental publications and other published documents were gathered to serve as secondary sources. The same process was repeated to answer the second research objective, while utilizing a broader scope of primary sources. Findings related to structural and cultural changes were referenced to the TGRA framework to answer research objective three.

# Findings

The findings in this study are broken down into two major categories with several sub-categories to best depict findings in relation to the research objectives.

## Research Objective 1: Changes in Agricultural Education Between 2009-2014

Three themes were identified that help depict changes within agricultural education that led to demographic shifts of pre-service agricultural educators.

### *Changes in Legislation Pertaining to Agricultural Education*

Considering the wide array of legislation passed during this five-year span, only changes brought forth by the federal government that impacted SBAE were analyzed. To best comprehend legislative scope of the study, parameters were expanded to include important legislation that impacted education during the study period. The No Child Left Behind (NCLB) Act of 2001 and Every Student Succeeds Act (ESSA) of 2015 both increased accountability measures for teachers and the use of standardized testing (U.S. Department of Education 2004, 2015). Post-secondary institution funding was increased with the renewal of the Higher Education Act of 1965 in 2008 (U.S. Department of Education, 2009). In CTE, revisions to the Perkins Act pushed for more stress towards “rigor and relevance” of CTE programming through: (a) alignment of standards and curriculum, (b) collaboration with industry professionals, (c) creation of accountability measures, and (d) the promotion of innovation (Association for CTE, 2017). Following this

federal legislation, SBAE created the first national Agriculture, Food, and Natural Resources (AFNR) standards (The Council, 2015).

### *Changes in Agricultural Education Curriculum*

From JAE artifacts, it is apparent that the curriculum at both secondary and post-secondary levels has changed. The creation of AFNR standards prompted calls for science-integrated curricula (French & Balschweid, 2009; Theriot & Kortlik, 2009; Myers et al., 2009) and more science coursework in teacher preparation programs (Washburn & Myers, 2010). Additionally, curriculum changes in JAE called for more preparation for teaching students with disabilities (Stair, 2010; Pense et al., 2010), and marginalized students (King et al., 2013). This sub-finding is supported in AEM where authors discussed the need for new assessments, technology, and facilities to meet these changing standards and curricula (Gratz, 2009; Womochil, 2009; Clark et al., 2011; Thoron, 2014; Anderson, 2014; Fowler et al., 2014; Wells, 2014; Emig, 2014; Collins, 2014). Calls from both primary sources appear to be reactionary to changes in standards but may explain structural changes that disinterested male students from pursuing teaching careers.

### *Changes in Agricultural Education Recruitment*

Several JAE articles in this timeframe related to recruitment of SBAE teachers. Many focused on why students decide to teach (Roberts et al., 2009; Lawver & Torres, 2011), while others focused on external factors (e.g., fair salaries, advancement opportunities, extended contracts; Arnold & Place, 2010; Warnick et al., 2010). Toward the end of the timeframe, JAE authors called for recruitment changes to be more inclusive of (a) female and minority teachers in SBAE (Heins et al., 2010; Vincent et al., 2012) and (b) first-generation college students (Irlbeck et al., 2014). Articles from the AEM also reflected changes in recruitment including: (1) future teachers in SBAE will likely be different than those currently teaching (Disberg, 2009; Vincent & Board, 2009; Washburn & Warner, 2009), (2) agriculture teachers should be involved in the recruitment process (Buckley, 2009; Jimenez, 2009;), and (3) calls for changes in the teacher preparation programs to better address needs of students (Bellah, 2011). Unfortunately, due to the themed nature of the AEM, volumes or articles discussing recruitment efforts are not substantially found again within the research parameters.

## Research Objective 2: Changes Outside of Agricultural Education Between 2009-2014

Four themes were identified that related to the second research objective to describe changes outside of agricultural education that contributed to demographic changes.

### *Major United States and World Events*

Although it is not an all-encompassing list of national and world events, selected events were chosen to both recap the era and highlight events involving the U.S. economy, political and global landscapes. The first event found was the Global Financial Crisis of 2008 (Erkens et al., 2012). While this did occur before the study start date, the implications and economic effects remained in place for much of the study's duration. Barack Obama was elected as the first African American President of the United States in 2008 and served in office throughout the duration of the study parameters (Bligh & Kohles, 2009; Jacobson, 2010). During this time, the Democratic Party had much of the political control in Washington and led a more progressive agenda guiding our nation at the time (Erkens, et. al., 2012). Shortly after taking office in 2009, President Obama signed the American Recovery and Reinvestment Act (ARRA) of 2009 to help

rebound the U.S. and global economy. However, in addition to educational provisions, the ARRA also provided many financial and tax-based initiatives to help soften the current economic hardships. Later viewed as a hallmark of his administration, President Obama signed into law the Patient Protection and Affordable Care Act of 2010 which had many effects on both employees and employers. Additionally, the national climate of the United States during the study centered around civil rights via race, gender, and sexual orientation (Baude, 2013). Running parallel with the economic woes facing the United States, ongoing military conflicts were still present in the Middle East during this time (Compton, 2011).

### *United States Educational Attainment*

The enrollment and expected graduation rate fluctuated between the 2008-2009 and the 2013-2014 academic years (U.S. Department of Commerce, 2008, 2015). Additionally, high school dropout rates decreased during the timeframe (U.S. Department of Commerce, 2008, 2015) and there were large increases in the number of post-secondary degrees awarded (Snyder et al., 2009, 2016b). Focusing on the gender differences of those obtaining a bachelor's degrees, it was found that in comparison to past decades males had a larger increase of bachelor's degrees obtained, but females still outranked males in current bachelor's degree obtainment at 57% female to 43% male (Snyder & Dillow, 2010, 2011, 2012, 2013, 2014, 2015; Snyder et al., 2009, 2016a, 2016b).

### *Agricultural Economics*

When considering the lack of male pre-service agricultural teachers, broad scale U.S. agricultural economics were also noted. U.S. agricultural commodity prices rose across the board during the study years of 2009- 2014 (U.S. Department of Agriculture, 2017a, 2017b, 2017c). This increase of crop prices, followed by a rise in livestock prices towards the end of the study time frame (U.S. Department of Education, 2017), possibly created more financial stability in traditional agricultural production. Because of this, it is possible young men decided to stay on the farm or chose a different degree path due to the possibility of financial prosperity in agricultural production. However, agricultural commodity prices have since leveled off and these effects on pre-service agricultural teachers have yet to be determined.

### *Industry and Rural Demographics*

Females comprised nearly 47% of the total labor force and males made up the remaining 53% during the study timeframe (U.S. Department of Labor, 2010, 2011, 2012, 2013, 2014a, 2014b). Contrary to the entire distribution of the workforce, it was found females make up 52 percent of management and professional level jobs and this remained constant over the study years (U.S. Department of Labor, 2010, 2014b). Rural laborers on average are older and receive less pay than a similar laborer in an urban setting (Day et al., 2016; Wang & Findeis, 2004). These economic gaps between rural and urban laborers are often more profound for women due to an increased gender wage gap with less job opportunities available (Wang & Findeis, 2004). However, a career as an agricultural educator in a rural community could offer financial stability and family flexibility which may be more attractive to females in such areas.

### *Education Employment Salaries*

The concluding sub-theme of the second objective sought to identify the salaries of public educators in the United States over the course of the years in question 2009- 2014. The public teacher salary data showed slight annual increases over the study time frame starting with an

average salary of $53,910 in the 2008-2009 school year and ending at $56,689 in the 2014-2015 school year (Snyder & Dillow, 2009, Snyder et al., 2016a, 2016b). It should be noted these dollar amounts represent the raw dollar figure per year and do not account for inflation. However, it was stated in the data that education salaries of this time were nearly two percent lower than those of in previous decades (Snyder et al., 2016b).

## Conclusions, Implications, and Recommendations

To achieve research objective one, this study identified accountability, curriculum, and recruitment changes that occurred in SBAE between 2009-2014. New legislation and standards fueled curriculum changes within agricultural education which transitioned SBAE from more traditional agricultural production practices to more integration with science phenomena. Agricultural education leaders also began addressing the deficit of agricultural teachers entering the profession annually. Recruitment efforts of future SBAE teachers also changed to more personalized efforts in recruiting a more diverse teacher population. This study also identified changes outside of SBAE during 2009–2014 to describe research objective two. During this time, the U.S. endured one of the worst economic collapses since the Great Depression. The U.S. was led by a primarily democratic controlled national government that passed several acts impacting educational institutions. Educational attainment of U.S. citizens grew steadily during the timeframe and females received most bachelor's degrees annually. Males still dominate the entire working population, but females occupy over half of professional and higher-level positions across the country. These changes both within and outside of SBAE highlight structural and cultural changes that could have led to a reduction of male pre-service teachers.

From our findings it is apparent agricultural education did experience both structural and cultural changes throughout the years analyzed, aligning to the theoretical assumptions about gender re-alignment from TGRA. These structural and cultural changes in agricultural education curriculum appeared to be a reactionary response to the changes in legislation as opposed to a proactive approach. Cultural changes in SBAE recruitment efforts could have added to the gender re-alignment of the field where females were more apt to enroll in pre-service agricultural education programs. The overall economic benefit of teaching agriculture is likely higher for females than males and has contributed to the gender imbalance in pre-service agricultural educators. Stagnant salaries coupled with the effects of the financial crisis could have also re–aligned gender roles and driven males away who were expecting to receive higher levels of pay.

Being descriptive by nature, this study identified specific changes within SBAE that run parallel with the reduction in male pre-service agricultural teachers. It did not, however, specifically test the effect each factor had on gender specific involvement. Because of this, the study is left with several questions that should further be investigated by future researchers. First, future research should identify where the male population of pre-service agricultural teachers has migrated to. Although this study analyzed different structural and cultural changes, it did not identify where these individuals have transitioned to. It is unclear if more males have left SBAE to pursue other agricultural professions, if they have migrated more towards industry and trade careers, or if they have avoided higher education all together. Using quantitative and qualitative methods, researchers should analyze and arrange the effect the changes in legislation, curriculum, and recruitment; in addition to the external factors; by order of which they had the most effect on potential male's decision to enter the field.

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# Experiences of Graduate Students of Color within Colleges of Agriculture at Land-Grant Institutions

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## Introduction and Literature Review

As the United States' population increases, changes in racial and ethnic diversity are occurring at a rapid rate (Vespa et al., 2018), which impacts the cultural composition of the U.S. workforce (Vincent & Torres, 2015). The private, public, and non-profit agricultural sectors have developed initiatives to seek a diverse, equitable, and inclusive workforce (Tindell et al., 2016). Yet, equity gaps in hiring still exists between individuals who identify as Black, Indigenous, or People of Color (BIPOC) and their White counterparts. One noted reason is the perceived skill advantage of White individuals with valuable agricultural experiences, such as a farm upbringing, internships, and advanced degrees (English et al., 2019). Engaging and incentivizing the BIPOC population in agriculture and related careers through early experiences and formal education may combat the diversification issue within the agricultural workforce (USDA, 2018).

Land Grant Universities (LGUs) serve as a pipeline to the agriculture and natural resources field because of the wide array of academic disciplines connected to research that supports the agricultural industry (Alston et al., 2019). Accordingly, the U.S. government and other stakeholders have supported the growth of LGUs since their emergence. The Morrill Land Grant Act is the legislative foundation for LGUs to explore educational and scientific methods to uplift modern society through teaching, research, and extension (Singh, 2021). However, the BIPOC population could not benefit from the passage of the first Morrill Land Grant Act in states that did not allow them to attend institutions of higher education; until the second Morrill Land Grant Act was passed to include BIPOC populations within LGUs. This is commonly referred to as the 1890 Land Grant Act (APLU, 2013). Each Morrill Land Grant Act serves as a foundational pillar in the LGU system but still does not address how to best serve and support agricultural BIPOC graduate students.

Research indicates that when organizations have diverse and inclusive practices, they create opportunities for innovation to become more present (USDA, 2018). Therefore, LGUs are encouraged to be more responsive to the preparation of BIPOC students to ensure they are equipped with practical skills, experiences, and leadership qualifications to address global agricultural issues (Alston et al., 2009; Drape et al., 2019). Accordingly, agricultural degree attainment by BIPOCs have increased from 2001 to 2018, while White students have seen a proportional decline, thus decreasing degree attainment gaps (USDA, 2018). Although previous efforts have increased the number of BIPOC students in agriculture at higher education institutions and thus degree attainment, particularly at LGUs, retention remains a problem (Ginder et al., 2015; Her & Thompson, 2022). There are many existing challenges regarding BIPOC students' experiences with marginalized identities, inadequate finances, and ineffective academic support (Ha Choi et al., 2020; Ramos, 2019). Given the retention issue among BIPOC students, the current literature sheds little light on interventions in the field of agriculture to

address it (Bullock et al., 2021). Therefore, an exploration of the lived experiences and unique needs of BIPOC graduate students in agricultural programs at LGUs should be conducted so that targeted retention interventions can be implemented leading to an increase in well-trained and engaged BIPOC workers in agricultural jobs.

## Purpose and Research Questions

This study builds on previous studies suggesting the need to explore the diverse experiences of BIPOC students to enhance institutional capacity to support BIPOC graduate students in colleges of agriculture. Identifying the challenges within LGUs aligns with Research Priority Area 6, Vibrant, Resilient Communities, through exploring the perceptions of BIPOC agricultural graduate students in colleges of agriculture at LGUs that can enhance the inclusive and resilient communities within the higher education system domestically and abroad (Roberts et al., 2016). The purpose of the current study was to explore the experiences of BIPOC graduate students within colleges of agriculture at land-grant institutions. The following three research questions guided this study: 1) How do BIPOC graduate students in colleges of agriculture at land-grant institutions describe their expressed identities? 2) What are the experiences of BIPOC graduate students in colleges of agriculture related to the land-grant tripartite mission? 3) What are BIPOC graduate students' perceptions of student support services within colleges of agriculture at their host land-grant institution?

## Conceptual Framework

The conceptual framework for this study is the Organismic Socio-Behavioral Perspective (OSBP) model. Anderson et al. (2018) integrated a variety of psychosocial approaches in the OSBP's development process to create a foundation for researchers to better comprehend an individual's desire for self-fulfillment. In addition, the OSBP model was designed to focus on motivational factors and academic achievement of underrepresented student populations. Expressed identity, observed behavior, and environmental feedback are the three components of the OSBP model built from Social Cognitive Theory (SCT; Anderson et al., 2018; Bandura, 1986). Anderson et al. (2018) explains that the organismic socio-behavioral perspective model involves a triadic reciprocal process in which an individual's perception of their expressed identity influences their behavior, in turn eliciting further feedback from their environment.

Individuals construct beliefs through social, cultural, and emotional factors which develop a personal identity (Schwartz, 2011). Establishing identity within higher education can be difficult because students may view themselves differently than faculty and peers (Grabsch et al., 2019). College students who identify with a particular group may want to adapt to the group's socialization to feel accepted (Linder et al., 2015). Understanding the importance of culture as it relates to identity is critical because it involves cultural connections and creating social cohesiveness to comprehend and appreciate other students' cultural identity (Wiersma-Mosley, 2019).

An individual's environment impacts the evolution of their behavior (Bandura, 1986). Therefore, individuals often embrace certain environmental characteristics to obtain designated outcomes (Schunk & DiBenedetto, 2020). Khudzari et al. (2019) believed an individual's environment may

often dictate the interaction between self-identity and behavior. Anderson et al. (2018) also described observed behavior as an individual's ability to strategically execute an aspiration. Therefore, an individual must be aware of the triadic influences their behavior has on their environment and the formation and affirmation of their identity within that environment (Anderson et al., 2018).

## Methodology

The current study used a qualitative research design to explore and conceptualize the lived experiences of BIPOC graduate students in colleges of agriculture at LGUs through focus groups (Maxwell, 2013). States throughout the southeast and south-central regions of the U.S. were chosen to participate in this qualitative study. A purposive sampling method was used to recruit participants in order to investigate a distinct population and due to the authors' professional network connections with both 1862 and 1890 LGUs (Creswell & Plano Clark, 2011; Palinkas et al., 2016; Patton 2002). Deans of the colleges of agriculture, professors, department chairs, and graduate school coordinators at twelve LGUs acted as liaisons to recruit the BIPOC graduate students in this study. This research study was approved by the University of Georgia's Institutional Review Board (PROJECT00005693).

Focus groups occurred via Zoom and lasted an average of an hour. The five questions that guided the focus groups asked about participants' experiences within the colleges of agriculture at LGUs, available support services, and challenges and barriers they faced during their time in their program. For example, participants were asked to describe their experience as a graduate student within their academic department in the college of agriculture and describe their relationship with student support services as a BIPOC graduate student in the college of agriculture. The moderator guide was reviewed for content and face validity by faculty with expertise in qualitative research, cultural competence, and sociocultural identity. Once contact information was received from the recruitment liaisons, participants for this study were invited to participate in focus groups via email and telephone calls (Dillman et al., 2014).

Sixteen individuals participated in the focus groups. Of those, eight identified as Black/African American, two as Hispanic/Black, and six international students (African). The international participants identified as African, Mexican, and Asian. There were four female and twelve male participants in this study. Three were master's students and thirteen doctoral students. The participants' academic concentrations included Family and Consumer Sciences, Entomology, Agriculture Leadership, Education, and Communication, Agricultural Regulatory Sciences, Agricultural Economics, and Nutritional Sciences. Participants from four 1862 and two 1890 LGUs participated in the study. Follow-up participant recruitment emails were sent to potential participants. A consent form was distributed via email to the participants prior to engaging in the focus groups (Dillman et al., 2014).

Thematic analysis was used to identify themes related to the phenomenon of interest. Data were analyzed through Atlas Ti through an abductive coding method (DeCuir-Gunby et al., 2011). The researchers developed a codebook to record the codes' contextual meanings and to provide peer debriefing to enhance trustworthiness of the data (Lincoln & Guba, 1985). The researchers followed the theory-driven three-step process which includes: 1) identifying codes based on the

OSBP model (Anderson et al., 2018); 2) assessing the codes through codebook development and peer review; and 3) finalizing the reliability of the codebook (DeCuir-Gunby et al., 2011).

## Results

### RQ1: How do BIPOC graduate students in colleges of agriculture at land-grant institutions describe their expressed identities?

Two common themes throughout each focus group were the perception of pursuing a graduate agricultural degree due to certain stereotypes surrounding the BIPOC population. Another emerging theme was some participants identified themselves as non-traditional students because of their older age which they felt may impact their social interactions within their college of agriculture. Ann stated, "I feel like I always explain that I'm not a farmer […] within the university, people understand that the College of Ag is big, and how diversified it is. But talking to somebody who's not in agriculture, they all still think it's all just farming." Antonio explained,

My family came to this country by working in the fields, you know, whether it was picking cotton, etc. I had uncles here in [State] that were herding sheep since they came from [Country]. My family has been a part of the agricultural industry but not in lucrative agriculture. So, when they hear I am going into a College of Agriculture, there is a lot of kickback that I get from them. A lot of their perception is like, Why? Why go into that field? Like we worked so hard, so you don't have to go into that field.

Devin said, "when I talk to others about agriculture, it's often a negative perception because of the history of slavery... Also, many people view agriculture as labor intensive and do not see their son or daughter going into the agricultural field."

Dominique stated, "My experience within my department has been very different because I'm a non-traditional student. So, you know, I don't live in [City], I have a whole family, a wife and kids, I'm not able to do certain things or be in some of the social spaces that traditional graduate students are in." Also, Devin identified as a non-traditional student because of his older age and responsibilities to his family.

### RQ2: What are the experiences of BIPOC graduate students in colleges of agriculture related to the land-grant tripartite mission?

Two common themes were identified throughout each of the focus groups which highlighted the challenges and perceptions of colleges of agriculture through the perspective of BIPOC graduate students. The themes included positive support from the academic department and belongingness within LGUs.

Marcus stated, "I have not seen a lot of barriers or challenges that you would anticipate coming into a university as a student of color. I have not seen those stigmas that I had anticipated coming into the program." Karen explained, "I had a positive experience in my department, specifically because my very own PI goes out her way to include people of color, to essentially diversify the department". Kevin stated, "I had a positive experience within my department. I think part of that

comes with the fact that I grew up in a very rural community. Phillip described, “I have seen more students, rather than professors either view something as a prejudice or something of that nature than the actual professors have.”

The positive support from the participant’s department impacted their graduate school experience related to the land grant mission. For example, Gerald stated: “My experiences as an instructor, teaching assistant, and student have taught me professors can serve as guides or gatekeepers. Great professors serve as mentors that motivate students to reach their full potential. They build a level of understanding and cohesion with their students that is needed for a successful learning environment.”

Kevin recalled, “I’ve literally been in circumstances where I will share a story, and a lot of people will see me as like, “the interesting novelty.” Ann described, “Since I did not come from a traditional agriculture background, or I didn’t come from a rural setting. This impacts when I am in class and stories are told or things are being shared, I personally cannot relate.” Phillip stated, “I’m in leadership education, to me that is still like, I’m not as much as involved in traditional agriculture (natural sciences). I feel like it is a disconnect. That can be isolating, not having that full background.”

**RQ3: What are BIPOC graduate students’ perceptions of support services (financial, emotional, social, and academic) within colleges of agriculture at their host land-grant institution?**

Participants described their experiences throughout their graduate school matriculation with student support services. After analyzing the focus groups, the researchers identified two common themes reflecting the resources to support BIPOC agricultural graduate students. The perceptions towards the colleges of agriculture from the perspective of BIPOC agricultural graduate students were towards accessibility and visibility of resources and knowledge of funding sources.

Gerald described his experience as positive, stating “I maintain an active commitment to organizations that are impactful in diversity and inclusion for the College of Agricultural & Environmental Sciences. I have volunteered and assisted my college’s Office of Diversity Affairs in many recruitment and outreach events geared towards increasing enrollment for minority students.”

Other participants had alternative experiences within their colleges of agriculture. Phillip stated, “I think the access to information is a barrier because there is a lot of information about the services that are out there. I just didn’t know how to access it”. Ann agreed with Phillip about accessing the information, stating, “I would like to see more visibility as it relates to student resources.” Marcus said, “for my university and the Graduate School at [1890 LGU], the access to information is there, and knowing the right person to talk to. And 9 times out of 10 my professor slash mentor [1890 Professor Name], he will feed you that information.” Ann explained, “I work closely with the Office of Diversity Affairs within the College of Agriculture at the [University]. So, I feel like I personally have a lot more conversations because I’m intentional about being in those spaces. I feel like a lot of students don’t even know about this

space that's designed for them to go to have those conversations and to be supported throughout their experience." Dominique stated, "I know we have a DEI office, I have never been to that office, believe it or not. Part of it is because I'm always taking night classes."

Kevin described the lack of transparency with available funds for BIPOC student scholarships: "I did not know I was being funded by a diversity grant at all. And I didn't find out until I got ready to look for funding for my Ph.D. My professor told me that he could not put me back on the diversity grant because they had already used the funding on me during my Masters' degree. And I was like, okay, you know, you didn't tell me that."

## Conclusions and Recommendations

The results indicated that BIPOC agriculture graduate students' perspectives of their department may look different based on their perceived identity, behavior and environment, supporting the OSBP model (Anderson et al., 2018). Participants' identities were impacted by perception of and support from faculty and staff, peers, and family members. These factors contributed to participants' attitudes toward their department due to a positive or negative sense of belongingness. The BIPOC agricultural graduate student population has continued to increase over the last twenty years, becoming one of the major factors influencing the need for diversity, equity, inclusion, and belonging within the agricultural workforce (USDA, 2018). Colleges of agriculture at LGUs are a critical component to prepare these students for professional careers. The departments within colleges of agriculture are challenged to properly support these students due to a lack of cultural competence, financial resources, and stereotypes associated with the agriculture field (Bullock et al., 2021). Recognizing these gaps within the colleges of agriculture may assist other academic colleges at LGUs.

Participants were enrolled in either an 1862 or 1890 LGU, which captured experiences from two culturally different university settings. The BIPOC agricultural graduate students from 1862 LGUs showed similarity in lack of visibility of academic and financial resources to support their graduate school journey. Also, the 1862 LGU participants felt that the institution needed to address certain stigmas surrounding BIPOC students and faculty to help support BIPOC students. In contrast, the 1890 LGU BIPOC participants expressed gratitude towards their faculty and staff within the college of agriculture and the graduate school. Similarities at both LGUs included having non-traditional BIPOC agricultural graduate students, who may experience intersectional inequalities by being in a minority age group as well as an ethnic group. Future research should explore the participation of BIPOC students in rural and urban agricultural youth development programs such as 4-H and FFA which serves as a recruitment and retention pipeline into LGUs. This may allow researchers to better follow the experiences of BIPOC students through each level of their educational experience. In addition, future researchers should consider how to address the needs of support for BIPOC students due to challenges such as limited access to support services because of internal and external financial obligations at 1862 and 1890 LGUs.

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## Efforts to Be Successful: Case Study of LatinX FFA Leaders

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### Introduction

Secondary education has a male-dominated culture driven by social norms that ask our students who do not fit a particular mold to assimilate in order to be successful (Faircloth & Hann, 2005). Students of color need the space to learn about and develop themselves in an authentic way consistent with their culture at home; but with school systems that look nothing like them and that indirectly invalidate their experiences of oppression, this sense of belonging is often difficult to find (Faircloth, 2012; Garza, 2009).

Within secondary agricultural education, minority youth struggle to feel included within the white space of the classroom and the FFA organization (Barajas et al., 2020). The National FFA Organization has gone to certain lengths claiming an expansion in opportunities for marginalized youth with programs like Agricultural Education For All (ffa.org, 2020); however, state and national leaders continue to amplify the white, male narrative common in agricultural education (Elliot & Lambert, 2018).

A distinct lack of research exists prioritizing the voices of the underserved population at its center. Recently, research speaks about multiculturalism in agricultural education but stories directly from the mouths of students are slim (Roberts et al, 2009; Rodriguez & Lamm, 2016; Velez, et al., 2018; Vincent & Torres, 2015). The exploration of the experiences of Latinx members involved in the FFA organization is limited. Prior research about Latinx/ Hispanic youth looks at the involvement of high school students in three different programs in Texas (Roberts et. al, 2009), urban privilege in one agriculture program (Elliot & Lambert, 2018), and the decision to enroll in an agricultural college and undergraduate program (Faulkner et al., 2009; Vincent et al., 2012).

### Theoretical Framework

Critical Race Theory (CRT) and LatCrit analyzes race, racism, and other forms of oppression in the lives of people of color in order to disrupt these oppressive conditions between dominant and marginalized racial groups within the education system in the United States (Delgado & Stefanic, 2017). Critical race theory uncovers the ingrained social inequalities of our education system and challenges the status-quo of privilege and oppression for our students of color (Ladson-Billings, 1998). In addition, CRT centralizes the voices of students of color who experience oppressive conditions and works to challenge the dominant ideologies, specifically those surrounding a need for immigrant assimilation, that perpetuate these conditions. By using the fifth tenet of CRT, counter-storytelling, experiences of our students of color can be authentically explored. Counter-stories serve as personal narratives from people of color that speak on their lived experiences dealing with their identity and living in a white space (Hiraldo, 2010; Huber, 2008). Counter-stories assist us in analyzing the culture of the youth leadership organization and provide ways to help agricultural education programs become genuinely inclusive rather than simply superficially diverse (Solorzano & Yosso, 2001).

Critical race theorists used counter-stories to critique the idea of immigrants needing to assimilate to American culture for future generational success, defending such criticisms with the second and fourth tenets of CRT. Researchers have long established that white society uses the idea of assimilation to "discipline" and teach immigrants how to "behave" in their white society, particularly teaching the ideas of submissiveness and English-only assimilation (Lash, 2018). School teachers, of whom eighty percent are white (U.S. Dept. of Education, 2016), are unaware, unprepared, and/or unwilling to address the specific needs of their Latinx students when it comes to healthy identity development. Without the development of their cultural identity, Latinx students are left torn between choosing to embrace their culture at home and being left behind in school and dismissing their roots and potentially succeeding in school (Marx, 2008; Villenas & Deyhle, 1999).

Latinx students in agricultural education do not use Critical Race Theory as the foundation that drives the study, nor do they use counter-storytelling to aid in these discussions of assimilation. Currently scholars focus on engagement or disengagement of marginalized youth and outline some barriers— teacher engagement, parent involvement, and peer opinion— to recruitment and retention (Barajas et al., 2020; Jones & Bowen, 1998; Roberts et al., 2009).

## Purpose & Research Question

The study aims to fill a gap and gain a greater understanding of Latinos' need to assimilate to fully engage in their extracurricular leadership roles. Through a CRT worldview, identification of the larger relationships between race, racism, and power in the classroom and in youth leadership organizations can begin to occur. Answering the following questions is necessary for future positive identity development and social engagement within our Latinx and Hispanic student population:

1. What unspoken practices of leadership offices in the FFA exist and reinforce racial inequalities particularly among Latinx youth leaders?
2. How do Latinx FFA leaders respond to the practices and their need to assimilate?

## Methodology

Qualitative research works to answer the "why" behind a phenomenon (Creswell & Creswell, 2017). The researchers sought to examine why Latinx leaders in an agricultural youth organization are disproportionately represented in their respective states. In accordance with Yin (2018), a case study design approach was used with participant interviewed one-on-one, asking the same questions of this Latinx student assimilation.

A total of twelve interviews were conducted out of the fourteen who were nominated by state staff and completed an online questionnaire. Participants in this study were past state, regional, or district leaders of the FFA organization. They all identified as Latino or Hispanic, with many self-identifying with their ethnicity (Mexican, Mexican-American) or by simply acknowledging themselves as "brown". Of the 12 participants, five participants identified as young men and seven identified as young women. Seven were from California, three were from Texas, and two residing in Arizona. Those states were chosen because each state had a population of at least 30% Hispanic/Latino origin (Stepler & Lopez, 2016). New Mexico met the criteria; but after two no responses, further contact was ceased. We followed Bernard (2017) steps to take before, during, and after semi-structured interviews in a case-study design. To gather a set of student

participants, e-mails were sent to state staff in four states where the Hispanic/Latino population was greater than thirty percent (2016).

After receiving approval from the Institutional Review Board, consent was obtained from each student participant through verbal confirmation. All 12 participants consented to be interviewed. To maintain confidentiality participants were given aliases throughout the study. Because the youth are visible and relatively easy to find with a quick Google search, we will refrain from writing or outlining specifically what state they served or what year they were active in their leadership role. Audio recordings of the interview were done and notes were taken throughout each interview. No videos or photographs of the participants were taken to ensure confidentiality.

Interviews occurred in the form of one-on-one conversations. Eleven questions, along with clarifying sub-questions, were asked and spoken in English, though some brief moments of shared Spanish occurred and served to build rapport. The interviews were conducted online via Zoom and lasted between 60 minutes and two hours. The collection of data followed each completed interview for common themes and recurring answers to each interview question (Schensul & LeCompte, 2010). Interviews were transcribed, and field notes completed during the interview to maximize the qualitative research design (2010). Coding occurred on major topics discussed in the interview, repeated statements from a majority of the participants, and overall feelings from the participants perceived by our interpretations (Schensul & LeCompte, 2013). Through each of the processes triangulation occurred.

The implementation of multiple validity strategies ensured trustworthiness, authenticity, and credibility of the findings (Schensul & LeCompte, 2013). Our biases were explicitly stated. Transferability of the findings will be done so that readers and future Latinx leaders will find the analysis of these lived experiences applicable to their situations (Polit & Beck, 2014). The study's transferability will be supported through detailed description of the participants and their stories and by being transparent about the analysis and trustworthiness (Connelly, 2016).

Various intersections of similarities and differences do exist between the researchers and the participants, leading most in the profession to label us as a "native" or "insider" in regard to Latinx members. However, like Narayan (1993) and Visweswaran (1994) state, even the most "native" or "insider" researchers cannot know everything about their own society. As a result, the researchers recognized their roles and created a reflexivity statement that they continued to monitor and check to assure their personal experiences were not playing a role in the interpretations.

## Findings

The first research question can be divided into three different subsections of answers. The sections appear as the following: (1) "Cool kids" cliques in the FFA; (2) a lack of networking opportunities for members; and (3) advisors' frequent reminders of differences between the aspiring student and a typical state officer. Here, we introduce "the game" of state FFA officer elections.

**Cool Kids Clique** - Of the most prominent issues highlighting inequalities for Latinx FFA members, participants spoke of the "Cool Kids" clique in each state and how membership in this clique determines their success for higher leadership offices. One participant, Rosa, spoke of her time as a regional officer her senior year of high school. She didn't realize until she became a state officer the next year that the stereotypes of members at the regional level she witnessed then were still prevalent in regional officer teams after her own. When asked if she could further expand on the identities of regional officers, she said the following,

"There was definitely, like, a stigma of being a preppy kid during regional office. {What do you mean by preppy?} The popular kids [laughs] and they all hung out, and it was very exclusive, super-white, super popular, high achievers, legacy babies. Pushed to be perfect. Those kinds of people were the popular kids in our region."

Many other participants voiced similar experiences with the idea of the "cool kids" groups. Francisco noted their existence in his states and highlighted some key differences between the popular clique and his group of friends in state FFA association. Francisco noted not only the personalities of the members of the popular clique but also pointed out the exclusion and isolation felt by his group of friends.

**Networking Opportunities** - Francisco was an FFA member who was deciding on whether or not to run for state office, having a year of eligibility to run after graduating from high school. Although he finds his time in FFA and in agriculture education beneficial, he states the difficulty being a member of color in an organization that is a majority white. Francisco said the following about his state association and his lower-income, predominantly Mexican, rural high school,

No one from my chapter could ever be elected. When you look at the state officers they're all white, showed animals, come from farming families. When I think about having a chance [of getting elected state office] I really don't think I have one which is kind of, I would say, unfortunate; but it is what it is unfortunately. I've always seen white kids in state office. It's a niche of people who always hang out together, go to FFA camp, go to this conference or that conference, or who get badges and banners or whatever. It's like I'm not part of that and those are the ones that get state office.

Over and over, participants highlighted the importance of not just being a member of the "cool kids" clique but also doing the activities, events, and competitions that this clique does too. Only through these, oftentimes costly, networking opportunities-- like the leadership conferences, conventions, fairs, shows, and CDE events-- were members able to gain the attention of their fellow peers, other ag teachers, and state FFA staff who frequent these events as well.

**Agriculture Teachers' Reminders** - To the third point, one participant spoke of her ag advisor's frequent acknowledgment of the power white, popular members had in their FFA organization and how she was affected. Elena spoke of her time preparing for running for a regional officer position her junior year of high school. Elena had been an FFA member since her freshman year when she decided to seek out a leadership position beyond her chapter. When recalling the process, Elena remembers how her agriculture advisor approached the topic:

One of my teachers had come up to me and she pulled me to the side-cause they train you or whatever- and she, I guess, wanted to point out the obvious but she said, "When you think of a regional officer, what do you think of?" and I didn't say anything [laughs] but I knew, but I

didn't say anything. And she literally said, "You see a bunch of skinny, white, blonde girls," and she told me-- and I quote it because I'll never forget it-- "You don't look like that." And I-and I was in shock, but I also wasn't because I knew, like I knew what I was getting myself into.

Though Elena praised her ag teachers frequently throughout the interview, she did say that their constant reminders of differences between herself and the officers on stage opened her eyes to the inequalities faced by Latinx members like her. These inequalities are the reason she decided against running for state office despite her position as a high-ranking regional officer.

Although there was a myriad of responses, subsections are outlined between these two findings for RQ2: (1) a precedent of past Latinx officers being rewarded for their assimilation; and (2) a majority of past white state officer teams and wanting to fit that mold;. Here, we introduce how Latinx members "play the game". {A note to add: there will not be hard lines drawn between these two points as seen previously. Although outlined, the themes intersect with one another heavily in all and are not mutually exclusive. With assimilation, acculturation, adaptation, everything is blurry. Authentically, they spoke of a reality faced by students of color everywhere.}

For many other participants, they contemplated on their time participating in "the game". Isaac reflects, "I really just wanted to fit in and be successful in FFA. [Pause] I would put the jacket on and want my hair to look nice and look the part. I definitely- I don't know- I never define myself as my culture; I never emphasized I'm Mexican." After asking for clarification, he tells me,
I remember not making the top-10 list for Creed and thinking, "Damn... Is it cause I speak funny or like did I say things wrong?" That's when it hit me [pauses] like, "Ok, Isaac, what are the things we need to do to fix that or be better or fit this box that other people would check off?" Ultimately, I was like, "Okay, here's the rubric. They're looking for this, this, and this. How can we change you, so you can fit all these qualities?"
{What kind of qualities are you talking about specifically?}
Well, like, I was surrounded by a lot of Hispanics and would see them dirty because they worked in the fields, so I think-- wow!-- I think that's what it was for me! Wow! [Clearly having some sort of realization.] I didn't want to look dirty because I wanted to look clean and look like I have my.... I don't know... just like trying to stray away from that as much as possible to move in a direction where I'm hitting another level. [He ends this sentence like it's a question.] Just, like, trying to create an opportunity for myself. Oh, that sounds kinda tricky. [Pause] I don't know. I knew I had to dress and act opposite of that.
{Act opposite of what?}
Of the Latino farm workers.

Constantly in the interviews members repeated the need to be 'white-washed'. Isaac says it explicitly first, "I can definitely say I was like white-washed. Not because of my chapter's culture but the [popular] friend group I surrounded myself with." Of all my participants, Isaac was the male who was fully immersed with the popular crowd. Though others had dipped their toes into the "cool kid" clique, Isaac makes it clear throughout the interview that he fully assimilated to white culture in order to be a part of the seemingly successful popular clique and recognizes the assimilation he had to do from an early age.

Lastly, Carlos tells us something that shockingly proves a point we were agonizingly waiting. Off-handedly and confidently, he claims, "I've been told I'm white-washed [small chuckle]. And I jokingly will agree. You know, I'm a coconut: dark on the outside, white on the inside. It doesn't really affect me or anything. People have been calling me that my entire life."
*"It doesn't really affect me or anything."*
*"Being white-washed doesn't really affect me or anything."*
*"Others acknowledging my whiteness doesn't really affect me or anything."*
But in the following statement he contradicts his first statement: "I didn't feel like I had to be somebody else to run for office [pause] but that's cause I was always kind-of white-washed. You know, I never fit any of the [Mexican] stereotypes." He never fit any of the Mexican stereotypes. He considered himself white on the inside. He was elected as the only Hispanic member on his state officer team as was done for the past five years before him and since the years after him. *"It doesn't really affect me or anything."*

## Conclusions, Implications and Recommendations

Most elected officers at the state and national level who identify as Latino/Hispanic were interviewed for this study. Of the past five years, state and national FFA associations elect Latinx leaders at a disproportionately low rate and when they did get elected, they tried their best to erase their culture to be seen as the right prototype of a leader. Over and over again participants stated they did not see themselves genuinely represented on stage with the state and national officer teams. Even in states where the Hispanic/ Latinx population is well over 30%, members failed to see their culture accurately celebrated. Furthermore, the National FFA Organization and respective state associations does not recognize that Latinidad encompasses a wide spectrum that's defined as more than just "Mexican" or "brown" or even "Hispanic".

Lack of cultural representation implies that Latinx members feel the need to wear a mask instead of really feeling connected to their peers and teammates. Faircloth (2012) writes about the reciprocal nature of the adolescent identity experience and the resulting impact on engaged participation and connection. Members need FFA connections to things that are foundational to them. Participant interviews showed that they oftentimes felt replaceable by another token Latinx student because they never felt like their connection to FFA was specific to *them*.

Though Latinx members are unaware of it, their actions fall under the pillars of self-categorization theory - group prototypicality has an important role when it comes to leadership (Hains et al.. 1997). Specifically, more prototypical group members-- in an agricultural youth organization that would be defined as white, rural, conservative members-- are more likely to become leaders and are more likely to be perceived as effective group leaders than are *less* prototypical group members (which can be defined as our members who don't subscribe to traditional 'white' norms).

## Recommendations for Future Research

Although Latinos are regularly classified as the highest growing subpopulation in the United States (Schaeffer, 2019) minimal research has been done in regard to the Latinx experience in agricultural education. Of the studies that have been conducted, only two research teams have used LatCrit as a method for helping identify barriers for Latinos (Barajas et al., 2020; Elliot &

Lambert, 2018). We strongly urge the profession to expand our research efforts to find a pathway to assist the Latinx community in becoming successful in agricultural education.

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# The Resiliency and Thriving of Gay Men in Agricultural Education: A National Mixed Methods Study

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## Abstract

*Gay men in agricultural education do not have comprehensive support within the agricultural education profession. When gay men decide to become agriculture educators, they often keep their identity private. This national mixed methods study aims to seek if gay agriculture educators are resilient and thrive in rural communities. The thriving elements of spiritual influence, personal competence, peer support, and family cohesion were surveyed and analyzed using a resiliency lens. Findings include gay male agricultural educators thriving in a heteronormative profession. Recommendations include ensuring LGBTQIA+ teachers have a support system through mentoring, program development, and post-secondary support through student teacher placements.*

## Introduction

The moment for full marriage equality arrived on June 26, 2015, with the Supreme Court decision in *Obergefell v. Hodges*. The lesbian, gay, bisexual, transgender, queer, intersex, and asexual plus (LGBTQIA+) community youth and teachers continue to feel unwelcomed into rural classrooms (Biegel, 2018). The current legal foundation that protects LGBTQIA+ teachers rest on the Bostock v. Clayton County, Georgia case, which ruled that an employer cannot fire someone based on sexual orientation or transgender status (Smilan, 2020). Although the court has provided reassurances in protecting LGBTQIA+ rights, the pressure to share one's identity increases one's risk of being outed by peers, being ridiculed by community members, harassment in the workplace, and job security (Bower-Phipps, 2017).

The LGBTQIA+ narratives that are depicted in the media primarily represent life for urban LGBTQIA+ individuals (McInroy & Craig, 2015). Through these depictions, the urban experience is the norm making the universal LGBTQIA+ experience seem to only occur in urban areas (Sorgen & Rogers, 2020). Metronormative narratives make rural LGBTQIA+ lives invisible and for teachers, makes supporting them all the more important. Recognizing and supporting LGBTQIA+ youth students in rural areas is essential (Sorgen & Rogers, 2020). As Stone (2018) states, “The city is imagined as a place of community and freedom from surveillance” (p. 1). As a result, rural LGBTQIA+ youth feel they must flee rural areas to escape the surveillance of their heteronormative communities (Gray, 2009).

Today, the LGBTQIA+ literature is moving away from metronormativity towards conceptualizing anti-urbanism (Herring, 2007). To combat metronormativity, anti- urbanism argues the lived experiences of rural LGBTQIA+ individuals reveal many positives of living in rural areas (Kazyak, 2012). In addition, rural LGBTQIA+ teachers may also influence LGBTQIA+ youth to stay in a rural area (Kosciw et al., 2014).

LGBTQIA+ teachers who live in rural communities may not have the opportunity to share their identity with their administrators, students, or the students’ parents. Additionally, teachers report personal or professional identities as incompatible, which leads to low self-worth, depression, and anxiety (Lee, 2019). In rural settings, the “don't ask, don't tell” heterosexism construct perpetuates a public and personal denial of gay behavior, gay identity, gay relationships, and the gay

community (Boulden, 2001). Fortunately, preservice teacher education programs provide multicultural education courses to assist teachers in diverse classrooms. Through these courses and trainings, heterosexual and LGBTQIA+ teachers learn how to serve LGBTQIA+ students better and help preservice teachers create a more inclusive classroom (Mitton-Kukner et al., 2015).

Although public attitudes towards the LGBTQIA+ community have moderated somewhat in the last few decades, studies continue to show rural areas have higher negative feelings about gay men (Keleher & Smith, 2012). Residents of rural communities tend to have more negative attitudes toward the LGBTQIA+ community than do residents of urban or suburban areas, a tendency that may be especially pronounced in more remote rural communities (Eldridge et al., 2006). Despite the heteronormative perceptions and statistics, gay men are finding careers in rural communities (Wienke & Hill, 2013). The current trend is showing gay men are moving away to seek higher education, but they are coming back to live in their rural community (Annes & Redlin, 2012). Gay men choose to live in rural areas for many of the same reasons straight people do because it is where they are from, where their families live, or where they feel at home (Gray et al., 2016). Therefore, gay men are seeking secondary teaching positions in rural communities which include agriculture science education careers.

Literature is on a path to aid future teachers in their awareness as to how to serve LGBTQIA+ youth and support LGBTQIA+ teachers, but agricultural education is falling behind (Murray et al., 2020). Currently, there is a limited literature depicting the lived experience of gay men who teach in rural communities. More specifically, there is a minimal research on gay men who teach agriculture in rural communities. This study attempts to examine the resiliency and thriving of gay men who accept the challenge to teach agriculture within rural communities.

## Theoretical Framework

In the 1970s, psychologists, social scientists, educators, and academics started studying children that faced genetic and experiential adversity (Masten & Barnes, 2018). The overcoming of these adversities to find success in adulthood is now a phenomenon labeled as resilience. Resilience was developed and strengthened as a function of surviving past adverse experiences (Masten, 2001).

Resilience, as a component of the individual's personality, develops and changes over time through ongoing experiences with one's physical and social environment (Lee et al., 2007; Hegney et al., 2007). The degree to which one values themselves or finds themselves to be of worth is indicative of higher self-esteem (MacInnes, 2006). Lack of confidence or a view that one is less important than others is associated with low self- esteem (Heidari & Nemattavousi, 2020). Individuals with greater self-esteem tend to be more resilient and are more willing to attempt new endeavors or take on new responsibilities concerning work and other life activities (MacInnes, 2006; Resnick, 2015).

Teachers' resilience refers to the extent to which teachers can maintain positive attributes in the face of a range of challenges, pressures, and demands associated with their work (Kyriacou, 2011). Various protective and risk factors empower or disable teachers' resilient behavior (Fleming & Ledogar, 2008). A risk factor is considered any observable attribute of the individual (Kaplan, 2002) or the environment (Benard, 1991), which has been found to correlate significantly with a specific negative behavior or outcome. A risk factor is a possible cause or precursor of an attitude but not a direct or indirect outcome or symptom of behavior. Regarding the teaching profession, risk factors can be related to both individual and environmental attributes. At the individual level, the most critical risk factors are low self-esteem (Day, 2008), difficulties in seeking help (Flores,

2006), the conflict between personal beliefs and practices used (Beltman et al., 2011; Flores, 2006), anxiety and emotional exhaustion (Schlichte et al., 2005) and inadequate preparation for the reality of work (Demetriou et al., 2009). At the environmental level, risk factors are the adversities teachers may face due to constant changes in the education system may increase their levels of uncertainty, pressure, and workload (Gu & Day, 2007; Howard & Johnson, 2004).

Protective factors refer to those factors that mitigate the effects of risk factors or enhance the positive outcomes and the successful adjustment of the individual (Benard, 2004). Most instruments for the measurement of resilience assess a varying number of protective factors that enhance an individual's resilience.

The literature describes how analyzing thriving may explain how teachers overcome the risk factors. Thriving is an element of resiliency; therefore, thriving provides tangible constructs for the researcher to study. The thriving constructs further explain the protective factors that empower teachers to stay in the profession. Day (2008) states:
Research on teacher retention tends to focus on factors affecting teachers' decision to leave the teaching profession. Instead, what is required is a better understanding of the factors that have enabled the majority of teachers to sustain their motivation, commitment, and effectiveness in the profession (p. 256).
Therefore, the factors keeping teachers, predominantly minority teachers, in the profession need further research by utilizing the constructs of thriving.

Thriving suggests people will respond to thriving in three different ways when confronted by a challenge: They may (a) survive the incident, (b) recover from the incident, and (c) thrive as a result of enduring the hardship (Nishikawa, 2006). Daniilidou and Platsidou (2018) created the teachers' resilience scale to analyze the concepts of resiliency and thriving. The survey helps explain how spirituality, personal competence, peer support, and family cohesion work together to help teachers thrive.

As teacher resilience is an emerging field of research, there are sectors of research that directly deal with teacher resilience and others that examine related constructs. The area of research missing is the understanding of utilizing these constructs to analyze the resiliency and thriving of gay men in agricultural education. Using resiliency as the theoretical framework and the concept of thriving allows for the proposed research questions to be answered.

## Purpose and Research Questions

The broader purpose of this explanatory sequential design study is to explore the perceptions of gay men who teach agriscience education regarding their profession. More specifically, the researcher analyzed the overall agricultural education field to provide insight into how LGBTQIA+ teachers are perceived in the profession. Utilizing a mixed methods approach allowed the researcher to examine the concept of thriving through a survey and prescreened individuals with at least five years of teaching experience in the same rural community. Once the participants completed the survey, the participants went through an interview. The following research objectives guided the scope of the study:
**RO1**: What elements of thriving (spiritual influence, personal competence, peer support, family cohesion) allow gay men to succeed in agricultural education?
**RO2**: How do gay male agriculture teachers contribute their longitudinal success in the classroom to the *spiritual influence* element of thriving?

**RO3**: How do gay male agriculture teachers contribute their longitudinal success in the classroom to the *personal competence* element of thriving?
**RO4**: How do gay male agriculture teachers contribute their longitudinal success in the classroom to the *peer support* element of thriving?
**RO5**: How do gay male agriculture teachers contribute their longitudinal success in the classroom to the *family cohesion* element of thriving?

## Methodology

### Characteristics of Mix Methods Research

In mix methods research, the inquiry is based on the assumption that collecting diverse types of data provides a more complete understanding of the research problem than quantitative or qualitative data alone (Creswell & Creswell, 2018). The following study employs the explanatory sequential design mixed method (Hanson et al., 2005) to adequately explore the topic of the resiliency and thriving of gay men in agricultural education. Greene (2008) states:

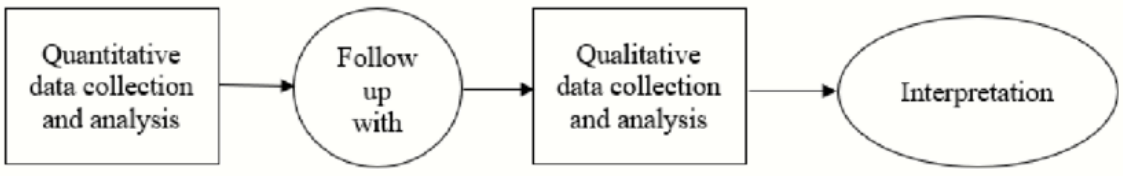
A mixed methods way of thinking is an orientation toward social inquiry that actively invites us to participate in dialogue about multiple ways of seeing and hearing, multiple ways of making sense of the social world, and multiple standpoints on what is important and to be valued and cherished.

For this mix method study, a broad survey was used to generalize results to a population and then, in a second phase, focuses on qualitative, open-ended interviews to collect detailed views from participants to help explain the initial quantitative survey (Creswell & Creswell, 2018).

### The Explanatory Sequential Design

The explanatory sequential design frames the concurrent or sequential collection and analysis of quantitative and qualitative data sets (Creswell & Clark, 2011). The purpose of the explanatory sequential design is to conduct research that clearly explain
the qualitative data by referring to the initial quantitative data (Creswell & Clark, 2011). Figure 3.1 displays the process of the explanatory sequential design. For this framework to successfully be used, the researcher must first provide the participants with a quantitative piece (questionnaire) followed with a qualitative (case study) element. Each must be collected before interpretation can occur.

**Figure 1. The Explanatory Sequential Design**




*Note*. Model depicted by Creswell & Clark, 2011.

The researcher is utilizing a social constructivist worldview. Social constructivists seek an understanding of the world in which they live and work (Creswell & Creswell, 2018). The researcher utilized social constructivism to help understand the multitude and complexity of views surrounding gay men in agricultural education and the men's lived experiences.

### Participants

Participants in this study were either current, past, or recently retired secondary agriculture teachers. They all identified as gay and as a male. Snowball sampling (Goodman, 1961) was utilized to help spread awareness surrounding the current work. Snowball sampling allows participants to provide information about the study to individuals who may qualify to participate to gain awareness of the research (Goodman, 1961). Through snowball sampling, more gay men were able to participate in the survey. Due to snowball sampling, the researcher is not knowledgeable of how many received the recruitment email but was later informed that it was shared on private social media group pages, specifically for the gay community.

A total of 45 gay men completed the survey portion of the study. Eighteen teachers agreed to participate in the qualitative portion; however, twelve completed the interview. The six non-participants did not respond to a second interview invitation or decided to no longer participate due to time restraints. Contact was made with the other seven participants who initially qualified for the interview, but after a lack of response from a follow-up email, further contact was discontinued.

Table 1 provides an overview of teaching experience, observed personality during the interview, and whether each gay man was open about their sexual orientation at school. The researcher utilized the Myers-Briggs personality types and definitions to help him describe each participant's observed personality (Judge et al., 2002). Collectively, the men have 115 years of teaching experience. The location of the gay men is to stay anonymous; however, each region of the National FFA Organization is represented (ffa.org, 2022).

Table 1
*Participant Information* (*n* = 12)

| Pseudonym | Teaching Experience | Observed Personality during the Interview | Open Yes/No |
|---|---|---|---|
| Troy | 9 years of teaching experience | Cool and Calm | Yes |
| Freddie | 6 years of teaching experience | Succinct and Realistic | No |
| Harry | 5 years of teaching experience | Outgoing and Bubbly | Yes |
| David | 8 years of teaching experience | Kind and Quick | Yes |
| George | 7 years of teaching experience | Diligent and Considerate | Yes |
| Adam | 8 years of teaching experience | Shy and Intelligent | No |
| Ricky | 5 years of teaching experience | Reserved and Caring | No |
| Michael | 15 years of teaching experience | Bold and Optimistic | Yes |
| Sam | 6 years of teaching experience | Reflective and Laid-back | No |
| Clay | 11 years of teaching experience | Determined and Easygoing | Yes |
| Tyler | 28 years of teaching experience | Established and Easygoing | No |

| | | | |
|---|---|---|---|
| John | 7 years of teaching experience | Passionate and Warmhearted | No |

Each of the participants met the criterion of having a minimum of five years teaching experience in the same rural school. The researchers set the criterion at five years to ensure that the teachers had built rapport in their community/school (Topchyan & Woehler, 2021) and had obtained tenure status. A total of twelve interviews were conducted out of the eighteen who qualified. The seven remaining individuals were unresponsive to follow-up emails so further contact was discontinued.

## Findings

After four months of email invitations, follow-up reminders, and tracking of snowball sampling, 45 participants completed the questionnaire and 12 of the 45 agreed to participate in the qualitative portion of the mixed methods research design. Using an explanatory sequential mixed methods research design, chapter four depicts the quantitative and qualitative findings and their relationship to one another.

**Research Objective 1: What elements of thriving (spiritual influence, personal competence, peer support, family cohesion) allow gay men to succeed in agricultural education?**

Research objective one sought to evaluate the four thriving elements of the teachers' resilience scale (TRS) that Daniilidou and Platsidou (2018) developed. Through measures of central tendency, Table 2 depicts that personal competence ($m$ = 3.98; $SD$ = 0.48) was the highest perceived thriving element among the rural secondary agriculture teachers who identify themselves as gay. Following personal competence was peer support ($m$ = 3.88; $SD$ = 067), family cohesion ($m$ = 3.70; $SD$ = 0.92), and spiritual influence ($m$ = 3.50; SD = 0.65).

Table 2

*Thriving elements as described by rural gay secondary agriculture teachers* ($n$ = 45).

| Element | *n* | *m* | *SD* | Minimum | Maximum |
|---|---|---|---|---|---|
| Personal Competence | 45 | 3.98 | 0.48 | 3.00 | 5.00 |
| Peer Support | 45 | 3.88 | 0.67 | 2.00 | 5.00 |
| Family Cohesion | 45 | 3.70 | 0.92 | 1.00 | 5.00 |
| Spiritual Influence | 45 | 3.50 | 0.65 | 2.00 | 5.00 |

*Note:* TRS responses were based on a 5-point Likert scale ranging from 1 (not true at all) to 5 (almost always true) with 3 as neutral point. All responses are based upon the teachers' resilience scale (Daniilidou & Platsidou, 2018).

**RO2: How do gay male agriculture teachers contribute their longitudinal success in the classroom to the *spiritual influence* element of thriving?**

Spiritual influence is the lowest of the four elements in the quantitative data; however, the mean score ($m$ = 3.50) is above the neutral point. Consistently across the interviews, participants spoke how religion and politics interfere with their ability to thrive. Starks and Robinson (2009) explain how religion and politics are nearly inextricable when analyzing spiritual influence. Therefore, the researcher pulled themes that explain the complexities of religion and politics impacting the spiritual influence of the thriving element.

Some of participants discussed how their religious upbringing was an obstacle that they faced when coming out to their loved ones. John explains with sincerity:

So, a lot of my reservations about telling my family were grounded in religious beliefs, religious perspectives, I was baptized . . . [and] I knew what their beliefs were. And I knew, I mean, I'd heard that [being gay meant you were condemned] at sermons, and things like that.

For John, the sermons that he heard at church made it more challenging for him to accept his sexuality. He was not the only one who struggled with a religious upbringing. Sam, who is closeted, still struggles with his identity. He states, "I still struggle with [being gay] to be quite honest. And a big part of that comes from growing up in a very conservative evangelical home. And I'm still not actually completely open with my family about it."

**RO3: How do gay male agriculture teachers contribute their longitudinal success in the classroom to the *personal competence* element of thriving?**

Personal competence is a set of skills that include self-awareness, self- management, social awareness, relationship skills, and responsible decision-making (Feuerborn & Gueldner, 2019). Several of the men shared with the researcher their understanding of defining characteristics of self. Through these conversations, the men discussed that identifying as a gay man does not define who they are, but it is part of who they are, and that is a distinction that was made throughout these interviews. Troy states with gusto, "My sexuality isn't my number one defining feature. I let my agricultural background and knowledge, my hobbies, my passions, and my interests be more of my defining features. . . [My sexuality is] just a piece of me". Harry, who is an openly gay man echoes the same sentiment when it comes to being themselves in the classroom. Harry explains:

Regardless of whether or not I date men, that's not the first thing about me. It's a small subset of who I am as an overall individual. My sexuality is not what I'm always going to talk about in class. I don't force my opinions upon people. I feel like some people do. I am who I am. I have a fiancé. Ultimately, that's my personal life, and I'm at school, and if it comes up, it comes up, but it's not like my sexuality is the talk of the town.

**RO4: How do gay male agriculture teachers contribute their longitudinal success in the classroom to the *peer support* element of thriving?**

Identifying the support systems of gay men in agricultural education helps in the understanding of why these men stay in the profession. The lack of support from administration, community members, students, and the parents of the students may hinder gay men in their ability to thrive (Robinson & Ferfoja, 2001). Therefore, the peer support systems that gay men belong to in agricultural education provided significant insight on how gay male agricultural educators thrive.

To understand the magnitude of peer support, David explains how he provides his students with support. David unapologetically states:

You show your kids that you love them, and you care for them, and you want to be authentic, and you want to be yourself, and you want to support the students 100% even if you cannot support yourself some days, they are going to give you the same back. I really think that when you look at ho*w* do they support you? How do they support you personally? How do they support you mentally? How do they support you emotionally? It goes beyond gifts. It really comes down to the concept of how they can mentally make you feel like you belong at your school. How can they inspire you to want to get out of bed every day? And I think the most significant component with that is, there are days I do not want to go to work, there are days I want to call in sick, but when I sit there, and we have a CDE [Career Development Events] practice, and I know that kids really

want to learn about that concept. That is when you know that they support you 100% because they need you there. And you can pry yourself out of bed to go.
David explains how his students support him, and how he supports his students. In this section, the researcher decided to include students as the participants' peers. Most agricultural educators spend more time with their students than they do with any other group they may interact with at any given time.

**RO5: How do gay male agriculture teachers contribute their longitudinal success in the classroom to the *family cohesion* element of thriving?**
Every man interviewed discussed how their family unit contributed to their overall thriving. The mean TRS ($m$ = 3.70) was the second-lowest recorded. However, the men accredited the individuals they interact with daily to their overall success.
David discusses how his father was an agriculture teacher, and how he always knew he could rely on him to ensure that he had a place in FFA. David states, "I pay tribute to that because my dad was my ag teacher. So, I knew I always had my dad".

Michael explains that he can talk to his mom about anything. He states, "So I just talk to her about pretty much everything". Michael's mother accepts him for who is, and he talks to his mother about life. Then, there is Tyler. Tyler's parents are the only family members of his that are aware of his sexual orientation. Tyler explains the unconditional love his parents have for him:
My parents are accepting. We do not talk about [me being gay] much. Especially my dad. He knows. And I know he loves me, but it is just one of those things he does not feel comfortable talking about it, so we just do not discuss it. My mom loves me.
Tyler's father does not discuss his son's sexuality, but he does love Tyler. Tyler cares for his parents, and they help him to thrive.

## Conclusions, Implications, and Recommendations

Gay men in agricultural education are resilient and are thriving in the classroom, but gay men have their own unique challenges to overcome to thrive in the profession. Spiritual influence, personal competence, peer support, and family cohesion are pivotal in the understanding of how these men thrive in agricultural education. The researcher has provided the reader with the themes that emerged from the interviews and provided conclusions and dialogue to help summarize the findings.

Most of the men did not contribute their success to spiritual influence, but a few men did accredit thriving to their faith. Ironically, having a religious upbringing was acknowledged by the men as a reason for becoming more resilient later in life, not because of their love for faith, but how the participants felt attending church and having to suppress their identity due to their faith. Throughout sermons, the participants explained how identifying as gay is a sin, and that identifying as gay is condemning. Hearing that growing up has psychological consequences (Barton, 2010). It is imperative to understand that one cannot simply pray the gay away, and heterosexual individuals who participate in and applaud saying that gay men are going to Hell is committing a microaggression (Nadal et al., 2011). Regardless of how many times an individual who feels uncomfortable with LGBTQIA+ identity say, "I do not agree with your lifestyle" or "do not say gay", people cannot change who they are attracted to at a given time (Marshall & Hernandez, 2012).

Conversely, several men stated that their faith is something that no one can take away from the participants. By utilizing resiliency, the men who shared that their faith plays a significant role in their lives allow the gay men to be resilient (Walker & Longmire-Avital, 2013). Through these conversations, the researcher concludes that religion is a sensitive topic to discuss with rural agriculture teachers because of the complexities of organized religion.

Some research participants expressed difficulties teaching in traditional Christian conservative environments and not connecting with conventional families. Not having the ability to relate with individuals impacts resiliency by creating an additional barrier for gay men to overcome (Hash & Rogers, 2013). The researcher found it captivating that the men admitted to being a valuable addition to the rural Christian conservative environments they serve. Therefore, the openly gay male agriculture teachers provide students with diverse perspectives compared to the lived experiences of rural heterosexual teachers and communities. Research shows that the more exposure students have at an early age to diverse perspectives, the more successful they will be at interacting with individuals with various backgrounds from their own (Keengwe, 2010). The men thrive in their communities while helping their students understand that people comprehend information in various ways.

Personal competence provided critical insight on how gay men in agricultural education thrive. The men's sense of self helped the researcher to draw conclusions. Gay agriculture teachers must be more than good teachers. Several men expressed that their students do not regard their educator's identity as a negative trait. Although, several participants explained how identifying as a gay man led the participants to believe that they were not doing their jobs adequately. Therefore, participants explained that they felt they constantly needed to prove that they were the right candidate for the job. By overcoming the mindset of being a good teacher, gay agriculture teachers become more resilient. Demonstrating that they are the best educators helps these men subconsciously thrive (Hutchins & Rainbolt, 2016). Gay men are more intentional in their decisions than their heterosexual peers in the classroom because of their identity.

Gay men who keep their identity a secret have more depressive symptoms than gay men who are open about their sexual orientation (Fingerhut et al., 2010). The depressive state is harmful and diminishes one's mental health (Burgess et al., 2007).

Research has aided in describing how one's mental health is correlated with the intricacies of the coming out process, which impacts resiliency (Kosciw et al., 2014). Concurrently, coming out and its impact interferes with one's ability to thrive. There is a stark contrast between the closeted and open gay male agriculture educators. The closeted men explained a fear that once they came out, they would no longer be the *agriculture educator* but the *gay agriculture educator*. There is a dread of being outed. Contrarily, the openly gay men's vulnerability to being out allows the participants to thrive, and there is no fear of being outed.

Each gay male agriculture educator varied in lived experiences. Each man has his unique perceptions of being gay. Some had lived experiences that contributed to the participants' ability to thrive. At the same time, others had stories that explained how gay agriculture educators are resilient. Overall, gay agriculture teachers stay in agriculture education because they love their jobs and students.

For educators, empathy and sympathy are central to sociological thinking while interacting with students (Rockwell et at., 2019). The gay men interviewed expressed how they have more empathy and sympathy because of their identity. As children, the gay agricultural educators recall how adults treated the participants while figuring out their identity. The experiences growing up had a lasting impact on each man's life - assisting them to become more empathetic and sympathetic with individuals who share similar challenges in belonging to the LGBTQIA+ community or belong to a marginalized group (LaSala, 2010). The men are more resilient because of their challenges while coming out or identifying as gay.

Gay agriculture teachers may face unique hardships with their identity and teaching. For the educators, they stay in the profession because of their students. The teachers stated that the students did not care how the men identified if they knew that the teacher cared about their well-being and learning—the teacher recalled stories of how their students helped the participants thrive. Adolescents are resilient (Hauser et al., 2008), and their gay agriculture educator is resilient too.

The men shared that most of their schools have consequences for students who participate in homophobic rhetoric. The men recall when their students called the participants a faggot. Being called derogatory terms has the potential to psychological harm gay men who constantly hear these terms that are directed towards their identity (Slaatten et al., 2015). As the participants explain, by the school disciplining students who use homophobic rhetoric, they feel respected as a gay man in their rural school.

Most of the participants felt supported at their rural schools. The support stemmed from the men doing their jobs adequately and fulfilling their duties as a teacher. Once the researcher included sexual orientation, the conversations changed. The participants explained how their coworkers were homophobic. The gay agriculture teachers stated that their students were not as homophobic as their coworkers. Teachers and other adults do not understand the severity of how harmful homophobic rhetoric is to the LGBTQIA+ community (Poteat et al., 2019). One of the participants explained how teachers are entering the profession for the wrong reasons, alluding those teachers are not prepared to educate populations that vary from their own. For the closeted gay agriculture teachers, their homophobic coworkers are adding an extra stressor in the coming out process. Through these interactions, the participants become more resilient.

Finding validation from other LGBTQIA+ teachers has helped gay agriculture educators thrive. Multiple participants discussed how belonging to a social media group allows a space to see they are not alone. Additionally, several men discussed how they are not the only LGBTQIA+ community member at their rural school. Having other community members at their schools they can turn to for guidance has aided the educators tremendously.

Community support is imperative for agriculture educators (Pratt et al., 2021). Therefore, gay agriculture educators agreed that having community support is essential for a successful classroom. There were mixed reactions regarding the LGBTQIA+ community. Parents of LGBTQIA+ youth believe that their child will thrive with a gay agriculture teacher. On the other hand, several men describe leaving the classroom because of their identity. Through understanding how to navigate the community's social pressures, gay men become more resilient (Bartone, 2017).

The researcher recommends that additional research surrounding the LGBTQIA+ community should include interviewing and surveying heterosexual agriculture science teachers and analyze

their perceptions of the LGBTQIA+ community. Through this work, it will aid in the understanding of the biases and misunderstandings that heterosexual people have toward the LGBTQIA+ community. Additionally, theories and conceptual frameworks including, but not limited to, the theory of planned behavior, theory of intersectionality, theory of hegemony, masculinity, queer theory, metronormativity, heteronormativity, and urbanormativity, should be researched and used to see how researchers and practitioners can enhance behaviors and perceptions of preservice and veteran teachers' acumens on topics surrounding the LGBTQIA+ community. Gay men are not the only members of the LGBTQIA+ community; therefore, additional research surrounding other queer populations must occur in agriculture education.

Further research into masculinity and power dynamics within agriculture science education is needed. The parameters of this work did not focus on those areas, but the literature describes in detail how these constructs impact the LGBTQIA+ community. For this work to take place, the researcher encourages individuals to work in school systems to understand how these two dynamics work together in a classroom setting. Therefore, it is recommended to research these topics and how they impact the profession and high school classrooms. The researcher also recommends continuing the work of Murray et al. (2020) states in their research to help all the identities within the LGBTQIA+ community within agricultural science education.

An estimated 3.5% of adults in the United States identify within the LGBTQIA+ community. That implies that about nine million Americans belong to the community which is equivalent to the entire population of New Jersey (Gates, 2021). Therefore, those nine million adults were children once, and most of them went through the American public school system. Agriculture science education belongs to that system who is educating the adults that belong to the LGBTQIA+ community.

Extensive training on multiculturalism must occur for all preservice educators surrounding topics on underrepresented populations. Homophobia should not be occurring in one's classroom. Therefore, teachers must ask themselves if they have the capability to serve a child that belongs to the LGBTQIA+ community before committing themselves to the teaching profession. Providing an inclusive classroom for all must be at the forefront of all educators (Lindsay, 2003).

LGBTQIA+ representation in schools is essential but tokenizing (Linley & Nguyen, 2015) needs to be monitored. It is not the responsibility of these men to educate individuals on LGBTQIA+ identities. Therefore, the researchers recommend that preservice teachers, practicing teachers, and higher education personnel attend professional development surrounding these topics. The researcher plans to develop a series of professional development that will aid in the understanding of the topics discussed in this document. He will seek guidance, but no one should feel exploited to develop a curriculum based solely on their identity. Murray et al. (2020) has started the conversations, but the teaching must occur.

Gay male agriculture educators are not going anywhere soon and are here to stay. It is time to accept individuals for who they are and appreciate varying perspectives as a profession. For gay men in agricultural education, the researcher recommends calling homophobic rhetoric, facial expressions, and degrading comments that make one feel small out. Use this time as a teaching opportunity.

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# Preparing Agricultural Education Majors for Racially Diverse Classrooms: Students' Experiences During a Service-Learning Project for Black Youth


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## Introduction and Review of Literature

Trends published by the Institute for Educational Sciences (IES) (2020) documented a shift in the racial distribution of students in U.S. public schools. The growth of racially diverse populations differs by region; however, a decline in the percentage of White students enrolled in public schools has been reported across the U.S. (Kena et al., 2014). These changes in demographics have created challenges for some teachers and school districts because they have struggled to reduce the achievement gap between racial minority students, especially Black students, and their White peers (Rojas-LeBouef & Slate, 2012). On this point, Maxwell (2014) argued that these achievement gaps could negatively influence the well-being of the U.S., not only in urban spaces but also in rural areas, by exacerbating the socioeconomic gap between White and minority populations. Consequently, these trends have also begun to influence the preparation of school-based agricultural education (SBAE) teachers (Roberts et al., 2016, 2020).

For example, data on the hiring and retention of SBAE teachers have demonstrated a problem with recruiting and retaining racially diverse professionals (Foster et al., 2021; Smith et al., 2022). As a result, a need has emerged to prepare SBAE teachers with the dispositions, knowledge, and skills needed to teach students who represent different cultural and racial backgrounds than themselves (LaVergne et al., 2012). One approach that has been advanced to achieve such in teacher preparation has been service-learning (SL) (Roberts et al., 2020). In the literature, SL has been defined as the merger of academic learning with profound service in which students use critical reflection to connect their learning to issues and problems in a local context (Bringle & Hatcher, 1995). In teacher preparation, SL has been differentiated from other preclinical experiences because students "…not only acquire professional growth through leading instructional-based initiatives, but they also address local educational problems and areas of need" (Roberts et al., 2020, p. 216). As an illustration, the literature on using SL in teacher preparation has advanced the method of instruction to improve preservice teachers' self-efficacy for teaching while also helping underrepresented youth gain critical knowledge and skills (Borgerding & Caniglia, 2009; Jia et al., 2018; Wilson et al., 2015). Consequently, this approach could be mutually beneficial to racial minority students and undergraduate students who hope to pursue careers as SBAE teachers (Roberts et al., 2020; Woods, 2004).

Despite these benefits, multiple challenges have been reported that have hindered SL's use in preparing teachers for SBAE classrooms (Roberts et al., 2019a, 2019b, 2020). For instance, a national study (Roberts et al., 2019a) reported that teacher educators for agricultural education did not intend to use or feature SL in their teaching methods courses (Roberts et al., 2019a). As a consequence, it does not appear that agricultural education majors gain exposure to the method before entering the SBAE classroom (Roberts et al., 2019b). On this point, Roberts et al. (2020)

suggested additional research on the method's utility for SBAE. Consequently, a need emerged to understand whether SL could be used to prepare agricultural education majors for racially diverse classrooms.

## Epistemological Position and Theoretical Perspective

We used critical constructionism to investigate the phenomenon under investigation (Denzin & Lincoln, 2008). Critical constructionism draws on critical theory and constructionism (Crotty, 1998). Critical theory, a theoretical perspective, requires researchers to critically examine phenomena to understand how various forces have been influenced by power, control, and influence while being reinforced by societal norms (Crotty, 1998). Therefore, critical theory intends to critique these power dynamics and advocate for lasting change. Meanwhile, constructionism, an epistemological position, refers to the worldview that individuals view knowledge as socially constructed through lived experiences, which contrasts with the objectivist position that argues that knowledge is fixed and not influenced by humans (Crotty, 1998).

By combining the two lenses, critical constructionists reject the notion that knowledge is simply a social construct. Instead, they critique the limits placed on humans' construction of knowledge by the individuals who hold power over them (Denzin & Lincoln, 2008). As such, critical constructionism served as a productive lens to examine how power dynamics have shaped how agricultural education majors understand and experience working with racially diverse populations. Further, this lens also helped us critique how such dynamics could be addressed to ensure that agricultural education majors become prepared to teach students from diverse racial backgrounds.

## Background of the Study

This study investigated a SL project for the *Foundations of Agricultural and Extension Education* course at Louisiana State University in the Fall 2020 ($n$ = 20) and 2021 ($n$ = 12) academic semesters. Students take this course as a freshman or sophomores; however, some juniors also enroll because they transfer to the major later in their academic career. The SL project occurred over 14 weeks in the 2020 and 2021 academic semesters. Because the project happened during the COVID-19 global pandemic, it was delivered in a virtual format to ensure the safety of all involved. For the SL project, we partnered with Big Buddy, an after-school mentoring program that seeks to improve Black youth's academic and professional development in Baton Rouge, Louisiana. Black youth have been identified as an at-risk group because they have been shown to be less likely to complete high school and college and obtain a career in a job requiring an advanced educational degree (IES, 2020). For this project, each agricultural education major mentored four Black youth, called a *mentoring pod*, through weekly virtual sessions about career awareness in which the students introduced the youth to various careers in the agricultural and allied sectors. The agricultural education majors accomplished this through multiple pedagogical approaches, including formal lessons, readings, and small group discussions. Table 1 provides an overview of the significant activities of the SL project.

**Table 1**

*Significant Activities of the SL Project*

| Week(s) | Activities |
|---|---|
| 1-2 | 3. The agricultural education majors were assigned to a mentoring pod, i.e., four Black youth participating in Big Buddy |
| 3-4 | 3. Students conducted a minimum of five hours of virtual observation with their learning pod to familiarize themselves with the youth |
| 5-6 | 4. Students developed educational and mentoring materials and planned for their mentoring pod<br>5. Students and the lead instructor coordinated to enhance educational materials<br>6. Students submitted one (1) weekly written reflection |
| 7-12 | • Students delivered one-hour weekly mentoring and career awareness sessions<br>• Students submitted reflections each week |
| 13 | • Students submitted a final portfolio with four (4) photos and captions of their experience |
| 14 | • Students engaged in a final SL project reflection and peer-debrief |

## Purpose and Research Question

This case study examined the experiences of agricultural education majors during a SL project for Black youth that was designed to help prepare them for teaching racially diverse student populations. One research question guided the study: How did an SL project for Black youth help agricultural education majors address their biases and become more prepared to teach students from diverse racial backgrounds?

## Methodology

We employed Stake's (1995) instrumental case study design to ground this study methodologically. Stake (1995) argued that one of the primary characteristics of a case study is how it is bounded. In

the current study, we bounded the case by the course and time; for example, the case focused on the experiences of students enrolled in the *Foundations of Agricultural and Extension Education* course at Louisiana State University during the Fall 2020 and 2021 academic semesters. In total, 32 (*2020 Fall Semester* = 20; *2021 Fall Semester* = 12) agricultural education majors participated in this study. The agricultural education majors were primarily White (*f* = 29; 90.1%) and female (*f* = 24; 75.0%) with 15 (46.9%) freshman, 10 (31.2%) sophomores, and seven (21.8%) juniors.

The data for this investigation consisted of 219 written reflections, 128 photographs with captions, and focus group interviews, i.e., two total, that occurred at the conclusion of the 2020 and 2021 academic semesters, which lasted for two hours. It should be noted that although the photographs were analyzed as data for this investigation, they were not featured in this abstract because of space limitations. Throughout the investigation, we promoted qualitative quality by embedding Lincoln's and Guba's (1985) standards – confirmability, credibility, dependability, and transferability – throughout each phase.

In our data analysis, we used Saldaña's (2021) qualitative analytic approaches to analyze each data source systematically. For this investigation, we used the following first-cycle coding procedures: (a) in vivo, (b) emotion, and (c) values coding. As a result, 682 unique first-cycle codes emerged. To reduce the data, we used axial coding to group similar first-cycle codes into categories. Then, in the final phase of analysis, we used thematic analysis to reduce the categories further and emerge the investigation's themes.

## Findings

The findings for this investigation emerged through three themes: (1) defying stereotypes, (2) recognition of power and privilege, and (3) the reinforcement of professional identity. When considered together, the themes helped describe how the agricultural education majors in this study grappled with how existing social and cultural structures have placed limits on Black youth while also coming to terms with how they could address such inequities through teaching in the future.

### Theme #1: Defying Stereotypes

In the first theme, defying stereotypes, the agricultural education majors expressed how their attitudes, beliefs, and perspectives began to evolve as a result of the SL project. For example, Participant #17 shared in a reflection: "I think Black students are often thought of as low achieving, and we often think they won't be able to keep up in classes." She continued: "However, in my SL project, I realize[d] how bright and remarkable some of these kids are." Meanwhile, Participant #3 shared: "In the media, [Black] people are depicted as criminals and violent. However, in my learning pod, I had some of the sweetest kids ever; it [the SL project] just helped me flip the script in my mind, I guess."

Similarly, Participant #31 explained: "I was expecting the kids to be more argumentative. However, I felt like they were excited most of the time and showed me a lot of respect." The agricultural education majors also articulated how they also began to shift the Black youth's perspectives on agriculture. For example, Participant #22 shared in a focus group interview: "in the beginning, most of the kids would joke about agriculture and how being a farmer would be a sucky job." He continued, "after a couple of weeks, a lot of the kids seemed to be more excited and aware that agriculture was more than just farming." On this point, Participant #27 expanded: "Yeah, I

really enjoyed debating with the kids about what jobs were connected to ag and which ones were not. You could almost see their mind like expanding in real-time; it was one of the best moments for me." Therefore, as a result of the SL project, the agricultural education majors and the Black youth began to rethink previous stereotypes they held and discovered mutual respect and understanding for one another.

**Theme #2: Recognition of Power and Privilege**

When reflecting on their experiences, the agricultural education majors began to recognize how issues of power and privilege negatively affected Black youth. For example, Participant #1 explained, "because of the pandemic, we usually Zoomed [a virtual meeting platform] into the kids' houses. Some of their living situations were pretty eye-opening for me. I forget how lucky I have it." Correspondingly, Participant #14 revealed: "One of my kids apologized for missing the previous week because his cousin was shot. It just kind of made me stop for a few moments because I did not know how to respond. I just don't have any experience with dealing with that heavy of a situation." Participant #9 expanded: "one of my kids would talk about being home alone because their mom was at work. This kid was like 11. I was worried about her safety; it was just not something I had to worry about as a kid."

When asked in the focus group interview what their biggest takeaway from the project was, Participant #15 responded: "I think doing the SL project virtually was powerful because I got to see how these kids live. I think that is something I will remember when I start teaching." Participant #4 echoed a similar sentiment: "Yeah, I agree with [Participant #15]. I think when I am teaching, and I have a problem with a student, I may really have to think about all external things that could be influencing them to behave in a certain way." Meanwhile, Participant #32 shared: "The SL project just really opened my eyes to how lucky I have had it growing up. And I need to consider what may be going on in someone's life, like do they have enough food? Is the kid safe at home?" Consequently, the SL project appeared to help the agricultural education majors recognize how power and privilege influenced the lives of the Black youth.

**Theme #3: The Reinforcement of Professional Identity**

In the final theme, the agricultural education majors expressed how the SL project contributed to growth in their professional identity as a *teacher*. For example, Participant #1 explained, "I think I was really nervous about teaching before doing this [the SL project]. Now, I feel like I could make a difference in kids' lives that maybe come from a different background." Meanwhile, Participant #11 said: "It [the SL project] was pretty nerve-wracking at first to be honest. I thought I was going to bomb this miserably, but I don't know, after a couple of weeks, I started to think maybe I was making a difference for a couple of these kids." Similarly, Participant #6 recalled: "one of my kids stayed late on the Zoom [a virtual meeting platform] one day and he told me I was his favorite teacher. That meant the world to me, I just haven't really thought of myself like that before." As a result, many of the agricultural education majors expressed that they perceived that as a result of the SL project it reassured them that teaching was the path they wanted to pursue. Further, many of the agricultural education majors maintained that mentoring the Black youth helped alleviate some of their concerns about teaching students from diverse racial backgrounds.

## Conclusions, Discussion, Implications, and Recommendations

This investigation sought to describe the experiences of agricultural education majors during a SL project for Black youth that was designed to help prepare them for teaching racially diverse student populations. Using a critical constructionism lens (Denzin & Lincoln, 2008), three themes emerged from our analysis: (1) defying stereotypes, (2) recognition of power and privilege, and (3) the reinforcement of professional identity. As a result, we conclude that the SL project helped the agricultural education majors recognize how various societal forces have created unique obstacles for Black youth. We also recommend that future research examine the utility of using critical constructionism as a lens to examine issues of power, privilege, and inequity in investigations that focus on the preparation of teachers for agricultural education since it does not appear to have been used extensively in the literature.

In this study, the agricultural education majors articulated how the SL project helped them reject stereotypes they held of Black youth – a concept supported by existing literature (Roberts et al., 2020; Woods, 2004). In the future, we recommend that teacher educators create opportunities for students to interact with Black youth more intimately through immersive projects such as SL. In addition, future research should seek to understand whether other methods of instruction could achieve similar outcomes for undergraduate students considering a career as a SBAE teacher.

The agricultural education majors in this study also had to confront issues of power and privilege. We concluded that the SL project in this investigation uniquely provided insight into the lived experience of Black youth and helped the students gain empathy. In the literature on the preparation of teachers for agricultural education, such a concept does not appear to have been explored previously. Moving forward, we recommend that teacher educators who use a similar approach consider providing resources for students who may struggle with understanding how such forces may limit opportunities for Black youth. Further, future quantitative studies should also be conducted to examine trends across multiple cohorts regarding the growth that agricultural education majors experience in regard to recognizing and coping with issues of power and privilege when teaching students of color.

We also conclude that the SL project helped reinforce the professional identities of the agricultural education majors in this study. For example, after the project, many students reported that by mentoring Black youth, they felt more confident in teaching, perceived the experience renewed their purpose, and reduced their concerns about becoming a SBAE teacher. This sentiment does not appear to have been reported in agricultural education literature. Therefore, we recommend that teacher educators create SL opportunities to allow students to interact more purposefully and build relationships with youth representing minority populations. Perhaps such an approach could help prepare future generations to teach students from diverse racial backgrounds better. It should be noted that the study had a key limitation. The SL project occurred during the COVID-19 global pandemic and had to be delivered virtually. Therefore, we recommend that future studies investigate whether SL projects that are facilitated in-person versus being delivered virtually lead to more robust outcomes.

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# Leadership Competencies Developed During a Short-term Domestic Study Tour: An Exploration of State FFA Officers' Perceptions

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## Introduction and Literature Review

Globalization is an integral component of the agricultural, food, fiber, and natural resources industry, increasing the need for developing leadership competencies within a global context (Deardorff, 2006). Study abroad experiences are a valuable learning opportunity for students preparing to become globally competent leaders in a rapidly changing world and expanding their capacity to solve complex problems. Participation in study abroad experiences generally produce positive outcomes associated with individual growth, development of intercultural competence, and understanding one's role in global engagement (Landon et al., 2017). Higher education institutions offer many opportunities for student participation in faculty-led, short-term study abroad (STSA) programs within the context of agriculture (Hendrickson, 2015; Vetter & Wingenbach, 2019). These programs help students seeking careers in the agricultural industry be better prepared to enter a diverse workplace and understand social responsibilities beneficial to society as whole (Vetter & Wingenbach, 2019). Many STSA programs available to students in agriculture are designed to develop cultural awareness, technical knowledge within various agricultural industries, and foster personal growth (Bunch et al., 2018; Roberts et al., 2019; Smith, 2013). While STSA programs may not produce the same outcomes as long-term, cultural awareness growth can occur; but students may not move through all developmental levels needed to develop cultural competencies (Bunch et al., 2018; Newlon, 2019; Rowan- Kenyon & Niehaus, 2011). Some STSA efforts exist to develop global leadership competencies, yet few studies were found specifically exploring student global leadership competency development during a STSA within the context of agriculture (Quirk, 2018).

With barriers such as finances or reservations about international travel preventing students from participating in STSA programs, it is questioned whether domestic study tours designed to meet the same objectives as a STSA and produce similar meaningful outcomes (Gomez-Lanier, 2017; Sobania & Braskamp, 2009). Travelling abroad is not always necessary for a cross-cultural experience, as increased diversity within the United States provides rich opportunities (Sobania & Braskamp, 2009). Promoting cultural understanding, expanding personal worldview, and gaining understanding in one's field of study can also be accomplished through domestic experiences (Gomez-Lanier, 2017; Sobania & Braskamp, 2009). Currently, little literature exists exploring the development of leadership competencies during a short-term domestic study program (Radford, 2020). To better align objectives and outcomes of short-term domestic study programs focused on global leadership competency development, it is imperative to understand the perceived leadership competency development of participants in these experiences.

## Context of the Study and Purpose Statement

Each year the National FFA Organization hosts an International Leadership Seminar for State Officers (ILSSO) abroad, which is attended by state FFA officers between the ages of 17 and 20. As a result of ILSSO, participants will be able to demonstrate knowledge of global values and diversity, create a plan to articulate and interpret learning to constituents, and formulate empathy and awareness of domestic and global conditions through a facilitated immersion experience.

The 2022 ILSSO experience was planned to take place in Costa Rica for 2022. However, due to COVID-19 travel restrictions, the destination of the trip pivoted domestically to California, resulting in a short-term domestic study tour. For 10 days, participants traveled to various agricultural operations across the state of California, listened to presentations from producers, connected with industry leaders such as the California Secretary of Agriculture, and engaged in facilitated reflection at the end of each evening with a small group of fellow participants. The purpose of this study was to explore participants' perceptions of leadership competencies developed through participation in the ILSSO, a short-term domestic study tour. One research question guided the investigation: What leadership competencies did participants perceive they developed through the ILSSO experience?

## Conceptual Frameworks

Two conceptual frameworks, Social Capital (Coleman, 1988) and Global Perspective (Hanvey, 1982), were utilized inductively to illuminate meaning in the findings. Social capital refers to the resources and benefits we may receive from relationships within a social structure (Coleman, 1988). Within social structures, social capital can be depicted among its three main forms: obligations and expectations (i.e., trustworthiness among members of the group), information channels (i.e., acquisition of information through social relations), and social norms (i.e., beliefs and standards that guide or constrain behaviors) (Coleman, 1988). Hanvey (1982) outlined five dimensions of a global perspective that could be attained by young people through formal and informal education. One-dimension, cross-cultural awareness, is the ability to acknowledge and empathize with diverse ideas and practices from around the globe, and also recognize how the ideas and norms of one's own society may compare and be viewed by another (Hanvey, 1982).

## Methodology

The qualitative case study approach was selected for this study (Creswell, 2013; Stake, 1995; Yin, 2009). This single case was bound by time, location, and participants. The 10-day experience was a domestic study tour across the state of California with 46 trip participants. When studying this case, we focused on the participants' perceived knowledge and leadership competencies that were developed as a result of participating in the experience

## Participants

Purposive sampling was used to identify study participants (Creswell, 2013). The population of interest included college-aged students who were elected to serve as state FFA officers within their respective states who also attended ILSSO in January 2022 ($N = 46$). Permission to study this case was granted by the National FFA Organization, IRB, and 42 participants of which we obtained consent and parental assent. The research participants represented 17 U.S. states. A majority of the participants identified as female ($n = 28$), with the remaining identifying as male ($n = 14$).

## Data Collection and Analysis

Case study research requires an in-depth analysis of the case through the inclusion of several sources of data for analysis and triangulation (Creswell, 2013; Stake, 1995). Sources of data included (a) pre-experience reflection statements, (b) post-experience reflection statements, (c) deferred post-experience focus group interviews, (d) researcher observations, (e) captioned photos, and (f) trip artifacts and documents. Pre- and post-experience statements were hand-written by participants and transcribed electronically by the researchers. Focus group interviews occurred approximately three months post-experience. They were conducted via ZoomÓ, and transcripts were verified by the researchers. Observations were conducted by one researcher who attended the experience and kept journal notes. Captioned photos were collected via QualtricsÓ submission at the end of the experience. Primary data (pre- and post-experience statements and interviews) were analyzed using the constant comparative method (Corbin & Strauss, 2015). The process began with open coding, where line-by-line analysis was conducted by one researcher to establish a set of open codes (Miles & Huberman, 1994). The open codes were then discussed, negotiated, and condensed, by the researcher team. All other sources of data were used for data triangulation. Finally, four themes were confirmed by the researchers.

## Rigor, Trustworthiness, and Researcher Reflexivity

The considerations for establishing qualitative rigor and trustworthiness recommended by Lincoln and Guba (1985) were used: (a) credibility, (b) confirmability, (c) dependability, and (d) transferability. Specific practices included researcher and data triangulation (Creswell, 2013), researcher audit trailing, multiple data checks that led to inter-coder agreement (Lincoln & Guba, 1985), reflective bracketing to minimize researcher biases (Tufford & Newman, 2010), the inclusion of reflexive statements (Ary et al., 2010; Tracy, 2010), the implementation of thorough qualitative methodology, and the presentation of rich data descriptions (Stake, 1978). To accurately present the findings of this study, biases, context, and the experience must be properly acknowledged to uphold the sincerity and quality of research (Tracy, 2010). Due to the COVID-19 pandemic, the ILSSO experience pivoted from abroad to a domestic experience and encountered many unforeseen itinerary changes during the trip. As a result, participants in this study are not reflective of the entirety of ILSSO participants since the program's inception. Also, the lack of context available with the qualitative content analysis of pre and post-trip statements limited the depth of understanding and interpretation of meaning of participants' experiences. Each member of the research team participated in an abroad ILSSO experience previously and

were familiar with the program. One member was invited by the National FFA Organization to lead the 2022 ILSSO experience.

## Findings

Four emergent themes were revealed through the data related to perceived leadership competencies developed during the ILSSO short-term domestic trip: a) *expanded relationships with fellow participants,* b) *conflation of gained industry and technical exposure as a leadership competency,* c) *changed perspectives on agricultural production methods,* and d) *varied perspectives of cultural experiences.*

### Theme #1: Expanded Relationships with Fellow Participants

Participants expressed their disappointment when the location of the trip moved from Costa Rica to California but continued to see it as an opportunity for expansion of relationships with fellow participants. Many of the National FFA Organization's largest events for these participants were cancelled due to the COVID-19 pandemic; as a result, they wanted to attend ILSSO because they missed out on the ability to interact and network with each other during the year. Having conversations and building friendships with fellow state FFA officers was one of participants' biggest takeaways from the trip. When discussing the ILSSO experience in focus groups, Nick stated, "Just the friendships and the relationships really laid the groundwork to have some really vulnerable but intentional and really fulfilling conversations." Another participant, Josh, summed up a sentiment shared by most participants, "I think for me personally, the most impactful learning experience came from conversations with people whether that was the other individuals on the trip or the producers we met and just kind of realizing impact can come from all directions." Four months after the ILSSO experience participants expressed in focus groups they were continuing to maintain the friendships developed in California through social media and phone calls. Jessica felt supported by her fellow participants even after the trip and shared her experience by saying, "My dad passed away unexpectedly [after ILSSO] and almost everyone reached out to me at some point . . . and it solidified that making those connections that will last forever is just one of the best feelings in the world." Facilitated small group sessions and informal conversations were most valued by participants and seen as opportunities to develop meaningful relationships with one another and process information learned on the trip together.

### Theme #2: Conflation of Gained Industry and Technical Exposure as a Leadership Competency

Through farm tours in California, participants were exposed to a variety of agriculture operations and production methods such as caviar and oyster farms, wineries, orchards, cattle feedlots, and operations centered around organic, sustainable, and regenerative practices. Participants felt they became more educated on California agricultural issues and gained valuable experience by observing various agricultural practices and engaging with producers as they shared production methodology. By having the opportunity to interact with the Secretary of Agriculture for the state of California, participants learned how public policy influences agriculture through regulatory action. Participants hoped to apply the new knowledge they felt they gained when returning

home. Josh said, “I have that raw information that I can take and apply and ask intelligent questions or be able to hopefully learn more about that side of the industry [in the future].” While developing a foundational perspective of domestic perspectives in agriculture is one of the main objectives of the ILSSO experience, the program is marketed more widely as a leadership development opportunity for the premiere leaders of the National FFA Organization. With that in consideration, when discussing what leadership competencies participants believed they developed and if the trip had influenced their approach to leadership, participants felt the ILSSO experience did not impact a shift in their leadership approach. As Crystal said, “I wouldn’t say it’s necessarily changed my approach to leadership.” Nick echoed her statement by saying, “It hasn’t really altered my leadership style or how I see myself as a leader.” One participant expressed not being able to understand why leadership would be a focal point of ILSSO. Peter communicated this sentiment by stating:

> I just viewed ILSSO as more of an advocate training and industry development and agricultural development of knowledge… I just don’t see the need to necessarily draw leadership back into it time and time again, because even thinking about the international experience like when are you actually, if we’re trying to develop leaders on this trip or develop leadership competencies and you’re touring different places and you have adult leaders, how exactly are you exemplifying leadership just by listening, which all state officers should be good at, at that point.

For most of the participants, acquisition of agricultural knowledge and technical exposure was most often referred to when asked to describe the leadership learning that occurred during ILSSO, rather than literature-based leadership competencies. While leadership competencies were alluded to throughout responses, participants did not make the clear connection that what was being described was leadership development.

**Theme #3: Changed Perspectives on Agricultural Production Methods**

Most frequently referenced in post-trip questionnaires, many participants expressed a shift in perspective around organic and alternative production methods. In the focus groups, many participants said their knowledge of agriculture was limited to conventional production methods and felt the ILSSO experience allowed them to develop open-mindedness towards organic farming and other sustainable practices as a result of interacting with the producers. Participants valued being able to hear the personal and passionate anecdotes of each producer and better understand the “why” behind the choices of their operation practices. Stacey explained her newfound appreciation in this way: “Organic agriculture isn’t bad it’s just different, and there is a place for that…the experience it just gave me a way better perspective and understanding of you know why we have stuff like organic farming.” Other participants expressed excitement to share their newfound knowledge with others and hopefully influence others to change their perspectives on organic, sustainable, and regenerative production methods. Philip shared:

> So when I came back [from ILSSO] a lot of those one sided farmers asked me questions, and so I was able to implement kind of learning that open mindset with

> being able to apply it and advocate for [organic and regenerative practices] and change some of their perspectives and help them understand why people choose that.

Many participants described ILSSO as an eye-opening experience and believed the open-mindedness they developed related back to changed perspectives around organic agriculture.

**Theme #4: Varied Perspectives of Cultural Experiences**

When the trip was moved to California, participants still expected to experience a new culture in a new area of the United States. In both the pre and post trip questionnaire, participants admitted they previously had a negative perception of California. After attending ILSSO, participants expressed a developed respect for the state of California. They liked being able to share their experiences and refute any negative stereotypes of California they feel FFA members and producers may have back in their home state. Lisa wrote, "I was able to break that thought that California is crazy and all hippies, and I can't wait to share what I learned to everyone back home." Some participants, however, expressed a desire to be immersed in California culture and felt the trip did not provide those experiences. Maren said, "Learning about a different culture was something I was kind of expecting to learn a little bit more about and… [I wanted] to understand some more of the differences between California and [my state]." Jessie shared similar thoughts: "One thing I was looking forward to in Costa Rica is (sic) seeing the diversity in their culture and music, so I think finding different ways to experience the different cultures in California [would have been beneficial]." One participant believed other students would not gain any cultural competencies from going to California because it was no different than any other place in the United States. Several participants also perceived a domestic experience to be more beneficial than an international trip because they felt it was easier to apply what they learned because of the similar continental context.

## Conclusions, Implications, Recommendations

We explored the perceived leadership competencies developed by participants' of ILSSO, a short-term domestic trip. The four emergent themes revealed insight to participants' takeaways from the experience. Students valued the social capital developed through participation in the experience and can build upon the relationships post-trip as resources for future goals and endeavors. They did not necessarily view ILSSO as a leadership development experience, and often conflated the attainment of knowledge with leadership competency development. A disconnect between an intended outcome of the program, leadership competency development, and student perceptions was apparent. However, students did suggest ILSSO expanded their perceptions about the diversity of agricultural production methods in the industry, and it allowed them to build social capital via relationships formed with fellow participants (Coleman,

1988). Finally, participants' opinions of the domestic location for the trip and lack of cultural learning perhaps reveals U.S. culture was centered during the experience and not brought to light to generate more critical thought about cultural differences within the continent. Regarding

cross-cultural awareness, participants seemed to acknowledge and empathize with the diversity of agricultural practices and ideas they encountered; however, the failure to recognize cultural

differences by centering United States culture during the experience kept them from considering external perceptions of their own norms (Hanvey, 1982).

We recommend those hoping to lead similar short-term study abroad experiences, whether domestic or abroad, design curriculum with a global leadership competency framework to better guide the learning experience as it relates to leadership development and cross-cultural awareness. Simply participating in international or domestic leadership experiences with some guided independent reflection and facilitated conversation may not be enough to ensure the development of cultural competence and global leadership competencies (Bunch et al., 2018). While this study explored perceived outcomes of a domestic experience, it was not compared to an international trip. It is encouraged that this study be replicated the next time ILSSO travels outside the continent to compare findings in different contexts. Creating domestic study tour experiences for students may be a viable way to create more accessible unique learning opportunities producing positive outcomes. Among agricultural students, there may be an opportunity to utilize domestic study tour experiences reflective of cultural differences within the United States and diverse agricultural practices to create knowledge growth in students. Similar qualitative studies should also be conducted to assess the leadership development outcomes of similar youth leadership development programs by the National FFA Organization.

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# The State of Agricultural Mechanics in the Preparation of School-Based Agricultural Education Teachers

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## Introduction, Purpose, and Objectives

Agricultural mechanics has been considered a fundamental content area of agricultural education and dedicated agricultural mechanics facilities have been identified among the most common forms of school-based agricultural education (SBAE) laboratories (Phipps, 2008; Shoulders & Myers, 2012; Talbert et al., 2022; Twenter & Edwards, 2017). Further, of the technical skills deemed necessary for beginning SBAE teachers, Albritton & Roberts (2020) found that 34% were directly related to agricultural mechanics. Despite this importance, first-year SBAE teachers have ranked agricultural mechanics lower than any other content area in perceived teaching self-efficacy (Burris et al., 2010). Training deficits in agricultural mechanics among SBAE teachers have been well documented and frequently elicit calls for expanded professional development (Burris et al., 2010; Figland et al., 2019; McKim & Saucier, 2011; Peake et al., 2007; Saucier & McKim, 2011; Saucier et al., 2014; Shultz et al., 2014).

On this point, Hubert and Leising (2000) reported a national average of 6.7 required college credit hours for preservice SBAE teachers. Five years later, Burris et al. (2005) reported the most recent data on preservice teachers' agricultural mechanics training in which they found that 89% of teacher education programs required five or more credits in the area for degree completion, with an average requirement of 9.1 credit hours. However, more recent research has indicated a decline in the number of post-secondary course credits required in agricultural mechanics taken by SBAE instructors (Byrd et al., 2015; McKim & Saucier, 2013). As such, a need has emerged to provide more recent data on the level and content of agricultural mechanics coursework available for preservice SBAE teachers.

Therefore, the purpose of this study was to compare the level of agricultural mechanics preparation of preservice SBAE teachers between 2000 and 2021. Because this study aimed to assess the technical skill development available to students in teacher preparation programs, it aligned with Priority Three of the American Association for Agricultural Education (AAAE) National Research Agenda: Sufficient Scientific and Professional Workforce that Addresses the Challenges of the 21st Century (Stripling & Ricketts, 2016). The following research objectives were developed to guide the study:

- Describe post-secondary institutions offering a four-year undergraduate degree designed to prepare students for careers as SBAE teachers.
- Describe selected characteristics related to post-secondary instruction in agricultural mechanics.
- Identify the current perceived level of importance of selected agricultural mechanics content areas for agricultural education graduates.
- Identify the current perceived level of preparation for agricultural education graduates in selected agricultural mechanics content areas.

- Compare characteristics related to post-secondary instruction in agricultural mechanics from 2000, 2005, and 2021.
- Compare the perceived level of importance of selected agricultural mechanics content areas for agricultural education graduates from 2005 and 2021.
- Compare the perceived level of preparation of agricultural education graduates in selected agricultural mechanics content areas from 2005 and 2021.

## Conceptual Framework

Conceptually, this study was underpinned by Roberts and Ball's (2009) conceptual model for agricultural subject matter as a content and context for teaching. The dual goal of the model, to produce life-long learners who are agriculturally literate citizens and a skilled agricultural workforce, does not conceptualize these outcomes as mutually exclusive. Instead, Roberts and Ball (2009) discussed the complex need for an area of overlap in both parts, "[a]gricultural educators do not have the luxury of defining how students apply what is learned; that is on the student. Further complicating things, high school students likely do not know how they might apply something in the future" (p. 88). In the context of agricultural mechanics education, secondary education students' learning outcomes are related to their teachers' knowledge of the content and related technical skills as a base for the integrated curriculum needed to facilitate learning. This study's primary focus was the foundational learning experiences of SBAE teachers in agricultural mechanics in post-secondary teacher preparation programs.

## Methods

This study sought to expand on the research of Hubert and Leising (2000) and Burris et al. (2005) by providing an updated view of the preparation of preservice teachers in agricultural mechanics by evaluating: (a) requirements for degree completion, (b) the content of post-secondary agricultural mechanics courses available to preservice teachers, and (c) perceptions of specific agricultural mechanics topics in teacher preparation programs.

### Target Population

All post-secondary institutions offering four-year undergraduate degree programs designed to train SBAE teachers in the United States served as the target population for this study. A list of AAAE member institutions was used as the base of the target population frame. After reviewing the list for frame error, a panel of teacher educators determined that six institutions present on the list did not meet the qualifications for inclusion. Additionally, 11 institutions absent from the AAAE list met the inclusion criteria and were subsequently added to the population frame. After review, the target population was determined to be 103 institutions. Because of the relatively small size of the target population, a census was determined to be the most appropriate sampling method for the study. A representative for each institution was identified and confirmed by a panel of current SBAE teacher educators at Louisiana State University. An effort was made to identify a representative that was a faculty member in the SBAE teacher preparation program and listed as the instructor of at least one course involving agricultural mechanics topics or laboratory management. If no such person could be identified, a faculty member associated with the SBAE teacher preparation program was selected. If no agricultural education faculty were

identified, the chair of the department housing the SBAE teacher preparation program was selected to represent the institution.

## Instrumentation

The instrument utilized for data collection in this study was a modified version of the instrument developed by Burris et al. (2005). After obtaining an original copy of the instrument, a review was conducted with a panel of three experts to determine necessary alterations to the instrument to align it with this study's objectives. Suggested modifications included adding items designed to collect descriptive data related to the institution, the SBAE teacher preparation program, and items designed to collect data comparable with the findings of Hubert and Leising (2000). The modified instrument retained all items in the original nine agricultural mechanics content areas included by Burris et al. (2005); however, changes in wording were made for clarity. Additionally, a tenth content area, Renewable Energy, was added due to the inclusion of the topic in the Power, Structural, and Technical System Pathway in the Agriculture, Food, and Natural Resources Standards and modern references for secondary agricultural mechanics (Hancock et al., 2017; Koel et al., 2013; National Council for Agricultural Education, 2015).

Part of the instrument asked participants to rate their perception of 59 competencies' importance on a five-point, Likert-type scale, with one indicating the lowest level of importance and five indicating the highest. Similarly, participants were asked to indicate their perception of the level of preparation that preservice SBAE teachers in their programs received on those same competencies using a similar five-point, Likert-type scale.

## Data Collection and Analysis

Data were collected, via Qualtrics, during the Fall 2021 semester. Dillman et al. (2014) tailored design method was used in an attempt to maximize the response rate. An initial email containing a link to the survey was sent to all contacts identified for the target population, followed by three subsequent reminder emails sent at eight-day intervals. A week after the final reminder email, an attempt was made to contact non-respondents by email and phone to clarify correct contact information and ask for participation. If the person initially designated as the contact for a particular institution could not be reached, an attempt was made to contact a different representative for the institution.

When data collection concluded, 94 individuals responded, constituting 91.3% of the original population to whom the survey instrument was distributed. Of the respondents, five representatives indicated that their institutions did not have an undergraduate agricultural education program designed to train SBAE teachers, indicating a small degree of frame error. Consequently, the target population was adjusted from 103 to 98 institutions ($N = 98$) to accommodate the known frame error. Additionally, four respondents indicated they did not wish to participate, and a new representative for those institutions could not be identified. After the frame error adjustment, 85 respondents provided data usable for analysis, constituting a usable response rate of 86.7%. Lindner et al. (2001) concluded that procedures for controlling nonresponse error are not necessary when response rates to surveys are over 85%; therefore, the researchers deemed the response rate acceptable.

The instrument was reviewed for content and face validity by a panel of experts consisting of SBAE teacher educators with experience teaching agricultural mechanics content and faculty with expertise in instrument development. IBM SPSS v.27 was used for post-hoc reliability analysis and descriptive statistics. Cronbach's (1951) alpha values for items measuring perceived levels of importance ranged from .83 to .95. Items measuring perceived levels of preparation yielded values ranging from .83 to .96. The reliability values for all scales were above an acceptable threshold of .70 (Field, 2018).

## Findings

Objective one sought to describe the post-secondary institutions offering a four-year undergraduate degree program designed to prepare students for careers as SBAE teachers. Most ($n$ = 78; 91.8%) of the institutions in this study were public colleges or universities, with the largest subgroup of public institutions ($n$ = 41; 48.3%) being either 1862 or 1890 Land-grant Universities. The majority ($n$ = 52; 61.2%) of institutions had undergraduate student populations greater than 10,000, and almost all operate on semester-based academic calendars ($n$ = 82; 96.5%). Slightly more than half ($n$ = 43; 50.6%) of the responding institutions were in the Southern Region of the AAAE, with the North Central Region constituting slightly less than one-third ($n$ = 27; 31.8%) and the Western Region representing the smallest group of respondents ($n$ = 15; 17.6%). The average number of graduates from these programs during the 2020-2021 academic year was 11.5, while the average number of newly certified SBAE teachers was 10.7. Most of the institutions in this study produced ten or fewer SBAE graduates ($n$ = 50; 59.5%) for the 2020-2021 academic year.

Objective two sought to describe post-secondary instruction in agricultural mechanics for preservice SBAE teachers. Most ($n$ = 77; 91.6%) of the institutions in the study offered courses in agricultural mechanics. Over half ($n$ = 54; 70.1%) of the institutions with agricultural mechanics coursework offered those courses in the same academic department as the SBAE teacher preparation program. The most preferred ($n$ = 37; 44.0%) qualification for an instructor of agricultural mechanics for preservice SBAE teachers was a doctoral degree in agricultural education. Of the institutions offering agricultural mechanics courses ($n$ = 77), 97.4% required preservice SBAE teachers to complete at least one course, with an average credit hour requirement across all institutions of 5.8. The most common content areas included in required courses were *General Agricultural Mechanics* ($n$ = 68; 88.3%) and *Welding / Metal Fabrication* ($n$ = 56; 72.7%). Agricultural mechanics teaching methods courses were offered by most ($n$ = 55; 64.7%) respondents and required by more than half ($n$ = 48; 56.5%). The average number of required agricultural mechanics teaching methods credit hours was 3.6.

This study's third objective sought to compare the characteristics of post-secondary agricultural mechanics instruction for preservice SBAE teachers between 2000 and 2021. The average number of newly certified SBAE teachers increased by 12.63%, from 9.5, as reported by Hubert and Leising (2000), to the current average of 10.7. The current average for required credit hours in agricultural mechanics content ($M$ = 5.8) was 13.43% less than the findings of Hubert and Leising (2000) ($M$ = 6.7) but was reduced by 36.26% from the findings of Burris et al. (2005) ($M$ = 9.1). The average number of required credits in agricultural mechanics teaching methods per

program ($M$ = 2.0) increased from the findings of Hubert and Leising (2000) ($M$ = 1.3). The percentage of respondents with a preference for post-secondary agricultural mechanics instructors with a graduate degree in agricultural education (69.0%) rose from the findings of Hubert and Leising (2000) (34.8%). Similarly, agricultural mechanics courses were more commonly offered in the same department as the SBAE teacher preparation program (70.1%) than the findings of Burris et al. (2005), who reported 57.7%. All agricultural mechanics content areas were more frequently part of the required coursework than the findings of Hubert and Leising (2000); however, only *General Agricultural Mechanics* (2005 – 60.87%; 2021 – 79.22%), *Metal Fabrication* (2005 – 44.93%; 2021 – 54.55%), *Agricultural Mechanics Teaching Methods* (2005 – 37.68%; 2021 – 62.34%), and *Electricity* (2005 – 10.14%; 2021 – 27.27%) displayed increases as the primary course content from the findings of Burris et al. (2005).

Objectives four and five focused on identifying faculty members' perceptions of the importance of agricultural mechanics competencies and their students' preparation in those competencies. Additionally, objectives six and seven sought to compare those perceptions to the findings of Burris et al. (2005). Table 1 displays the composite means that comprise the results related to objectives four through seven.

Table 1

*Comparison of Perceived Importance and Preparation for Competency Groups*

| | Burris et al. (2005) ($n$ = 69) Importance | | Current Study ($n$ = 80) Importance | | Burris et al. (2005) ($n$ = 69) Preparation | | Current Study ($n$ = 80) Preparation | |
|---|---|---|---|---|---|---|---|---|
| Competency Grouping | *M* | *SD* | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| Metal Fabrication | 3.7 | 0.70 | 3.8 | 0.69 | 3.2 | 0.98 | 3.3 | 0.85 |
| Hand and Portable Power Tools | 4.2 | 0.62 | 4.3 | 0.64 | 3.5 | 0.95 | 3.8 | 0.72 |
| Project Planning and Materials Selection | 3.8 | 0.63 | 3.8 | 0.76 | 2.9 | 0.91 | 3.1 | 0.84 |
| Electricity | 4.0 | 0.70 | 4.0 | 0.69 | 3.1 | 1.08 | 3.3 | 0.92 |
| Concrete | 3.7 | 0.85 | 3.8 | 0.91 | 2.9 | 1.20 | 2.8 | 1.15 |
| Plumbing | 3.5 | 0.93 | 3.8 | 0.88 | 2.7 | 1.13 | 3.0 | 1.09 |
| Building Construction | 3.9 | 0.69 | 3.9 | 0.68 | 3.0 | 1.04 | 3.2 | 0.90 |
| Outdoor Power Equipment and Small Engines | 4.1 | 0.70 | 4.1 | 0.68 | 3.4 | 1.19 | 3.6 | 1.00 |
| Machinery and Equipment | 3.6 | 0.75 | 3.7 | 0.79 | 2.4 | 1.04 | 2.6 | 0.95 |
| Renewable Energy | - | - | 3.1 | 1.05 | - | - | 2.0 | 0.96 |

*Note*[1]. Importance Scale: 1 = *Not Important,* 2 = *Of Little Importance,* 3 = *Somewhat Important,* 4 = *Important,* 5 = *Very Important*

*Note*[2]. Preparation Scale: 1 = *Not Prepared,* 2 = *Poorly Prepared,* 3 = *Somewhat Prepared,* 4 = *Prepared,* 5 = *Very Prepared*

## Conclusions, Discussion, and Implications

This investigation revealed the diversity of preservice SBAE teacher preparation across the nation and presented that agricultural mechanics education in post-secondary settings has become far from uniform. The findings of this study documented that the number of credit hours required for preservice SBAE teachers in agricultural mechanics content in 2021 decreased by 3.3 credit hours when compared to previous studies (Burris et al., 2005; Hubert & Leising, 2000). This finding was in alignment with Byrd et al. (2015), Clark et al. (2021), and McKim and Saucier (2013), who observed reduced agricultural mechanics coursework for teachers in Iowa and Missouri, respectively.

Despite a reduction in credit hour requirements, an increase in exposure to some areas of agricultural mechanics content was noted. These findings indicated that SBAE teacher educators have observed the need for agricultural mechanics training for preservice teachers and may be attempting to increase the breadth of agricultural mechanics content to which preservice teachers become exposed. However, when comparing faculty members' perceived importance to their perceptions of preservice teacher preparation, all competency groups had an average perception of importance greater than the average perceived level of preservice teacher preparation, exhibiting only marginal changes from the findings of Burris et al. (2005). Based on these findings, it appears many SBAE teacher educators have become aware that they were operating in an extended agricultural mechanics training deficit. Why, then, have SBAE teacher preparation programs not altered their requirements to include more agricultural mechanics content if training needs are known? The answer is most likely the result of pressure on post-secondary leaders to reduce the number of credits for degree completion, with 120 credit hours now the standard for most four-year undergraduate degrees (Johnson et al., 2012). Although these measures were meant to reduce the time to degree completion and improve graduation rates, it appears that they have particularly affected SBAE teacher preparation in the form of agricultural mechanics coursework reduction.

The combination of the highly technical nature of agricultural mechanics and the reduced credit hours for preservice teachers in the content area has created an evident issue. Preservice teachers have frequently expressed concerns regarding their self-efficacy to teach agricultural mechanics (Burris et al., 2010; Granberry et al., 2022; Hainline et al., 2018; Tummons et al., 2017). The findings of this study display that, based on faculty perceptions, preservice and, consequently, early career teachers need training in multiple content areas under the agricultural mechanics umbrella, which aligns with recent needs assessments (Wells & Hainline, 2021). With current limitations to degree plans, SBAE teacher educators should determine if expanded coursework was possible and, if not, should seek to integrate agricultural mechanics content into existing agricultural education courses and attempt to provide agricultural mechanics professional development for SBAE teachers. Despite training needs, SBAE teachers are continuing to teach

agricultural mechanics. Therefore, research is warranted to determine where SBAE teachers are acquiring agricultural mechanics knowledge and skills and measure the effectiveness of those sources. If specific forms of highly effective professional development can be identified to build agricultural mechanics skills, such information would prove invaluable to teacher educators.

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# Concerns about Hen Welfare in Poultry Egg Production: Experts' Views on how Consumer Demands Influence the Marking and Communication of Egg Products


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## Introduction and Review of Literature

Government intervention in food labeling began as a way to "improv[e] human health and safety, support domestic agricultural and food manufacturing industries, and averting international trade disputes" (National Agricultural Law Center, 2013, p. 2). In the U.S., food labeling has generally been regulated by three primary entities, including the: (1) USDA, (2) FDA, and (3) United States Federal Trade Commission (FTC) (NALC, 2013). The Food Safety and Inspection Service (FSIS) has served as the public health organization housed in the USDA that has been responsible for ensuring the proper labeling and packaging of meat, poultry, and egg products.

Government oversight has historically been used to enforce and regulate changes to production practices in the egg industry. In many cases, market prices and fluctuations in market expectations and standards have also influenced changes as consumers demand that restaurants and grocery stores source products from brands with welfare standards (Derstappen et al., 2021; Othman et al., 2021). To help facilitate a more seamless selection of food products, manufacturers and policymakers have meticulously revised package designs and updated regulations for food labels (Shen et al., 2018). Examples of company initiatives to revise package designs to meet consumers' calls have included Walmart, Tyson Foods, and Perdue Farms (Ares et al., 2011; Becker & Tickner, 2020; Boesen et al., 2019). In addition to other consumer-driven demands for transparency regarding egg production practices, these brands have also endorsed and offered products bearing an antibiotic-free claim (Kesmodel et al., 2014). Similarly, in 2015, Mcdonald's began advertising that only eggs sourced from cage-free production systems should be used for menu items that included eggs (Strom, 2015). Because of this tactic's success, Strom (2015) predicted that other fast-food restaurants would soon develop similar practices. In addition to changes in restaurants, 93% of leading grocery retailers established clear goals to transition the sourcing of eggs to cage-free eggs by the end of April 2016 (Shields et al., 2017). Consumers have generally assumed that the market for eggs from alternative housing systems has been high quality because they imply superior animal welfare practices on their labels. However, research has indicated this has not been the case (Alonso et al., 2020; Bernard et al., 2019; Kumar & Kapoor, 2017).

For example, in recent years, the poultry industry has seen an increase in alternative housing systems, i.e., cage-free, free-range, pasture-raised, and organic (Alonso et al., 2020; Janczak & Riber, 2015). As an illustration, cage-free aviary systems often allow hens to lay eggs outside the nest box (Campbell et al., 2016). Nevertheless, this system has led to lower-quality egg

collection approaches, and in many cases, the eggs have been rendered unmarketable (Matthews & Sumner, 2015). On this point, Matthews and Sumner (2015) explained that many alternative hen housing operations accrue higher operating costs because they have become more labor-intensive compared to conventional housing. Despite this, it has been nearly impossible for consumers to decipher between socially accepted and industry-accepted production practices and welfare standards. Consequently, it has become important for producers to consider public opinion and respond to demands for changes to labels that suggest a product has been raised using superior animal welfare practices (Tonsor & Wolf, 2019).

Labels have been defined as ‘‘any words, particulars, trademarks, brand names, pictorial matter or symbols on any packaging, document, notice, board or collar accompanying or referring to a product” (Fliess et al., 2007, p. 6). As such, labels have been used for various reasons, including as a way for food companies to differentiate their products from their competition (Ares et al., 2013). When messages regarding health have been included on food labels, the FDA has required companies to include nutrition labeling and specify nutrient contents (Food and Drug Administration [FDA], 2013). Beyond mandatory labeling, some manufacturers of food products have chosen to voluntarily include other information on their labels (FDA, 2018). According to the FDA (2018), this trend often occurs because egg companies want to provide customers with specific information of interest. Nevertheless, the USDA has maintained regulatory oversight for shell egg labels and requirements. Despite this oversight from the USDA, however, confusion has persisted from the public about the policies that guide animal welfare standards in egg production, especially in regard to how hens have been housed and the foods they consume. As a result, little has been known about how consumers’ concerns about hen welfare may impact the poultry industry. This deficiency in knowledge inspired the current investigation.

## Theoretical Framework

This study was grounded in consensus-building theory (CBT). Consensus building has been used in various disciplines to capture experts' opinions and knowledge regarding specific topics (Innes, 2004). It has also been used to analyze common interests and has allowed for authentic and organized dialogue to transpire (Dong, 2015). Previous research on consensus-building theory has indicated that the process of building consensus has yielded collaborative education, problem-solving, and a shared understanding of topics and perspectives (Booher and Innes, 2002; Connick and Innes, 2003; Innes, 2004; Ostrom, 1990). As a result, consensus building has encouraged experts to think more critically about an issue or problem (Connick & Innes, 2003).

Understanding the conflicting opinions of experts has been cited as a key benefit of consensus building (Innes, 2004). Nevertheless, describing the converging perceptions of expert panelists has also been a primary outcome of the theory (Schively, 2007). Further, changes in participants’ attitudes and commitment to a position have also been reported to evolve through the consensus-building process (Innes, 1992). As such, consensus-building theory has primarily been used in research to provide an “approximation of the public interest” (Innes & Booher, 1999, p. 21). In the current study, we used consensus-building theory to understand how an agreement could be reached regarding how public concerns influence the market and communication strategies used for egg products.

## Statement of Purpose

The purpose of this study was to reach a consensus among the study's selected experts regarding their perspective on the ways in which consumers' concerns about hen welfare have influenced the marketing and communication of egg production practices.

## Methodology

This study used a survey research approach incorporating a modified Delphi technique (Sackman, 1975). Developed in the 1950s by two research scientists, a Delphi is a procedure that has been used to forecast future events using a series of concentrated questionnaires that allow for findings to emerge (McCampbell & Hemler, 1993). Well-known for its ability to capture convergent opinions, the Delphi technique solicits experience and knowledge from experts within a field or discipline (Hsu & Sanford, 2007). In the study, we evaluated responses over three rounds of data collection. Each round was built on the previous one and allowed panelists to come to a consensus on items that might not typically be agreed on. The data analysis in round one employed a qualitative coding process that reduced the emergent information gathered (Saldaña, 2021). Round two asked the panelists to rate the statements from round one using a six-point, Likert-type scale. Analysis of data collected in rounds two and three employed descriptive statistics to determine items reaching consensus.

The decision rules for this study were determined by considering both rigorous and more flexible criteria (McMillan et al., 2016). We determined that during round two, at least 66% of panelists should respond within two categories on a six-point scale and have a mean of at least 3.96. To reach a consensus of agreement during round three, nine or more (>75.00%) panelists must have selected *Agree* for each item to be retained.

Data collection began by having two experts in the laying hen sector of the poultry industry nominate other experts. After initial nominations were made, we used a snowball sampling approach in which our initial participants nominated other experts who fit the parameters of this investigation. The experts had a range of professional backgrounds such as animal welfare specialists, extension educators, university faculty, and leaders of professional poultry organizations. The experts' highest level of education was a bachelor's degree ($n$ = 6) while four held a master's degree and four held a doctoral degree. Regarding years of related work experience, nine (75%) of the panelists reported 21 or more years of experience and three (25%) indicated 16 to 20 years. The experts' years of work experience ranged from 17 to 47 years. The experts' related work experience averaged 29.33 years.

Data were analyzed using Microsoft Office Excel® version 2021. Demographic data were analyzed using frequencies and percentages. The panelists' ages, years of experience, ranges, and averages were also calculated. For each item in rounds two and three, the frequency distribution validity percentage was used to determine if consensus had been reached, the item should be retained for further consideration, or removed from the study (Buriak & Shinn, 1989; Jenkins & Kitchel, 2009). We accomplished this by presenting one open-ended question in round one. The question that guided data collection in the first round was: *Please list what you believe to be the*

*production methods that may reflect an unsatisfied consumer demand and have the potential to contribute to consumer concerns for laying hen welfare.*

In round two, 28 items were presented by the expert panel ($N = 12$; 100% response rate) in which more than two-thirds (>66.00%) of the participants selected either *Extremely Important* or *Slightly Important* and were considered items that reached consensus (Buriak & Shinn, 1989; Hsu & Sandford, 2007). Additionally, five items for which less than one-half (50.00%) of the participants selected either *Extremely Important* or *Slightly Important* were removed from the study. Round three of the study included items presented by the expert panel in which more than one-half (>50.00%) but less than two-thirds (<66.00%) of the panelists selected *Extremely Important* or *Slightly Important* during round two. In round three, 11 items were presented for reconsideration by the panelists on a three-point, Likert-type scale (100% response rate).

## Findings

In round one of this study, the expert panelists provided 28 emergent statements that were identified as having the potential to contribute to consumers' concerns about hen welfare. In round two, panelists were asked to indicate their level of agreement with each item on a 6-point Likert-type scale. We determined that in round two, at least 66% of panelists responded within two categories on a six-point scale and had a mean of at least 3.96. To reach a consensus during round three, nine or more (>75.00%) panelists must have *Agreed* for each item that has been retained. Additionally, items achieving less than one-half (<50.00%) of panelist agreement in round two were discarded and excluded from round three. After evaluating the data from round two, we determined that 13 items reached a consensus (see Table 1).

**Table 1**

*Statements (N = 13) Provided by the Experts that Reached a Consensus During Round Two of the Study about the Egg Production Practices that may Contribute to Consumers' Concerns about Hen Welfare*

| Statements | *M* | *SD* | % Agreement after round two |
|---|---|---|---|
| Battery cages. | 5.09 | 1.446 | 84.8 |
| Intense confinement. | 4.91 | 1.758 | 81.8 |
| Painful procedures. | 4.91 | 1.578 | 81.8 |
| Male chick culling. | 4.73 | 1.489 | 78.8 |
| Feed withdrawal. | 4.55 | 1.572 | 75.8 |
| Lack of empathy from producers. | 4.55 | 1.864 | 75.8 |
| Higher levels of stress. | 4.55 | 1.368 | 75.8 |
| Unnatural environments. | 4.36 | 1.362 | 75.6 |
| Beak trimming. | 4.45 | 1.508 | 74.2 |
| Inability to express normal behaviors. | 4.45 | 1.572 | 74.1 |
| Physical alterations to poultry. | 4.27 | 1.421 | 71.2 |
| Interflock cannibalism. | 4.09 | 1.640 | 68.2 |

| | | | |
|---|---|---|---|
| Depopulation. | 4.09 | 1.578 | 68.2 |

After data analysis in the final round, we determined that 10 additional items out of 11 considered reached a consensus after the experts reconsidered the items on a three-point, Likert-type scale (see Table 2). We were also able to determine that a total of 23 items out of the original 28 (82.14%) reached a consensus.

**Table 2**

*Statements (N = 10) Provided by the Experts During that reached Consensus during Round Three of the Study about the Egg Production Practices that may Contribute to Consumers' Concerns about Hen Welfare*

| Statements | *M* | *SD* | % Agreement after Round Three |
|---|---|---|---|
| No access to the outdoors. | 1.83 | 0.389 | 91.5 |
| Insect and pest maintenance. | 1.83 | 0.577 | 91.5 |
| Limited retreat from predators. | 1.75 | 0.622 | 87.5 |
| Unstable social interactions within a flock. | 1.75 | 0.622 | 87.5 |
| Air quality/ventilation (dust, ammonia, etc.). | 1.75 | 0.452 | 87.5 |
| Molting. | 1.75 | 0.452 | 87.5 |
| Respiratory health of a flock. | 1.67 | 0.492 | 83.5 |
| Environmental comfort. | 1.67 | 0.492 | 83.5 |
| Feather pecking. | 1.58 | 0.515 | 79.0 |
| Foot health of poultry. | 1.50 | 0.522 | 75.0 |

## Conclusions

This study intended to reach a consensus among the study's selected expert panelists about the egg production practices that may contribute to consumers' concerns about hen welfare. As a result, we concluded that a wide variety of standard production practices have influenced the marketing and communication of egg production practices. For example, the experts of this study submitted 28 primary factors that could potentially reflect unsatisfied consumer demands and ultimately reached a consensus on more than three-fourths (82.14%) of the items. Therefore, we conclude that acknowledging these challenges regarding animal welfare in the laying hen sector of the poultry industry would be beneficial. By evaluating the responses and corresponding data, we identified four primary categories of concerns elicited by panelists: (1) biological factors, (2) environmental factors, (3) animal welfare factors, and (4) animal health-related factors. As a result, we conclude that alternative housing of laying hens presented a wide variety of issues that should be addressed when labeling eggs and egg products – a finding that has not previously been reported. To further describe this study's findings, a discussion of the conclusions follows.

The first category of concerns illustrated the biological factors that could contribute to consumer concerns for animal welfare. In many cases, poultry exhibit behaviors or biological processes that affect their appearance. For example, when poultry goes through molting, many if not most, of the feathers fall out. This process gives the animal the appearance of being mistreated or malnourished. As such, we conclude that consumer education efforts should include explanations of natural biological processes. The second category reflected the environmental factors that could contribute to consumer concerns. For example, any level of confinement presents issues for air quality and ventilation. In some cases of intense confinement, poultry can develop diseases and respiratory constrictions that inhibit proper breathing. Consequently, we recommend that future research explore how poultry producers can better communicate how they seek to mitigate environmental factors that may negatively affect hen health.

The third category focused on animal welfare-related factors. Examples of animal welfare-related issues that contributed to consumer concerns were intense confinement, feed withdrawals, culling male chicks, and depopulation. Therefore, we conclude that environmental and animal welfare-related factors exhibited overlapping characteristics that should be addressed more explicitly – a finding that has not been explored in previous literature. The final category encompassed factors concerning animal health or flock maintenance that could contribute to consumer concerns. For instance, beak trimming, insect and pest maintenance, disease control, and painful procedures have sometimes become necessary to preserve life or to prevent flock loss but could be perceived negatively by consumers and contribute to distrust. Therefore, we conclude that flock maintenance procedures should be depicted positively to provoke more optimistic consumer reactions – a finding that has not been reported in previous literature.

## Discussion, Implications, and Recommendations

Food labeling and agricultural production practices operate within the confines of policy and regulations enforced by the U.S. government and have also been reflective of consumer and stakeholder expectations (Mench et al., 2011). Food labeling policy, specifically regarding eggs, has become ambiguous and has introduced the misinterpretation of animal welfare, environmental, and sustainability standards. Therefore, we recommend evaluating past and present policies and legislation related to egg production. Further, we recommend that policymakers be required to complete basic education and training on the production practices that have been necessary to produce food. Regarding egg labeling policy, we recommend that industry professionals lobby for policies that support accepted production standards and consumer demands and advocate for policies related to greater poultry and egg education.

Flock maintenance, environmental sustainability, and issues surrounding animal welfare have historically been portrayed by activists and the media as neglectful or irresponsible practices (Grandin, 2014; Lusk, 2010; Ochs et al., 2018). However, in many cases, practices perceived as abusive or neglectful have benefited poultry health (Mathews & Sumner, 2015). Therefore, we recommend that marketing professionals develop industry standards that cultivate creativity and product differentiation in the egg industry while communicating the necessary product attributes.

Moving forward, we also recommend evaluating policymakers' knowledge of egg production practices. Consumer demands often influence food labeling policy (Nayga, 1999). Consequently,

we recommend that future research determine consumer knowledge of agricultural practices. Powers et al. (2020) determined that consumers have high levels of concern for animal welfare and on-farm practices but have a scant amount of knowledge regarding agricultural production. As such, we recommend that future research on food labeling address the terms and practices that consumers associate with product attributes so that differences among egg products can be better communicated.

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## Activity Preferences of Mississippi's Agritourism Clientele

### Introduction, Purpose, and Objectives

To compete with industrialized farms, small producers are becoming more diversified and unique in their marketing strategies to continue operating (Barbieri et al., 2009). Structural changes in agriculture have motivated small-scale farms to venture into niche markets and diversification strategies, like agritourism, to be financially viable (Rich et al., 2016). Agritourism includes "farming-related activities carried out on a working farm or other agricultural settings for entertainment or education purposes" (Arroyo et al., 2013, p. 45). However, the agritourism industry is difficult to develop due to the lack of universal agreement regarding what activities should be included in the definition of agritourism, and whether the definition of agritourism should only include activities that take place on a working farm (Chase et al., 2018).

Agritourism is becoming more common because it furthers small farms in the promotion of local products, rural economic development, and consumers' knowledge about agriculture (Rich et al., 2016). Small producers are more likely to achieve financial success through direct-marketing and value-addition that agritourism contributes to their land and products (Connolly & Klaiber, 2019). In addition to creating jobs in rural communities and improving local economies, agritourism offers a convivial environment for consumers to learn about agriculture (Khanal et al., 2020; Rich et al., 2016).

Numerous factors influence consumers to participate in agritourism activities. Studies conducted by Che et al. (2006) and Nasers and Retallick (2009) both concluded that word of mouth and road sign advertisements were the most common advertisement methods among agritourism clientele, whereas the usage of the internet had low advertisement success. Although Murphy and Melstrom's (2017) study found 48% of respondents discovered agritourism destinations through word-of-mouth advertisement, 17% found agritourism enterprises using social media, whereas 9% discovered agritourism operations through an internet search. Social media use is becoming an increasingly common method of agritourism advertisement (Murphy & Melstrom, 2017).

Kim et al. (2019) stated that social media use could be beneficial for agritourism operations by providing continued emotional attachment after an agritourism trip was experienced. Primary reasons clientele visited agritourism destinations were to pick or buy produce and vegetables, to pick or buy apples, and to participate in family outings (Che et al., 2006). Nasers and Retallick's (2009) study identified the primary activities in which clientele participated were farmers' markets and pick-your-own fruits and vegetables, followed by hayrides. Families also preferred to visit agritourism destinations during the fall months and were willing to visit agritourism operations annually (Nasers & Retallick, 2009). Murphy and Melstrom (2017) reported tourists visited agritourism operations that provided the direct sale of products more frequently than operations that only offered agricultural attractions.

The purpose of this study was to improve Mississippi's agritourism industry through gained knowledge of agritourism clientele's participation levels and activity preferences.

Objectives of the study were to (1) identify agritourism activities consumers had participated in, and (2) identify agritourism activities consumers preferred to participate in.

## Conceptual Framework

The conceptual framework for this study was based on Chase et al.'s (2018) agritourism framework that assigns activities as either core or peripheral tiers of agritourism, and further categorizes activities into five different sections: direct sales, education, hospitality, outdoor recreation, or entertainment. Activities are considered core or peripheral based on whether they occur on a farm, or whether the activity is connected to agriculture. An activity must occur on a working farm or ranch and be deeply connected to agriculture to be categorized as a core activity (Chase et al., 2018) (Figure 1). Core activities include direct farm sales through on-farm U-pick activities or farm stands, on-farm tours, agricultural festivals, and overnight farm stays (Chase et al., 2018). However, peripheral activities do not possess a deep connection to agriculture, even if those activities occur on a working farm or ranch (Chase et al., 2018). Peripheral activities include weddings, concerts, farmer markets, and agricultural fairs (Chase et al., 2018).

Figure 1

*Core and Peripheral Tiers of Activities that May Be Considered Agritourism*

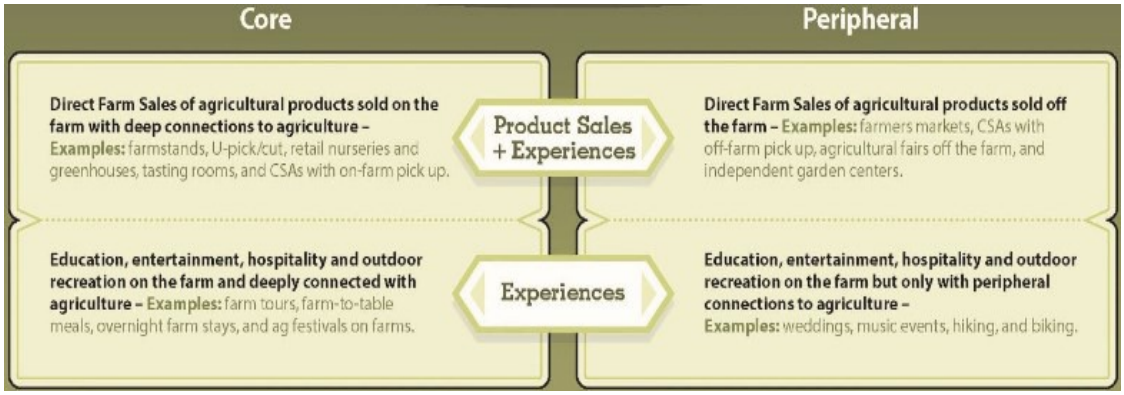
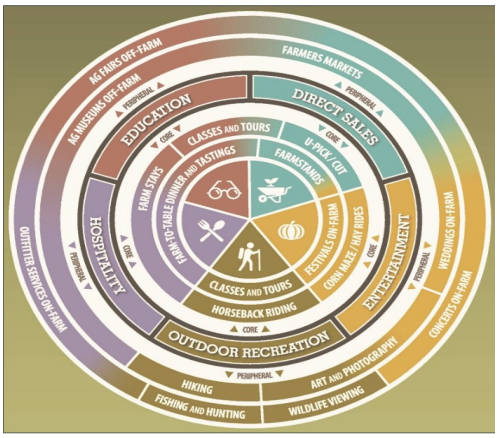



Figure 2 illustrates core and peripheral activities in each of the five categories. The inner portion of the wheel considers core activities that are exemplified in agritourism including farm stands, U- pick/cut, on-farm festivals, classes and tours, and farm-to-table dinners and tastings. Each core activity falls into at least one of the five categories: direct sales, entertainment, outdoor recreation, hospitality, and education. Peripheral activities are located toward the exterior of the wheel. For example, farmers' markets are a peripheral activity because they take place off-farm and are categorized as direct sales because these markets allow farmers to sell local products without an intermediary. Both core and peripheral activities are placed into at least one of the five categories provided in the study. However, some activities (i.e., farm stays) can be placed into multiple categories.

Figure 2

*Five Categories of Agritourism: Direct Sales, Education, Hospitality, Outdoor Recreation, and Entertainment, and Examples of Core vs. Peripheral Activities*




## Methods and Procedures

The population for this descriptive study included attendees of the 2021 Mississippi State Fair who were at least 18 years of age. A convenience sample of individuals who visited the Agriculture Experience Expo in the Mississippi Trade Mart Center at the Mississippi State Fair from October 6 – October 17, 2021 was used to collect data.

The instrument for the study was adapted from Naser and Retallick's (2009) study. Most of the instrument's elements were not changed; however, some questions were either omitted, amended, or replaced to (1) more accurately measure the study's objectives and (2) create an instrument specific to Mississippi's potential agritourism clientele. Numerous professionals in academia, Extension, and the agritourism industry reviewed the instrument for content and face validity. Individuals reviewing the instrument provided suggestions to amend the instrument to reflect agritourism needs within Mississippi. Once amended, the instrument was pilot tested at the Neshoba County Fair to (1) confirm that further amendments to the instrument were not required, and (2) ensure validity of the study was present. The pilot test collected 28 valid responses. No further amendments were needed based on the results of the pilot test.

Data collection began October 6, 2021 with the distribution of QR codes to individuals entering the door of the Mississippi Trade Mart Center who visited the Agriculture Experience Expo, continuing until the last day of the fair, October 17, 2021. However, fairgoers had until October 24, 2021 to complete the survey. The QR code directed fairgoers to an online survey administered through Qualtrics. FFA members who participated in the Agriculture Experience Expo assisted the researcher in administering surveys throughout the duration of the Mississippi State Fair. Of the 112 survey respondents, 96 individuals met the criteria to participate in the study.

Data were analyzed using SPSS. Descriptive statistics, including frequencies, percentages, means, and standard deviations were utilized to summarize data. Descriptive statistics were also

used to summarize responses for the questions that ranked agritourism sectors, preferred amenities and services, respondents' age, and reasons for participating in agritourism activities.

## Results and Findings

Ninety-six individuals completed the survey about Mississippi agritourism and whether they had participated in agritourism activities. Sixty (62.5%) had participated in Mississippi agritourism activities, 21.9% of the respondents ($f$ = 21) indicated they had not participated in agritourism activities, and 12.5% of the respondents ($f$ = 12) were not sure if they had participated in agritourism activities.

### Agritourism Activities Participated In

Of the 96 valid responses, 53.1% ($f$ = 51) had visited a farmers' market, 50.0% ($f$ = 48) had participated in hayrides, 49.0% ($f$ = 47) had visited pumpkin patches, 39.6% ($f$ = 38) had visited a corn maze, and 38.5% ($f$ = 37) had participated in pick-your-own fruit/vegetables agritourism activities. In contrast, the lowest participated agritourism activities by respondents were farm produce tasting ($f$ = 14, 14.6%), farm tours ($f$ = 11, 11.5%), on-farm camping ($f$ = 5, 5.2%), and on-farm concerts ($f$ = 5, 5.2%).

Respondents who had participated in agritourism activities ($f$ = 60) were asked to indicate what attracted them to participate in agritourism activities. The most frequently reported advertisement method was word of mouth ($f$ = 45, 75.0%), followed by social media ($f$ = 39, 65.0%), school activities ($f$ = 27, 45.0%), the internet ($f$ = 22, 36.7%), and church activities ($f$ = 21, 35.0%). Respondents indicated local Chambers of Commerce ($f$ = 2, 3.3%) as the least successful form of agritourism advertisement methods.

### Agritourism Activities Willing to Visit

Respondents indicated the likelihood they would be willing to visit an agritourism operation from 1 = extremely unlikely to 5 = extremely likely. Of the 90 valid responses, respondents most wanted to visit entertainment activities ($M$ = 4.11, $SD$ = 1.02), followed by the outdoor recreation sector ($M$ = 4.01, $SD$ = 1.01) and the direct sales sector of agritourism ($M$ = 4.00, $SD$ = 1.02). Respondents were less likely to visit the education sector ($M$ = 3.90, $SD$ = 1.05) and least likely to visit the hospitality sector of agritourism ($M$ = 3.69, $SD$ = 1.11).

Respondents indicated their perceived importance to visit agritourism activities within Mississippi from 1= not important to 5 = extremely important. Of the 86 valid responses, the most important reason to visit agritourism activities was to spend time with family and friends ($M$ = 4.48, $SD$ = .818), followed by to support local farmers ($M$ = 4.43, $SD$ = .79), to enjoy rural scenery/nature ($M$ = 4.17, $SD$ = .87), and to purchase fresh products ($M$ = 4.13, $SD$ = .92). Some of the least important reasons for participating in agrotourism activities was a short travel distance for vacation ($M$ = 3.88, $SD$ = 1.10), to learn about agriculture ($M$ = 3.81, $SD$ = 1.10), and to have internet access to rural broadband ($M$ = 3.35, $SD$ = 1.51). The least important reason for participation in agritourism activities was to take pictures for social media ($M$ = 2.62, $SD$ = 1.49).

Respondents indicated their perceived importance for Mississippi agritourism operations to offer specific amenities. Of the 82 valid responses, the most important amenity desired was real restrooms ($M$ = 4.15, $SD$ = 1.01), followed by handicap accessibility ($M$ = 3.94, $SD$ = 1.19), the ability to use credit/debit cards (M = 3.94, SD = .960), and the ability to purchase food and drinks ($M$ = 3.90, $SD$ = 1.00). Some of the least important amenities for agritourism operations to offer were a convenient location ($M$ = 3.85, $SD$ = 1.06), strollers/wagons for kids ($M$ = 3.44, $SD$ = 1.37), and a picnic area ($M$ = 3.66, $SD$ = 1.10). The least important amenity for agritourism operations to provide among was online ticketing ($M$ = 3.15, $SD$ = 1.32).

Respondents also indicated their perceived importance for specific services that Mississippi agritourism operations should offer from 1 = not important to 5 = extremely important. Of the 76 valid survey responses, the most important service was to offer fresh products ($M$ = 4.30, $SD$ = 0.88), followed by to learn how products were grown or made ($M$ = 4.03, $SD$ = 1.01). Some of the least important services to offer were the opportunity to pick your own fruits/vegetables ($M$ = 3.92, $SD$ = 1.06), to offer naturally raised products ($M$ = 3.91, $SD$ = 1.05), and to offer organic products ($M$ = 3.53, $SD$ = 1.28). The least important service for agritourism operations to provide was an opportunity to care for animals ($M$ = 3.86, $SD$ = 1.12).

## Conclusions/Discussion/Implications/Recommendations

Respondents had participated in Mississippi agritourism activities and had primarily visited farmers' markets, hayrides, and pumpkin patches. Preferred agritourism activities among respondents were peripheral activities within the direct sales sector of agritourism (i.e., farmers' markets) and core activities within agritourism's entertainment sector (i.e., hayrides and pumpkin patches). Popular agritourism activities among respondents corresponded with Brown and Hershey's (2012) study, which found that farmers' markets were also the most visited agritourism activity in Wisconsin.

Word of mouth was the most frequently utilized advertisement method among agritourism clientele. Multiple studies (Murphy & Melstrom, 2017; Nasers & Retallick, 2009) also reported that word of mouth was the most effective advertisement method among survey respondents. However, research shows that social media and internet searches have increased as a commonly indicated advertisement method among clientele as technology and internet-access progressed in the U.S. (Murphy & Melstrom, 2017). The highest indicated reason for non-participation in Mississippi agritourism activities was because potential clientele did not know about such agritourism destinations.

Respondents preferred interests in the entertainment, outdoor recreation, and direct sales sectors, as they were more likely to visit these agritourism sectors. In contrast, respondents were least likelihood to participate in agritourism's education and hospitality sectors. Research related to clientele's preferred agritourism sectors is vital in discovering a universal definition of agritourism in the future, as indicated by the efforts of Chase et al.'s (2018) study.

Spending time with family and friends, supporting local farmers, enjoying rural scenery/nature, and purchasing fresh products were all important reasons to visit Mississippi

agritourism destinations. Real restrooms were the only important amenity identified for agritourism operations to provide for clientele. Respondents indicated that the sale of fresh products and teaching clientele how products are grown or made were important services for agritourism destinations to provide on their farm.

Respondents also indicated they found value in supporting local farmers and agriculture through the purchase of fresh products and local items, as supported by Nasers and Retallick's (2009) study. Respondents reported handicap accessibility as a more important amenity than did respondents in Nasers and Retallick's (2009) study, which reported handicap accessibility as the least important amenity for an agritourism destination to provide in Iowa.

It is important to continue developing and improving the agritourism industry as it generates additional income for small farms, furthers rural economic development, and promotes local products (Connolly & Klaiber, 2019; Rich et al., 2016). Based on the findings of this research study, individuals developing agricultural tourism activities should: (1) Focus on providing agritourism activities that were commonly visited in this study, (2) Increase word of mouth advertisement and social media presence to maximize the efficiency of your operation's advertisement and marketing strategies, (3) Provide local products for clientele to purchase on your agritourism operation, especially fruits and vegetables, (4) Concentrate marketing efforts within the entertainment, outdoor recreation, and direct sales sectors of agritourism in Mississippi, (5) Create a family - friendly atmosphere that engages clientele to support local farmers, (6) Implement real restrooms and handicap accessibility onto your agritourism operation, and (7) Offer the sale of fresh products and teach clientele how products are grown and made.

It is important for Extension to provide educational resources and materials for agritourism operators and stakeholders. Recommendations for Extension based on this study include: (1) Utilizing this study's data for guidance and recommendations for farmers interested or invested in agritourism within the state, and (2) Creating and publishing resources that aid existing [State] agritourism operators through the dissemination of this study's findings.

This research study was conducted to provide a foundation of data that future researchers can build upon. The following are recommendations for future research: (1) Replicate this study in other regions of Mississippi to gain additional data about agritourism clientele within the state, (2) Study other variables (i.e., dollars willing to spend on agritourism operations, number of times clientele have visited agritourism destinations, how to improve previous experiences, etc.) to gain more knowledge on Mississippi agritourism clientele, (3) Explore why some respondents did not indicate that learning about agriculture was an important reason to participate in Mississippi agritourism, (4) Study the effect of farmers' markets and their relationship on the decreasing number of agritourism operations as it relates to direct sales of products on agritourism destinations, and (5) Conduct this study in other states within the U.S. to aid in the contribution and development of a universal definition of agritourism.

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# Emerging Project Abstracts

# Enhancing Learning Through Undisguised Teaching Case Studies: Both Instructor-Facilitated and Student-Written

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Bridging the gap between theory and practice has been a major educational campaign (Fossey & Glover, 2006; Rieks et al., 2011; Ruhanen, 2005). While this is not a new development, the increasing concern over adaptive challenges in agriculture has made demystifying the theory-practice nexus crucial. This nexus explains skills gaps and whether a graduate will be fit for the contemporary workforce (Nuthall, 2004). Because skill gaps are largely a result of disconnects between the educational system and the evolving economy (Business Roundtable, n.d.), industry leaders are increasingly concerned that students may not be learning skills suitable for workforce preparedness (Jackson et al., 2016; Jaschik, 2015). The challenge lies within the seemingly 'mysterious' divide between technical skill acquisition and the applicability of knowledge in a fluid, real-world situation. Indicators of this learning deficiency are observed in the lack of higher-order, transferable skills, such as critical analysis, decision-making, adaptability, and leadership (Cappelli, 2015; Jackson et al., 2016).

This challenge demands preparing college students beyond technical, job-specific skills to carefully design teaching methods that enhance applied skills development (Rateau, et al., 2015). Work readiness, therefore, should be an integral and imperative pursuit of formal agricultural education (Rateau et al., 2015). While successes have been reported with experiential learning outside of the classroom (Austin & Rust, 2015; Lee, 2008), addressing learning/skills gaps requires multifaceted efforts (Business Roundtable, n.d.). Hence, combining hands-on learning inside and outside of the classroom presents a more holistic approach to enhancing learning and making college students labor market ready. This is especially important as learning is not just a function of experience but engaging with and reflecting on experience (Dewey, 1944).

The increasing complexities of agriculture and life sciences mean that teaching must be designed "to engage students in thinking about theoretical, applied and deeper conceptual understanding" (Herreid, 2006, p. 30). Through the stimulation of critical and analytical thinking and reflection, teaching cases allow students to connect abstract concepts to concrete realities (Herreid, 2006; Patil et al., 2020). Moreover, an undisguised and open case seizes the opportunity to maximize experiential learning for students as it rouses interest, provokes conflict, forces decision-making, and stirs the need to learn (Fossey & Glover, 2006; Herreid et al., 2016). Through repeated classroom exposure to such opportunities, Fossey and Glover (2006) reckon that students develop skills to address difficult challenges before they are confronted with them in the professional workplace.

## Purpose and Objectives

This work seeks to demystify the theory-practice nexus and enhance college students' learning through teaching strategies that address the higher-order, adaptive skills deficiency and prepares graduates for the ever-dynamic agricultural workforce. Objectively, it aims to: foster instructors and learners' ability to analyze and synthesize multiple concepts of leadership for transdisciplinary engagements in agriculture; offer learner experience in applying shared leadership in a (small) group setting; promote instructor-student (akin to employee-supervisor) partnership in co-learning and collective problem-solving; and give students the learning opportunity to craft their own cases, thereby translating critical thinking and learning to actual doing.

## Theoretical/conceptual framework/perspective

This project builds on the need to establish the connection between the classroom and the real world of agricultural and life science organizations through instructor-student interaction, thereby shifting the didactic pedagogical classroom approach (Minnit et al., 2017). This paradigm shift is critical to mending the broken education-workforce pipeline in the United States (AIR, 2021). The nature of teacher-student interaction, considered the core of pedagogy (Battro et al., 2013), is significant to unraveling how this gap might be bridged. It is necessary that teachers/instructors pay attention to their teaching methods as the engagement with students "is strongly influenced by the teaching perspective embraced by the teacher" (Myers, 2008, p. 1). The rhetorical perspective and relational perspective represent two important concepts highlighted in instructional communication (Aspelin, 2021; Myers, 2008). We focus on the relational perspective, which provides a grounding for the needed paradigm shift from teacher-centered communication and passive student role in the classroom. Contemporary agricultural organizations, many of which are battling adaptive challenges, are unlikely to profit significantly from graduates who are products of merely a rhetorical perspective, where teachers rely on knowledge transfer or inculcation by clear, assertive, and persuasive communication. Instead, a co-generative classroom leading to knowledge creation through instructor-student interaction and engagement is a more useful paradigm, particularly when learning is expected to produce knowledge for solving difficult, real-world organizational problems (Poulsen & Buland, 2020; Rahmawati et al., 2015). This argument adds to the body of literature toning down 'teaching' and spotlighting 'learning' (Aspelin, 2021; Biesta, 2009, 2017).

In a coherent analysis of Buber's relational theory of teaching, Aspelin, 2021 exemplifies the importance of developing a 'whole' student capable of going beyond the banking system of education to (re)generating knowledge in a community of practice (hooks, 1994). Even more critical is the metaphorical concept of teaching indicated as positioned against an 'old' and a 'new' concept, where the old (the traditional) sees the teacher's role as using "a funnel to pour knowledge into the students' brains" and the new (the modern) understands the teacher's role as "using a pump to bring individual [student's] latent creative forces to the surface" (Aspelin, 2021, p. 590). This metaphor is not only typical of the rhetorical and relational perspectives of

teaching but also alludes to the intent of our teaching case method to transcend encouraging students to bring forward their lived experiences to reviewing and renewing them in the face of current realities as their latent creative forces are stimulated. Stimulating forces of creativity, however, comes with the challenging requirement to change old assumptions, beliefs, and behaviors, which is a domain of leadership-as-practice development (Raelin, 2016) and creates potential for a "productive zone of disequilibrium" that requires sustained commitment in adaptive work (Heifetz et al., 2009).

Therefore, the teaching case classroom is built on a hybridized leadership philosophy of adaptive leadership (Heifetz et al., 2009) and leadership-as-practice (Raelin, 2016). Summarized by Northouse (2022), "Adaptive leadership focuses on the *adaptations* required of people in response to changing environments" (p. 285). The changing environment coupled with the need for new learning creates tensions that must be managed, nurtured, and supported productively in a holding environment (Northouse). However, managing these tensions could be more productive within the framework and understanding of collective and relational leadership engagement as students transit through the state of reviewing and renewing held assumptions, forming new thinking, and acquiring applied skills for resolving difficult organizational problems (Raelin).

## Methods

The teaching case has two components – the case narrative and the teaching notes. The case narrative has the major elements of introduction, overview/analysis, status report, case problems, and appendices carefully crafted to engage and trigger the readers' interest in learning and problem-solving. And the teaching notes, which provides instructive but non-exhaustive guidance for teaching the case, contains the case synopsis, educational objectives, discussion outlines/questions, and tips for addressing the case (International Records Management Trust, 1999). Our approach in the use of the undisguised teaching case method transcends encouraging students to bring their existing beliefs and knowledge to new challenges (Lee & Caffarella, 1994) to educating them to review and renew them for surfacing processes and practices suitable for working in complex adaptive situations (Denyer & Turnbull-James, 2016). This approach is embedded in Leadership-as-Practice Development (LaPD) for resolving complex, rather than tame or complicated, or technical problems. Students are also put into collaborative leadership learning groups (CLLGs) which are "anchored in practice, bringing together learners who can identify and work together on the challenges they face collectively" (Denyer & Turnbull James, 2016, p. 269). Moreover, "rather than delivering theory to simplify practice, case-based instruction expands the complexities … wherein students are encouraged to 'think like a teacher' (Feiman-Nesmer, 1990) … construct their own knowledge and practice reasoning and decision making skills in complicated, ambiguous situations" (Merseth & Lacey, 1993, p. 289) and are encouraged "to be active protagonists in the learning process" (Minniti et al., 2017, p. 377).

Students in an undergraduate agricultural leadership course were introduced to a teaching case on the Oldsmar water treatment plant cyberattack. The incident is an undisguised and open case, a learning opportunity, and a scary incident telling of the potential danger of cyberattacks on agricultural and biological systems to humans, plants, animals, and the environment. This makes the Oldsmar water case qualify for what characterizes a good case (Herreid et al., 2016). The initial reactions, collected and documented, of students to the case provided a glimpse into the students' differential dispositions to the teaching case and the incident. And helps the teacher to understand how the classroom should be organized.

The teacher and students are co-learners and producers of knowledge working together in the classroom. The role of the teacher is typically that of a facilitator, guiding learning to stimulate criticality and curiosity among students. Kohn's (1996) ideal classroom provides a suitable setting for this teaching strategy. And, as demonstrated in the delivery of the Oldsmar teaching case, an ideal classroom is one that promotes deep understanding, excitement about learning, and social and intellectual growth wherein students are active decision-makers and teachers work with students. The interests and questions of the learners (in context, the facilitator and students) are the drivers of the learning setting and content. Carefully geared toward unraveling an intriguing case, this teaching method stimulates the creative potential of the learners to seek systematic solutions. While the original case serves as an instrument of learning, students demonstrate their learning and transfer applied skills learned to crafting their own undisguised cases (including the narratives and teaching notes) of interest to address critical agricultural organizations' leadership concerns. Switching point of view from a student to a teacher and vice versa, in the course of grappling with real-world incidents, potentially stimulates the students' latent creativity for adaptive learning and problem-solving.

## Results/Findings to date

This undisguised teaching case is currently being used for the first time in an undergraduate agricultural leadership course and has not been evaluated. According to the International Records Management Trust (1999), a teaching case should be evaluated for stability after being used at least once. Evaluation outcomes will thus be used for relevant amendments and annotations. The final products, the case narrative and teaching notes, will be published as open educational resources (OER). In past years, students have written their own teaching case studies, and several of those have been shared for other educators to use. For example, some student-written case studies have been published in the Association of Leadership Educators' teaching case study database.

## Requests for Input/Guidance/Mentorship/Questions

To further encourage discussions on teaching cases, copies of the case narratives and teaching notes will be shared at the conference, and feedback will be highly appreciated from participants. The hope is to simulate what an ideal classroom for an undisguised teaching case would look like under a hybridized leadership philosophy of adaptive leadership and leaders-as-practice development for addressing complex real-world agricultural challenges.

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# HEARING In Practice

## Introduction, Purpose, and Objectives

School based agricultural education (SBAE), specifically in courses concentrating on agricultural mechanics, focuses on a multitude of different topics that are directly related to safety both in and outside of a classroom. Due to space restraints, appropriateness of the subject, or comfortability of the instructor, these topics often utilize active learning techniques and laboratory instruction (Phipps & Reynolds, 1990). As these spaces and methods are used more commonly, the discussion relating to student safety also increases (Dyer & Andreasen, 1999; Langley et al., 2018; Saucier et al., 2014). Active teaching methods, as well as laboratory settings, can lead to lessons and opportunities where multiple safety concerns may arise (Chumbley et al., 2018; Roberts & Dyer, 2004; Saucier et al., 2014). With lessons that focus more on active student engagement, student attitude and awareness toward safety concerns including, but not limited to, hearing loss and noise levels have been identified as key points of discussion within scholarship for many years (Bunch, 1937; Franklin, 2008; Hancock et al., In Press; Herren, 2014; Woodford et al., 1993). In specific regards to hearing within agriculture, there have been multiple studies concentrated on noise levels and concerns within the larger scope of agricultural fieldwork (Matthews, 1968; Miller, 1989). These studies have shown that agricultural work, both inside and outside the scope of agricultural mechanics, are well above the National Institute for Occupational Safety and Health (NIOSH) recommendation of 85dB (NIOSH, 2018a; NIOSH, 2018b).

While there have been significant studies conducted on hearing safety (Hancock et al., In Press), there are still numerous instances of anecdotal evidence that indicated a disconnect between students' understanding of decibel output and the long-term effects on hearing that can occur while working in agricultural environment. Roberts and Dyer (2004) discuss proper laboratory management and emphasize the safety concerns presented by hands-on learning opportunities. Their study further determined that out of 40 characteristics, care of students is the most important to be an effective instructor. Osborne and Dyer (2000) acknowledge that students' attitude positively changes when active learning methods are presented in an engaging and safe manner. Utilizing these active learning techniques within the laboratory environment can help bridge the perception gap Clarke (2006) identified relating to one's occupational safety climate and safety concerns. Clarke (2010) further connected the presentation of a learning space's safety climate aspects to one's motivation and perceptions of safety concerns. Building the competency of both students and instructors is a critical step in the foundation of a healthy and safe learning environment (Daniels, 1989; Flin et al., 2000) and leads to educational success for an agricultural mechanic program. As we renew the focus on hands-on learning (Akkermans et al., 2020), it is important for instructors to devote time to building a well-defined safety climate within their curricula (Johnson & Schumacher, 1989; Rudolphi & Retallick, 2015; Ullrich et al., 2002) and ensure students are engaging in safe and meaningful activities (Langley et al., 2018).

The purpose of this study is to better assess student willingness to use wear hearing protection as it relates to established self-imposed thresholds within an agricultural mechanics laboratory. The HEARING project (Hancock et al., In Press) identified that students, through direct and indirect exposure, better distinguish use of hearing protection to established thresholds. This study aims to put lessons learned from the original study into practice to promote hearing safety and identify

reported use of hearing protection by students taking Auburn University's introduction Agricultural Mechanics course. Three objectives guide this study:

1. Establish student threshold for use of hearing protection in an agricultural mechanics setting
2. Identify student perceptions of decibel outputs relating to tool use in an agricultural mechanics setting
3. Determine student willingness to wear personal protective equipment relating to hearing safety in an agricultural mechanics setting

**Theoretical/conceptual framework/perspective**

Students operate in a risking taking world and do not understand the consequences associated with foregoing safety procedures (Hubert et al., 2003). Students, as part of their school community, are exposed to the actions of others, mainly their peers. This constant exposure can lead to the adoption of culture-normative objects and habits. Familiar art, tastes, actions, and language, all give what Zajonc (1968) called a "warm glow" when one is in its presence. Out of this logic, the Mere Exposure Theory (MET) was developed. MET is shaped by two main beliefs. The first is that increased exposure eases barriers to processing a stimulus, and the second is the reduction of processing effort or time increases fondness (Reber et al., 1998; Vincent et al., 2020). Vincent et al. (2020), stated that the theory is often called the familiarity principle and states that people tend to remember and develop a preference for things with which they are more familiar. This principle is empirically supported by the relationship between frequency and meaning (Zajonc, 1968). Vincent et al. (2020) extended the MET theory to the classroom by discussing the power of MET to affect change in students' cultural understanding and behavior. This study aims to utilize MET to better understand connections associated with student willingness to adhere to a culture of safety by wearing hearing protection and hopes to provide additional insight into student motivations within the agricultural mechanics laboratory.

**Methods**

To help mitigate the safety gap in the agricultural mechanics lab and better instruct students on the need for the use of hearing protection, students in the Auburn University Ag Mech lab are asked to reflect in writing on their use of proper Personal Protective Equipment (PPE) and the decibel threshold for safety concern. The use of our target population (students in the introduction to ag mech course) is twofold. First, to provide insight to former secondary agricultural science students and future secondary agricultural mechanics teachers. Second, this population provides direct feedback on best practice for the development of a culture of safety within courses at Auburn University's agricultural mechanics lab.

This study utilizes pre- and post- testing in conjunction with data collected from a set of PPE use questions asked through weekly reflections. These instruments utilize CDC-NIOSH established guidelines (NIOSH, 2018a, 2018b) and were developed through Qualtrics. The pre-instruction instrumentation was distributed electronically during the first two weeks of the course. The instrument first asks participants to reflect on the last time they used specific tools without indication of decibel output (Handheld Circular Saw; Powered Hand Drill; Angle Grinder; Impact Wrench; Powered Miter Saw; Pneumatic Nail Gun) and identify their wearing of hearing protection. Participants are then asked, using the same tool list, their intention of wearing hearing

protection the next time they use the specific tool. The third question relates to the participant's decibel threshold level (1=Always; 2=60dB; 3=65 dB; 4=70 dB; 5=75 dB; 6=80 dB; 7=85 dB; 8=90 dB; 9=95 dB; 10=100 dB; 11=105 dB; 12=110 dB; 13=115 dB; 14=120 dB; 15=Never) they identify as a level needed to wear hearing protection. The remaining questions identify characteristic data of the participants. The post-instruction instrument will reflect the pre-instruction instrument and be available electronically during the last two weeks of the semester as students complete the final course reflection assignments. The tools for the first two questions will be presented in random order to help mitigate instrumentation errors.

Between the two instrument administrations, course instruction focuses on active learning techniques that promote tool use. While there is no explicit requirement to use specific tools for project completion, the lack of alternative tool availability leads to exposure either through direct or indirect use. The exposure provides insight into decibel levels within an agricultural environment. In addition to the tool use exposure, at the halfway point in the semester, students will be indirectly exposed to NIOSH recommended limits and tool decibel outputs (NIOSH 2018a, 2018b). This will be done through two 48" X 48" informational posters hung in high-trafficked locations (a prominent central location within the laboratory and adjacent to the door that leads between the classroom and laboratory). Instruction and project completion will continue as normal. Instructors will not directly instruct on the informational posters, but placement will be such to encourage the viewing by students. Weekly reflections will continue throughout the course, before and after the installation of the posters, asking about projects completed, tools used, and the use of PPE.

**Results/Findings to Date**

In the pre-test collection, eight participants stated that they would start wearing hearing protection at the NIOSH recommendation of 85dB. Fourteen participants indicated a level of either 80db ($n$ = 1) or 90dB ($n$ = 13). Nine participants answered that they would always wear hearing protection no matter the sound level and two participants stated they would never wear hearing protection. Seven participants reported a threshold 10dB above 85dB and one indicated a threshold of 10db below the NIOSH recommendation of 85dB.

Using participants' indicated thresholds, individual responses to their intent to use hearing protection for specific tools (without the dB level listed) were scored for accuracy. Twelve individuals accurately identified the tools that correspond to their indicated dB level threshold for hearing protection and nine others accurately responded to five. Table 1 shows the frequency of accurate responses for participants broken down by their indicated threshold levels.

**Table 1**

*Pre-Evaluation Will Use Hearing Protection Accuracy to Indicated Decibel Threshold Response*

| Decibel Threshold to Use Protection | Frequency of Accurate Responses | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Always | 0 | 0 | 2 | 0 | 0 | 1 | 6 |
| 75 dB | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 80 dB | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 85 dB | 1 | 1 | 2 | 1 | 0 | 2 | 1 |
| 90 dB | 2 | 0 | 1 | 3 | 0 | 4 | 3 |
| 95 dB | 2 | 0 | 0 | 0 | 0 | 0 | 1 |
| 100 dB | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 115 dB | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 120 dB | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| Never | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Totals (*n*) | 6 | 2 | 5 | 5 | 2 | 9 | 12 |
| Percentages (*%*) | 14.63 | 4.88 | 12.20 | 12.20 | 4.88 | 21.95 | 29.27 |

*Note.* $n = 41$. NIOSH indicates recommended decibel threshold of 85dB (2018a).

Starting in week three of the semester asked about their use of different PPE during the week's lab. Table 2 shows the weekly breakdown of two pieces of PPE. Each week there is a large difference between the use of Safety Glasses compared to Hearing Protection. Week D did see an increase in the use percentage of hearing protection to 32% ($n = 8$) however, there were no signifiers for this increase. Viewing the total use of PPE, the overall use of hearing protection is an alarming 10.43% ($n = 17$) compared to safety glasses use of 93.25% (n = 152).

**Table 2**

*Weekly Reported use of Personal Protective Equipment*

| Course Week (*n*) | Safety Glasses | Hearing Protection |
|---|---|---|

| | *f* | *%* | *f* | *%* |
|---|---|---|---|---|
| Week A (37) | 35 | 94.59 | 1 | 2.70 |
| Week B (28) | 27 | 96.43 | 3 | 10.71 |
| Week C (34) | 26 | 76.47 | 1 | 2.94 |
| Week D (25) | 25 | 100.00 | 8 | 32.00 |
| Week E (36) | 36 | 100.00 | 4 | 11.11 |
| Totals (163) | 152 | 93.25 | 17 | 10.43 |

To date, this study has shown that, while participants have prior working knowledge of hearing protection as suggested by their threshold levels and accuracy response in support of (author), there is a significant disconnect between intention and application. According to the students' responses in the pre-test to the level they would wear hearing protection, the tools utilized in lab should have resulted in a 29.27% to 51.22% use of hearing protection. This significant discrepancy sheds light on the gap on perceptions to noise levels in the laboratory and intentions to use proper safety equipment.

**Requests for Input/Guidance/Mentorship/Questions**

This study currently focuses on the use of MET, as we have identified the use of both direct and indirect exposure as potential variables affecting student perceptions and willingness to utilize proper PPE. We are seeking guidance and input from other researchers relating to the use of MET in the design of intervention studies with the culture of safety, as this is the largest hesitation the research group currently has. Additionally, input on data collected from the weekly reflections is requested as each week has volatile response rates. Early findings have begun to suggest little change to the reported use of hearing protection as it relates to direct exposure to tool use. The research team is interested in the continuation of this project, as all current data are pre-indirect exposure of decibel outputs and recommended use of hearing protection (posters). The results from this study will hopefully continue the discussion on the importance of exposure to safety concerns and provide a space to develop and promote best practices within the agricultural mechanics laboratory at both the secondary and post-secondary level.

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# The Key Concepts of Agricultural Entrepreneurship: A Scoping Review

## Introduction, Purpose, and Objectives

Pursuing opportunity beyond your current resources is entrepreneurship (Eisenmann, 2013). Entrepreneurship is characterized in a variety of fields. Agricultural entrepreneurship generates new opportunities or on-farm diversification to create or grow an agribusiness (Fitz-Koch et al., 2017). This could take the form of agritourism, producing value-added products, or creating an agribusiness. In entrepreneurship scholarship, agricultural entrepreneurship has been ignored (Dias et al., 2019; Fitz-Koch et al., 2017). The entrepreneur sees opportunity, acquires the resources, and then acts on the opportunities (Freytag & Thurik, 2007).

The current research on agricultural entrepreneurship tends to focus on entrepreneurial skills, diversification, entrepreneurial motivation, farm structure, and finances (Dias et al., 2019; Fitz-Koch et al., 2017). Agricultural entrepreneurship can increase revenue, resilience, and unity across the agricultural value chain while reducing urban migration and subsidy dependence (Fitz-Koch et al., 2017). Entrepreneurship can improve individual, community, and societal wellbeing (Ernst et al., 2005). Currently, many programs in around the world aim to build entrepreneurship skills (United Nations, 2015). Encouraging entrepreneurship can increase economic development, job creation, and innovation across disciplines (Ozaralli & Rivenburgh, 2016; Voda & Florea, 2019; Yami et al., 2019). Entrepreneurship can create jobs and opportunities for urban and rural populations. To build those skills, agricultural entrepreneurship programs need to be attuned to current economic needs. Therefore, this study aligns with the National Research Agenda of the American Association for Agricultural Education priority *Sufficient Scientific and Professional Workforce that Addresses the Challenges of the 21st Century* (Roberts et al., 2016). Agricultural innovation centers, extensionists, and teachers can build entrepreneurial skills and direct innovation (Mykhailov & Miroshnychenko, 2008). Agriculture is a main employer for many rural families (White, 2012). Since agricultural entrepreneurship highlights the rural-natural environment, agricultural entrepreneurs face unique challenges (Dias et al., 2019).

Entrepreneurship is a complex phenomenon; it involves a multitude of technical and leadership skills and personal characteristics (Cunningham & Lischeron, 1991). Agricultural entrepreneurship program content may be vastly different across interventions. Much of the academic literature includes scant detail on what comprises entrepreneurship education in rural areas (Dias et al., 2019). Identifying the core concepts of agricultural entrepreneurship is key to ensure that people participating in programs are receiving accurate and well-rounded information. The purpose of this study is to clarify agricultural entrepreneurship. To this aim, the researchers will investigate the key concepts of agricultural entrepreneurship present in academic literature.

## Conceptual Framework

The framework to guide this study is About/For/Through Framework of Entrepreneurship Education (Johnson, 1988; Heinonen & Hyti, 2010; O'Connor, 2013). Teaching about entrepreneurship focuses on the content and theoretical approaches to provide understanding of the phenomenon (Lackéus, 2015). Teaching for entrepreneurship aims to provide new

entrepreneurs the knowledge and skills they need (Lackéus, 2015). Teaching through entrepreneurship is and experiential learning approach where students undertake the entrepreneurial process (Lackéus, 2015). These forms of entrepreneurial education practice have different goals and objectives though are complementary (Pittaway, 2009).

The *About* type tends to use more traditional pedagogic instruction (Pittaway & Edwards, 2012). The instructional method focuses on raising awareness or knowledge and is subject led (Pittaway & Edwards, 2012). The *For* type incorporates experiential, inquiry-based, or project-based learning for students to engage in activities to learn key competencies (Pittaway & Edwards, 2012). Usually, this method of instruction prepares students for future entrepreneurial pursuits (Pittaway & Edwards, 2012). While *For* and *Through* overlap, the inclusion of providing a space for students to engage in entrepreneurship in somewhat controlled conditions is included in the *Through* type of instruction (Pittaway & Edwards, 2012). This method involves students consulting on or running enterprises themselves (Pittway & Edwards, 2012). Pittaway and Edwards (2012) also identify a fourth type: *Embedded*. This method of entrepreneurial instruction intertwines entrepreneurial instruction with other courses and disciplines (Pittaway & Edwards, 2012). However, this kind of instruction can involve all three of the above forms as well (Baker, 2015; Pittway & Edwards, 2012). The *About* and *For* entrepreneurship methods are used most commonly for secondary and higher education, while the *Through* or *Embedded* methods are relevant for all education levels (Lackéus, 2015).

For the purposes of this study, the framework serves to focus the kinds of entrepreneurship education that should be included in the study. This will ensure that we are including all three types of entrepreneurship education rather than favoring one method over the other. Also, the three types of entrepreneurial education will help during the charting process as that will help distinguish programs from each other and could illuminate trends among the methods of instruction.

## Methods

To assess the research objective, a scoping review of the relevant literature will be undertaken. The scoping review will focus on the relevant literature in agricultural entrepreneurship, entrepreneurial education programs, and agricultural development. A scoping review systematically examines literature, synthesizes evidence, and addresses knowledge gaps (Munn et al., 2018). The scoping review will follow the guidelines outlined by Arksey and O'Malley (2002): (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) data charting, and (5) synthesizing the results. Step one necessitates the definition of parameters to identify the important aspects of the research question (Arksey & O'Malley, 2002). To search for relevant sources, articles are limited to those published between 2000 and 2022. The predetermined search terms and Boolean operators were chosen based on preliminary searches on Google Scholar. These searches aimed to increase the researchers' knowledge on the variety of terms used to discuss agricultural entrepreneurship in the academic literature and the current research on the topic. This search revealed three search terms for entrepreneurship, four search terms for agricultural entrepreneurship, and two search terms for entrepreneurship education (Table 1).

**Table 1**

*Search Terms and Boolean Operators*

| Concept | Search Terms |
|---|---|
| Entrepreneurship | 'entrepreneurship', or 'small business development', or 'small to medium enterprises' |
| Agricultural Entrepreneurship | 'Agricultural entrepreneurship' or 'agricultural diversification', or 'agritourism', 'agro-entrepreneurship', 'agripreneurship' or 'rural entrepreneurship' |
| Entrepreneurship Education | 'Entrepreneurship education programs', 'entrepreneurship training' |

Four internet databases were used to find relevant literature according to the predetermined search terms and Boolean operators: Google Scholar, Web of Science, PubMed, and Science Direct (Arksey & O'Malley, 2002; Baker et al., 2022; Brüne & Lutz, 2020; Catalano, et al., 2019; Fitz-Koch et al., 2017). The development of inclusion and exclusion criteria was determined ex post based on increasing knowledge of the existing literature (Table 2; Arksey & O'Malley, 2002).

**Table 2**

*Inclusion and Exclusion Criteria*

| Inclusion Criteria |
|---|
| 1. Quantitative studies examining the possible factors related to agricultural entrepreneurship.<br>2. Studies focusing on agricultural entrepreneurship, entrepreneurship education, rural small business development and small to medium sized enterprises<br>3. Participants are rural youth or rural adults<br>4. Studies published in English in peer-reviewed journals between January 2000 and December 2022 |
| **Exclusion Criteria** |
| 1. Qualitative Studies<br>2. Studies in which agricultural entrepreneurship, entrepreneurship education, rural small business development and small to medium sized enterprises was not studied<br>3. Book chapters, secondary articles, and reviews.<br>4. Studies published in a non-English language and before January 2000 and after December 2022 |

Initial inclusion and exclusion criteria will be based on the abstracts of the article, should the abstract not clarify their inclusion or exclusion the full article will be read. For those that are included after reading the abstract, the full article will be read (Arksey & O'Malley, 2002). Once all the relevant articles are identified, key information from each article will be charted such as the quality of the methods, outcomes, and relationships identified in the articles (Arksey & O'Malley, 2022). The scoping review data will then be summarized to find common relationships following the charting and collecting of the articles and reports. Open coding will be used to determine the categories and possible subcategories of agricultural entrepreneurship

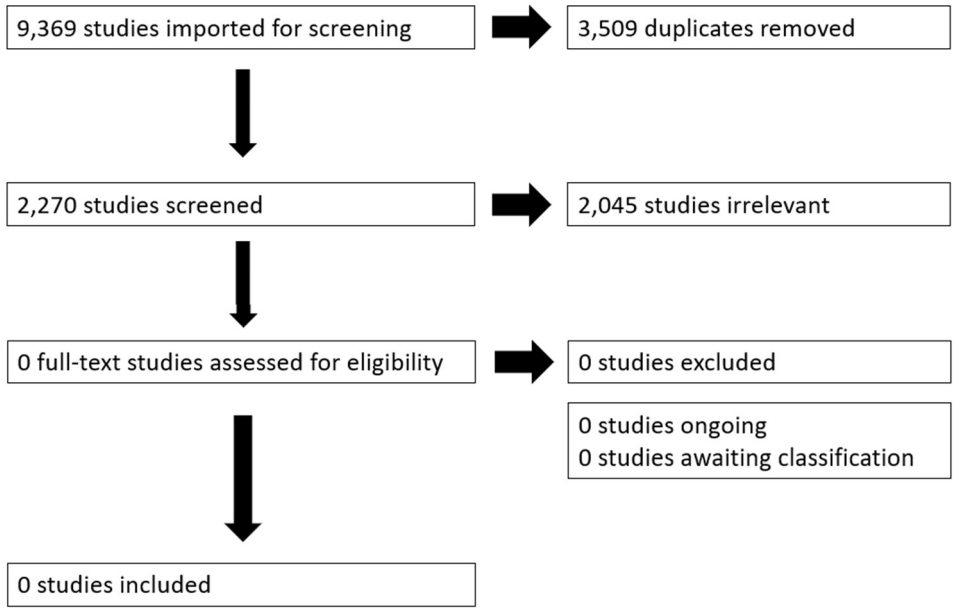
concepts (Baker et al., 2022; Deroover et al., 2021).

## Results/Findings to Date

As of this writing, preliminary article title and abstract screening has occurred (Figure 1). Through *Endnote*, 9,369 studies were imported into *Covidence* for title and abstract screening. Of those 9,369 studies, 3,509 duplicates were removed. Of the total 5,860 studies to be screened, 2,270 of them have been screened according to the current inclusion and exclusion criteria. A total of 2,045 studies have been deemed irrelevant and 225 studies are awaiting full-text review.

**Figure 1**

*Literature Review Search and Screening Process*




## Requests for Input/Guidance/Mentorship

I am a graduate student who plans on pursuing a Ph.D. in agricultural education and communication. This research will be incorporated into my master's thesis. This study is being conducted in conjunction with two others (a Delphi study and a needs assessment) to triangulate the concepts and competencies of agricultural entrepreneurship to be used in a short-term youth program framework for Latin America and the Caribbean. I would like input on the current inclusion and exclusion criteria and its appropriateness for the study's purpose. I would also like guidance for future research following the completion of this study. I would like to learn more from other scholars about potential research methods and how I can improve my own research. I am curious about other scholars' opinions and research on agricultural education and the incorporation of entrepreneurship into the curriculum. Additionally, I would like to learn more about how as agricultural educators we can best prepare future agricultural teachers how to incorporate entrepreneurial skills into their classroom instruction.

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# Reaching the Indoor Environmentalists: Understanding Generation Z's Perceptions of Hunting and Conservation Efforts in Arkansas

## Introduction/Purpose/Objectives

Participation in hunting has steadily declined since the 1980s (Vayer, 2020). Hunting is a highly effective tool to help regulate animal populations and maintain stable ecosystems (Moore, 2021). The funding for state-run wildlife stewardship organizations mainly comes from conservation sales taxes on firearms, bows, ammo, and other hunting equipment, hunting licenses, and permits (Sellers, 2020). The decrease in hunting participation decreases the funds needed for conservation efforts (Zellers, 2020). According to a 2016 national survey, only 2% of hunters were aged 16-17 and only 9% were aged 18-24 (U.S. Fish and Wildlife Service et al., 2018). Members of Generation Z (Gen Z) who hunt typically do so during their formative years, ages 12-17, but lapse in participation as they grow older and enter college, ages 18-26 (Chase & Chase Consulting, 2017).

Born from 1997 to 2012, less than half of the Gen Z participants, in a recent study, reported spending more than two hours a day outdoors, and are instead spending an average of nine hours a day on the internet and social media (Larson et al., 2019). Studies are inconclusive on the activities Gen Z enjoys participating in outdoors. Despite this lack of connection with nature, Gen Z is more interested in the environment and its conservation than previous generations (Larson et al., 2019). Terms such as "hunting" are not always looked on favorably by those outside the industry (Everett & Raven, 2018). This is especially prevalent because social networks promoting wildlife management practices can influence stakeholder perceptions over time and technology is integral in the daily lives of Gen Z (Triezenberg et al., 2011). Content such as short-form videos seen on YouTube, Instagram, and TikTok are used to help make decisions (Gassett, 2021). In a study by Vitelar (2013), 98% of the Gen Z participants had an Instagram and around 80% believed it was an effective platform for building brands.

The purpose of this study is to learn Gen Z's opinions and perceptions of hunting in relation to conservation efforts and how these opinions are formed. The objectives of this study are to, 1) Describe how Gen Z perceives the relationship between hunting and conservation, 2) Define what information on hunting or conservation Gen Z consumes to form these perceptions, 3) Determine which channels of conservation information are used by Gen Z and, 4) Discover how members of Gen Z are engaging with the outdoors through outdoor activities. This study will help state wildlife stewardship organizations, such as Arkansas Game and Fish Commission (AGFC), discover Gen Z's perceptions to improve communication with them and engage them in hunting.

## Theoretical Framework

The Outdoor Recreation Adoption Model (ORAM) is a theoretical framework that defines recreational behavior based on social support to help develop R3 programs: recruitment, retention, and reactivation (Byrne & Dunfee, 2018). The model describes the eight stages of a new activity: awareness, interest, trial, continuation with support (apprentice), continuation without focused support (no longer apprentice), continuation as a proponent, temporary lapse, and permanent lapse (Byrne & Dunfee, 2018). The ORAM theory places emphasis on the impact an individual's social support network has on their progression through the eight stages (Byrne &

Dunfee, 2018). The four pillars of social support, family, friends, community, and peers, must all exist in order for individuals to fully adopt hunting recreation and reach the stage of continuation without focused support (Byrne & Dunfee, 2018). This model helps wildlife organizations know how to best implement their R3 programs to reach target audiences (Byrne & Dunfee, 2018).

## Methods

This study follows the mixed-methods explanatory research design with the follow-up explanations variant where quantitative results will be collected through surveys and are followed by the collection of qualitative data through semi-structured interviews to provide further insight (Creswell & Clark, 2018). Stratified purposeful sampling was used to select participants from the University of Arkansas who are members of Gen Z and U.S. citizens. The University of Arkansas was chosen because it contains a diverse set of majors and many currently enrolled students are members of Gen Z. The researcher created a Qualtrics survey with Likert scale, select all that apply, and open-ended questions to gain effective responses for answering the research questions. A total of 12 cognitive interviews were conducted to ensure the research instruments were effective for the purpose of this study. Data collection will begin in late October. The survey will be administered through the University of Arkansas campus-wide email newsletter, flyers, and in courses across the university. At the end of the survey, participants will be asked if they are willing to participate in Zoom interviews. Participant results will be divided by those who have hunted in the last five years, those who do not hunt, and those who hunted as a minor to compare how experiences influence opinions (Byrne & Dunfee, 2018). Results will be analyzed using the Qualtrics analytics. Follow up interviews will be transcribed and placed into NVivo to organize and code using the constant comparative method.

## Results/Findings to date

During the cognitive interviews, preliminary data was collected that will not be included in the study's findings but can provide insight into what those findings may be. All participants were members of Gen Z and U.S. citizens, currently or formerly enrolled in courses at universities but not current students at the University of Arkansas. Participants were male (4), female (8), White (11), Hispanic or Latino (1) and residents of Texas (7), Arkansas (2), Missouri (1), Idaho (1), and California (1). When asked how many hours they intentionally spend outdoors for pleasure in an average week, 41.67% said 5-6, 25% said 1-2, 16.67% said 3-4, and 16.67% said 9-10. Their most common outdoor activity was walking (50.00%), followed by running (16.67%). Preferences on outdoors activities included hiking (13.04%), kayaking (11.59%), and fishing (10.14%). Hunting received 8.70% preference.

Six participants had hunted in the last five years, one had not hunted in the last five years but did as a minor, and five had never participated in hunting. Those who had hunted in the last five years defined hunting as, "Harvesting wildlife for food or pleasure," and, "The pursuit of wild game for sport and food." A total of 66.67% of these participants were in favor of hunting for sport, while 100% were in favor of hunting for both food and wildlife management. These participants agreed or somewhat agreed that their friends/family supported hunting (100%). These individuals were indifferent to seeking information on hunting (66.67%), and the content consumed included moose hunting, rules for hunting on public lands, posts of hunting, and bear hunting guidelines. Sources were mostly family/friend (33.33%), followed by website,

Instagram, and YouTube all at 16.67%. The participant who hunted as a minor defined it as, “an enjoyable and productive outdoor sport.” They were in favor of hunting for sport, food, and wildlife management, and agreed their family/friends supported hunting. They might or might not seek hunting information and last consumed a Texas Parks and Wildlife Department Instagram post on dove hunting season. Those who have not hunted defined it as, “Stalking and killing an animal,” and, “The act of killing animals for recreation or resources.” When asked if they were in favor of hunting for sport, 40% disagreed, 40% agreed, and 20% were neutral. Most agreed with hunting for food (60%) and 40% somewhat agreed. For wildlife management, 80% agreed and 20% were neutral. When asked if their friends/family supported hunting, 40% somewhat disagreed and somewhat agreed, neither agreed nor disagreed, and disagreed were 20% respectively. Most either do not consume any hunting information or saw a post and cited family/friend (40%) or Instagram (20%) as the source.

When asked to define environmental conservation, those who have hunted in the last five years said, “intentional efforts to preserve healthy lands,” and, “being good stewards of our resources.” They agreed or somewhat agreed they cared greatly about the environment and 83.33% somewhat agreed that friends/family do care Over 80% said they participated in environmental conservation with the most common answers being tree planting, trash pick-up, and personal conservation on their private land. A total of 50% said they seek hunting information and 33.33% said they do not. Content included bird migration, managing land, recycling and native gardening from family/friends, websites, or Facebook (all 16.67%). The participant who hunted as a minor provided, “keeping our environment healthy,” as a definition and agreed they and their family/friends care about conservation. Conservation participation included planting a garden and recycling. Content consumed included bird migration and came from family/friend, but are unsure if they seek information. Those who do not hunt defined environmental conservation as “scientists taking steps to prevent further ruin of the environment,” and, “living purposefully to lower your environmental impact and carbon footprint.” All agreed they care greatly about this topic and 60% agreed family/friends care. Participation included recycling, tree planning, eating a plant-based diet, trash pick-up, and advocating. 60% said they do not seek information and 40% said they do. Content consumption included oil rig pollution, carbon offset, and big corporations and use or protected land from family/friend, organization, and Instagram (all 20%).

Finally, when asked if hunting relates to conservation, 91.67% of participants said yes and 8.33% said maybe. All participants discussed either hunting invasive species or hunting to balance ecosystems as reasons. Of those who have not hunted, 40% somewhat agree with the statement, “hunting is beneficial for the environment,” while neutral, somewhat disagree, and I do not know tied at 20% each. All participants who had hunted agreed with that statement.

## Request for Input/Guidance

The author of this abstract is seeking input from experienced researches on the best methods for reporting findings from this study. What forms of data visualization or vernacular would best present the data to broad audiences, particularly when separating and comparing groups of data? Additionally, input on potential implications of the study’s findings for R3 programs and effective communication methods are requested.

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# Examining the use of social media applications by West Virginia agricultural producers

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## Introduction, purpose and objectives

Social media has become a part of the typical individual's everyday routine. A Pew Research Center study reported that seventy-two percent of Americans use some form of social media (2021). Additionally, seven-in-ten Facebook users and six-in-ten Instagram users reported visiting these sites at least once a day (Pew Research Center, 2021). These typically free of charge, internet-based applications allow for the creation and exchange of information among users (Kaplan and Haenlein, 2010). This exchange of information can be done by creating and sharing posts, sending direct messages, and interacting with others by reacting or commenting on their posts.

Social media is a primary source for information-seeking behavior among individuals (Osatuyi, 2013). Because of this behavior, businesses and organizations have implemented social media to communicate with their customers (Osatuyi, 2013). Within the agricultural industry, producers have created new relationships with consumers using social media platforms (White et al., 2014). The information provided by the agriculturists could help consumers gain a better understanding of how their food is produced, eliminate myths about agricultural practices and combat negative perceptions of agriculture, ultimately bridging the gap between farmers and consumers (Allen et al., 2010). With the increasing number of consumers utilizing social media to identify, research, and buy local foods, food producers can ultimately benefit from social media marketing and developing a relationship with consumers (Cui, 2014).

The need for innovation and technology adoption is apparent; however, agriculture has been laggard (Barrett et al., 2010). Agriculturists are not necessarily against participating in social media, but they may not understand the advantages and benefits of utilizing social media to promote their operation (Baumgarten, 2012). In a study conducted by White et al. (2014), the researchers explored the use of social media for agri-marketing efforts throughout Texas. Overall, the participants were motivated to use social media because of personal experiences with negative information being shared about agriculture (White et al., 2014). Though the use of social media requires practice and learning, the participants agreed that with their other responsibilities, they were able to maintain their presence on social media (White et al., 2014). Similar studies have been conducted on the utilization and perceptions of social media by individuals and organizations associated with the agriculture industry (Daigle & Hess, 2021; Bowman et. al, 2014; Bowen, 2012); however, there is a lack of research behind the barriers of social media usage by individuals and organizations within the agriculture industry.

The state of West Virginia has approximately 22,300 agricultural operations (USDA-NASS, 2021); however, eighty percent of these farms generate income of less than $10,000 (NASDA, n.d.). Ninety-eight percent of West Virginia farms are family owned and operated (USDA-NASS, 2017). The USDA-National Agricultural Statistics Services reported data relating to

internet access on West Virginia farms. In 2021, seventy-three percent of farms had internet access, which is just below the national rate at eighty-two percent. The state continues to promote local foods, farmers markets, and other agricultural attractions through the [West Virginia Agritourism initiative in order to increase income and preserve the rural heritage within West Virginia (West Virginia Department of Agriculture, 2020).

With this new initiative and the increasing need to communicate with consumers, it seems apparent for West Virginia agricultural producers to utilize social media, however there is very limited research or data currently available on social media adoption or rejection by agricultural producers in the state. The purpose of this study is to examine the utilization or rejection of social media platforms by West Virginia agricultural producers. Knowledge and understanding of this information can assist West Virginia agricultural producers with utilization of social media for operational purposes and help provide insight to barriers of adoption. In order to achieve this purpose, the following objectives will be in place:

1. Describe the utilization of social media by West Virginia agricultural producers;
2. Describe the barriers of implementing social media by West Virginia agricultural producers;
3. Describe the perceived characteristics of social media by West Virginia agricultural producers; and
4. Describe the willingness to adopt social media by West Virginia agricultural producers.

## Theoretical perspective

Diffusion, defined by Rogers (2003), is "the process by which an innovation is communicated through certain channels over time among the members of a social system" (p.5). By using the Diffusion of Innovation theory, we can see the level and rates of adoption of social media usage into an agricultural operation.

Rogers (2003) depicted a model of the Innovation-Decision Process, which illustrates the process of an individual's decision of an innovation over time with a series of actions.

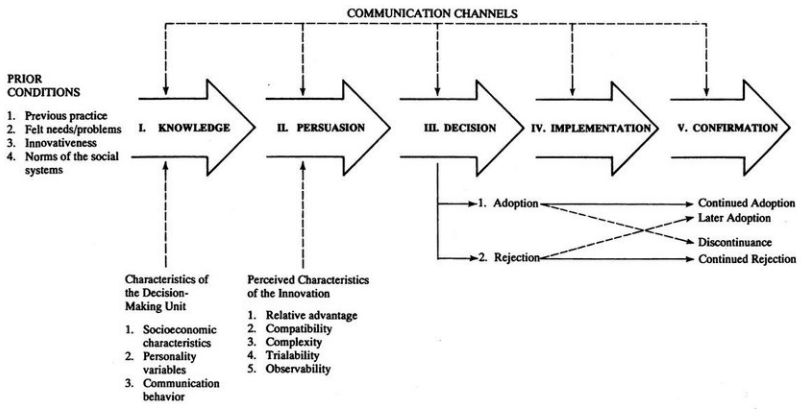


*Figure 1.* Innovation-Decision Process. Rogers, E. M. (2003). *Diffusion of innovations*. New York: Free Press.

Rogers (2003) described these five stages of the model:

1. "Knowledge occurs when an individual is exposed to an innovation and understands how it functions.
2. Persuasion occurs when an individual forms a favorable or unfavorable attitude towards the innovation.
3. Decision takes place when an individual engages in activities that lead to a choice to adopt or reject the innovation.
4. Implementation occurs when an individual puts a new idea to use.
5. Confirmation takes place when the individual seeks reinforcement of an innovation-decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation" (Rogers, 2003, p. 169).

Under the second stage of the Innovation-Decision Process Model, Rogers (2003) lists five perceived characteristics of the specific innovation: (1) Relative Advantage, (2) Compatibility, (3) Complexity, (4) Trialability, and (5) Observability. These five attributes affect the adoption decision by the individual and will lead to their decision of adoption (Rogers, 2003). It's important to note that these characteristics are based on the perceptions of the innovation itself, and not the use of the innovation (Rogers, 2003).

## Methods

A mixed methodology design will be employed to conduct this study. The Explanatory Sequential Design is a two-phased mixed methods design that begins with collecting and analyzing quantitative data followed by collecting qualitative data that connects to the quantitative results (Creswell & Clark, 2011). There are two models of this design. This study will employ the participation selection model (Figure 2).


*Figure 2.* Explanatory Sequential Design: Participation Selection Model. Creswell, J. & Clark, V. (2011) *Designing and conducting mixed methods research.* (2nd ed.). SAGE Publications.

By implementing a survey to collect quantitative data, the researcher can then identify and select participants for an in-depth interview to obtain the qualitative data (Creswell & Clark, 2011).

A survey adapted from Bowen (2012) and Moore & Benbasat (1991) will be utilized to determine which individuals are using social media, those that are not using social media, and their perceived attributes toward social media using multiple choice and likert-type questions. The instrument will be administered at the West Virginia Annual Farm Bureau Meeting held in November. Data will be analyzed using descriptive statistics and an average of the likert-type questions. Based on survey responses, individuals will then be selected and asked to participate in a semi-structured, in-depth interview to further investigate the rejection, or discontinuance, of social media applications for their agricultural operations. Interview questions will be semi-structured based on responses from the survey and relating to the theoretical framework. Interviews will be recorded and transcribed to determine themes generated through responses.

## Anticipated Results/Findings/Applications

After data collection and analysis, several findings are anticipated by the researchers. One anticipated result is that social media usage will be imperative for future agricultural operations in order to bridge the gap between producer and consumer (White et al., 2014). Producers have identified this gap and will use social media to address this issue, since they can reach a larger audience through digital media (Morris & James, 2017).

Another anticipated result is that most agriculturists will see the benefits in adopting social media into their operations. A majority of producers in the White et al. (2014) study began using social media in order to combat those negative perceptions of agriculture. The content generated usually dealt with occurrences on the farm, current agricultural issues, general agricultural information, or audience questions (White et al., 2014). Current literature has suggested that agriculturists utilize social media to promote their operations, but also to connect with various audiences (Daigle & Hess, 2021, White et al., 2014). On the contrary, there are many agriculturists who do not utilize social media but would be willing or interested in utilization (Davis, 2017; Morris & James, 2017). The use of social media requires practice and skill (White et al., 2014). This is something that can be learned and integrated into agricultural operations. A participant from the Morris and James (2017) study stated, “I would like to see people sharing social media and technology, so some kind of workshops for people to learn how to do it properly.” It would be recommended to offer various workshops to agriculturists within communities to teach the basics of social media usage for their operation.

## Requests for input/Guidance/Mentorship/Questions

Moving forward with this study, the researcher asks several input/guidance/questions from others who have led similar studies:

1. Is this same phenomenon that’s happening in West Virginia occurring in other states?
2. How is social media training currently being taught to agricultural producers?
3. What barriers pertaining to social media adoption have been identified in other industries/disciplines?

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# Identifying Barriers to Belonging in School Based Agricultural Education

## Introduction

Adolescents have trouble finding ways to move past participation in social institutions to a state of belonging because of the lack of trust; simply participating is not enough for students to escape social isolation (Packard et al., 2020). As social isolation, an effect from the impact of COVID-19, has been investigated by the CDC it has pertinent to encompass younger age groups to determine the psychological impacts (Karakose et al., 2022). Where adolescents rely on relationships as an important part of child development, it is imperative that we consider this idea in contexts external to the home (Bronfenbrenner, 1977). Schools whose students have a positive relationship with their teacher and believe they provide value to their classrooms have positive correlations with their well-being (Allen & Kern, 2017, p.12). While teachers have been identified as gatekeepers for belonging in classroom and school settings (Hattie, 2009), students who are provided more social resources and have fewer stressors at school, have higher levels of belonging and lower rates of depression and anxiety (McMahon et al., 2008).

Today's secondary school environment impose many barriers in allowing adolescents to feel a sense of belonging amongst teachers, peers, and opportunities for socialization (Allen & Kern, 2017; Libbey 2004). Providing student interventions for belonging requires the involvement of many factors including peers, parents, teachers, environmental conditions, and policies (CDC, 2022; Libbey, 2004; Wingspread, 2004). Within these proposed interventions schools should focus on belonging as student development when seeking to build social and community connections (Bowles & Scull, 2019). Ma (2003) identified the most important finding in their study that being active in school activities has the potential to provide students with a sense of belonging with their school. While research in School Based Agricultural Education (SBAE) has shown promise for providing students a sense of belonging through participation in FFA, there is little evidence on fostering that feeling in the classroom/laboratory setting (Rose et al., 2016; Croom & Flowers, 2001). Agriculture teachers have been showing poor career retention rates partly because they do not feel a part of the school community (Clark et al., 2014; DeLay & Washburn, 2013). Agricultural education has the opportunity to expand scholarship into finding ways to fulfill the fundamental need of belonging for students and teachers in a post pandemic society.

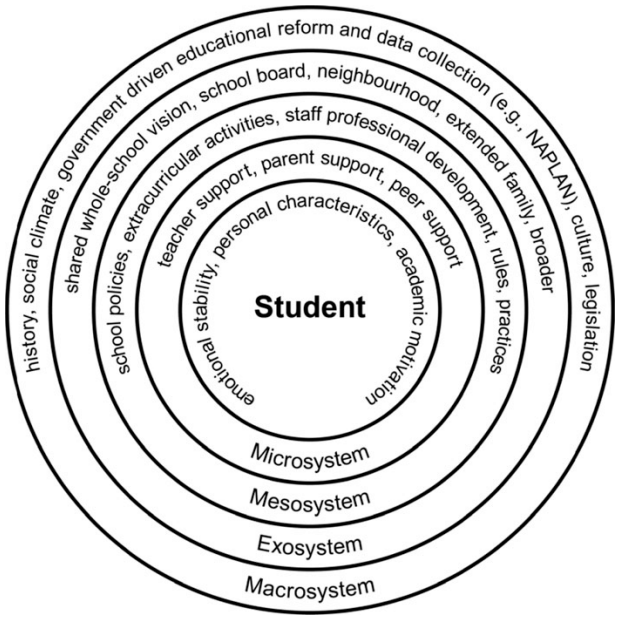
## Framework

*Belonging* has been identified as a human need (Maslow, 1968) where stabilizing a connection to our personal and interpersonal relationships is vital in personal growth and development (Brown, 2014; Rogers, 1951). The "belongingness hypothesis" is vastly different from simply social connection because it implies that the relationship needs to be positive and meaningful to the individual to feel a sense of belonging (Baumeister and Leary, 1995). Within educational environments, Goodenow (1993) defines belonging as a student's perception of their acceptance, value and inclusion by peers and teachers as a vital part of the school community. Allen et al., (2016) propose a socio-ecological framework for school belonging by applying Bronfenbrenner's (1979) ecological framework for human development. The socio-ecological framework of school belonging (Allen et al., 2016) places a close lens on the student as it relates to the individual, classroom, and school. Schools have been known to provide students with some of their most important relationships because of how adolescents are routinely engaged (Bronfenbrenner, 1979).

By adopting this framework and using the construct of belonging, the researchers will be able to focus on students' The socio-ecological framework of school belonging (Allen et al., 2016) emphasizes the student individually first, but it is vital to understand how the barriers to student belonging within the microsystem (teachers, parents, and peers), mesosystem (school policies, extracurricular activities, rules, and practices), exosystem (school board, neighborhood, extended family and broader relations) and macrosystem (school culture, history, social climate and government driven reform). By placing the focus on students' emotional stability, personal characteristics, and academic motivation, this study seeks to discover how students perceive they are accepted in the agricultural education classroom. Utilizing the socio-ecological framework for school belonging would allow for the researcher to focus on the ways in which students feel barriers to belonging from a multi-level perspective.

Figure 1

*Socio - ecological Framework of School Belonging*




## Purpose of the study

The purpose of the study is to identify the barriers students face in agricultural education settings and the efforts of the teacher in providing a space for all students to *belong*. Two research questions guide study:

RQ1: What barriers do students face that prevent opportunities to *belong* in agricultural education classrooms?

RQ2: How can agricultural education teachers develop strategies to support students *belong*?

## Methods

To better understand the barriers students face when experiencing belonging, the researcher will individually interview high school alumni involved in agricultural education or their school's FFA chapter along with their agricultural education teacher. Choosing a qualitative method will aid in the pursuit of developing the belonging theory during this stage of life (Parr et al., 2020). Interviewing the lived experiences of students in agricultural education will provide insight into a proposed pathway for navigating efforts to foster belonging.

Participants for this study will be recent high school graduates within the past year who have been a part of an agricultural education program for at least two years at their urban high school, and their agricultural education teachers. This study will specifically focus on students who were enrolled in agricultural education courses regardless of their FFA involvement.

The study will use schools from the Northeast (N = 6) as defined by the U.S. Census Bureau (2022) which includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Pennsylvania, and Vermont. After receiving IRB approval, the researcher will contact prospective advisors to ask for their participation in the project. Schools with agricultural education programs will be identified through public records. The potential interviewees will be invited and if they choose to participate, they will be asked to complete an online response survey that would identify their demographic data. After identifying the recent high school graduates who are willing to take part in the study based upon the returned online response form, approximately three students will be selected per school based upon equitable demographic representation. The participant interviews will follow a semi structured format because of its ability to depict experiences in an open-ended way that uses the response of the participants to guide the dialogue (Busetto et al., 2020; Mcintosh & Morse, 2015; Doody & Noonan, 2013).

## Results

This is an emerging research proposal; therefore, the researcher is in the planning phase and is seeking input for guidance from others in the field. It is anticipated to begin implementation in July of 2023.

## Request for input and guidance

The researcher is seeking scholarly discussion regarding the effort to connect belonging theory into agricultural education scholarship. In an effort to introduce the discussion, the research is seeking guidance and input toward the following questions:

1. What guidance can be given on the chosen sample population?
2. What other qualitative methods should be used or would be better suited for the study?
3. Are there other bodies of literature the researcher should seek out to incorporate?

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# Juntos, We Grow: A Culturally-Tailored Youth Program Capitalizing on the Nexus of Agricultural Literacy and Nutrition Education

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## Introduction, Purpose and Objectives

Childhood obesity is a national health crisis with roughly 14.7 million affected youth in 2020 (Stierman et al., 2021). In 2019, it is estimated that the medical care costs associated with obesity in the U.S. was $173 billion (Ward et al., 2021). Though this pervasive health problem affects a vast number of adolescents, there is a higher prevalence of this disparity among the Hispanic population (Stierman et al., 2021). Hales et al. (2017) discovered that one in four Hispanic children are deemed to be obese. As the United States continues to see an upward trend in the Hispanic population, it is imperative that programs are established to assist in alleviating the health disparity seen in youth. This is especially the case for [State] as it possesses the second largest number of Hispanic residents in the nation (Texas Demographic Center, 2021). Further, [State] possesses the eighth highest childhood obesity rating in the U.S. (Robert Wood Johnson Foundation, 2021).

Concurrent with today's societal health issues, there is an evident downward trend in Americans' agricultural literacy levels (Bradford et al., 2019; Kovar & Ball, 2013; Whitehead & Estepp, 2016). As the gap widens between youth and the source of their food, it prevents youth from being able to make informed decisions about their food choices (Lakin & Littledyke, 2008; Pierce, 2012). Raj et al. (2017) highlights the nexus of agriculture and nutrition being essential for eliciting a food behavior change in our youth. Blair (2010) discovered that teaching youth the origins of their food through experiential learning allowed for youth to become aware of how to make healthy choices.

Though garden programs are not a novel concept, these interventions have proven to be successful for addressing healthy eating habits and behaviors among youth (Rush et al., 2014). By implementing a garden within a community or school, it provides a local source of nutritionally rich food to low-income families (Davis et al., 2011). It is imperative for nutrition-related programs to recognize the vital role that parents have on their children's behavior (Gentile et al., 2018). Tamayo et al. (2021) underlines the benefits that family-centered nutrition interventions have on empowering Hispanic families to adopt healthy lifestyles.

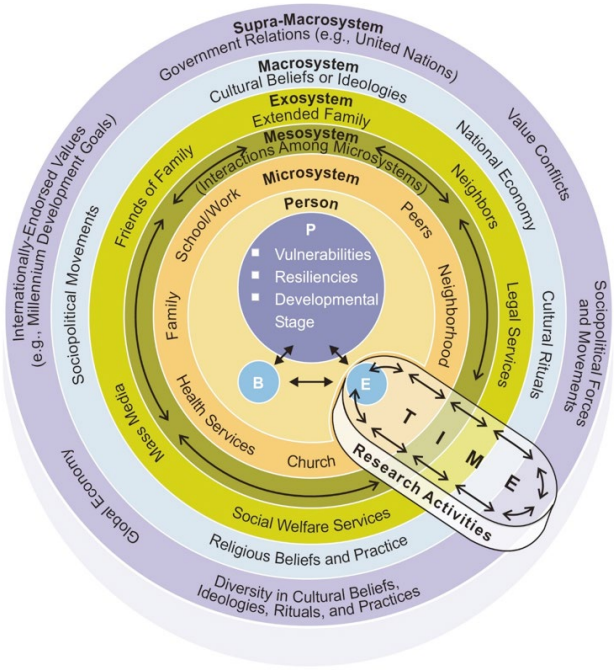
The Juntos, We Grow Program aligns with several *Healthy People 2030* objectives for adolescents (U.S. Department of Health and Human Services, 2022). Additionally, this program follows the National Institute of Food and Agriculture (NIFA)'s mission to cultivate a society that has foundational agricultural knowledge and literacy as well as improving overall human health and well-being (USDA-NIFA, 2021).

The purpose of this study will be to investigate the effects of a culturally-tailored nutrition-sensitive agricultural literacy program on self-reported food behavior, agricultural literacy level, and understanding of the agriculture-nutrition interaction in Hispanic youth.

## Theoretical Framework

This research will be guided by utilizing the Bronfenbrenner (1979) ecological systems theory, youth development involves the interactions of a multitude of layers. As youth are positioned at the center, the systems that surround them interact with the child to assist them in their personal growth and development (Figure 1). Through the Juntos, We Grow program, the systems will be allowed to be transactional with one another through the incorporation of family, community, and cultural values. These transactions

**Figure 1.** *Illustration of the ecological systems theory (Bronfenbrenner, 1979).*




## Methods

Through a randomized control trial, this 10-week program will be implemented by utilizing school gardens. The curriculum will consist of 10 classes, each 90 minutes in length. Each class will involve experiential learning to educate youth on the interconnectedness of agriculture and nutrition. Further, each class will conclude with students and parents learning how to cook a culturally-tailored healthy meal or snack utilizing fruit and vegetables from the garden. The curriculum for Juntos, We Grow will be guided by the National Ag in the Classroom as well as the LA Sprouts program. Educators with nutrition and agricultural knowledge will be hired to assist in the facilitation of the program. Bi-lingual change agents that are more homophilic (Rogers, 2003) to the target audience of underrepresented youth in marginalized communities is necessary to improve adoption of the curricula and potential learning impacts.

Families will be eligible for the Juntos, We Grow program if they have at least one youth attending the middle school located in the high risk, food desert area of South Texas and identify themselves as being Hispanic/Latino. Recruitment will occur through sending emails out to the parent listserv, providing information to teachers at the designated schools, and through Texas A&M AgriLife Extension office for youth and their families to enroll in the afterschool program. Materials will be offered in both English and Spanish.

The intervention and control participants completed questionnaires at baseline as well as post-intervention. The first questionnaire consisted of demographic information, attitudes and beliefs toward nutrition, self-reported dietary habits, and pre-nutrition and agricultural knowledge.

## Anticipated Results/Findings/Applications

It is anticipated that the results of this project will contribute to the scholarship of agricultural literacy and nutrition education in our youth. Specifically, it is predicted that this program will catapult the development of additional nutrition-sensitive agricultural literacy programs that are culturally-tailored to the target population. The predicted outcomes for the given project are:

a) Youth enrolled in the intervention will understand the interconnectedness of agriculture and nutrition.
b) A dietary habits questionnaire will be given to parents as well or just them. Since parents have a larger realm of influence on food consumption at this age (compared to high school).
c) A biometrics assessment will be administered to gather data such as height and weight to better understand participants conditions.
d) It is anticipated that students with less access to nutritious food will have lower dietary habits that the treatment groups.

e) Anticipated results include the treatment groups, due to their participation in Juntos, We Grow as the intervention, will increase knowledge, dietary behavior changes, and significant differences in the longitudinal biometric post assessment juxtaposed to the control group members.
f) A medium and short-term result will be increased collaborations between agricultural education faculty and transdisciplinary faculty at multiple institutions.
g) Short, medium, and long-term results include increased digital and face-to-face visibility of program impacts to stakeholders in marginalized communities.
h) A long-terms impact would be pipelining underrepresented students to agricultural education undergraduate programs and potentially graduate education.
i) An increased level of student diversity in agricultural education academic departments.
j) A long-term expectation downstream is the development of students for career success in industry, government or academia.

## Requests for Input/Guidance/Mentorship/Questions

American Association for Agricultural Education members can assist in providing input and guidance to multi-disciplinary faculty located at their institutions to partner. Schools of Public Health, Colleges of Medicine, Departments of Food Science and Nutrition or any specific Institutes or Centers would be appropriate. AAAE members can also mentor in identifying school district administrators or gatekeepers to assist in developing teacher networks interested

in shared goals and collaborations. Both academics and practitioners can provide recommendations toward instrument development and potential field days, career fairs at local schools to share information with students and data collection.

Solutions for the nexus of agricultural literacy and nutrition education has not been this imperative since World War II coincidentally when the proliferation of 4-H and FFA programs reached critical mass since their federal creation approximately 30 years earlier. Precision nutrition requires agricultural literacy as a foundation. Input and guidance from American Association for Agricultural Education members would be essential and appreciative to help solve this multidimensional societal issue for individuals that have been left out of loop of research findings and extension dissemination.

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