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2016 Western Region AAAE Research Conference
Research Paper Review Process

The 2016 Western Region AAAE Research Conference Call for Papers was issued via the AAAE listserv in December 2015 with a submission deadline of May 2, 2016. Authors were invited to submit manuscripts via FastTrack™ at **http://aaae.expressacademic.org/login.ph**.

The 2016 Western Region AAAE Research Conference received 20 papers from researchers and authors. Personal identifiers were removed from research papers before released to invited reviewers through the FastTrack system. Authors were notified of papers acceptance at the completion of the review process. Each manuscript was blind-reviewed by a minimum of three individuals registered within the FastTrack system. A total of 15 papers were accepted for presentation.

Our appreciation to John Rayfield, the AAAE Conference Manuscript Submission and Review Manager, for providing technical assistance and overseeing the paper review process using the FastTrack system. Special thank you to the research paper presentation chairs and facilitators, and to all of the AAAE members for their manuscript submissions.

2016 Western Region AAAE Research Paper Reviewers

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1982	Austin, TX	Gary E. Briers	Texas A&M University
1983	Rio Rico, AZ	Phillip A. Zubrick	University of Arizona
1984	Oklahoma City, OK	David Cox	Cameron University
		James P. Key	Oklahoma State University
1985	Boise, ID	John E. Slocombe	University of Idaho
1986	Las Cruces, NM	Paul R. Vaughn	New Mexico State University
1987	Logan, UT	Gilbert Long	Utah State University
1988	Ft. Collins, CO	Ramsey Groves	Colorado State University
1989	Sparks, NV	Joseph G. Harper	University of Nevada, Reno
1990	Fresno, CA	James. G. Leising	University of California, Davis
1991	Seattle, WA	Marvin D. Kleene	Washington State University
1992	Cody, WY	Carl L. Reynolds	University of Wyoming
1993	Bozeman, MT	Van Shellhamer	Montana State University
1994	Honolulu, HI	David Cox	University of Arizona
		Frank C. Walton	University of Hawaii
1995	Phoenix, AZ	Glen M. Miller	University of Arizona
1996	Moscow, ID	Jim Connors	University of Idaho
1997	Stillwater, OK	James White	Oklahoma State University
1998	Salt Lake City, UT	Gary S. Straquadine	Utah State University
1999	Corpus Christi, TX	Lance Keith	Texas Tech University
		Jacqui Lockaby	Texas Tech University
2000	Las Cruces, NM	Brenda Seevers	New Mexico State University
2001	Carmel, CA	William Kellogg	Cal Poly, San Luis Obispo
		J. Scott Vernon	Cal Poly, San Luis Obispo
2002	Spokane, WA	Michael K. Swan	Washington State University
2003	Portland, OR	Gregory W. Thompson	Oregon State University
		Brian K. Warnick	Oregon State University
2004	Honolulu, HI	Martin J. Frick	Montana State University
		Michael K. Swan	Washington State University
2005	Prescott, AZ	Billye B. Foster	University of Arizona
		Edward A. Franklin	University of Arizona
2006	Boise, ID	Lori L. Moore	University of Idaho
2007	Cody, WY	Carl L. Reynolds	University of Wyoming
2008	Park City, UT	Rudy S. Tarpley	Utah State University
		Brian K. Warnick	Utah State University
2009	Lake Tahoe, NV	Vernon Luft	University of Nevada, Reno
2010	Great Falls, MT	Shannon K. Arnold	Montana State University
		Carl G. Igo	Montana State University
2011	Fresno, CA	Mollie Aschenbrener	CSU, Chico
2012	Bellingham, WA	Michael Swan	Washington State University
2013	Lubbock, TX	Lori Moore	Texas A&M University
		Theresa Pesl Murphrey	Texas A&M University

Western Region AAAE Research Conference History

(Continued)

Year	Location	Chair(s)	University
2014	Kona, HI	Scott Burris	Texas Tech University
		Jon Ulmer	Texas Tech University
2015	Corvallis, OR	Misty Lambert	Oregon State University
		Jonathon Velez	Oregon State University
2016	Tucson, AZ	Edward A. Franklin	University of Arizona

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Facilitator: Erica Irlbeck, Texas Tech University

Concurrent Research Session D Title: 4-H, Outreach, and Supervision

Chair: Debra Spielmaker, Utah State University
Facilitator: Hannah Parker, University of Arizona

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Concurrent Research Session E Title: Ag Communications & Leadership

Chair: Carl Igo, Montana State University
Facilitator: Sean Stone, University of Arizona

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Ryan Foor, University of Arizona
Dean Fish University of Arizona

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Joanna King, Texas Tech University
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2016 Agricultural Communications Vision Consortium
Sydney Nelson, Texas Tech University
Erica Irlbeck, Texas Tech University
Emily Buck, Ohio State University
Cassaundra Dietrich, Ohio State University

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Dr. Gaea Hock, Kansas State University
Emily Keeton, Mississippi State University
Dr. Christian Baldwin, Mississippi State University
Dr. Courtney Meyers, Texas Tech University

Building an Agricultural Teacher Pipeline through Community College and University Collaboration
Steven J. Rocca, California State University, Fresno

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Erin K. Gorter, Texas A&M University and Texas Tech University Doc @ Distance
Theresa Pesl Murphrey, Texas A&M University

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Kalynn Baldock, Texas A&M University and Texas Tech University
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FFA Members Perceived Benefits & Barriers to Agricultural Education Teaching
Ethan A. Igo, Montana State University
Dustin K. Perry, Montana State University
Carl G. Igo, Montana State University

Adoption of Water Conservation Practices in Irrigation Management: An Application of the Theory of Planned Behavior in the Texas High Plains

Libby Durst, Texas Tech University
Dr. Courtney Meyers, Texas Tech University
Dr. Erica Irlbeck, Texas Tech University
Dr. Rudy Ritz, Texas Tech University

Abstract

A vital part of the Texas High Plains economy, agricultural production in this region is sustained by using the Ogallala aquifer as a source of irrigation water, but the aquifer is in decline. It is imperative for agricultural producers to continually improve their irrigation management strategies for water conservation, but without agricultural producers' support, water conservation technologies and strategies will not make a difference. This study used the theory of planned behavior to explore Texas High Plains producers' adoption of water conservation practices. Following the Tailored Design Method, a mail survey was distributed to a sample of agricultural producers. Findings indicate producers had positive attitudes toward utilizing advanced irrigation application technologies, monitoring soil moisture, and evaluating crop water demand, and they perceived to have control over performing these water conservation behaviors. Subjective norms for each of the behaviors reflected a neutral stance, negating both strong feelings of social pressure and denial of any social pressure at all. While the theory's constructs provided insight into producers' adoption behavior, the theory models were unable to predict producers' adoption intentions. Additional research is necessary to further explore how various water conservation strategies are used collaboratively and identify barriers to adopting these strategies.

Introduction/Literature Review

Water management is one of the world's most important challenges (Flint, 2004). Every aspect of our lives illustrates the need for water (Adler, 2002). Water provides nourishment for our bodies in its original form and in the form of foods we consume, as it supports plant and animal life. Without water, we would not have building materials, natural fabrics, paper, and other goods obtained from trees and plants. Water's natural cycles play a role in maintaining stable weather patterns, which allow for a sustainable economy and lifestyle and even protection from flooding, drought, and other impacts of climate (Adler, 2002). Simply stated, all life depends on and is shaped by water (Palmer, 2010).

Despite the value of freshwater sources, human societies worldwide have not always appreciated the need to protect and maintain this resource (Adler, 2002). Whether it manifests as the absence of quality drinking water or economic declines from losses in industries dependent on water, the effects of losing this precious resource are far reaching (Flint, 2004). The region of the Texas High Plains in the northwestern portion of the state has felt the pangs of the latter deficit through the agricultural industry. The Texas High Plains is comprised of 39 counties in the Texas Northern High Plains and Southern High Plains (Colaizzi, Gowda, Marek, & Porter, 2009). Like

many other regions situated above the Ogallala aquifer, the Texas High Plains sustains agricultural production by using the Ogallala as a source of irrigation water. Spanning beneath eight states from South Dakota to Texas, the Ogallala aquifer is one of the world's largest underground sources of freshwater (Colaizzi, 2009). Following World War II, innovations in groundwater extraction enabled an increase in the use of groundwater irrigation (Hornbeck & Keskin, 2014). This newly-gained access to the aquifer transformed the land above into one of the most agriculturally productive regions in the world (Peterson, Marsh, & Williams, 2003).

Supplementing with irrigation has allowed producers in the area to substantially increase yields and produce crops that would not usually be as economical in a drier climate (Almas, Colette, & Wu, 2004). In addition, feed grains from the irrigated corn and grain sorghum contributed to the popularity of the region as a cattle feeding area (Terrell, 1998). As a result, agriculture has become a vital part of the Texas High Plains economy. According to the Texas Alliance for Water Conservation (TAWC), the region generates a combined annual economic value of crops and livestock exceeding $9.9 billion (TAWC, 2013).

The vitality of the aquifer has a substantial effect on irrigated agriculture's $1.6 billion gross output for the Texas High Plains economy (Wagner, 2012). Unfortunately, the Texas High Plains is experiencing declines in groundwater availability from the Ogallala aquifer (Texas Water Development Board, 2016). It is imperative for agricultural producers to continually improve their irrigation management strategies for water conservation when considering the future prospects of agricultural productivity enhancements through technology development (Bian, 2015). Without agricultural producers' support, water conservation technologies and strategies will not make a difference. According to Texas A&M AgriLife Extension (n.d.), advanced irrigation application technologies, monitoring soil moisture, and evaluating crop water demand are important behaviors for improving irrigation efficiency, which helps conserve water. Therefore, this study sought to identify to what extent agricultural producers in the Texas High Plains region are currently using these water conservation strategies as well as determine their intentions for adopting the practices in the future.

Theoretical Framework

The theory of planned behavior served as the theoretical framework for this study. As an extension of the theory of reasoned action, the theory of planned behavior provides a model for predicting human action by evaluating one's behavioral intention though the study of a subject's behavioral beliefs, normative beliefs, and control beliefs (Ajzen, 2002). The combination of these three constructs leads to the formation of a behavioral intention, which is the immediate antecedent of behavior. In general, the more favorable the attitudes and subjective norms and the greater the perceived behavioral control, the stronger should be an individual's intention to perform the behavior (Ajzen, 1988). The theory of planned behavior has been applied across disciplines to investigate diverse behaviors such as leisure participation (Ajzen & Driver, 1991), alcohol consumption (Hagger et al., 2012), healthy eating (Fila & Smith, 2006), social network website use (Pelling & White, 2009), and unsafe driving (Parker, Manstead, Stradling, Reason, & Baxter, 1992). It also has been used to explore pro-environmental and conservation behaviors (Beedell & Rehman, 2000; Hoag, Luloff, & Osmond, 2012; Taylor & Todd, 1997). Considering water conservation behavior, the theory has been used to study rural and urban residents'

intentions to conserve water (Trumbo & O'Keefe, 2001) and adopt water conservation technologies (Lam, 2006).

More specifically, the theory of planned behavior has been used to research agricultural producers' water conservation intentions (Lynne, Casey, Hodges, & Rahmani, 1995; Yazdanpanah, Hayati, Hochrainer-Stigler, & Zamani, 2014). Lynne et al. (1995) administered a questionnaire via telephone interviews to 44 commercial strawberry farmers in Florida. The study sought to examine the producers' decisions to adopt or not adopt drip irrigation systems and subsequently how much money to invest in conservation technology. Findings indicated perceived behavioral control was important for explaining producers' decisions, which suggests that farmers did not have complete control in the decision to invest in the drip irrigation systems. In another application of the theory of planned behavior, Yazdanpanah et al. (2014) studied water conservation behaviors of 330 farmers in the semi-arid, drought-prone Boushehr province of southern Iran via face-to-face interviews. The researchers found farmers' risk perception of a water crisis was high as well as their intentions and moral norms regarding water conservation. The farmers' subjective norms and attitudes toward water conservation were also positive.

Purpose and Research Questions

The *American Association for Agricultural Education's National Research Agenda 2016-2020* described a need for research to better understand how farmers make decisions related to the adoption of new technologies and practices (Lindner, Rodriguez, Strong, Jones, & Layfield, 2016). The purpose of this research was to explore Texas High Plains agricultural producers' adoption of water conservation practices, specifically advanced irrigation application technologies, monitoring soil moisture, and evaluating crop water demand. Six research questions guided this study:

1. What were Texas High Plains agricultural producers' respondents' attitudes toward the water conservation practices?
2. What were producers' perceptions of subjective norms regarding the water conservation practices?
3. How did producers perceive their behavioral control in regard to adopting the water conservation practices?
4. What were producers' behavioral intentions regarding the water conservation practices?
5. To what extent did producers' behavioral beliefs, normative beliefs, and control beliefs influence their intentions to adopt the water conservation practices?
6. What water conservation practices were producers using?

Methods

To address the research questions, this study used descriptive survey research methodology with a questionnaire mailed to agricultural producers in the Texas High Plains. The target population for this study was agricultural producers in the Texas High Plains encompassing a 39-county area of the Northern and Southern High Plains of Texas (Colaizzi et al., 2009). According to the 2012 USDA Census of Agriculture, there were 17,709 principal operators in the study area at the time of the study. According to Ary, Jacobs, and Sorensen (2010), the minimum sample size required for a five percent margin of error at the .95 confidence level with a p value of .10 or .90

is 139. Using SurveyMonkey's® online Sample Size Calculator with the population of 17,709, a confidence interval of 95 percent, and a five percent margin of error the researcher determined the optimum sample size for this study is 377. Considering the availability of research funds and the effects of a larger sample size on sampling error, the researcher selected a sample size of 1,000 producers. Selecting 1,000 addressed for the sample size also served to account for the typical response rate for mail survey research. In their analysis of 309 mail surveys published in 2000 and 2005, Baruch and Holtom (2008) calculated a 44.7% average response rate. Furthermore, Graber's (2011) study of Texas agricultural producers' traditional and social media use had a 26.8% response rate using a mail survey research design.

The sample frame for this study was a list of about 1,500 agricultural producers' mailing addresses in the study area purchased from U.S. Farm Data, a database marketing service. Members of the TAWC were also excluded from the study population because their membership creates unique circumstances for adopting water conservation practices that differ from other agricultural producers in the study area. After the list was prepared, simple random sampling was used to select 1,000 producers to contact. The list was sent to a printing company that provided the printing and mailing services.

Questionnaire

Following Dillman's Tailored Design Method (2007), the researcher-developed instrument contained four parts. For the purpose of this paper, relevant sections pertain to the constructs of the theory of planned behavior, the producers' current water conservation behavior, and slected personal characteristics. Questions were asked to ascertain producers' attitudes, perceptions of subjective norms, and perceived behavioral control regarding three water conservation practices: utilizing advanced irrigation application technologies, monitoring soil moisture, and evaluating crop water demand. The advanced irrigation application technologies, soil moisture monitoring technologies and techniques, and crop water demand technologies and techniques included in the survey instrument were provided by Texas A&M AgriLife Extension (n.d.) and verified by this study's panel of experts.

Attitude items. Semantic differential scales assessed producers' attitudes toward each of the three water conservation behaviors. The 7-point scales had six pairs of bipolar adjectives: *Pleasant/Unpleasant, Good/Bad, Economically Beneficial/Economically Harmful, Socially Beneficial/Socially Harmful, Worthwhile/Not Worthwhile,* and *Environmentally Beneficial/Environmentally Harmful.*

Perceived Behavioral Control items. Four items were used to measure this construct. Two items used a semantic differential scale:*1 = No Control* to *7 = Complete Control* and *1 = Impossible* to *7 = Possible*. Two other questions were presented using 7- point Likert-type scales with the endpoints *1 = Strongly Disagree* and *7 = Strongly Agree* as response choices. If I wanted to I could…" and "It is mostly up to me whether or not I…" These items were based on prior research (Lynne et al., 1995; McCullough, 2011).

Subjective Norm items. Four questions, using a 7-point Likert-type scale (*1 = Strongly Disagree* to 7 = *Strongly Agree)* were asked regarding subjective norms: (a) *Most people who*

are important to me think I should…; (b) *It is expected of me to…*; (c) *The people whose opinions I value would approve of me…*; (d) *Many agriculture producers like me…*

Intention items. To measure intention, three items were assessed on a 7-point Likert-type scale: *1 = Strongly Disagree* to *7 = Strongly Agree*. We adopted this portion of the instrument from previous studies (Ajzen, 2013; Cunningham & Kwon, 2003; Francis et al., 2004; McCullough, 2011; Shrestha, 2013) that used "I *intend* to. . .," " I *will try* to. . .," and "I *am planning* to. . ." However, when reviewing the instrument, the expert panel members and I were concerned this language was not pointed enough to differentiate levels of intention. The wording, therefore, was changed to "I *intend to*. . .," "I *have firm plans in place to*. . .," and "I *am making preliminary plans to*. . ."

Behavior items. Producers indicated the water conservation technologies and practices they currently used with *yes* or *no* responses. These items were divided into the three areas of utilizing advanced irrigation management, monitoring soil moisture, and evaluating crop water demand. An area was provided for each of the items to write in additional options, if desired.

A panel of experts (n = 10) reviewed the instrument before data collection began. The panel was comprised of agricultural producers, various affiliates of the TAWC, and agricultural education and communications faculty members at Texas Tech University. Panelists were selected based on their level of knowledge regarding the questionnaire subject matter and the overall survey research process. Following the review, the panel's suggestions were used to modify the instrument prior to mailing.

After data collection, *post hoc* analyses were conducted to determine reliability. We chose to forgo a pilot test in favor of the panel of experts' review and *post hoc* analysis to preserve as many names in the sampling frame as possible. The cost of materials and postage for a pilot study was prohibitive as well. However, as previously stated, the items used in this study had been used in other studies to measure the same constructs of interest with acceptable reliability estimates. Table 1 displays the Cronbach's alpha reliability scores for the respondents' attitudes toward the behaviors, subjective norms, perceived behavioral control, and intentions to perform the behaviors. Reliability estimates ranged from .74 to .94, which indicates all were acceptable. According to Fields (2013), a Cronbach's alpha reliability score of .70 or higher is acceptable.

Table 1
Reliability of Instrument's Constructs as Measured by Cronbach's Alpha

Conservation Practice	Utilize Irrigation Application Technologies		Monitor Soil Moisture		Evaluate Crop Water Demand	
	n	α	*n*	*α*	*n*	*α*
Intentions to perform behavior (3 items)	94	.91	90	.94	91	.92
Attitudes toward behavior (6 items)	88	.87	88	.90	90	.90
Perceived behavioral control (4 items)	90	.83	92	.77	91	.85
Subjective norms (4 items)	93	.74	93	.87	94	.91

Data Collection

The Institutional Review Board at Texas Tech University approved this study before data collection began. The data collection process had three points of contact with members of the sample. First, 1,000 members of the sample received a cover letter describing the study, an information sheet, the survey instrument, and a return envelope. This was mailed September 18, 2015. Approximately two weeks after the first mailing of the instrument, on October 1, 2015, a reminder postcard was mailed to all sample members. Following the postcard, on November 5, another complete mailing with a new cover letter, an information sheet, the survey instrument, and return envelope was mailed only to those who had not responded. Data collection ceased on November 30. A lottery-type incentive was offered on a voluntary basis for respondents. Participants had the chance to enter a drawing for one of two $50 gift cards by providing their name and preferred contact information on a tear-away portion of the back cover of the survey instrument.

Data Analysis

Despite efforts to encourage participation in the study, the survey garnered a low response rate; 183 responses were received for an overall response rate of 18.3%. This issue does present a limitation of the study. The researcher used SPSS® v. 22 for Windows™ to calculate statistics. Descriptive statistics were used for nominal and scale data. Measures of central tendency, including means and modes, were calculated as well as measures of variability, i.e. frequencies, standard deviations, and ranges. Chi-square statistics and independent samples *t*-tests compared early and late respondents in terms of selected characteristics. Multiple linear regressions were computed to identify the amount of variance in behavioral intention to adopt water conservation practices explained by the theory of planned behavior constructs.

In an effort to reduce non-response error, we conducted analysis to compare early versus late responders. Lindner, Murphy, and Briers (2001) recommended identifying late respondents based on responses generated by a stimulus such as a reminder postcard or second complete mailing. In the case of this study, the last stimulus was a second complete mailing of the survey materials. No statistically significant ($p < .05$) differences were found between early and late

responders in regard to age, years farming/ranching, acres farmed, or familiarity with the TAWC.

Description of Respondents

After data collection, descriptive statistics were used to analyze characteristics of the respondents. Demographics collected in this survey were age, gender, number of years farming or ranching, total number of acres operated, location of farm by county, and type of crops produced. Some questions have missing responses because they were included at the end of the instrument and several respondents did not complete the survey instrument in its entirety. The majority of respondents were male (n = 108, 94.7%); six females (5.3%) responded. Respondents' ages ranged from 28 to 86 years old with a mean of 58.40 (SD = 11.65) and mode of 59. The mean number of years farming/ranching was 34.7 years (SD = 13.43), with a minimum of one and a maximum of 70. Thirty-five and 40 years were the modes indicated by 11 respondents each.

The total number of acres in operation ranged from less than 500 acres (n = 17, 15.6%) to 5,000 or more acres (n = 8, 7.3%). The mean for total acreage was 2,049.7 (SD = 2002.44). The respondents represented 42 counties with five counties in the 39-county study area not represented and eight counties outside of the area represented. The most frequently reported crop produced was cotton (n = 69, 67.0%) followed by wheat (n = 66, 64.1%) and grain sorghum (n = 63, 61.1%). Other crops included corn, hay, and peanuts. Eighty-five respondents (84.2%) indicated producing multiple crop species.

Results

RQ1: What were Texas High Plains agricultural producers' respondents' attitudes toward the water conservation practices?

Table 2 displays the summated attitude means toward utilizing advanced irrigation application technology, monitoring soil moisture, and evaluating crop water demand. Because this construct was measured using 7-point semantic differential scales where 1= *Good* and 7= *Bad* – the lower the mean score, the more positive the attitude. Utilizing advanced irrigation application technology had the lowest mean score of 1.87 (SD = 0.96). The largest mean score was for monitoring soil moisture (M = 2.03, SD= 1.08).

Table 2
Summated Attitudes Toward Water Conservation Practices

Conservation Practice	*n*	*M*	*SD*	*Mode*	*Range*
Monitor Soil Moisture	93	2.03	1.08	1.00	6.00
Evaluate Crop Water Demand	95	1.97	1.02	1.00	4.50
Utilize Irrigation Application Technology	93	1.87	0.96	1.00	4.00

Note. Scores based on semantic differential scale: *1 = Good* to *7 = Bad*.

RQ2: What were producers' subjective norms regarding the water conservation practices?

Table 3 displays summated subjective norms for each of the water conservation practices. This construct was measured using a 4-item, 7-point Likert-type scale (*1 = Strongly Disagree* to *7 = Strongly Agree)* so the higher the mean score, the stronger the subjective norms. Utilizing advanced irrigation application technologies had the highest mean score of 5.09 (*SD* = 1.03). The lowest mean score was reported for monitoring soil moisture (*M* = 4.65, *SD* = 1.31).

Table 3
Summated Subjective Norms for Respondents Regarding Water Conservation Practices

Conservation Practice	*n*	*M*	*SD*	*Mode*	*Range*
Utilize Irrigation Application Technology	99	5.09	1.03	5.50	5.50
Evaluate Crop Water Demand	99	4.79	1.46	4.00	6.00
Monitor Soil Moisture	98	4.65	1.31	5.50	6.00

Note. Scores based on a Likert-type scale: *1 = Strongly Disagree to 7 = Strongly Agree*

RQ3: How did producers perceive their behavioral control in regard to adopting the water conservation practices?

Table 4 displays respondents' summated mean scores for perceived behavioral control over performing water saving behaviors. Evaluating crop water demand had the highest mean score of 5.84 (*SD* = 1.21). Utilizing irrigation application technologies had the lowest mean score of 5.43 (*SD* = 1.35).

Table 4
Summated Perceived Behavioral Control over Water Conservation Practices

Conservation Practice	*n*	*M*	*SD*	*Mode*	*Range*
Evaluate Crop Water Demand	97	5.84	1.21	7.00	5.25
Monitor Soil Moisture	98	5.80	1.12	7.00	5.25
Utilize Irrigation Application Technology	94	5.43	1.35	6.50	6.00

Note. Scores based on a Likert-type scale: *1 = Strongly Disagree* to *7 = Strongly Agree*.

RQ4: What were producers' behavioral intentions regarding the water conservation practices?

Table 5 displays the summated intentions to utilize advanced irrigation application technology, monitor monitoring soil, and evaluate crop water demand. This construct was measured using three items measured on a 7-point Likert-type scale: *1 = Strongly Disagree* to *7 = Strongly Agree.* The higher the mean score, the stronger the intent to perform the behavior. Utilizing advanced irrigation application technologies had the highest mean score of 5.11 (*SD* = 1.42). The lowest mean score was for monitoring soil moisture (*M* = 4.54, *SD* = 1.54).

Table 5
Summated Intentions to Perform Water Conservation Practices

Conservation Practice	*n*	*M*	*SD*	*Mode*	*Range*

Utilize Irrigation Application Technology	101	5.11	1.42	5.33	6.00
Evaluate Crop Water Demand	98	4.89	1.48	6.00	6.00
Monitor Soil Moisture	97	4.54	1.54	6.00	6.00

Note. Scores based on Likert-type scale: *1 = Strongly Disagree* to *7 = Strongly Agree*.

RQ5: To what extent did producers' behavioral beliefs, normative beliefs, and control beliefs influence their intentions to adopt the water conservation practices?

The attitude construct was reverse coded so all constructs were based on the same directional scales where lower values indicate more negative attitudes or less agreement and higher values denote more positive attitudes or more agreement. First, a multiple linear regression model was used to examine if respondents' attitudes, subjective norms, and perceived behavioral control predicted their intentions to utilize advanced irrigation application technologies (see Table 6). The model was not significant ($R^2 = .61$, $F(87) = 44.83$, $p > .05$); attitude ($p > .05$), subjective norms ($p < .05$), and perceived behavioral control ($p < .05$).

Table 6
Multiple Linear Regression Analysis for Variables Predicting Intention to Utilize Advanced Irrigation Application Technologies

Variable	*B*	*t*	*p*	*F*	R^2
(Constant)	-.99	-1.46	.15	44.83	.61
Attitude toward behavior	.05	0.41	.68		
Subjective norms*	.62	5.70	.00		
Perceived behavioral control*	.49	5.65	.00		

*Indicates significance at $p < 0.05$.

A multiple linear regression model was used to examine if respondents' attitudes, subjective norms, and perceived behavioral control predicted their intentions to monitor soil moisture (see Table 7). This model was not significant ($R^2 = .51$, $F(83) = 28.52$, $p > .05$); attitude ($p > .05$), subjective norms ($p < .05$), and perceived behavioral control ($p < .05$).

Table 7
Multiple Linear Regression Analysis for Variables Predicting Intention to Monitor Soil Moisture

Variable	*B*	*t*	*p*	*F*	R^2
(Constant)	-.84	-1.01	.31	28.52	.51
Attitude toward behavior	.11	0.78	.44		
Perceived behavioral control*	.33	2.47	.02		
Subjective norms*	.61	5.02	.00		

*Indicates significance at $p < 0.05$.

A multiple linear regression model was used to determine if respondents' attitude, subjective norms, and perceived behavioral control predicted their intentions to evaluate crop water demand

(see Table 8). This model was not significant (R^2 = .62, $F(86)$ = 46.37, p > .05); attitude (p > .05), subjective norms (p < .05), and perceived behavioral control (p < .05).

Table 8
Multiple Linear Regression Analysis for Variables Predicting Intention to Evaluate Crop Water Demand

Variable	*B*	*T*	*p*	*F*	R^2
(Constant)	-.19	-0.29	.77	46.37	.62
Attitude toward behavior	-.03	-0.21	.84		
Perceived behavioral control*	.30	2.60	.01		
Subjective norms*	.66	8.10	.00		

*Indicates significance at p < 0.05.

RQ6: What water conservation practices were producers using?

Table 9 displays respondents' current use of water conservation practices. LEPA was the most commonly reported irrigation application technology (n = 61) followed by SDI (n = 35). Hand sampling was the most frequently reported method for monitoring soil moisture (n = 80, 82.5%) followed by capacitance probes (n = 31, 34.8%). Plant water potential was the most frequently identified method for evaluating crop water demand (n = 50, 53.8%) followed by estimating evapotranspiration (n = 43, 46.7%).

Table 9

Respondents' Current Use of Advanced Irrigation Application Technologies, Soil Moisture Monitoring Methods, and Crop Water Demand Evaluation Methods

Behavior Category		*n*	*f*	%
Irrigation Application Technologies	Low Energy Precision Application (LEPA)	95	61	64.2
	Subsurface Drip Irrigation (SDI)	88	35	39.8
	Low Elevation Spray Application (LESA)	91	34	37.4
	Low Pressure In-Canopy (LPIC)	89	18	20.2
	Mid-Elevation Spray Application (MESA)	86	7	8.1
	Precision Mobile Drip Irrigation (PMDI)	82	4	4.9
Soil Moisture Monitoring	Hand sampling	97	80	82.5

Methods	Capacitance probes	89	31	34.8
	Tensiometers	89	5	5.6
	Gypsum resistance blocks	90	5	5.6
Crop Water Evaluation Methods	Plant water potential	93	50	53.8
	Estimating evapotranspiration	92	43	46.7
	Time-temperature threshold	89	12	13.5
	Measuring canopy temperature	90	11	12.2

Conclusions, Implications, and Recommendations

Studying producers' attitudes, subjective norms, and perceived behavioral control regarding water conservation practices using the theory of planned behavior as a lens provided valuable insight that can help explain why some producers have adopted these behaviors and others have not and why producers have adopted some methods more than other methods. Respondents had favorable attitudes toward the three water conservation practices. Similarly, Yazdanpanah et al. (2014) found farmers' attitudes toward water conservation to be relatively favorable in their case study of Iranian farmers. When comparing producers' attitudes toward each of the water conservation behaviors based on their overall mean scores, respondents had the most favorable attitudes about evaluating crop water demand followed by utilizing advanced irrigation application technologies and monitoring soil moisture.

Although previous studies found subjective norms can present barriers to adopting new technology (Hoag et al., 2012), respondents in this study indicated strong subjective norms were not at play because the mean scores were more neutral. Summated mean scores for each of the subjective norms measured showed the greatest social pressure was for utilizing advanced irrigation application technologies followed by evaluating crop water demand and monitoring soil moisture. The agricultural producers' subjective norms or social pressure for performing water conservation behaviors reflected a neutral stance. This implies respondents did not perceive firm expectations being placed on the respondents to perform these behaviors.

For perceived behavioral control, producers had the highest perceptions of control on evaluating crop water demand followed by monitoring soil moisture and utilizing advanced irrigation application technologies. However, the differences in mean scores for perceptions of control were small. One possible implication for that is producers perceived being somewhat in control over implementing each of these water conservation practices, which insinuates the practices have an almost equal opportunity of adoption based on perceived behavioral control alone. Lynne et al. (1995) said farmers need to perceive at least some control for them to move forward

with technology decisions. In fact, with a perception of personal control, farmers are more likely to take action and invest more intensely (Lynne et al., 1995). The summated mean scores for intention to adopt each of the water conservation behaviors showed respondents had the strongest agreement with intentions to utilize advanced irrigation application technologies followed by intentions to evaluate crop water demand and monitoring soil moisture.

Multiple linear regression models examined if respondents' attitudes, subjective norms, and perceived behavioral control predicted intentions to utilize advanced irrigation application technologies, monitor soil moisture, and evaluate crop water demand. Even though the subjective norms and perceived behavioral control constructs of the theory of planned behavior were statistically significant for each of the three water conservation behaviors' multiple linear regression models, the overall models were not statistically significant. Similar to Lam's (2006) study, the theory of planned behavior alone did not capture respondents' intentions to adopt new technology. However, in Lam's (2006) model and the Yasdanpanah et al. (2013) model, it was the perceived behavioral control construct that was insignificant. In this study, it was the attitude construct.

Both perceived behavioral control and subjective norms were significant in the multiple linear regression models. Perceived behavioral control was positively related to behavioral intention. For Taylor and Todd (1997) and Lynne et al. (1995), perceived behavioral control also played a significant role in predicting intentions for pro-environmental behaviors. Because respondents did not perceive they had complete volitional control over performing the water conservation practices (Lynne et al. 1995; Taylor & Todd, 1997), the behavior must not be under full volitional control. Similar to other studies (Lynne et al., 1995; Yazdanpanah et al., 2014), the subjective norms construct was statistically significant ($p < .05$) in predicting intentions to adopt. The subjective norms were positively related to behavioral intention, which suggests that social pressure to adopt these water conservation practices is beneficial. As in the Lynne et al. (1995) study, the findings imply that farmers can be influenced by subjective norms in regard to water conservation. However, the actual mean scores calculated for the respondents' subjective norms may limit interpretation of this finding. The scores ranged from 4.65 to 5.09 representing a more neutral stance when it came to social pressure.

Each of the examples of water conservation behavior methods from utilizing advanced irrigation application technologies with LEPA to monitoring soil moisture by hand sampling to evaluating crop water demand by estimating evapotranspiration had at least four respondents who indicated their use of the practice. The use of different methods for irrigating, monitoring soil moisture, and evaluating crop water demand implied that producers in the Texas High Plains have diverse technical and educational needs.

Because this study quantitatively captures a broad view of the advanced irrigation application technologies, soil moisture monitoring methods, and crop water evaluation techniques agricultural producers were using for irrigation management, a qualitative study that provides information rich, detailed data could be an insightful complement to this study. Although this study gained information about the number of technologies and methods used to manage irrigation for conservative water use, it did not divulge the complementary interplay of these tools and techniques. The effectiveness of these practices is improved with the integration of

multiple practices in an irrigation management strategy (Texas A&M AgriLife Extension Services, n.d.). A qualitative approach could more deeply explore the extent to which producers are using these water conservation practices together.

In addition, further research is needed to explain the factors that influence producers' adoption of water conservation practices. Although the theory of planned behavior can be useful in predicting behavioral intention to adopt, in this study it did not fully explain all of these factors. Other barriers to adoption and factors influencing producers' decisions should be identified to help determine whether Texas High Plains producers are unable and/or unwilling to adopt these water conservation practices. Messages can be created that address producers' attitudes, subjective norms, and perceived behavioral control regarding water conservation behavior. These messages should be tested using an experimental design to determine the messages that truly resonate with agricultural producers and lead to change in behavior.

For those who are working to help farmers implement water conservation techniques, this study provides several practical recommendations. Lynn et al. (1995) explained it is important for farmers to perceive they have some control over adopting a conservation technology. It affects not only their decision to take action, but also the intensity of investments. Strategies for enhancing producers' perceptions of their control over adopting these water conservation practices should be explored and considered. Furthermore, the subjective norms construct served as a significant factor in accounting for variance in predicting adoption of water conservation practices implies perceived behavioral control is not the only variable that helps explain behavior. Producers reported approval from those who are important to them and those whose opinions they value in regard to performing the water conservation behaviors. Strategies for promoting the social approval of utilizing advanced irrigation application technologies, monitoring soil moisture, and evaluating crop water demand should be used. This could be done by identifying and building rapport with opinion leaders viewed as having significant influences in the Texas High Plains social system in regard to crop irrigation.

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Influence of a Horsemanship Camp on Youth Leadership Life Skill Development

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Abstract

The purpose of this study was to investigate youth perceptions regarding development of their leadership life skills as a result of participating in a horsemanship camp. Descriptive survey methodology following a pretest-posttest design was used. The population was all (N = 60) youth enrolled in the program. Participants' self-perceived leadership life skills were assessed using a modified version of the Youth Leadership Life Skills Development instrument. Specific objectives were to describe and compare changes in self-perceived leadership life skills of 4-H and non-4-H youth in four constructs: (a) self-motivation, (b) responsibility, (c) leadership, and (d) problem solving and critical thinking. 4-H youth showed a significant increase in perceived knowledge of life skills and life skill development compared with non-4-H youth, who showed no significant increases. Significant differences between 4-H and non-4-H youth were present in all four constructs. These results confirm previous research indicating 4-H youth excel beyond their non-4-H peers in leadership life skills gains. This structured horsemanship camp was a valuable educational venue for leadership life skill development in 4-H youth, but further research should be conducted to assess how to create positive changes for non-4-H youth.

Introduction/Conceptual Framework

Life skill development is not a new concept; however, ideas for how to incorporate life skills into educational practices have increased not only in the United States, but also at the international level (United Nations International Children's Emergency Fund [UNICEF], 2012; World Health Organization [WHO], 1999; 2014). UNICEF, a global humanitarian and developmental agency advocating for children and family rights, stated that life skills education is "universally applicable" to all disciplines that seek personal changes in behavior, attitudes, skills and knowledge (2012, p. 1). UNICEF (2012) further defined life skills education as essential

> for young people to negotiate and mediate challenge and risks and enable productive participation in society… personal, interpersonal, and cognitive psychosocial skills that enable people to interact…manage… emotion… and make decisions and choices for an active, safe, and productive life. (p. 11)

With respect to the aforementioned definitions of life skills and life skills education, the importance of life skills in youth education can be described as follows:

> The goal of youth programming is to provide developmentally appropriate opportunities for young people to experience life skills, to practice them until they are learned, and be able to use them as necessary throughout a lifetime. Through the experiential learning

> process, youth internalize the knowledge and gain the ability to apply the skills appropriately. (Iowa 4-H, 2015, p. 1)

Showing continued dedication to the goal of the 1998 United Nations Inter-Agency meeting, the WHO Department of Mental Health (1999) identified five basic areas of cross-cultural life skills: (a) decision making and problem solving, (b) creative thinking and critical thinking, (c) communication and interpersonal skills, (d) self-awareness and empathy, and (e) coping with emotions and coping with stress. Furthermore, the WHO, UNICEF, and United Nations Educational, Scientific and Cultural Organization (UNESCO) created a life skill model which identified one's health, mental, emotional, and physical well-being as the four core life skill areas. Within each skill set, specific competencies were outlined that contribute to the overall development of the life skill area. Each of these core skills and their integration must be considered in the development of life skills educational programming focused on one's total well-being (WHO, 2003). The WHO (1997, 1999, 2003) also proposed success factors necessary for the development and evaluation of life skills educational programs: long-term programs, trained educators, a focus on both generic and specific skills, developmentally appropriate inputs, active student involvement, links to other subjects, user-friendly materials, and peer leadership components.

Recently, youth development research has increased focus on positive youth development theories and frameworks. The term, "positive youth development", can be conceptualized in many ways, but refers to "a focus on the developmental characteristics which lead to positive outcomes and behaviors among young people" (Hamilton, Hamilton, & Pittman, 2004; Heck & Subramaniam, 2009, p. 1). Common frameworks include Assets (Search Institute, 2007), The Four Essential Elements (Peterson et al., 2001), The Five C's (Carnegie Council on Adolescent Development, 1989), and the Community Action Framework for Youth Development (Connell, Gambone & Smith, 2000). Regardless of the context, goals of all youth development theories aim at developing shared outcomes in youth such as skill building, academic achievement, improving self-confidence and social competencies, leadership development, creating positive relationships, commitment to learning, community involvement, constructive use of time, and having a plan for the future (Heck & Subramaniam, 2009).

4-H, the Cooperative Extension System's youth development program, has been one of the leading youth organizations focused on building life skills. A wealth of research by youth development scholars has found that participation in 4-H is positively correlated to youth leadership life skill development (Boyd, Herring, & Briers, 1992; Fox, Schroder, & Lodl, 2003; Garton, Miltenberger, & Pruett, 2007; Goodwin et al., 2005; Radhakrishna & Sinasky, 2005; Seevers & Dormody, 1995). The largest-ever longitudinal research study to measure positive youth development in 4-H youth was completed in 2013 by Tufts University and the Institute for Applied Research in Youth Development. Findings from this study revealed that in comparison to their peers, 4-H youth excelled in several life skill areas and were more likely to make contributions to their communities, be civically active, make healthier choices, and participate in science, engineering, and computer technology programs (Lerner, Lerner, and Colleagues, 2013). A smaller-scale study on developing youth life skills (Boyd et al., 1992) reported similar results, namely that participation in 4-H was positively related to leadership life skill development. The level of leadership life skill development increased as the level of 4-H participation increased,

and 4-H youth perceptions of their leadership life skill development were significantly higher than those of non-4-H youth (Boyd et al., 1992).

In 4-H, positive youth development focuses on developing life and leadership skills through educational programs (National 4-H, 2015). The 4-H Targeting Life Skills Model (Hendricks, 1998; Figure 1) offers a framework for organizing positive youth development experiences into skills within the four 4-H competency areas: (a) Head—thinking and managing, (b) Heart—relating and caring, (c) Hands—giving and working, and (d) Health—living and being (Hendricks, 1998; Norman & Jordan, 2006). Lamm and Harder's 2009 study examined the impacts of 4-H programming on youth development with positive economic outcomes in the areas of workforce preparation, volunteer training, and the 4-H SET initiative. A comparison study of several impact studies from Montana (Astroth & Haynes, 2002), Idaho (Goodwin et al., 2005), and Colorado (Goodwin, Carroll, & Oliver, 2005) offers detailed information regarding 4-H participant success. 4-H members had enhanced decision-making skills, higher scholastic achievement, improved relationships with adults, and a more positive outlook on life and the world around them than youth not enrolled in 4-H. 4-H youth were also more likely to demonstrate life skills than their peers (Goodwin et al., 2005).

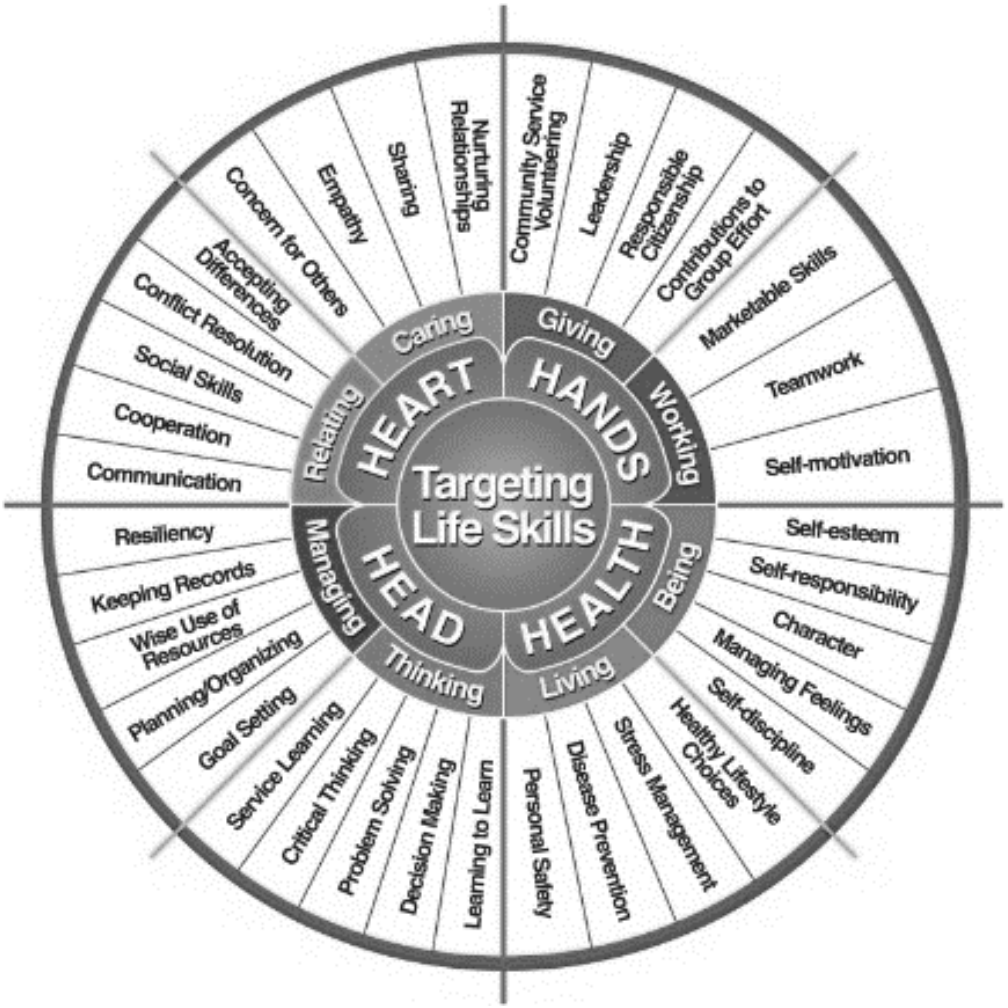

Figure 1. 4H Targeting Life Skills Model. From "*Developing Youth Curriculum Using the Targeting Life Skills Model: Incorporating Developmentally Appropriate Learning Opportunities to Assess Impact of Life Skill Development,*" by P. Hendricks, 1998. Copyright 1998 by Iowa State University Extension. Reprinted with permission.

Research also suggests youth camps can positively impact leadership and life skills development. The American Camp Association (ACA, 2005) conducted the largest national research study of camper outcomes and concluded that camps are "unique educational institutions and a positive force in youth development" (p. 1). Significant growth in campers was reported in "self-esteem, social skills and comfort, peer relationships, leadership, independence, adventure and exploration, environmental awareness, values and decisions, and spiritual growth" (ACA, 2005, p. 1). The ACA discovered no differences in outcomes according to camp type or length. Similar to the ACA findings, Garst and Bruce (2003) found that 4-H campers improved numerous life skills as a result of camp participation, including independence, technical skill development, developing relationships, self-confidence, responsibility, leadership, and communication. Research has further shown that campers with previous experience in the content area have higher knowledge and attitude increases than those without experience (Kruse & Card, 2004).

Expanding on the foundation of camp research, Garton et al. (2007) found that experiential learning activities at 4-H camps can positively impact leadership life skill development. Experiential learning models have provided a framework used in various learning environments and programming. Kolb's (1984) model of experiential learning consists of a four-cycle process: concrete experience, reflective observation, abstract conceptualization, and active experimentation. Kolb believed that experiential learning was a "holistic integrative perspective on learning that combines experience, perception, cognition, and behavior" (p. 21) and could be applied to any educational setting.

With regard to innovative approaches in experiential learning, using horses as teaching tools has gained popularity in non-formal and academic educational settings in recent years. It has been documented that "working with horses can create positive changes in adolescents and possibly even improve basic life skills of young adults" (Antilley et al., 2010, p. 7). Horses have been used to promote life skill development not only in 4-H, but also in equine-assisted therapies for mentally and physically disabled individuals and educational programming (Evans, Jogan, Jack, Scott, & Cavinder, 2009; Gibbs, Potter, & Vogelsang, 2003; Saunders-Ferguson, Barnett, Culen, & TenBroeck, 2008; Smith, Swinker, Comerford, Radhakrishna, & Hoover, 2006). Mandrell (2006) identified the advantages of using horses in teaching as follows:

> The horse activities provide a visible metaphor for life experiences and relationships. These metaphors are used to teach people valuable tools for success in life. Participants learn about themselves and others through horse activities…to discuss related feelings, behaviors, and patterns. (p. 23)

Youth who work with horses not only gain the benefits of learning horsemanship and care of a large animal, but also develop important life skills that can be used in their day-to-day lives. As Antilley et al. (2010) reported, "Those participating in horse-related activities can

experience beneficial improvement in self-motivation, responsibility, confidence, and self-esteem" (p. 7) that transcends to all life situations. Cavinder et al. (2010) evaluated the educational value of a summer horsemanship clinic over a period of three years and found that a high percentage of individuals expressed improved knowledge of horse awareness and training as well as greater thinking skills. A similar study by Slocum (2004) indicated that youth who participated in both riding and non-riding competitive horse events and activities scored significantly greater on the Youth Leadership Life Skills Development Scale than youth who competed in only one or the other. Smith et al. (2006) found a significant positive relationship between overall horsemanship and life skills gained by 4-H youth, the American Quarter Horse Youth Association, the United States Pony Clubs, and National High School Rodeo Association in an equine camp. Researchers concluded that "youth horse programs should continue to develop and support programs that focus on the development of horsemanship and life skills" (p. 92).

Evaluating impacts of youth programs continues to be important as funding tightens in all educational settings, including non-formal and public education. In particular, 4-H must justify the use of public funds and how it "contributes positively to the development of U.S. economy… by proving its worth and return on investment to stakeholders" (Lamm & Harder, 2009, p. 1). Through the documentation of life changes linked to educational programs, all youth organizations can provide unequivocal evidence for continued public and private support. Youth development programs exist in many environments; therefore, research on measurement, tools, and evaluation of outcomes must be conducted in these settings to determine effectiveness and practicality. Comparisons of 4-H youth and non-4-H youth are less common in the research, particularly in the development of life skills. Maass, Wilken, Jordan, Culen, and Place (2006) reported that 4-H alumni revealed that different youth organizations influenced the development of different life skills. Radhakrishna and Doamekpor (2009) found that 4-H was more helpful than other youth organizations in developing leadership and communication skills. Ratkos and Knollenberg (2015) found that 4-H alumni rated significantly higher in six life skills constructs than non-4-H alumni for college preparation and success. And Seevers, Hodnett, and Van Leeuwen (2011) reported that participation in 4-H made a positive difference in participants' lives in many ways including academic performance, communication with parents, leadership, self-confidence, and positive identity.

Any educational experience that can assist youth in developing life skills to become productive, active citizens should be studied. Are 4-H youth excelling beyond their peers, and how can non-4-H youth be inspired to improve their life skills? Research on 4-H horsemanship camps is commonly reported because camps are a natural progression of horse projects; yet, research with non-4-H youth in horse camps is far less common (Cavinder et al., 2010). The educational value of horsemanship camps for all youth should be examined to create and improve meaningful opportunities for all participants. The present study is unique as it describes the impacts of a horsemanship camp on life skill development in both 4-H and non-4-H youth. This research contributes to the literature base on assessing the impacts of youth programs on leadership life skill development.

Purpose and Objectives

The purpose of this study was to investigate youth perceptions regarding development of their own leadership life skills as a result of participation in a one-week equine camp. This study aligns with the American Association for Agricultural Education's National Research Agenda 2016-2020 Research Priority Area 4: Meaningful, Engaged Learning in All Environments (Edgar, Retallick, & Jones, 2016) by addressing the following research objectives:

1. Describe changes in self-perceived leadership life skills of 4-H youth attending a one-week equine camp.
2. Describe changes in self-perceived leadership life skills of non-4-H youth attending a one-week equine camp.
3. Compare self-perceived leadership life skill development levels of 4-H and non-4-H youth attending a one-week equine camp.

Methods and Procedures

Descriptive survey methodology following a pretest-posttest design was used. The population for this study was all ($N = 60$) youth participants enrolled in a horsemanship summer camp program. Demographic and horse experience information was gathered from participants' registration packets. At registration, parents signed an informed consent document for their child to participate in the research. The WHO Department of Mental Health Model (2003) and the 4-H Targeting Life Skills Model (Hendricks, 1998) were used to develop and guide camp activities. The camp was designed for youth of all ages and abilities from beginner to advanced. The camp philosophy emphasized life skill development and personal growth as an intricate component of the horsemanship program. Life skill development through the use of horses was taught in activities focused on responsibility, relationships, communication, leadership, and teamwork through horse safety and care; haltering, tying, and leading a horse; horse behavior observation and horse anatomy; and on-the-ground horsemanship. Each day, campers participated in horseback riding, on-the-ground horsemanship, equine craft activities, and daily journaling that integrated health, mental, physical, and emotional awareness. Basic life skills were explained to the youth in each of these areas. Camp experiences and activities were similar for all youth participants and emphasized building life skills associated with the 4-H model (Hendricks, 1998).

Use of a pretest-posttest design to evaluate perceived self-growth is common among similar populations (Henderson, Whitaker, Bialeschki, Scanlin, & Thurber, 2007; Kruse & Card, 2004; Readdick & Schaller, 2005). A matched-pairs pretest-posttest design was created for this study. Participants' self-perceived leadership and life skills were assessed using the Youth Leadership Life Skills Development Scale (YLLSDS), which has previously been used in a similar manner among youth agricultural organizations (Anderson, Bruce, Jones, & Flowers, 2015). The YLLSDS was developed by Dormody, Seevers, and Clason (1993) to evaluate leadership life skills gained from a particular activity or conference. As such, this instrument was considered appropriate to measure changes in youth leadership life skills from a one-week camp. The 30-question YLLSDS instrument uses a four-point Likert scale from 0 (*no gain*) to three (*a lot of gain*) and has a reported Cronbach's alpha of 0.98. The instrument was modified by asking participants to rate their abilities before and after camp using a four-point Likert scale that ranged from 1 (*poor*) to 4 (*excellent*). The instrument was also modified by used only 42 of the

68 indicator questions that related to the four constructs of the WHO model's basic life skill areas: problem solving and critical thinking, responsibility, self-motivation, and leadership. Following Gall, Gall, and Borg's (1996) recommendations for determining the internal consistency of the modified YYLSDS instrument, Cronbach's alpha coefficients were calculated post-hoc for each of the four constructs: problem solving and critical thinking ($\alpha = 0.64$), responsibility ($\alpha = 0.74$), self-motivation ($\alpha = 0.65$), and leadership ($\alpha = 0.87$). These construct reliabilities were lower than the more commonly accepted value of $\alpha = 0.80$; however, according to Ary, Jacobs, Razavieh, and Sorenson (2006), "reliability of personality variables can be difficult to obtain, thus these measures typically have only moderate reliability (.60-.70)" (p. 267). This limitation could be addressed in the future by using a pilot test to achieve a higher measure of internal consistency by eliminating items that are poorly correlated and adding more highly reliable items to the scale (Ary et al., 2006). The modified YYLSDS was administered on the first and last days of the one week-equine camp. After removing incomplete matched-pairs, 44 non-4-H and 13 4-H youth participants' YLLSDS pairs were deemed usable. This yielded a response rate of 95.0% ($N = 57$).

Statistical significance was set a priori at $p < .05$, per typical educational research (Gall et al., 1996). Because of the small sample size, the *t* distribution was used to determine the level of statistical significance of an observed difference between sample means (Gall et al., 1996). To address the first two objectives, paired-samples *t* tests were used to determine if participation in a one-week equine camp statistically influenced self-perceived leadership and life skills according to our modified YLLSDS. To address the third objective, an independent-samples *t* test using the differences between pretests and posttests of the 4-H and non-4-H groups was conducted to explore perceived influences among the groups. Effect sizes quantifying group differences were interpreted using Cohen's (1992) criteria, wherein 0.02 is considered small, 0.15 is considered medium, and 0.35 is considered large. The one-week time period between the pretest and posttest was a concern due to response-shift bias on self-reported measures of change (Drennan & Hyde, 2008). However, the ACA (2005) found no differences in outcomes according to camp type or length, and found that the pretest was a useful indicator of initial deficiencies in youth skills and knowledge. The differences in sample sizes was also a concern and limitation in the present study. However, the comparison groups were self-selected based on 4-H enrollment, so we did not adjust the sample sizes. Caution should be used in generalizing these convenience sample results to larger audiences (Ary et al., 2005).

Results

The average 4-H youth participant ($n = 13$) was an 11-year-old female with approximately three and a half years of equine riding experience. Similarly, the average non-4-H youth participant ($n = 44$) was an 11-year-old female with approximately three years of equine riding experience. Independent samples *t* tests revealed no statistical difference between the two groups according to age ($p = 0.46$), gender ($p = 0.89$), or years of equine riding experience ($p = 0.38$).

The first research objective was to describe changes in self-perceived leadership life skills of 4-H youth. Significant increases ($p < .05$) from pretest to posttest were present in all

four constructs of the modified YLLSDS instrument (Table 1). Although likely inflated due to the small sample size (Ary et al., 2005), corresponding effect sizes were very large.

Table 1
Paired Samples t Test for 4-H Participants (n = 13)

Construct	Pretest		Posttest		Diff.[a]	*t*	*Df*	*p*[b]	ES[c]
	M	*SD*	*M*	*SD*					
Responsibility	3.14	0.42	3.71	0.33	0.57	5.76	12	0.00*	1.54
Self-motivation	3.17	0.44	3.73	0.26	0.56	5.49	12	0.00*	1.63
Leadership	3.19	0.43	3.73	0.24	0.54	5.53	12	0.00*	1.63
Problem-solving/critical thinking	3.08	0.42	3.62	0.26	0.54	4.63	12	0.00*	1.58

[a]Posttest minus pretest; [b]Probability of difference; [c]Mean difference divided by pooled group *SD* (0.02 = small; 0.3 – 0.15 = moderate; > 0.35 = large).
*$p < .05$.

The second research objective was to describe changes in self-perceived leadership life skills of non-4-H youth. No significant increases ($p > .05$) from pretest to posttest were present in any of the four constructs of the modified YLLSDS instrument (Table 2). Three of the four constructs (leadership, problem solving and critical thinking, and responsibility) displayed either no change or a negative change between pretest and posttest.

Table 2
Paired Samples t Test for Non-4-H Participants (n = 44)

Construct	Pretest		Posttest		Diff.[a]	*t*	*Df*	*p*[b]	ES[c]
	M	*SD*	*M*	*SD*					
Self-motivation	3.16	0.43	3.25	0.47	0.09	1.19	43	0.24	0.20
Leadership	3.22	0.36	3.22	0.43	0.00	0.07	43	0.95	0.01
Problem-solving/critical thinking	3.23	0.38	3.23	0.41	0.00	0.03	43	0.98	0.00
Responsibility	3.25	0.40	3.21	0.41	-0.04	0.64	43	0.52	0.09

[a]Posttest minus pretest; [b]Probability of difference; [c]Mean difference divided by pooled group *SD* (0.02 = small; 0.3 – 0.15 = moderate; > 0.35 = large).
*$p < .05$.

The third research objective was to compare self-perceived leadership life skill development levels of 4-H and non-4-H youth. Significant differences ($p < .05$) between 4-H and

non-4-H youth were present in all four constructs of the modified YLLSDS instrument (Table 3). The largest difference was growth in perceived responsibility (0.61); the smallest difference was in perceived self-motivation (0.47).

Table 3
Independent Samples t Test for all Participants (n = 57)

	Non-4-H difference [a]		4-H difference [a]						
Construct	*M*	*SD*	*M*	*SD*	Diff. [b]	*t*	*Df*	*p* [c]	ES [d]
Responsibility	-0.04	0.57	0.57	0.36	0.61	5.15	55	0.00*	1.65
Leadership	0.00	0.34	0.54	0.35	0.54	5.02	55	0.00*	1.56
Problem-solving/critical thinking	0.00	0.40	0.54	0.42	0.54	4.27	55	0.00*	1.33
Self-motivation	0.09	0.51	0.56	0.37	0.47	3.12	55	0.00*	1.08

[a]Posttest minus pretest; [b]4-H difference minus non-4-H difference; [c]Probability of difference; [d]Mean difference divided by pooled group *SD* (0.02 = small; 0.3 – 0.15 = moderate; > 0.35 = large).
*$p < .05$.

Conclusions

The context of this study was a one-week horsemanship camp that specifically focused on leadership life skill development for 57 youth (13 4-H and 44 non-4-H). Similar to previous studies (Boyd et al., 1992; Fox et al., 2003; Garton et al., 2007; Goodwin et al., 2005; Radhakrishna & Sinasky, 2005; Seevers & Dormody, 1995), this research found significant changes in 4-H youth participants' life skill development. 4-H youth had significant increases in all four life skill constructs measured (responsibility, self-motivation, problem solving/critical thinking, and leadership), while non-4-H youth had no significant increases. There were also significant differences between the two groups. The largest difference was growth in responsibility, and the smallest was in self-motivation. The significant increases confirm previous research that indicates 4-H youth excel beyond their non-4-H peers in leadership life skills gains due to continuous 4-H participation and higher self-perceptions of skill development (Boyd et al., 1992; Lerner et al., 2013).

Discussion, Recommendations, and Implications

Findings support previous research (Antilley et al., 2010; Boyd et al., 1992; Cavinder et al., 2010; Lerner et al., 2013) that states a structured horsemanship camp can be a valuable educational venue for leadership life skill development in 4-H youth. However, further research should be conducted to assess how to create positive changes for non-4-H youth in this setting as well. Why did 4-H youth excel beyond their peers in this camp? Previous studies have shown

that 4-H members have enhanced decision making skills, a more positive outlook on life, and are more likely to demonstrate life skills than youth not enrolled in 4-H (Astroth & Haynes, 2002; Goodwin et al., 2005; Goodwin et al., 2005). It is possible that 4-H youth participants in this camp were more likely to show life skill changes than non-4-H youth due to their positive outlook and perceptions. However, Maass et al. (2006) reported that different youth organizations influence the development of different life skills. This study measured only four life skill constructs: responsibility, self-motivation, problem solving/critical thinking, and leadership. Perhaps non-4-H youth developed different life skills not measured in this study, or maybe they do not understand what life skills are if they have had less exposure to the concepts. Because 4-H experiences are structured around the 4-H Targeting Life Skills Model (Hendricks, 1998), 4-H youth may be more inclined than non-4-H youth to show social desirability bias to the instruments. Social desirability bias is when respondents give "socially acceptable responses that they would not necessarily give on an anonymous questionnaire" (Ary et al., 2006, p. 382). Yet it is important to consider how to best design educational experiences that benefit all youth involved. Horsemanship camps have been shown to improve life skills for 4-H youth, so educators must discover how to improve perceptions and skills for non-4-H youth, too. Follow-up interviews and focus groups with youth participants would be valuable to discover their definitions of life skills, self-perceptions and understanding of life skills, beliefs on how to improve these skills, and how life skills can relate to horses. As a result, educational experiences and activities can be integrated into the horsemanship camp to accommodate specific learner needs and desires.

Re-Designing the Teaching Approach with Focus on Experiential Learning

Camps are commonly used to teach youth life skills with particular emphasis on experiential learning opportunities (ACA, 2005; Cavinder et al., 2010; Garst & Bruce, 2003; Garton et al., 2007; Kolb, 1984). Campers have shown significant growth in "self-esteem, social skills and comfort, peer relationships, leadership, independence, adventure and exploration, environmental awareness, values and decisions, and spiritual growth" (ACA, 2005, p. 1). Science, engineering, and computer technology programs also offer ideal venues to attract youth, particularly those who have shown keen interest in these subject areas (Lerner et al., 2013). Horsemanship camps offer a perfect venue to combine social, interpersonal, life, and technical skills for youth. Including equine science and technology activities in the areas of horsemanship, training, and resource management can add to the overall camp experience. Life skills can then be consciously integrated into the activities to create greater awareness and understanding. Discussions of human-horse connections, leadership principles, problem solving, business management, critical thinking, and overall responsibilities of horse ownership can assist in building many skills. However, for this approach to be effective, educators must explain basic life skills to youth, and have youth reflect upon these throughout the camp. Experiential activities such as journaling, leadership and team-building scenarios, field experiences, independent study projects, problem-based learning, and competitions can target specific life skills each day. These learning opportunities must be structured to include practice of life skills, reflection on learning, conceptualization of skills, and application of skills in different contexts, such as working with horses, at home, in the community, and at school (Kolb, 1984). Time should be allocated for individual and group discussion and reflection of how the life skills emerged in activities. Research has shown no difference in life skill outcomes based on camp type or length (ACA,

2005); therefore, camp settings can be adjusted to meet various time, content, and resource constraints while still producing positive leadership life skill development in youth.

Although non-4-H youth in this study did not show any significant increases in life skill development, it is critical to continue to emphasize application of life skills in learning experiences. In this horsemanship camp, life skills were deliberately integrated into the activities from the instructor's point of view; however, discussion and reflection of these life skills with youth during and after the activities was not emphasized. Kolb (1984) stated that immediate experiences are the basis for observation and reflection from which concepts are assimilated and then actively tested. For future camps, it is essential to complete the entire learning cycle with youth to achieve the complete experiential learning experience. A reflective discussion of how the experience affected one's health, mental, emotional, and physical well-being (WHO, 2003) and what life skills on the 4-H model were targeted (Hendricks, 1998) should be included in the camp design. Youth should be allowed time to apply the concepts discussed with active experimentation (Kolb, 1984).

Incorporating Life Skills Education into Camp Content

Another possible explanation for the lack of significant increases is that non-4-H youth may lack understanding of life skills, have less previous experience and knowledge of life skill concepts, or have lower levels of involvement in youth organizations. Previous research has shown that 4-H youth with previous experience in the content area have higher knowledge and attitude increases (Kruse & Card, 2004), 4-H youth have higher perceptions of their leadership life skills, and the level of life skill development increases as 4-H participation increases (Boyd et al., 1992). As a result, when facilitating non-4-H programs, educators must deliberately incorporate life skill discussion and reflection into activities. By increasing youth participants' understanding of what life skills are, how they look in action, and how they can be applied in various situations, educators can assist youth in seeing the connections to their lives. Because the 4-H program is built upon the acquisition of life skills and centered around the 4-H Targeting Life Skills Model (Hendricks, 1998), 4-H youth are potentially more familiar with life skills than non-4-H youth. Yet non-4-H youth can successfully achieve life skills, as practiced by many other youth organizations. Regardless of participants' prior experience, programs should be intentionally designed to include life skills. Camp coordinators must consider the range of life skills and carefully design programs to reach different skills with various experiences (Maass, 2006). WHO (2003) proposed certain factors of success for life skills programs. For example, a longer camp, focus on generic and specific life skills, links to other subjects, and peer leadership components could be added into the horsemanship camp to better focus on youth participants' total well-being (WHO, 2003). Non-4-H youth may also have different areas of strength in life skills, and including both audiences in programming could enhance both groups' skills. In this study, 4-H and non-4-H horsemanship camps were separate. Future camps could combine the audiences, identify life skill and horse knowledge strengths, and pair up youth based on these criteria. Finally, all youth organizations should seek collaborations to enhance their overall impacts. Partnerships with Boy Scouts, Girl Scouts, YMCA, afterschool programs, youth leadership programs, and other community-based services can broaden the scope of the 4-H programs and improve funding support.

Recommendations for Camp Educators

Recommendations for camp educators include using the 4-H Targeting Life Skills Model and the WHO Life Skills Model as a guide for developing programs (Hendricks, 1998; WHO, 2003). Camp educators can integrate components from each model—Head, Heart, Hands, and Health (4-H) and Health, Mental, Emotional, and Physical (WHO)—into the total program design. In addition, the factors of success for life skills educational programs, as defined by WHO (1997, 1999, 2003), can be used as a framework for program activities. Educators can combine specific life skills into content, provide active learning opportunities, make connections to life situations, and use peer leadership to maximize effectiveness. Within a horsemanship camp setting, educators can use horses as a metaphor for discussion of a challenging experience, the positive and negative effects of the experience, how participants managed the challenge, and how this experience contributed to development of overall life skills. As this study revealed, using horses as a metaphor for learning can be valuable for participants to develop critical thinking skills, responsibility, self-motivation, and leadership qualities. This process reinforces the significance of providing structured opportunities for youth to reflect on life experiences, learn about themselves, improve relationships, and apply skills to all aspects of life in a way consistent with experiential learning theory (Kolb, 1984; Mandrell, 2006). This approach is unique in that the personal benefits are often immediate, measurable, and have long-lasting results (WHO, 2003). Using horses has helped youth of all ages make positive life changes and healthier life choices. As Mandrell (2006) explained, "Results show attainment of basic skills competency and work maturity skills. Results have indicated an increase in productive and positive relations…participants increase the amount of involvement with school, work, and community activities while using creativity in a positive manner" (p. 37).

Future Research Needs

4-H and non-4-H organizations can use findings from this study to develop and improve youth programs. The impacts of life skills education are difficult to measure and quantify, but continue to be an essential topic for positive youth development research (Lerner et al., 2013; WHO, 1997, 1999, 2003). This study proposed one method of how to assess the impacts of a specific type of youth program (horsemanship camp) on leadership life skill development. Research should continue to identify new opportunities to evaluate youth life skills in non-formal and formal educational settings in order to continually improve positive youth development. As revealed in this study, 4-H youth are self-motivated, responsible leaders capable of problem solving and critical thinking when provided with strategic learning experiences. Although non-4-H youth in this study did not show significant life skill increases, all youth can learn these life skills and become community leaders and make positive life choices (Lerner et al., 2013). Therefore, educators and community leaders should purposefully include all youth in programs as resources, volunteers, and mentors as they are skilled, interested, and eager to learn.

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Understanding Why Family Units Become Involved in the Livestock Exhibition Industry: A Collective Instrumental Case Study

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Abstract

The purpose of this collective instrumental case study was to understand the motivational factors that support families' decisions to become involved in livestock exhibitions. The expectancy value theory served as the theoretical lens, and a review of literature led to four issues necessary for exploration. Four typical family cases were identified for the study, and interviews were conducted to understand the phenomenon. Based on the data, five In-Vivo themes emerged: (a) showing is a family tradition*, (b)* bonds us together*, (c)* on the job training for life*, (d)* joys and discomforts of agricultural life*, and (e)* the show industry*. It was concluded that families value tradition, family togetherness, the agricultural community, work ethic, and the development of life skills critical for the success of their children. Winning, as traditionally defined in the show ring, was not the expectancy. Rather, families expected to grow together, enjoy their time, and be competitive. The perceived family utility outweighed the noted costs. It was recommended that all stakeholders in the livestock exhibition community identify ways to enhance family involvement and work to reward ethical behaviors.*

The Journey Toward the Purple Banner

(Opening vignette) Approximately 7,000 students and their families crowded onto the Oklahoma State Fairgrounds last week in hopes of taking home a purple ribbon. Exhibiting livestock seems to be woven into the tradition of rural families in our communities and schools, but have we created a monster that cannot be tamed? Many of the students that crowd into various barns across the nation each year are students in agricultural education programs – publicly funded, school-based programs intending to build career skills in agriculture. Teachers are required to leave their classrooms behind in pursuit of that famous purple banner. It was announced recently that millions of dollars are spent on these projects statewide. Is this investment yielding the results that were intended? I spent some time with one of these show moms *at a recent Oklahoma junior livestock show and asked why she was so invested when research indicated students were not gaining the agricultural career or STEM skills so important to the program. I was surprised by her answer. "That is not the primary reason we show at all! Though I hope those skills are developed, we show for a very different reason."*

This opening vignette begs the question of interest to this study, "Why do families choose to become involved in livestock exhibitions?" Research over the last thirty years (Davis, Keith, Williams, & Fraze, 2000; Randell, Arrington, & Cheek, 1993; Rusk, Machemes, Talbert, & Balschweid, 2003; Wooten & Rayfield, 2013) has identified a number of benefits of livestock exhibition, including skill development, STEM integration, family cohesiveness, life skill

development, social relations, and financial support for education. However, which of these, if any, serve as the primary motivation for *family* engagement in exhibiting livestock?

Development of Issues: Review of Literature

Family dynamics have changed drastically over the past 50 years because families no longer have to rely as heavily on each other and do not spend as much time together as they once did (Bureau of Labor Statistics, 2015; Hareven, 1977). Because of the limited amount of time families spend together, they are not as unified as those of yesteryear (Bureau of Labor Statistics, 2015). This trend has implications for public education. "The evidence is consistent, positive, and convincing: families have a major influence on their children's achievement in school and through life" (Henderson & Mapp, 2002, p. 7).

Researchers have concluded that a family's culture is developed through active engagement with each other (Pai, Adler, & Shadiow, 2006; Roy, 2012). Thus, the more time a family spends together, the better defined the unit becomes. Because of its emphasis on leadership development, agricultural education has long been known as a medium for building relationships through ". . . a love and understanding for agriculture, educating students and adults as to its importance, and the promotion of literacy throughout educational and community systems" (Dailey, Conroy, & Shelley-Tolbert, 2001, p. 19).

It is possible that families who participate in the livestock show community do so, intentionally or otherwise, as a means to improve or cultivate their family's culture (Davis, et al., 2000). Families of the past relied on each other to survive (Hareven, 1977). Each member had a specific role within the family (Hareven, 1977). Often, roles were identified and defined according to sex and age (Hareven, 1977). Each family unit knew its values and beliefs, and decisions were made together (Hareven, 1977). *Togetherness* was valued and served as the driving force behind the unity and cohesiveness of the family (Hareven, 1977; Pai et al., 2006).

Families today do not share the same dynamics (Roy, 2012). According to the Bureau of Labor Statistics (2012), the average American family spends only 2 hours together per day. The lack of time parents spend with their children is due in large part to the upward trend of mothers entering the workforce. With both parents engaged in employment, parents are less accessible to their children today than ever before (Sayer, Bianchi, & Robinson, 2004). This lack of *togetherness* is causing family culture to suffer (Roy, 2012), having a negative affect on the "knowledge, beliefs, values, skills, behaviors and traditions" (Pai et al., 2006, p. 4) of the family unit.

Historically, exhibiting livestock has been considered a *family project* (Davis et al., 2000) that allows students to earn prizes for the quality of their project, as well as their work ethic (Rusk, Summerlot-Early, Machtmes, Talbert & Balschweid, 2006). Livestock exhibitions can serve as a motivator for students who wish to raise livestock projects (Bird, Martin, & Simonsen, 2013). Over the past several years, livestock shows have witnessed an increase in participation (Oklahoma Youth Expo, 2016; Rusk, et al., 2006). Specifically, students in Oklahoma participate in multiple livestock expositions, such as the Oklahoma and Tulsa State Fairs and the Oklahoma Youth Expo (Peck, 2016). Despite the decline of rural communities, Oklahoma has seen an increase in livestock show projects with over 7,000 students competing in the 2016 Oklahoma

Youth Expo alone (Oklahoma Youth Expo, 2016). Because the number of youth in Oklahoma who are involved in livestock exhibitions continue to escalate, it is important to understand the phenomena behind why families choose to invest time, energy, and money into this experience.

Researchers have determined numerous benefits to exhibiting livestock. Chief among them are the development of important skills necessary for life and employment. Specifically, junior livestock projects have been shown to improve students' science, technology, engineering and mathematics (STEM) competencies (Wooten, Rayfield, & Moore, 2013). In addition, livestock exhibition projects help students develop personal skills, such as self-confidence, decision-making, problem solving, and sportsmanship (Davis et al., 2000; Rusk et al., 2006).

Unfortunately, due to the competitiveness of livestock exhibitions, all that glitters is not gold. Research has acknowledged that unethical practices occur at youth livestock exhibitions and are often a direct result of adult involvement (Connors & Dever, 2005). Therefore, if the intent of exhibiting livestock is to increase the knowledge of youth and develop their personal skills (Rusk et al., 2006), it is imperative to understand why entire family units choose to become involved in livestock exhibition projects in Oklahoma.

Theoretical Lens

Our research team viewed each of the cases through the lens of the expectancy-value theory proposed by Eccles, et al. (1983). Through this lens, theorists argue that, "an individual's choice, persistence, and performance can be explained by their beliefs about how well they will do on the activity and the extent to which they value the activity" (Wigfield & Eccles, 2000, p. 68). Expectancies for success are defined as "children's beliefs about how well they will do in an upcoming task" (Wigfield, 1994, p. 52). Expectancy has been described further as a product of both task difficulty and domain specific self-concept (Eccles et al., 1983). Task value has been conceptualized as a construct built on four major components: (a) attainment value, (b) intrinsic value or interest, (c) utility value, and (d) cost (Eccles, 1987). Attainment value is the importance of doing well on a given task. Intrinsic value is the enjoyment one finds in completing a task. Utility, or usefulness, refers to how well a task fits into an individual's future plans. The first three components are often referred to as the elements of a task that affect the "positive valence" of a task (Eccles & Wigfield, 1995, p. 216). The fourth and final component – cost – refers to what is lost, suffered, or sacrificed to complete a task, and is described as the negative valence of a task (Eccles & Wigfield, 1995). Reflection on the model prior to case entry spurred a number of curiosities that ultimately guided issue development.

Focus of the Case through Issues Identification

The use of *issues* "draws attention to problems and concerns" (Stake, 1995, p. 16). Further, in an instrumental case study it is essential to utilize the case, defined by Stake as Θ, to focus fully on each of the issues, noted as ϑ, which are the central focus (Stake, 1995). Issue questions force attention to "complexity and contextuality" (p. 16). For this instrumental, collective, case study four issue questions guided the study.

ϑ_1: What values drive a family's decision to exhibit livestock?

ϑ_2: What are the task expectancies that provide the motivation to participate?

ϑ_3: What are the most significant family costs associated with the decision to exhibit livestock?
ϑ_4: Is the perceived utility greater than the perceived cost?

A Search for Understanding: Methods

A qualitative design was selected to describe the role of family in exhibiting livestock. This approach allowed for meaning to be found from observations in a natural setting (Creswell, 2013). Previous studies conducted in this area have been successful using a qualitative approach (Davis, 1998; Rusk, Summerlot-Early, Machtmes, Talbert, & Balschweid, 2006; Williams, 1998); however, they have not used a lens that focuses on family culture. A case study approach provided an in-depth analysis of typical Oklahoma livestock show families (Stake, 1995). The use of methodological triangulation provided insight into the case, and a semi-structured interview format allowed for exploration of concepts arising during the interview (Stake, 1995).

The study utilized the ontology of realism and a constructionism epistemology. Realism asserts that reality exists outside of the mind (Crotty, 2003). For realists, entities of the outside world are real, but are interpreted differently based on an individual's experience. The ontology of realism is compatible with constructionism in that something is socially constructed but exists because of the already set expectations of the interaction or experience. However, those set expectations can change. In a constructionism epistemology, meaning is constructed through the interaction between the participant and the experience (Denzin & Lincoln, 2000). In this study, meaning is co-constructed through the interactions of researchers and participants (Denzin & Lincoln, 2000). The interaction and engagement between the two parties in this study allowed us to explore the multiple ways participants made meaning in the experience of exhibiting livestock. The ontology of realism and the epistemology of constructionism informed the theoretical lens of Expectancy-Value (Wigfield & Eccles, 2000).

Typical case selection was used to identify four families to participate in the study. A typical case was defined as an Oklahoma family that has at least two children raising livestock for exhibition purposes and who would not be considered an elite legacy show family. An elite legacy show family is a family who has for generations competed in livestock shows. Since a typical case selection was used, an elite legacy show family would not be an accurate depiction of a typical Oklahoma show family. Experts identified families who fit the criteria. Four families of at least four members were selected to participate. Each case consisted of immediate family members participating in the livestock projects. Using a focus group format for the interview was advantageous to examining the case as a whole (Creswell, 2013). Collective observations allowed for observation of the entire case in its natural setting (Stake, 1995).

Individuals were invited to participate over the phone. Three different collection methods were used to achieve triangulation. First, a one-hour, semi-structured interview was conducted in a focus group format and included all immediate family members. Questions focused on the family's involvement in raising their livestock show projects. The focus group interviews lasted between 30 minutes to an hour. Observations were recorded during the interview and while touring the families livestock facilities. Field notes were be taken in detail and were guided by

the research questions. Finally, families were also be asked to share artifacts that may provide further insight. Artifacts included photographs, awards or audiovisual material.

Each interview was transcribed and field notes and artifacts were complied. Each line of the interview was numbered to help facilitate the coding process. In-Vivo coding was used for the first cycle coding method as described by Saldaña (2013). Codes used the participant's direct words to allow for reflection on their true meaning (Saldaña, 2013). This method of coding was ideal for a group that included younger children because it allowed for the use of their own words rather than the researcher's interpretation of their words. Once initial coding was complete, a secondary cycle coding method was used to metasynthesize data. Pattern coding was used to discern relationships between codes and determine emergent themes (Saldaña, 2013).

In this study, we used Tracy's (2010) criteria to build quality into the study. Sincerity and ethical procedure were achieved through transparency throughout the data collection and analysis processes. Additionally, through in-vivo coding, we stayed true to the participants' observations. We reached out to a representative from each family and requested permission for their family to participate voluntarily. Participants also were informed we intended to publish the findings and were advised of confidentiality through the consent form. Pseudonyms were assigned during transcription for confidentiality. Credibility established dependability of the findings provided by thick description, and context in field notes. Crystallization was chosen as a measure of credibility as we gathered data through various methods and frameworks to bring truth to the larger picture. Through the use of data, field notes, collection of artifacts, and previous research, multiple accounts of the same story were given (Tracy, 2010).

Reflexivity is important to any qualitative study to understand the researchers' background with the area they are studying and any bias they may bring to the study (Creswell, 2013). The four researchers involved in the study included two teacher educators, one instructor, and one graduate student – all with a background in agricultural education. The teacher educators taught agricultural education in the public school system and are involved in preparing preservice teachers at Oklahoma State University. All four researchers were active in their respective livestock show communities growing up, and two of the researchers are currently active as livestock show families. Therefore, as researchers, we are familiar with the dynamics of the livestock show community and, thus, the need to be aware of and avoid existing bias (Tracy, 2010). To become self-aware of biases and experiences and ensure that the participants' voices were heard, bracketing was achieved through memo-ing (Tracy, 2010).

Description of Cases

Most homes are adorned with family photos. These homes were no different, except their family photos were set at fairs and county shows, with a large group of *extent family* surrounding their livestock projects. Interviews occurred at kitchen tables and in living rooms. As we walked through their barns, they shared the details of their projects like most people would describe their kid's honor status or touchdown record. With each case examined, it was increasingly more evident that this was a large part of their family identity.

The first family to participate was the Roberts family. The Roberts' bleed blue and gold. Both parents, Ronald (father) and Deborah (mother), were active in FFA when they were in high school and they knew that they wanted their three girls, Leslie, Kayla, and Hazel, to follow suit. They have been raising show cattle actively for the last five years, and spend 10 plus hours per week in the barn. The second case examined was the Johnson family. The Johnson's have three kids, two older daughters, Emma and Olivia, and a young son, Logan, who were motivated to exhibit sheep because of their father's active involvement in the livestock show community. For the past seven years, the Johnson kids spend most of their afternoons at the barn together working their combined 20 plus sheep. Their parents, James (father) and Abigail (mother), provide support, expertise and help when needed, but believe that at the end of the day that it is their kids' responsibility to care for their projects. The third case studied was the Wagner family. Greg (father) showed livestock growing up and served as an agricultural education instructor for ten years, and he and his wife, Eliza, have always wanted their kids to show as well. Their daughter, Jamie, started exhibiting swine and goats when she entered the eighth grade. Even though she has since graduated, their son, Thomas, has continued and expanded their project program. The Wagner's keep their projects at the school farm and spend every evening together caring for them. The final case was the Burns family. Their daughter, Alyssa, and son, Noah, have shown cattle and goats but their main project is showing sheep they have raised themselves. Their barn is directly across the street from their residence, and they spend countless hours each day caring for their animals.

Assertions and Conclusions

From four focus group interviews, two of the four researchers extracted 165 and 164 process codes from the data. The research team negotiated 55 focused codes (secondary codes), which were compressed into 28 tertiary codes or categories. The categories were deduced into five themes; *Showing is a Family Tradition*, *Bonds us Together*, *On the Job Training for Life*, *The Joys and Discomforts of Agricultural Life*, and *The Show Industry*.

Theme 1: Showing is Our Family Tradition

In this category, families discussed how they got started as a family unit in showing, being in agriculture, the shared traditions, showing as a family and the investment of showing. The first subtheme under "showing is our family tradition" (3:755) was the importance of "we're around agriculture." Families discussed why they got involved in exhibiting livestock. For all four families, at least one of the parents showed or was involved in agriculture and were "rooted" (4:273) in the industry. When discussing why families started exhibiting livestock, parents would often observe how it was when "I did it in high school and you know, it was a good experiences and I wanted my kids to be able to do it" (4:6-7). When the children in the family discussed showing they stated; "it was never was a question, it was something we were going to do" (3:42-43) and "It's kinda the way we've been growing up" (1:679).

As a show family, traditions have been adopted around the raising and showing of livestock and the reflection and celebration of the show year. Families stated "we've never really taken vacations anywhere and so its really one of those places that we, went somewhere together, it was probably the stock shows" (3:507-509). One participant stated,

> Some people play golf . . . . This is something [exhibiting livestock] that we've chosen to do. We enjoy it. This is our family activity. We get home in the afternoon and we change clothes and we go up there and spend some time together and that's just kind of our thing that we like to do as a family (3:119-123).

When asked, "What are your traditions?," all four families stated, "Spring Break is OYE" (4:220, 2:405, 1:697, 3:218). James Johnson stated, "After the show is over, we sit down and talk about what went well, what didn't, and what we could do better, how we could improve" (2:414-415). Within traditions, participants showed family ownership of experiences by the use of the word, "we," or the indication that showing is a family event. Instead of referring to the youth's projects, both parents and their kids referred to activities as something "we do." For example, when starting a project program, Leslie Roberts stated, "So we kind made that decision together" (1:32). Moreover, it was reported that showing is worth the investment because it is something they do as a family. Families stated the importance of not only having "fun" (3:13), but also having "fun together as a family" (1:616). For example, "you can have memories from a cruise but you won't have memories like you have from the livestock show" (3:126). Families participated "for the enjoyment" (3:115). Since it was done as a family, "it was worth the investment" (2:38).

Previous literature by Bird et al. (2013) indicated that SAE projects created from intrinsic motivation are more sustainable and lead to greater outcomes. Internal motivators are more effective than external motivators and agricultural education should focus its efforts on helping students find internal motivation (Bird et al., 2013). Families in our study listed numerous internal motivators as reasons for participation such as family identity, continuing tradition, and enjoyment. Enjoyment as a motivator is consistent amongst both our study and Bird et al. (2013).

Them 2: Bonds Us Together

The second theme to emerge was, "Bonds Us Together." Although immediate family was the core of the study, the results found that family also includes the bigger showing community. Within the large community, families discussed community, support, friendships, and mentoring. Within the immediate family, subthemes included stronger bonds, gender roles, and working together.

When asked about the larger showing community, participants identified them as "extended family" (3:607), "tight-knit" (3:582) and a "big community" (2:495). When talking about the extended family, parents stated that other families "took us under their wing" (1:639) and were "incredibly welcoming" (1:633). Students reported that through exhibiting livestock, they "have a lot of unrelated brothers" (4:756) and "have a lot of friends because of [showing]" (4:31). Mentoring was also an important component of the community as indicated by, "Ronald has been mentored by a lot of men in the show barns and those tables have turned really quickly as he's mentored a lot of people" (1:646-647). Additionally, participants acknowledged the shared values within the community in statements such as, "I think it's that fraternity of being around people that, have the same values and the same principles that you do" (3:646-651). One of the

participants stated "That's why I love agricultural education and FFA so much, the values of what the program was designed for really aligns well with how people raise their kids" (4:522).

Working with livestock projects and showing has turned into "required family time" (1:269) that has brought the participants "closer as a family" (1:613) and created a "strong bond" (2:146). Showing is viewed as "our family activity" (3:121) and "gives opportunity to spend some time together" (3:122). Additionally, families "work through and learn through all kinds of relationship issues" (1:606-607). When discussing building a stronger bond, one participant stated, "It's helped us as parents learn a lot about the girls and their behaviors. Hopefully the girls have learned a little bit about our strengths and weakness and what makes us tick" (1:606-613).

Roles of each family member were discussed throughout the focus groups. Interestingly, when asked, family members identified roles consistently among gender. Mothers identified themselves as, "behind the scenes person" (2:222), "encourager" (1:618), and "in charge of food for the humans" (1:534); whereas fathers were identified, "this is the money bags (pointing at father)" (3:403), "I support them financially" (4:305). Roles in the families were also identified in terms of jobs related to taking care of livestock. "Everyone has a role" and families "share the load" (1:253). Work was usually done "on a rotation" (1:497) so the workload was shared as "the more hand you have on deck, the faster it goes" (1:510). "If there's a task at hand that we need to accomplish as a family then we can probably get it done" (2:304).

Davis et al. (2000, p. 122) also found that livestock shows are an opportunity for families to "travel as a family unit that is working toward a common goal." Consistent with what we found, they learned that emotions play a role in the family learning about each other and open up the opportunity for family bonding (Davis et al., 2000). Families in both studies also identified that raising livestock has taught them to work together to get the job done (Davis et al., 2000).

Theme 3: On the Job Training for Life

All four families felt that raising and showing livestock was "on the job training for life" (1: 663). This theme emerged as the participating families felt that through showing livestock they had the opportunity to learn a variety of "great life lessons" and learn "skills that employers want" (1: 361-362). Eliza Wagner stated, "We're choosing to invest this in our kids and in the invaluable lessons" (4:770-772). Life lessons these families felt they were learning through their livestock experience included "how to take care of something other than themselves" (3:28), "to be humble and to… accept winning with dignity, but also accept defeat" (2:380-381), and "hard work doesn't always get rewarded but it always pays off" (4: 537).

Families also attributed learning important career skills from their livestock projects. All families felt that showing livestock "instilled tremendous work ethic" (2:91). They compared their childrens' work ethic to their peers. Ronald Roberts stated, "I'm very impressed by our girls and their ability to work and their willingness to work because there's a lot of kids who don't" (1:246-247). Along with hard work, they all felt that "the responsibilities of just taking care of animals" (3:197) could translate to the work place. Something as simple as the ability to "show up to work on time" (3:273) could put them at an advantage in future. Some of the parents felt

that their children were responsible for their own projects and their role was really just to assist. James Johnson stated that his kids "really do it themselves" and he is "just sort of an oversight and making sure things are going okay and assisting with problem solving" (2:214-216). Noah explained that when he was younger his dad used to help a lot more "but as we got older, it kind of declined and now me and my sister pretty much do everything" (4:311-312). Finally they felt that their children were learning time management through having to balance school, their livestock projects, homework and other activities. Raising livestock projects helped turn their children into workers further employers could "depend on" (3: 266-269). James Johnson stated, "I feel pretty comfortable that when they come to a college campus and they start pursuing that higher level academic degree, they're going to be prepared to time manage and balance the academic requirements" (2:93-94). Families value the opportunity for personal growth and 'take advantage . . . of teaching them through those times" (1:361-363).

These findings align with previous literature stating that students are learning skills related to personal development (Davis et al., 2000). They also found that students are learning responsibility and work ethic. Davis et al. (2000) further confirmed our findings that parents want to play an active role in helping their students learn from their livestock projects. They claimed that parents take on a teaching and modeling role to help students learn desirable character traits (Davis et al., 2000). Participants in a study done by Dailey et al. (2001) identified that character traits were more desirable outcomes for their students then academics.

Theme 4: Joys and Discomforts of Agricultural Life

"In the creed it says for I know the joys and discomforts of agricultural life" (1:330-332). This theme emerged from two tertiary themes: "Realize that you're part of feeding the world" and "Learn a lot about sacrifice." These two subthemes truly convey the reoccurring idea from all four families of seeing both the enjoyable and challenging parts of agriculture. Each family mentioned that there are many joys associated with raising livestock. The Burns family found a purpose in their projects. Mia stated:

> I don't think a lot of kids that are not involved in agriculture or even FFA understand where their food comes from and just that aspect of it. To realize that you're part of feeding the world, you know. I think that that, I mean, is pretty remarkable to know, that, you know, you're part of people being able to eat. (4:131-134)

Showing livestock allows these families to feel like they are "contributing to our county, our state, the agricultural world" (4:772). The Wagner family found purpose in an opportunity to donate their animal to a local food bank. Noah stated he chose to donate his pig not for the recognition but "because I want to do it" (3:225-226).

On the other side, these families see of the discomforts agriculture. Three of the four families shared animal death or disease related experiences. Kayla Roberts recounted losing her heifer and the negative effects it had on her. She reflected,

> It was really hard on me and I avoided going to the barn and I don't know it's just really upset me .. I was going through this time where I hated showing. I didn't want to do it and it was the last thing I wanted to talk about. (1: 319-325)

The Wagner family learned that death and disease is a part of the learning process and they have come to except the reality that "if you don't want something to happen [to livestock projects], don't own 'em" (3:542).

These families have also discovered that through this process "you learn a lot about sacrifice". All four identified three areas of sacrifice: time, money and opportunities. The Johnson family described their daily time commitment:

> When we're in showing season, we get up and go feed in the morning. And then after school we will be at the barn for at least three hours every night. Just working sheep, getting sheep ready for shows, yeah it's a lot of time commitment (2:50-52).

Each family expressed that they "just don't have a lot of free time" (2-130). The all of the participating students stated that they "don't have much time after school to do very much" (3: 323-324) because they are having to invest so much time in their projects.

All participants also identified money as a large sacrifice. They saw their livestock projects as a "big financial commitment" (1: 348) and realized "it takes a long time to develop a program that money starts coming back around" (1: 349). The Johnson family acknowledged "the financial stress" showing livestock puts on their family. Finally the sacrifice of opportunities such as other activities and time for friends was identified by each family. The student participants shared their experiences of having to set priorities and give up other activities to show livestock. Emma Johnson stated:

> We both (Emma and Olivia) used to be involved in sports. And we were both girl scouts when we were little, we both took piano lessons, but as time goes on we really started to prioritize and figure out… this is what I want to do, this is what I'm committed to and some of the other stuff we were just kind of like- it's just kind of taken time that we would rather spend doing what we love. (2:116-120)

Noah Burns also recounted missing "a lot of football practices" and social events due to having to care for his animals. Sacrificing time with friends was also mentioned in all four interviews. Although most students are available to hang out on the weekends, the participants often have to tell their friends "they can't do that this weekend because they've got a show coming up" (2: 124-125). The students especially saw this as a challenging sacrifice stating it required them to make "adjustments with friends" (1: 375).

Davis's et al. (2000) also found students developed their character through the high points and struggles they were exposed to while showing livestock. In support of our findings, they also found families experience both the highs and lows together, leading to learning opportunities (Davis et al., 2000). These similarities provide reassurance however we have found that our livestock families have deeper struggles than losing or dealing with the reality of selling their animal at the end of the show (Davis et al., 2000).

Theme 5: The Showing Industry

Eccles and Wigfield (1995) described cost as the negative valence that would draw one away from an activity. Though there were a number of sacrifices and challenges noted in each of the cases, the true cost was most often connected to what Greg called "the showing industry" (4:161). Greg explained,

> The showing industry for me has changed a lot over the years. When I was involved in it, you didn't have so many of the livestock jocks and now I think it's . . . it's turned into a business for a lot of people. Um, I don't want to say the program's completely gotten away from what we're trying to do here, but I think a lot of it, you know, to be successful and to be honest in doing it, is really hard (4: 161-165).

In analyzing each of the cases, it was apparent these families perceive that exhibiting livestock has become more of an adult game, requiring greater financial resources, and riddled with those who do not go about the process honestly.

The financial burden was a sub theme that emerged. William shared that, "one of the things that I struggle with the most is we've gotten the show program to such an investment level that it's hard for the average person to get into it" (3:288-290). "I wish there was a way to get the skills that you gain through it but not have such an investment responsibility" (3:296-297). The need for increased financial investments was a result of the increased rigor of the activity. "Today you've got, gosh, feed costs that are so much now. . . and keeping them [show swine] in warm places, keeping wood chips, the facilities. Twenty years ago, it just wasn't that way" (3:298-300). "There's a lot of people that spend a lot of money in the livestock industry and we're not in that category" (2:175). Closely tied to the financial burden of remaining competitive in the show industry was the time and effort required. One case shared that "dad lives in the barn" (1:174). In describing the routine of the family one father shared, "we have a guy that comes and works with the girls once every two weeks. He'll work with them at shows, run over stuff. They are always being trained" (1:464-466). The burden and effort to remain competitive seemed to be approaching the limit in respect to perceived utility.

The final subtheme that emerged was a frustration with cheating. One father explained that, "We don't cheat. We will do it honest or we will not win. We raise our own animals. My kids don't show up to the show and grab a halter and go into the ring. They've earned it" (4:507-509). Eliza shared, "When you go in a show ring and [someone] beats you because. . . someone else has done the work for them – It's hard for our kids to understand how that is fair (4: 171-184). Though there have been numerous frustrating moments, as shared by Abigail, her children have learned that when they leave a show they know they have maintained their family's moral code (2:183). Inherently, this implies not everyone has done the same. Though families shared that showing has become more unethical, the discussions in all four cases support the top unethical practices in livestock exhibition reported by Nestor (2000) and Connors and Dever (2005): (a) paying extreme prices for animals to improve chances of winning, (b) parents or teachers preparing animals for show rather than youth, and (c) the grooming of show animals by professionals rather than youth. This is tied to the general idea of this theme – that exhibiting livestock can, and has, shifted to more of an adult industry rather than a child's learning experience. Table 1 summarizes the resolution of each of the four issue questions.

Table 1
Key Issues and Resolution

Issue Question	Resolution
ϑ_1: What task values drive the decision to exhibit?	Family's attainment value is grounded in their self-identity as a show family. Honesty, work ethic, tradition, family unity, and agricultural community typify this identity.

ϑ_2: What expectancies for success do families have?	Winning is not operationalized as a child's final place in a class. Rather, success seems to be tied to the children's' life skill development and family enjoyment of the activity.
ϑ_3: What are the family costs?	Costs include unrealistic financial pressures, a growing trend of *cheating* through professional assistance, and time commitments that actually prevent families from spending time together.
ϑ_4: Is utility greater than cost?	Families see the utility as far greater than the costs. Many of the costs actually become lessons for the children exhibiting livestock.

Discussion and Praxis

"The real business of case study is particularization, not generalization. We take a particular case and come to know it well" (Stake, 1995, p. 8). In that spirit, there is a great deal to learn from these four cases. First, the exhibition of livestock as a family activity was effective in building family relations in all four of these cases, which is consistent with the findings of Rusk et al. (2003) and Davis et al. (2000). Henderson and Mapp (2002) present overwhelming evidence that engaged families lead to better school performance, and suggest that all families could benefit from special efforts to engage families. Could livestock exhibition be that special effort? Regardless of where animals are housed, livestock exhibition should be a family event. Relieving parents of the responsibilities associated with livestock exhibition is detrimental to, not only the youth leaders assisting students, but also the families that are missing this opportunity for engagement. Strengthening family structures should not be overlooked as an important rationale for livestock exhibition.

Second, it was interesting that the development of job specific skills related to raising livestock were not often mentioned. Rather, families found it important for their children to be immersed in the agricultural community and develop an appreciation for the industry. Wooten et al. (2013) suggested that agricultural education teachers should work with those teaching *core* courses to standardize and deliver STEM concepts, implying that this activity would improve school performance. Based on overwhelming evidence that family engagement is one of the best predictors of school performance, would it not make sense to focus on getting more families involved instead? In these cases, families do not perceive academic performance as an expectancy or value associated with livestock exhibition. Family engagement could be the most valuable product of junior livestock exhibition.

Finally, it is essential that livestock exhibition maintain a realistic balance. Currently, each family found the utility to outweigh the costs. However, it did appear that the perceived costs were steadily growing, and the growing financial, ethical, and temporal demands were taxing at times. Are we creating a monster that cannot be controlled? What structures are in place to support the culture of community, love of agriculture, ethical behavior, and the value of hard work? The unethical activities noted by Connors and Dever (2005) have only become more prominent and are taking a toll on families' motivation to participate in livestock exhibition.

(Closing vignette) The show mom *wasted no time sharing why her family makes the enormous investment in junior livestock exhibition. "Our family shows because it is a family tradition. We show because a family that shows together stays together. Our children will know the joys and*

discomforts of an industry that means so much to us. . . and the world. We put our money into this activity because it trains our children for life. There are costs, but for us, the benefits are invaluable. We are a show family!

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What Influences Agricultural Education Students to Choose Teaching as a Career?

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Abstract

There has been a shortage of qualified secondary school agriculture teachers nationwide for over 40 years. Yet, a large number of students who seek careers as agriculture teachers were active participants in agricultural education and FFA in high school. The Factors Influencing Teaching Choice (FIT-Choice) Model was used as the theoretical framework for this phenomenological study which sought to explore how active participation in school-based agricultural education programs influenced students' choice to major in agricultural education and pursue a career in teaching. Seven agricultural education majors who participated in agricultural education and FFA in high school participated in a focus group interview. Transcripts of the focus group interview were analyzed and coded for thematic content using open, axial, and selective coding protocols. Five themes emerged from the data, which included, 1) socializer influencers, 2) social value 3) passion for agriculture, 4) alignment with personal values, and 5) agricultural education factors. The agricultural education factors theme was broken into four sub-themes, which include agriculture teacher encouragement, FFA events, increased self-perceptions through a quality program, and post-high school opportunities. Based on the findings, implications and recommendations for recruitment are discussed.

Introduction and Need for the Study

The agricultural education profession has been plagued with a shortage of teachers for more than 40 years (Kantrovich, 2010). The most recent supply and demand study revealed that in the beginning of 2014 school year, there were 76 full-time and ten part-time agricultural education vacancies yet to be filled (Foster, Lawver & Smith, 2014). Many agriculture teacher positions go unfilled every year because administrators are unable to find qualified candidates to fill positions. The lack of qualified agriculture teachers also impacts school districts desiring to open new programs. The failure to find sufficient qualified teachers to replace those who leave could mean termination of an entire Career and Technical Education (CTE) program.

Solving this teacher shortage in agricultural education is imperative if we are to adequately meet the scientific and professional agricultural workforce demands of this century. Today's agricultural and STEM employers throughout the U.S. report shortages of skilled workers (Goeker, Smith, Fernandez, Ali, & Theller, 2015; U.S. Congress Joint Economic Committee, 2012). Priority area three of the 2015-2020 National Research Agenda of the American Association for Agricultural Education places emphasis on attracting and developing the next generation of agricultural scientists (Stripling & Ricketts, 2016). These publications emphasize the importance of obtaining individuals to fill these positions as well as creating an educated workforce. One way to address these needs is through school-based agricultural education. According to Phipps and Osborne (1988), the most important function of school-

based agricultural education is to prepare youth for careers in agriculture. Fraze and Briers (1987) explained the longer and more involved students become in agricultural education and specifically in the FFA, the more likely they are to pursue an occupation in agriculture.

Solving the teacher shortage problem will require efforts on two fronts: recruitment of more teachers into the profession and retention of those teachers within the profession (Kantrovich, 2007). In this study, our aim was to address recruitment by exploring the factors influencing pre-service teachers' decisions to pursue a career as a teacher in agricultural education. In order to develop recruitment strategies, it is imperative that we understand the factors that influence students to choose agriculture teaching as a career, especially factors within our own school-based agricultural education programs. Despite this need, there is a lack of current literature exploring the agricultural education factors influencing one's choice to pursue a career as an agriculture teacher. Much of the literature exploring the factors influencing the choice to teach agriculture are outdated (Hillison, Camp & Burke, 1987; Arrington, 1985). Agricultural education and the education profession in general has experienced many changes over the past few decades. The social pressure to attain lucrative employment and a negative stigma surrounding teaching has increased in recent decades. With these changes, it is likely the motives for seeking a career in agricultural education have changed as well. Therefore, more current research exploring the factors of career choice in agricultural education is warranted.

The more recent literature available on factors influencing choice to teach agriculture has not fully addressed the questions: What influences career choice in agricultural education? And how does participation in school-based agricultural education programs influence one's choice to pursue a career as an agriculture teacher? Park and Rudd (2005) conducted a Delphi study with in-service teachers exploring the teaching practices that would increase recruitment of students into post-secondary agricultural education majors. However, they did not survey students, the ones making the decisions. In fact, they recommended, "Future research is necessary to determine the influencing factors associated with the decision to teach from the student perspective (p. 91)." In 2005, this call for research was partially met when Vincent, Henry, and Anderson (2012) explored why students of color choose to major in agricultural education. However, their study did not explore the factors from students not of color, the majority of which currently are agricultural education majors (Foster et al., 2014). Furthermore, no research exists exploring how agricultural education and FFA influences students' choice to major in agricultural education. Yet, most of the students who seek to pursue a career in agricultural education participated in agricultural education and FFA in high school. What factors and what experiences within agricultural education are motivating factors for deciding to teach agriculture? This research seeks to answer that question.

One of the most significant decisions a student will make during his or her high school and college years is which academic major and career to pursue. Choosing the right career that aligns with one's values and goals has implications for a lifetime of rewards and happiness. Recruiting students with skills and values that align with the career of teaching agriculture is paramount in working to solve the teaching shortage crisis. Students with matching skills and values would most likely be found within secondary agriculture programs. A variety of factors influence what students will major in and what career they will choose. According to Bandura (1986), students are more likely to choose a career in which they believe they can be successful,

have their needs met and be able to influence others. Self-efficacy, espoused as the concept of self-perceptions in the FIT-Choice model, is an important motive in selecting a major or career.

Theoretical Framework and Literature Review

The Factors Influencing Teaching Choice (FIT-Choice) Model was used as the theoretical framework for this study (Watt & Richardson, 2007). The FIT-Choice model is based on the expectancy-value theory (EVT), which has been used to understand the motivations that triggers individuals' behaviors, including the behavior of choosing a career (Eccles et al., 1983; Eccles & Wigfield, 2002). Based on the EVT, the FIT-Choice model was developed from themes emerging from both the teacher education literature as well as the career choice literature to explain why individuals choose teaching as a career (Watt & Richardson, 2007).

The FIT-Choice model framework consists of five influences on one's choice of a teaching career: *socialization influences, task perceptions, self-perceptions, values, and fallback career*. Watt and Richardson (2007) described *socialization influences* as positive teaching and learning experiences as well as significant people in the lives of individuals. Previous positive teaching and learning experiences can also include having good teachers. Significant individuals such as family, friends, teachers, and colleagues may influence an individuals' choice to teach as well. *Task perceptions* consist of two factors: task demand and task return. Task demand factors relate to the perceptions of teaching as a highly demanding and highly technical career requiring very specialized and technical knowledge. Task return involves the perceptions of teaching as a well-respected, high-status occupation, where teachers feel valued by society and salary is fair and good. *Self-Perceptions* are described as an individual's perceptions of their ability to teach. The FIT-Choice model separates *values* into three expectancy-value components: intrinsic, personal utility and social utility values. Intrinsic value describes an individuals' interest and desire for teaching as a career choice. Personal utility values relate to the quality of life teaching offers. These values might include time for family, job security, more secure income, opportunities to travel, and other benefit considerations such as length of the working day and frequency of school holidays and breaks. Social utility value describes the idea that individuals often choose to become teachers because of their strong desire to make a social contribution, enhance social equity, positively influence the lives of youth, or give back to society. The final component of the FIT-Choice model is fallback career which accounts for individuals who were not accepted in their first career choice, and who may have chosen teaching as a fallback career.

Utilizing the FIT-Choice framework, we seek to explore the motivations of agricultural education students to become agriculture teachers. Furthermore, we seek to explore how the influences of agricultural education programs influence students' decisions to major in agricultural education and pursue a career in teaching.

A variety of factors have been identified in the literature as influencing an individual's decision to become a teacher. Altruistic motives, such as making a contribution to society and being a role model for youth have been identified as motivating factors influencing students' choices to pursue teaching as a career (Kyracou & Coulthard, 2000; Lortie, 1975; Reid & Caudwell, 1997). According to the FIT-Choice framework, these are identified as social utility values. Intrinsic motives, such as opportunity to express creative abilities and the ability to

engage in an enjoyable subject matter have been identified as factors to pursue teaching as a career (Hayes, 1990; Lyons, 1981; Reid & Caudwell, 1997). These influencing factors are captured in the FIT-Choice model as intrinsic and personal utility values. The literature has also identified extrinsic motives, such as a good salary as influencing students' decision to choose teaching as a career. In agricultural education, Harms and Knobloch (2005) identified that students were motivated to teach agriculture because of the salary, the benefits it provided, and the opportunity for advancement. Vincent et al. (2012) found students of color were motivated to major in agricultural education because of the perception of financial stability it provided.

Social factors also influence one's career choice to teach. Key people such as family, friends, and former teachers have been identified as primary influences on choosing a career in teaching (Hayes, 1990; Hillman, 1994; Reid & Caudwell, 1997). Park and Rudd (2005) stated secondary agriculture teachers influence many decisions about a student's career and further education through teacher actions, comments, and instruction. Park and Rudd suggest these positive and encouraging interactions can also lead to a career in agricultural education.

Prior teaching and learning experiences can also influence a student's decision to teach. In agricultural education, research shows high school agricultural education courses and FFA experiences as the most influential factors in students' choice of career (Arrington, 1985; Edwards & Briers, 2001; Hillison, Camp, & Burke, 1987). Cole (1984) concluded that agriculture students who were actively involved in SAE and FFA activities were more encouraged to choose agricultural education as a college major than those who were not actively involved in those type of learning experiences. Despite these findings, literature in agricultural education has not examined how FFA and SAE activities influence students' choice of major.

Purpose and Research Questions

The purpose of this phenomenological research study was to explore reasons students who were active participants in secondary agricultural education programs select agricultural education as their academic major and plan to pursue a career in teaching. This analysis addresses National Research Agenda priority three which calls for research exploring the development of a highly qualified agriculture workforce and, recognizing the importance of agricultural educators (Stripling & Ricketts, 2016). The research questions guiding this research were: 1) what factors influence the choice to major in agricultural education and pursue teaching, and 2) in what way do experiences in the secondary agricultural education program influence one's choice to major in agricultural education and pursue teaching as a career?

Methods

This qualitative study used a phenomenological research design to obtain information regarding the motivation of students seeking a career in agricultural education. Phenomenological research seeks to describe the meaning of individuals' experiences of a phenomenon (Creswell, 2007). The phenomena of interest, shared by all the participants, is their major in agricultural education and shared interest in becoming secondary agriculture teachers.

Students participating in this study were accessed based on their participation of an online survey of a random sample of students in the College of Agriculture and Applied Sciences at Utah State University in which they indicated willingness to participate in the focus group interview. We selected participants from the accessible population through purposive sampling for maximum variation in an attempt to develop a wide picture of the phenomenon (Patton, 2002). Seven agricultural education majors who participated in agricultural education and FFA in high school participated in the study. Polkinghorne (1989) suggested between five and 25 subjects who have all experienced the phenomena of interest should be interviewed. Four participants were male and three were female and all reported to be White. Six of the students were between the ages of 19 and 23 while one of the students was over the age of 25 and considered a non-traditional student. One participant was a freshman, five were juniors, and one was a senior in the middle of the student teaching practicum. Three participants had changed their major to agricultural education after first seeking degrees in other disciplines. Four of the participants came from large multi-teacher agriculture programs in suburban areas while three originated from single-teacher and more rural programs.

The semi-structured interview consisted of a series of questions addressing topics about reasons for choosing agricultural education as a major, FFA, SAE, and agricultural education participation. Broad questions were asked that addressed topics of interest with some follow up questions to elicit more details (Denzin & Lincoln, 2011). Sample questions included, "Why did you choose to major in agricultural education?" and "How did FFA influence your decision to major in agricultural education?" with a follow up question: "What specific FFA events or activities had an influence on your decision and how?" The lead researcher served as the moderator for the focus group interview while another researcher took observational notes. The interviews lasted for 70 minutes and took place at the agricultural education facility.

The focus group interviews were audio-recorded and transcribed verbatim. The data collected were analyzed and coded for thematic content using coding protocols outlined by Auerbach and Silverstein (2003). Two separate researchers performed the coding process with constant checks for accuracy and reliability in coding. The process of coding was performed using open, axial, and selective coding (Auerbach & Silverstein, 2003). We used open coding to identify and describe the repeating ideas found in the text with consideration to the research focus and the theoretical framework of the study. We grouped these repeating ideas into logical and coherent groups. We then conducted axial coding, in which we examined how the categories might be related to each other. During this phase, we connected categories with subcategories. The final step in the analysis was selective coding where we renamed the themes and situated them within the theoretical framework of the study.

Rigor and trustworthiness were established for this study through measures of credibility, transferability, dependability, and confirmability (Harrison, MacGibbon, & Morton, 2001). To establish credibility, we used an outside source to review the transcription and coding for validation. We also utilized member checks and used a reflective journal to help identify any research biases. Transferability was attended to through the use of purposive sampling for maximum variation of characteristics of the participants as well as the use of rich, thick descriptions of the participants and their context (Maxwell, 2005). Finally, dependability and

confirmability were established through an audit trail, the use of a reflective journal throughout the process, and receiving approval of the findings from participants (Denzin & Lincoln, 2011).

Findings

Participants identified several motivating influences regarding their decision to major in agricultural education. Five themes with corresponding sub-themes developed through the analysis of the data which included, 1) socializer influencers, 2) social value 3) passion for agriculture, 4) alignment with personal values, and 5) agricultural education factors.

Theme 1: Socializer Influencers

Most of the participants spoke about key individuals who influenced their decision to pursue agricultural education. Each of the participants talked about key individuals, most of which they had close relationships with, encouraged them to pursue agricultural education. The encouragement was not always verbal, however, as many participants spoke about how they experienced or witnessed an agriculture teacher's impact on others, instilling a desire to be that same type of person. These key influencers that were spoken of by the participants included spouse, FFA advisor, extension agent, former teacher, and close relative.

Despite encouraging influences, participants also spoke of social pressure from individuals discouraging them from pursuing a degree in agricultural education. The participants shared that others had a negative opinion of teaching as a profession, mostly because of the lack of pay. One participant said, "That is always what you hear, you don't want to be a teacher, you don't make any money." Despite the social pressures discouraging these participants from pursuing a degree in agricultural education, other factors seemed to outweigh the opinions about teachers' salaries. One participant stated, "Regardless of cash that comes in or everybody else's opinion of educators, I'm going to be a teacher, I don't care what they think of it." The same student continues, "Regardless of the people that told me don't do it, I thought of it representing something big or something better, like agricultural education can be." This altruistic attitude emerged in the data as the second theme.

Theme 2: Social Value

A second theme emerging from the data was social value. The participants seemed to all convey a sense of altruism as they talked about why they want to become agriculture teachers. To the participants, being an agriculture teacher means exerting a positive influence in the lives of young people. This idea is what drives them to pursue a degree in agricultural education. The following participant statements support this theme:

- "As an agriculture teacher, you're also an advisor so you get to develop those relationships, you're more than just a teacher, you get to have an influence."
- "Being a part of something huge but still being able to make a difference, an impact on an individual level was probably what influenced me to become a teacher."
- "Agriculture teachers are not teachers, they're advisors, they're life coaches, they're mentors, they're always there for you. That's why I want to teach agriculture."

Students mentioned they didn't want to teach any other subject because agricultural education provides unique relationships and better opportunity to impact students' lives than any other subject. One student stated, "…The opportunities we get to spend with our students. We get to do professional development with our high school students. A lot of high school students don't get to experience that just through their classes. They get that through FFA, they get that through hands-on agriculture courses. We get to know our students better, we spend more time with them and we get to know their families." Another reason these participants are motivated to teach agriculture is because of their passion for it, which is the third theme.

Theme 3: Passion for Agriculture

A third theme that emerged from the data was the participants' passion for agriculture and their desire to share that passion with others. Because of their passion for agriculture, many of the participants described themselves as advocates and explained the best way to be an advocate was by teaching youth about agriculture. The following statements support this theme:

- "It's [agriculture] my passion. How cool is it that I can share my passion every day? I get to teach agriculture; I get to be a part of agriculture every day in the classroom."
- "I can share my passion for agriculture with others through being a teacher and get just as much enjoyment as any other profession can bring while moving agriculture forward and bettering the world and our community."
- "I want to be an advocate for agriculture, and that's why I changed my major."

Theme 4: Alignment with Personal Values

A fourth theme that emerged was alignment with personal values. This theme describes how teaching agriculture seems to fit nicely within the goals and values of each of the participants. The participants spoke about job security and the opportunities for family and leisure as an agriculture teacher. Many of the participants shared their feelings about their future and the type of life they want to live. They spoke mainly about their hopes to spend time with their future families as well as hobbies they can enjoy while working as an agriculture teacher. Most of the participants felt that being an agriculture teacher would allow them to pursue a lifestyle that aligned with their personal values and goals. Participants stated:

- "How many teachers get to bring their kids to activities? And you get to do fun things over the summer and your family is invited."
- "I could be an agriculture teacher, have a career, and still keep all of those things I worked hard for in high school and still keep them going as hobbies."
- "My agriculture teachers showed me how their career worked so well with their goals and hobbies and all their other stuff that they do, which made me realize I could do it too."

Theme 5: Agricultural Education Factors

A fifth and final theme that emerged was the influence of agricultural education factors, which shaped the participants' perceptions about teaching agriculture. One of the questions guiding this study was the way in which participation in the high school agricultural education program influences students' motivation to pursue agricultural education as a major. Participants

in this study continually referred to specific instances from experiences related to their participation in agricultural education in high school. This theme and sub-themes help to explain how participation in school-based agricultural education programs influenced these students' decisions to pursue a degree in agricultural education. This theme was broken into four sub-themes, which include agriculture teacher encouragement, FFA events, increased self-perceptions through a quality program, and post-high school opportunities.

Agriculture Teacher Encouragement. Most participants spoke in some way how their agriculture teacher was influential in their decision to pursue a degree in agricultural education. Though these participants went through agriculture programs that were vastly different, their experiences of their agriculture teachers encouraging them and talking to them positively about agricultural education as a career was a unifying characteristic among the participants. Participants were encouraged by their agriculture teachers in many ways including explicitly encouraging them to consider becoming an agriculture teacher, speaking positively about their jobs as agriculture teachers, showing students the joy that comes from teaching, and taking personal interest in their students' lives. The following participant statements support this idea:

- "It was originally my ag teacher who put the idea of agriculture education in my mind."
- "I spent a few afternoons, a few days chatting with my advisor and talking to him about his experience as a teacher, and it was at that point that I decided that I wanted to be an agriculture teacher, and I've stuck with it ever since."
- "My agriculture teacher related it to me that I could be an agriculture teacher…"

Despite these positive encouraging teachers, some of the participants shared moments from their high school experiences that were not so positive in nature. The participants shared how some of these moments or experiences made them think to themselves, "If I became a teacher, I would not do it like this…" At the time, some of the participants never thought about becoming an agriculture teacher, but as they entertained the thoughts of how they would do things differently, they seemed to open a window of opportunity for a career in agricultural education. One student recounts, "I saw where the program could be and I lived through what it wasn't and I wanted to change that in another kid's life." Another student stated, "If you have a crummy agriculture teacher like mine, you lose that opportunity and that potential to influence a kid to do good and be successful in life…I want to be able to make that difference in that kid's life, so they don't have the experience I did, so that they would have a better experience."

FFA events. Many participants identified specific moments in their life when they made the decision to become agriculture teachers, or when they decided agricultural education could be a possible career path for them. Many of these moments happened at FFA events away from the local school. Participants mentioned the State FFA Convention, National Convention, CDE events, and Teach-Ag workshops as catalysts for their motivation to pursue a career in teaching agriculture. For some, these events completely changed their perception of agricultural education. The following participant statements support this idea:

- "I also think the bus rides to and from conventions and contests—getting to know my agriculture teacher—that has just really solidified it all for me."

- "I was sitting at National Convention…and they did this campaign on Teach-Ag…and it just hit me at that moment that teaching agriculture is what I was supposed to do."
- "The big thing that got me was my ninth grade year when I went to nationals as an Agriscience fair participant. And then as soon as I saw nationals I was hooked because it was something so big, it was an organization that was huge that each person in the organization can make a difference in."

Self-perceptions through a quality program. Participants shared how their agricultural education program provided them with skills, experiences, and confidence that would enable them to be successful as agriculture teachers. One student said, "The things I learned, the growth that I saw in myself, prepared me to be an agriculture teacher. If it wasn't for that, I don't think I would have the public speaking skills or the necessary requirement for this kind of a career." For some students, participating in learning experiences through the FFA instilled in them a desire to share those same learning experiences with others. One student talking about his SAE experiences with showing livestock at the fair stated, "I learned what I needed to learn in class to make my SAE successful…and I really wanted to share it with people, I wanted to give that type of opportunity to other folks." For some students, a quality agricultural education program helped them develop a personal connection, a deeper appreciation, and passion for agricultural education, which then spurred their desire to stay connected with agriculture and agricultural education in the future. Although there was little evidence in the data to suggest SAE had a direct impact on students' choice to become agriculture teachers, it did seem to influence their decision to stay connected to agriculture. One student stated, "Because I loved my SAE project, you know, it directed me towards a career in agriculture."

Post-high school opportunities through agricultural education. Participants spoke about the many doors that were opened to them after high school graduation because of their participation in agricultural education. The post-high school opportunities these participants spoke of included an internship with a local extension agent, serving as an FFA state officer, and working with the local agriculture program during the summer as an intern. These opportunities helped keep the students connected to agricultural education in some way. Most of these participants hadn't made up their mind to teach agriculture until they participated in these post-high school experiences. Each of the participants shared how the opportunities to teach and do what agriculture teachers do were the solidifying moments. One student who served as a state officer spoke about the opportunity to teach other students in a classroom. He stated, "I had the opportunity [to teach] and to see that half-second gleam in their eyes, the fact of seeing that light bulb moment behind that kid's eye… in the classroom, that made it worth it for me, that really drew me in completely. That solidified my decision." Another student recounted how her internship with the local agriculture program over the summer solidified her desire to be a teacher. She said, "That [summer internship] made me one hundred percent sure that I knew that's [teach agriculture] what I wanted to do." Finally, one student speaks of her internship with an extension agent who had taught agriculture for a time, she said, "He's [extension agent] just what changed my mind. He told me how good of an experience he had while he was an agriculture teacher." These opportunities to interact with others in an agricultural education context were available to these students because of their agricultural education participation.

Discussion, Conclusions and Recommendations

This research study is limited in scope because of the small number of participants, limiting the generalizability of the findings (Maxwell, 2005). While this study may have the potential to be transferable to other settings, we make no attempt to generalize beyond the seven agricultural education students in this study.

Based on the findings of this study, we discovered five primary reasons participants were motivated to major in agricultural education and pursue a career in teaching. These included: (a) the encouraging influence of individuals within their social structure; (b) a strong desire to be a positive influence in the lives of students; (c) passion for agriculture and a desire to share that passion with others; (d) recognition of an alignment of teaching agriculture with personal values; and, (e) the influence of agricultural education program factors.

Participants in this study indicated key individuals, including their agriculture teachers, provided encouragement to select agricultural education as a major and to enter the teaching profession. Similarly, Park and Rudd (2005) found that encouragement from agriculture teachers is a positive factor in agricultural education career decisions. These findings are also congruent with those of previous studies on teaching career decision making (Hayes, 1990; Hillman, 1994; Reid & Caudwell, 1997). Some participants indicated feeling social pressure not to teach and encouragement to pursue a more lucrative profession. The influence of significant individuals on career decision identified in this study, both encouraging and dissuasive, align with the *socialization influences* component of the FIT-Choice model framework (Watt & Richardson, 2007). Personal encouragement of students to become agriculture teachers, speaking positively about the job, and showing students the joy that comes from teaching agriculture are important in influencing potential teachers. We echo the recommendation of Park and Rudd (2005) to agriculture teachers that "employing encouraging attitudes and behaviors, agriscience teachers could help recruit new teachers into the profession" (p. 91). Further, we recommend agriculture teachers identify students who show potential for becoming good agriculture teachers and then explicitly encourage them to consider agricultural education as a career

A strong desire to be a positive influence in the lives of students surfaced as a primary factor in the career decision making process for the participants in this study. Participants shared their desire to make a difference in lives of students, their desire to make a social contribution, and their excitement to work with youth in order to positively impact their lives. Hillison et al. (1987) also found that a desire to work with young people was a significant factor in the decision to teach agriculture. The FIT-Choice model framework (Watt & Richardson, 2007) described this factor as a *social utility value* in which individuals have a strong desire to make a social contribution, enhance social equity, positively influence the lives of youth, or give back to society. The opportunities provided to agriculture teachers to positively influence the lives of students should be highlighted to those who are exploring a career in agricultural education. Agriculture teacher educators must be honest with students about the challenges of the profession but also remind them of the benefits including the potential impact on next generation, opportunities for a good lifestyle, and opportunities to fulfill personal goals and values. This can be accomplished by sharing examples and by inviting current teachers to serve as guest speakers highlighting the positive aspects of the profession. These practices should also

be included in teacher induction programs to help in-service teachers maintain their focus on why they chose the profession, even though at times it is challenging and discouraging.

Participants expressed a passion for agriculture and a desire to share that passion with others. Several participants mentioned a desire to be an advocate for agriculture. Vincent et al. (2012) found students of color were motivated to choose agricultural education as a major for similar reasons. This factor is congruent with the *intrinsic value* component of the FIT-Choice model framework (Watt & Richardson, 2007). Because these students enjoy the subject matter in agriculture and enjoy being a part of the agricultural industry, they are intrinsically motivated to be involved with it as a career.

The realization that teaching agriculture aligned with participants' personal values, particularly related to lifestyle, family, and hobbies, emerged as a factor influencing the decision to teach agriculture. The FIT-Choice model framework (Watt & Richardson, 2007) described this factor as a *personal utility value* in which individuals find value in job security, time for family, and job transferability. Participants in this study primarily indicated concern about time for family and personal interests and hobbies. Job security and job transferability were not mentioned by the participants. These students decided to teach agriculture because they saw modeled by their agriculture teachers that they could have time for family and hobbies while teaching. These are potentially important values to many students and should be highlighted as a benefit of being an agriculture teacher.

Participants' own experiences in agricultural education changed their perceptions about agricultural education as a career and were identified as key factors in career decision. These findings are supported in the agricultural education literature (Arrington, 1985; Cole, 1984; Edwards & Briers, 2001; Hillison et al., 1987). The influence of prior teaching and learning experiences aligns with the *socialization influences* component of the FIT-Choice model framework (Watt & Richardson, 2007). Further, these prior experiences in agricultural education helped shape the participants' *self-perception* of their ability to teach agriculture. Park and Rudd (2005) found program quality was key to recruiting students. Therefore, agriculture teachers should try to develop programs that are well-rounded and give students a variety of opportunities. Our findings support this idea because participants spoke about the influence of out-of-school FFA events, post high school opportunities that were available to them, and personal development through participation in various FFA activities on their career decision. It is especially crucial to get as many students to district, state, and national FFA events, as these were identified as catalysts and key moments in participants' motivation to select agricultural education as a career. Additionally, we recommend agriculture teachers, state staff, and agriculture teacher educators provide post-high school opportunities connected to agricultural education. These opportunities might include working in schools as a paraprofessional in agricultural education or volunteering to help prepare students for competitive events.

Involvement in agricultural education programs influenced the other themes identified. Examples of this include: (a) putting them in contact with key individuals who encouraged them to become agriculture teachers; (b) making them self-aware of the positive impacts agricultural education had on their lives; (c) teaching them the value of service towards others; (d) helping them develop a deep-rooted passion for agriculture; and (e) helping them see how being an

agriculture teacher aligns with their own personal values and goals and could be a worthwhile and rewarding profession to pursue. State and national FFA leaders are encouraged to add components to state and national conventions that encourage students to consider agricultural education as a career. Activities might include workshops to encourage teaching as a profession or an agricultural education career development event. These opportunities can help students experience positive aspects of agricultural education teaching as a career and can show how the career may align with their personal values and goals.

Some components of the FIT-Choice model framework were not discussed by the participants in this study. One of these was the *task perceptions* related to teaching agriculture, including task demand and task return. Although agricultural education is a demanding and highly technical field, this area was not mentioned as a reason participants chose to pursue agricultural education. Social status and salary were not mentioned as reasons for choosing agricultural education as a career. Disparately, Vincent et al. (2005) found that the perception of financial stability and status as an agriculture teacher were key reasons for selecting agricultural education as a major. The selection of agricultural education as a *fallback career* was mentioned by participants and the fact that three of the participants changed their major from something else to agricultural education further substantiates this factor. However, it did not emerge as a central theme. Using the findings and conclusions of this study, we have developed a conceptual model for factors influencing students' choice to pursue a career in agricultural education with implications for recruitment (Figure 1). This conceptual model is based on the FIT-Choice model framework (Watt & Richardson, 2007) and adapted for agricultural education. Based on this model, we recommend future research towards the development of a quantitative instrument.

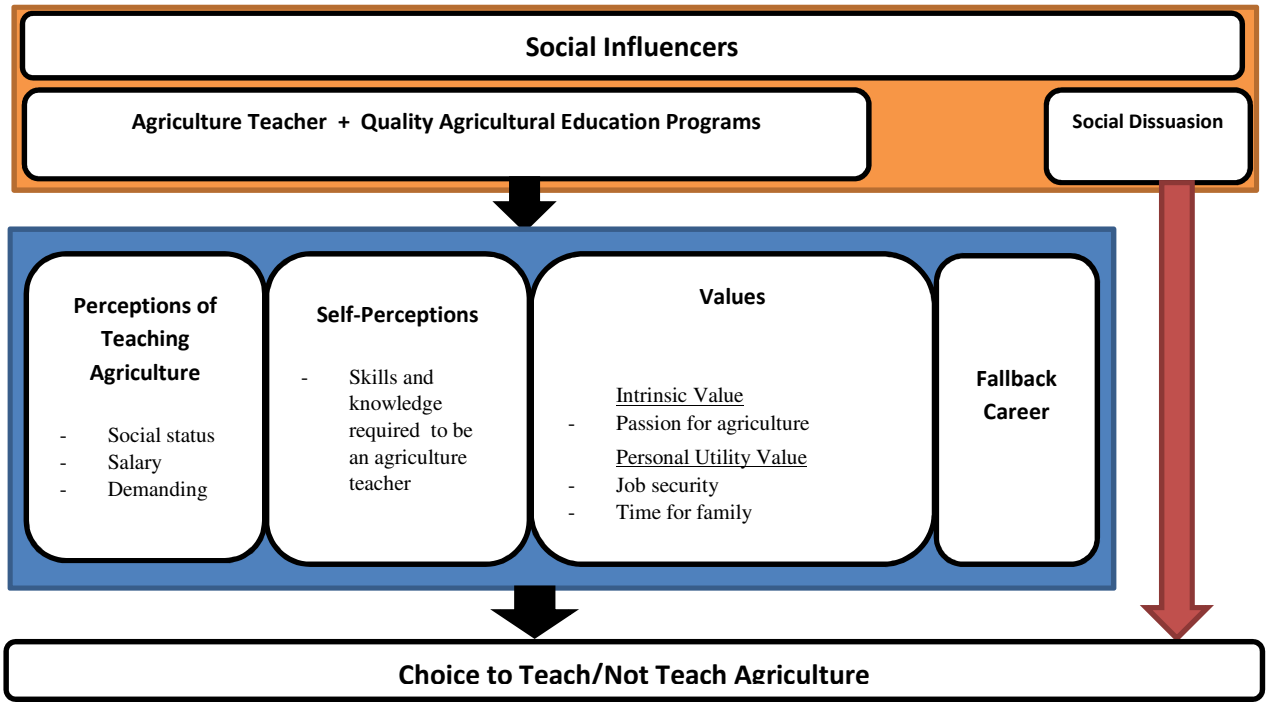

Figure 1. Conceptual model for career choice in agricultural education

We recommend additional research be conducted on the influence of SAE programs in the decision to teach agriculture. While the SAE program was not identified as a theme directly influencing the career decision, it did seem at least secondarily related as part of the complete program of agricultural education. Several additional questions could be asked, including whether or not SAEs have a greater influence on students not raised in production agriculture. We further recommend that additional studies be conducted that include students from more diverse backgrounds. Vincent et al. (2012) looked only at students of color. The participants in this study all had backgrounds in rural or suburban school-based agricultural programs and were all FFA members. What influences students who come from more urban schools or students with little agricultural education background to choose agricultural education as a career? These are pertinent questions if agricultural education is to be more representative of the population and able to serve a more diverse student population with less traditional background in agriculture.

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A Qualitative Analysis of Preservice Agriculture Teachers' Development during Student Teaching

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Abstract

The student teaching practicum experience is designed to give preservice teachers practical experience with teaching and is an important step in development. However, little is known about the developmental process of agriculture teachers during student teaching. Utilizing the theory of teacher concerns (Fuller & Brown, 1975) as a theoretical lens, The purpose of this qualitative case study was to determine how preservice teachers develop over the first half of the student teaching practicum by examining the way they talk about concerns. Written reflections of five different cohorts from 2010 through 2014 were analyzed at two different points in time (week two and week seven). During the first two weeks of student teaching, three themes emerged, including: 1) teacher/student identity crisis, 2) teaching competence: "I don't know how, what, or who…", and 3) adjusting to change. During week seven, the concerns changed, which indicated the student teachers were developing towards becoming teachers. The three themes that emerged from the data for week seven were: 1) building professional relationships, 2) engaging students, and 3) it's about time: work-life balance. A concerns based model of preservice agriculture teacher development during the student teaching phase is proposed.

Introduction and Review of Literature

The process of becoming a teacher has been extensively studied and discussed in the scientific and academic community worldwide (Caires, Almeida, & Viera, 2012). In most cases, the beginning stages of becoming a teacher begin at universities in teacher preparation programs. Darling-Hammond (2010) stated teacher preparation programs should include combination of didactic as well as clinical curriculum used to prepare the student for a culminating student teaching experience. As one component of this process, the major aim of the student teaching experience is to offer student teachers a "first" teaching experience through which they can develop specific competences (de Jong, Tartwijk, Wubbels, Veldman, & Verloop, 2013).

Consequently, the student teaching experience has been described as the capstone experience of the preservice teacher education program and is critical to the process of preparing future teachers (Borne & Moss, 1990; Edgar, Roberts, & Murphy, 2011; Edwards & Briers, 2001; Kasperbauer & Roberts, 2007). Caries et al. (2012) stated the student teaching practicum is a period of intense search and exploration of self, others, and the new scenarios; including a focus on cognition, emotion, doubt, fear, procedural and pedagogical growth, and the meaning that emerges from the student teaching experience.

Despite agricultural education's similarity to other teaching disciplines in terms of the requirements, scope and structure of the student teaching practicum, agricultural education is unique in its own way. In agricultural education, teachers are not only expected to develop strong classroom and laboratory practices, but also develop the ability to manage and supervise an active FFA chapter, conduct Supervised Agricultural Experience programs (SAE), foster community and school partnerships, and plan and market the local program (Torres, Ulmer, & Aschenbrener, 2008). The additional competencies required of agriculture teachers, may lend itself to unique challenges in the process of development for preservice agricultural education teachers. However, despite the unique characteristics of agricultural education, there is no known framework for preservice teacher development that explains the transitioning process from student to teacher. Therefore, one central purpose of this study is to begin to develop a framework in agricultural education that explores the development of student teachers towards becoming practitioners.

Designed to be a transition from student to practitioner, some student teachers progress and assimilate into teaching better than others. Challenges and successes give students experiences that help them mature and grow into professionals. In agricultural education the challenges student teachers experience include technical competence, student comprehension, teacher-student relationships, respect, student engagement, and motivation (Thieman, Marx, & Kitchel, 2012). Further, the success of a new teacher has been linked to a positive student teaching experience and the most important experience completed through the teacher development program (Borne & Moss, 1990; Harlin, Edwards, & Breirs, 2002). Despite the literature identifying the challenges and successes of student teachers, there is a dearth of literature regarding preservice agriculture teacher development and the influence of certain challenges towards their development in transitioning from a student to a teacher.

Caires et al. (2012) suggest answering the question what are student teachers' main difficulties and concerns, while they cope with the constraints and challenges of teaching practice and their teaching career? It is important to identify what challenges student teachers face in order for preservice agriculture teacher education programs to take steps to assist students in overcoming these challenges. Therefore, several questions remain. What type of challenges do preservice agriculture teachers face as they begin the transitioning process from student to practitioner? Do student teachers overcome challenges in the early stages of their student teaching experience or are they more persistent problems that may need to be addressed more heavily in preservice programs or in teacher induction programs when they enter the profession? Examining student teacher concerns may be able to shed light on the development of becoming a professional practitioner.

Theoretical Framework

A number of theoretical models exist that aid in the understanding of teacher development (Burden, 1990; Fuller, 1969; Fuller & Brown, 1975; Katz, 1972). One prominent theory guiding research in teacher development, and the theoretical basis for this study, is the theory of teacher concerns (Fuller & Brown, 1975). Initially, Fuller (1969) proposed a concerns based model of teacher development that focused on the concerns of teachers beginning at the

preservice level and continuing throughout their career. The theory consisted of three phases which included: 1) pre-teaching phase, 2) early-teaching phase: concerns about self, and 3) concerns with pupils' needs. In the first phase, Fuller explains that preservice teachers, before the student teaching experience, rarely had specific concerns relating to teaching because they were not sure what to be concerned about. In this phase, preservice teachers only thought about teaching from a student perspective. In the second phase, which takes place during student teaching and first years of teaching, Fuller theorized that concerns were about the teaching self and centered on self-adequacy. Teachers in this stage are concerned with their own abilities and knowledge of the subject matter, fear of failure, getting along with other personnel, and presenting themselves as professionals. In the third stage, Fuller theorizes that teachers' concerns shift from themselves and to the needs of the students. Teachers in this phase measure success by student achievement rather than teaching evaluations.

Later, Fuller and Brown (1975) reexamined the 1969 theory of teacher development and readjusted their theory. They hypothesized that teachers continually experience concerns in three developmental stages; self, task, and impact concerns. However, concerns of student teachers are primarily situated within the stages of self and task. Self-concerns are associated with the student teachers' experiences in the classroom, receiving evaluations, being accepted, and their ability to perform adequately in a professional environment (Marshall, 1996; Watzke, 2003). After student teachers work through their concerns of self, they begin to worry about more of the task related issues. Task concerns focus on the daily situation of teaching including, teacher duties, materials, teaching methods, and classroom management. This stage is generally characterized by early career teachers. Finally, teachers transition away from their concerns of self and task and are more concerned about the impact their teaching has on students as well as larger educational issues and policies that impact students (Srivastava, 2007).

Other theories of teacher development exist verifying the concept of teacher development through stages as Fuller and Brown proposed (Burden, 1990; Katz, 1972). However, little attention is paid to the preservice stage of development in these theories. The theory of teacher concerns (Fuller & Brown, 1975) is ideal for studying preservice teacher development because it explicitly addresses concerns of teachers beginning in the preservice stage of development. Nonetheless, it does not address student teaching in great detail as it combines this important step of development with beginning teachers. Despite the growing knowledge about the process of becoming a teacher, several key questions remain unanswered regarding student teacher concerns and development. Understanding the level of student teachers' concerns and their development should be used as a means to help guide activities of teacher education.

Purpose and Objectives

Utilizing the theory of teacher concerns (Fuller & Brown, 1975) as a theoretical lens, The purpose of this study was to determine how preservice teachers develop over the first half of the student teaching practicum. Additionally, we sought to develop a framework for preservice agriculture teacher development during the student teaching phase. With its focus on field-based teacher preparation programs, this study aligns with research priority area five of the 2016-2020 AAAE National Research Agenda (Roberts, Harder, & Brashears, 2016). The primary research

question guiding this study was how do preservice teachers talk about their concerns at the beginning and the middle of the student teaching experience?

Methods and Procedures

This qualitative multiple case study was conducted to obtain information about preservice agriculture teachers' main concerns during the early phases of their student teaching practicum. Multiple case studies focuses on more than one particular entity or event over different time periods in order to gain a deeper understanding of that particular entity or event (Creswell, 2013). In this study, the multiple cases consisted of five different cohorts of preservice teachers during the beginning weeks of the student teaching practicum.

Participants

The participants in this study included all of the preservice teachers who participated in the student teaching practicum at Utah State University in the years 2010 through 2014. In total, 47 preservice teachers from the years 2010 through 2014 participated in this study (see Table 1). A variety of student teaching centers were used over the course of the five years of data. However, no changes were made to the student teaching program during those five years. All of the preservice teachers had completed a 30-hour field experience at the same location as the student teaching practicum which occurred during the preceding semester. This field experience, which occurred during the fall semester, enabled the participants to meet with their cooperating teacher to plan curriculum for the upcoming semester, meet many of the students in the agricultural education program, and take part in some teaching experiences before beginning their student teaching in the spring semester. The student teaching practicum was a 14-week experience in which the student teachers immersed themselves into the day-to-day efforts of teaching agriculture. By the end of the second week, student teachers were required to have taken over from the cooperating teacher one to two classes, and by the fifth week, were teaching the cooperating teachers' full load of classes.

Table 1
Summary of Participants

Cohort	Number of participants	Gender of participants
2010	19	10 Female; 9 Male
2011	6	2 Female; 4 Male
2012	6	4 Female; 2 Male
2013	6	3 Female;3 Male
2014	10	4 Female; 6 Male
TOTAL	47	23 Female; 24 Male

Procedures

As part of the student teaching practicum, participants were required to register for a one-credit seminar, designed to provide the preservice teachers an opportunity to reflect and discuss their student teaching experiences. IRB approval was obtained, and the primary researchers for the study were not involved in the Seminar Course instruction. One particular form of data suitable for collection for case studies are emails (Creswell, 2013). Each week of the student teaching experience, participants were asked to respond to one email regarding specific experiences and topics for reflection. For this study, the focus was to elicit information from the participants about their concerns during the first two weeks of the student teaching practicum and then during the middle of the student teaching practicum (week 7). The email prompt to elicit this information was sent to the participants during their second week of student teaching and the seventh week of student teaching. The email prompt from the first two weeks consisted of four questions: "What are the successes of your first week of student teaching? What are the challenges? What has surprised you the most about beginning your teaching experience? During week seven, the students were asked to respond to the following prompt: "How do you feel about your student teaching experience at this point? What have you learned? What are the successes you have experienced? What are the challenges? Greatest area of growth?" Participants answered the email prompts by drafting a written response, which was emailed to the instructor and all other student teaching cohort members via the reply-all function in email. The participant responses from the email prompts were gathered by the instructor of the course and shared with the research team through an online file storage and synchronization service.

Data Analysis

The data collected through emails were analyzed and coded for thematic content using coding protocols outlined by Auerbach and Silverstein (2003). The data from the first week were kept separate and were coded separately from the seventh week prompt. The codes and themes were not compared until the final step of the analysis. Three separate researchers performed the coding process with constant checks for accuracy and reliability in coding. The process of coding was performed using open, axial, and selective coding (Strauss & Corbin, 1998). Initially, the researchers used open coding to identify and describe the repeating ideas found in the text. The researchers grouped these repeating ideas into logical and coherent groups. The research team then conducted axial coding, examining how the categories might be related to each other. During this phase, the researchers connected categories with subcategories. The final step in the analysis was selective coding where researchers interacted with the data in a more abstract level of analysis (Strauss & Corbin, 1998). During this phase, themes and codes from both sets of data were compared and the researchers renamed the themes and situated them within the theoretical framework of the study.

Trustworthiness

Rigor and trustworthiness were established for this study with a focus on measures of credibility, transferability, dependability, and confirmability (Harrison, MacGibbon, & Morton, 2001). To establish credibility, the researchers used an outside source to assess the validity of the data and data analysis by reviewing the participant email responses and researchers' coding of the data. Additionally, the researchers utilized a reflective journal to help identify any research biases. Through the use of thick descriptions of the student teaching context and the participants,

transferability was established. Dependability and confirmability were established through an audit trail and the use of a reflective journal throughout the process, (Denzin & Lincoln, 2011).

Limitations

Because qualitative studies are more suited for few cases, this case study is limited in scope and therefore limits the generalizability of the findings (Maxwell, 2005). Despite the relatively large number of participants over a five-year span of data collection, this research has the potential to be transferable to other settings. However, the researchers make no attempt to generalize further and acknowledge the findings from this study are limited to the context of the five cohorts of preservice teachers who participated in the study. Additionally, the email prompts sent to the participants did not allow for follow-up questions and conversation, which may have limited the opportunity for in depth answers, clarification, and follow up on points of interest. Furthermore, because the participants were asked to reply to the prompts through email rather than conversation, this may have limited the amount of description the participants would have otherwise shared. Finally, because data were collected and analyzed by the researchers of this study, there is inherent bias that may have influenced the data analysis.

Findings

The purpose of this study was to determine how preservice teachers develop over the first half of the student teaching practicum by examining the way they talk about concerns. During the first two weeks of student teaching, three themes emerged, including: 1) teacher/student identity crisis, 2) teaching competence: "I don't know how, what, or who…", and 3) adjusting to change.

Theme 1: Teacher/Student Identity Crisis

Most of the participants shared their concerns of being identified as a teacher. The idea of seeing themselves as teachers and acting in a professional teaching role was a difficult transition for some of the students. At the beginning of the student teaching experience, it seems these teachers had not fully embraced their new teacher identity. The participants expressed times where they struggled to take on the teacher identity and abandon their identity as a student. There seemed to be a dilemma; they wanted students to like them as friends but at the same time revere them as teachers. These concerns not only were internally motivated, as they struggled to see themselves as teachers, rather than students, but also externally motivated, as participants felt their students did not perceive them as teachers, but as peers. The participants shared examples of how they didn't know how to act around students and what appropriate "teacher behavior" was. The following participant statements support this theme:

- "It was difficult not dancing during the state dance, "I had a hard time being 'the teacher' that night."
- "I have a difficulty separating myself from the students, and just being a teacher."
- "Student's aren't seeing me as a teacher, but as their peer."
- "I am trying so hard to be their teacher and not their friend."

- "I want the students to like me and respect me. My biggest challenge is balancing being a teacher versus being their peer."
- "I'm not 100% myself around students…I don't know how to act around them."

Theme 2: Teaching Competence: "I don't know how, what, or who…"

Another theme emerging from the data was teaching competence. Participants' concerns focused on themselves and their lack of perceived ability to function as a competent teacher. Most of the participants shared their frustrations and concerns about planning lessons, managing the classroom, their own content knowledge, and their students. Overall, participants didn't feel they knew how to be a teacher. Four sub-themes comprise this theme: 1) how do I plan for instruction, 2) how do I teach and manage my classroom at the same time, 3) what am I supposed to know and teach, and 4) who are these students?

How do I plan for instruction? The first sub-theme captures the participants' concerns about planning lessons. They shared their frustrations about not knowing how to plan lessons with the right amount of time for each daily and unit lesson. They expressed their struggle with how to put different pieces into a lesson so students would understand the material. The following participant statements support this sub-theme:

- "I either have too much planned or not enough. Things I think will take twenty minutes take five, and things I think should take five take thirty."
- "The challenge that I face is dividing it up into a two week unit, adding material with labs, and adding facts and knowledge, so that students actually understand the material."
- "The biggest challenge that I face every day is deciding just how much of the material I want to cover in my classes."

How do I teach and manage my classroom at the same time? This sub-theme captures the idea that participants struggled to reconcile teaching while managing classroom behavior at the same time. Participants spoke about not knowing how or what to do in unfamiliar situations, especially regarding student discipline. The following participant statements support this sub-theme:

- "At first I was too worried about content and teaching it that I had students off task"
- "I get so wrapped up in the lesson that I become the cause of commotion."
- "I couldn't seem to keep them focused on the lesson, little conversations going on everywhere in the class."
- "In my classes there is unnecessary chatter that I have had a hard time stopping, and keeping their attention, especially with things that they are not interested in."
- "It is a bit tough to break a bad habit when there is little organization or structure."
- "I don't know what proper means of discipline are."
- "I have a hard time filling the time. The last five minutes of class are a disaster"

What am I supposed to know and teach? Most of the participants shared their concerns about feeling "unprepared" and "unqualified" to teach because of the lack of content knowledge they felt they had. Participants felt they didn't know the content well enough to be a

good teacher. Participants also shared they had a lack of knowledge of school policies and didn't know how to plan for or deal with different situations. Additionally, participants questioned the content they were teaching and didn't know if it was "the right stuff" they were supposed to teach. The following participant statements support this sub-theme:

- "I feel so unprepared to teach the students in some of the areas because I am still learning the content myself."
- "I do not know enough of the topics to teach it, and at times I feel I am unqualified."
- "I don't know the content, teaching six different classes is hard to know everything"
- "How do I know I am teaching the right stuff? I find myself wondering if I am covering material that I am supposed to."
- "I honestly had no idea what the schools policy was and I had no idea what to do. There was nobody to ask so I handled the situation as best as I could."

Who are these students? Most of the participants shared their frustration with their students. It seemed the students and their behavior were not what they expected. The participants quickly came to realization of who their students were, and it did not seem to be congruent with their previous conception of them. This lack of congruence seemed to be one of the connecting threads for their struggle in planning and delivering effective instruction because they hadn't anticipated the range of student differences. They discussed their surprise and frustration in working with students who were not motivated to participate and their concern with how to deal with them. The following statements support this sub-theme:

- "I'm surprised…my classes are loaded with students that just don't seem to care, or students that come to school for the social aspect."
- "How do I get the students that aren't as concerned about their grade motivated to learn anything and participate in class?"
- "I'm wondering if students are even interested in anything."
- They just don't care and half of them are only in there for the credit."

Theme 3: Adjusting to Change

The third theme emerging from the data during the first two weeks of student teaching was the participants' struggle to adjust to change. The participants expressed concerns about change in two forms; 1) changes in the demands for their time and 2) changes from a new work environment. Concerning time, participants came to a realization of the amount of time that was required in order to survive during student teaching. Many shared their tendency to procrastinate, but learned they could not do that as a teacher. Many shared their concerns about not knowing how to manage their time because it seemed student teaching was taking all of their time. Concerning the change in work environment, many of the participants struggled to settle in to their new work location. Some expressed how they didn't feel like they belonged because there was no space for them to work or put their belongings. The following participant statements support this sub-theme:

- "Perpetual procrastination…I try to get ahead but just get further behind."

- "My biggest challenge has been adjusting to my wife working during the evening and having to try to teach myself how to cook dinner for my kids."
- "One of the challenges that I have had this first week is that I don't really have anywhere to go or put my stuff."
- "Some challenges this week were just getting my surroundings and organizing myself. It has been hard adjusting to this new place."
- "The only computer workspace I have is at the front of [teacher name] classroom and this is inconvenient. I am a distraction if I work while she is teaching. So my prep hours have been less productive."

After the seventh week of student teaching, participants again shared their concerns. In comparing the themes that emerged from the data from week two with week seven, some of the same concerns still persisted but they had taken on a different focus for the student teachers. Other concerns had disappeared altogether being replaced with different concerns. The three themes that emerged from the data for week seven were: 1) building professional relationships, 2) engaging students, and 3) it's about time: work-life balance.

Theme 1: Building Professional Relationships

This theme from week seven seemed to derive from the participants' identity crisis they experienced in their first weeks of student teaching. However, the participants moved their conversations away from their struggle to find their identity as a teacher to the struggle of developing teacher/student relationships. Now, instead of focusing on themselves and trying to find out their identity, it appears the teachers embraced their identity as a teacher and were trying to develop appropriate relationships with their students. In the process, the participants shared how these new relationships helped them in their teaching. While some of the participants expressed how they struggled to be a professional teacher and develop relationships at the same time, most explicitly labeled themselves as teachers. Some participants shared how they learned to be a teacher rather than a friend to the students. The following participant statements support this theme:

- "As I've gained more experience and built relationships with my students, teaching has become easier and less stressful."
- "Students are not satisfied with me as a teacher."
- "…Being professional but maintaining good relationships with my students."
- "I have been creating good teacher relationships with students."
- "I have learned how to be friendly, but not their friend."
- "Building student rapport and engaging students goes a long way."
- "I am a teacher and not a student."

Theme 2: Engaging Students

The most drastic change from the first weeks of student teaching to the seventh week was how the participants spoke about their teaching practice. During the first weeks, students were concerned about planning lessons, content knowledge, classroom management, and learning who

the students were. By week seven, there was no more discussion of how to plan and about not knowing the content. Participants had moved past these concerns about their own ability as teachers, and they had developed confidence they could plan and teach the content. The focus shifted from their own abilities of planning and content knowledge to engaging the students. In the early weeks of student teaching, participants shared their frustrations with learning that their students lacked motivation to participate. However, in week seven, these participants focused their conversations heavily on motivating and engaging these same students. The participants still talked about classroom management as a concern but did so in the context of student engagement. They moved their conversations away from reacting to discipline problems to preventing classroom behavior issues through student engagement. The following participant statements support this theme:

- "…My greatest challenge is trying to get kids involved that have no desire to be there while keeping those that already know the material from getting bored."
- "One of my biggest challenges has been motivating my students to do anything."
- "I am still struggling to mix things up for my classes to keep them engaged."
- "I struggle working with some of my students who act really childish and whine about everything. I try to get them motivated but they just complain."
- "I think the students have just been "getting by" for so long, that they have convinced themselves they are not smart enough to get an A, so they don't try as hard as they should."

Theme 3: It's About Time: Work-Life Balance

The third theme that emerged from week seven was work-life balance. In the beginning weeks of student teaching, participants discussed having to personally adjust to the time demands of student teaching. By week seven, this concern morphed into the realization that the time demands of student teaching also effects their personal and family life. During week seven, participants recognized the time commitment required to be successful and realized it was not congruent with their previous lifestyle. Participants struggled to reconcile personal life and student teaching because of the overwhelming amount of time required for student teaching. During week seven, the point at which the student teachers were teaching a full load of classes, there seemed to be a sense of frustration that teaching had created a time conflict with their own personal lives. The following participant statements support this theme:

- "Teaching takes first priority because it is so time consuming. Teaching puts everything else second. It is hard to put my family second."
- "I am used to doing things of my own free will, but now my life revolves around teaching and preparing lessons. I don't have time to decide what I want to do anymore."
- "It is so much better to prepare for class two days ahead than the night before. It gives you room to breathe and live."
- "Teaching is very time consuming, you have to be willing to put in the time."

Discussion, Conclusions, and Recommendations

The theory of teacher concerns (Fuller & Brown, 1975) posits student teachers would exhibit behaviors of the pre-teaching phase or early-teaching phase of teacher development. According to the theory of teacher concerns, in these phases, education students and student teachers struggle to personally connect with teaching concerns and only think about teaching from a student perspective. However, as student teachers gain more exposure and experience in the classroom, their concerns shift from student-self to teacher-self and then to the students. During these transitional stages, teachers realize and are concerned with their inadequacies but eventually move to thinking about student success and learning. It is clear that participants in this study showed evidence of transitioning from pre-teaching to the early teaching phase of teacher development during the first half of student teaching. The findings of this study suggest the participants started out with a focus on "self" and transitioned to "task." No evidence exists from this study that suggests any of the participants were approaching the "impact" phase.

The findings of this study support findings in agricultural education that student teachers often experience challenges related to technical competence, teacher-student relationships and (Thieman, Marx, & Kitchel, 2012). Based on the findings of this study, we propose a model of preservice agriculture teacher development during the early student teaching phase (see Figure 1). We acknowledge this study only examined the first half of the student teaching experience. We recommend other studies duplicate this research with the scope encompassing the entire student teaching experience. In order to expand the generalizability of this study, we also recommend research that quantitatively explores the themes that emerged from this study.

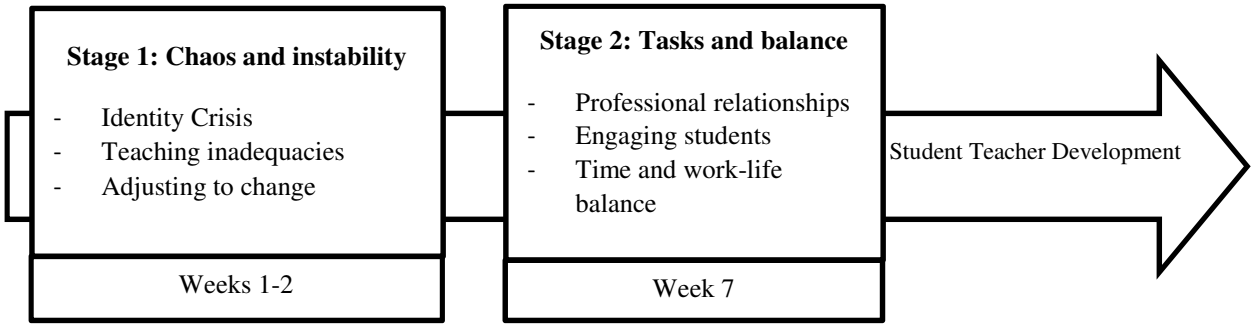

Figure 1. Concerns Based Model of Preservice Agriculture Teacher Development during the Student Teaching Phase.

When looking at the themes that emerged, the students' concerns changed over the course of the first half of the student teaching experience. The first two weeks of student teaching was characterized by instability and chaos while the seventh week was characterized by task and balance concerns. The transition from student to teacher and letting go of their student identity was a challenge for these participants. However, by week seven, the student teachers seemed to have found their identity and were focused on building positive teachers-student relationships. The student teachers had moved from concerns about "self" to concerns about "task."

During the first weeks of student teaching, participants were clearly concerned about their teaching inadequacies. The participants expressed their concerns with lesson planning, classroom management, content knowledge, and understanding the students. Fuller and Brown

(1975) argue that teachers in the "task" phase of development are often concerned with daily teaching tasks that include teaching methods and classroom management. Fuller and Brown suggested this phase is characterized by early-career teachers. However, the participants in this study shared their concerns in the "task" phase during their first two weeks of student teaching. Participants shared concerns in both the "self" and the "task" phase of teacher development as they began their student teaching experience. By week seven however, the student teachers did not seem to be concerned about how to plan for lessons and content knowledge of specific subjects, rather, their concerns were focused on the task of how to engage students. Although participants were still not focused on student learning and success as the outcome, and were still in discussing concerns in the "task" phase, they were beginning to think of teaching more broadly than just the task itself. They were beginning to think of teaching as a process that engages and requires student motivation to happen.

The participants in this study expressed concerns about their students. It seemed there was a lack of congruence between who the students were (how they would act and their motivation for participation) and the reality. Although these participants interacted with many of the students during their clinical experiences before student teaching, they were still surprised by the students' behavior. Perhaps preservice teachers are not able to understand student motivations until they are more fully engaged in the teaching role. Fuller and Brown (1975) describe that preservice teachers as juniors and seniors often do not fully understand teaching or the students because they have not been exposed to enough teaching. Perhaps, clinical or early field experiences before student teaching should enable preservice teachers the opportunity for more teaching experiences and more opportunities to interact with students in an authentic classroom setting. Furthermore, teacher educators should be frank with preservice teachers about the realities of students in today's 21st century secondary school classrooms. We recommend teacher educators place emphasis on teaching strategies to engage and motivate students in the learning process.

During the first weeks of student teaching, participants realized the time and effort required to survive their student teaching experience. Evidence from this study suggests the participants were not prepared for this change. To this point in their education and preparation to become a teacher, it seems they were able to just "get by." However, they realized this was not possible during student teaching and required a change in time management and lifestyle. Throughout the first half of student teaching, the participants continued to share their concerns about working so many hours. During the first weeks, it was more of a realization that their current lifestyle would have to change to keep up with the demands of student teaching. By the seventh week, participants were concerned with how the new lifestyle of working so many hours on student teaching was effecting other domains of their life.

The first signs of work-life balance began to emerge during student teaching and became even more evident by week seven. Perhaps the issue of work-life balance should be explicitly discussed in teacher preparation courses rather than waiting until the students experience it in the field. Some of the participants in this study mentioned that because of the difficulty in balancing student teaching and life, they questioned whether or not they wanted to become a teacher. By discussing strategies for personal and time management and coping with stress with preservice teachers during the teacher preparation courses, they might be able to have a more positive

student teaching experience and one that will keep them excited about their future in the profession. Furthermore, we recommend careful placement of student teachers with programs and cooperating teachers that spend excess time at work, especially regarding student teachers with other important life commitments (e.g. married). Teacher educators need to assess student teaching placement sites and ask the question, is this cooperating teacher going to teach the student to burn out of the profession or will he/she help the student teacher balance work and life while still maintaining a strong agricultural education program?

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Factors Correlated with the Teaching Efficacy of Beginning Agricultural Education Teachers

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Abstract

Teacher efficacy studies in agricultural education have primarily focused on documenting the perceived teaching efficacy of agriculture teachers. A limited number of studies have focused upon the factors that may help shape those efficacy beliefs. Therefore, the primary purpose of this study was to investigate the factors that may contribute to the teaching efficacy beliefs of beginning agriculture education teachers. These factors included perceived collective efficacy, perceived principal support, and perceived teacher preparation program quality. The population for this study included all agriculture teachers in Missouri and Kansas (N=213) who had not completed more than five years teaching agricultural education. The instruments used in this study included a modified version the Teachers' Sense of Efficacy Scale – Short Form, the Principal Behavior Scale, the Collective Efficacy Scale – Short Form, and the Teacher Preparation Scale. Collective efficacy and perceived teacher preparation program quality were found to have substantial and moderate correlations with perceived teaching efficacy. It is recommended that future research be conducted regarding the status of the perceived collective efficacy of the agricultural education profession. Recommendations and plans to develop new and existing programs to increase the collective efficacy of individual schools and the agricultural education profession are discussed.

Introduction/Theoretical Framework

Priority area three of the National Research Agenda for the American Association for Agricultural Education states ". . . that adequate numbers of well- prepared, highly effective agricultural educators . . . be made available to meet current and future needs " (Doerfert, 2011, p. 24). These needs will be met by ". . . developing the models, strategies, and tactics that best prepare, promote, and retain new professionals" (Doerfert, 2011, p. 9). Addressing the retention portion of the priority is vital if the profession is to stay viable as Clark, Kelsey, and Brown (2014) indicated "approximately 50% of agriculture teachers leave within the first six years of teaching". In attempts to address the retention issue plaguing the profession, the study of teacher efficacy has become an important topic among agricultural education researchers (Swafford, 2014). Identifying those factors that influence the efficacy beliefs of beginning teachers may provide baseline data from which programs can be improved or developed to further increase efficacy beliefs of beginning teachers.

Agricultural education has been described as a challenging profession (Talbert, Camp, & Heath-Camp, 1994) and one that "eats its young" (Halford, 1998, p. 38). Prompting the inclusion of the study of teacher efficacy is warranted as Bandura (1997) suggested that people who are efficacious tend to show more effort and persistence when faced with difficult tasks. Supporting this, Burley, Hall, Villeme, and Brockmeier (1991) concluded that teachers who are more efficacious about their teaching are less likely to pursue careers in other fields. Specific to

agricultural education, Knobloch and Whittington (2002) indicated teachers who are more efficacious about their teaching will be more motivated, be persistent in challenging situations, and may remain in the profession longer than their less efficacious contemporaries.

Agricultural education researchers have identified factors that may influence teacher efficacy including teacher preparation programs (Whittington, McConnell, & Knobloch, 2006) and teacher support within the organization (Swan, Wolf, & Cano, 2011). Researchers outside of agricultural education have identified similar factors (Capa, 2005) and have suggested perceived collective efficacy may be influential as well. Perceived collective efficacy refers to how a group views its shared capabilities to perform given tasks (Bandura, 1997; Goddard, Hoy, & Woolfolk Hoy, 2000). Skaalvik and Skaalvik (2007) argued "high collective self-efficacy leads to challenging goals and persistence in teachers efforts to meet those goals" (p. 621). These researchers later argued that "such a cultural context promotes student engagement and achievement, which again enhance individual teachers' sense of self-efficacy" (p. 621).

Teacher's sense of efficacy, often referred to as individual teacher or teaching efficacy can be defined as "teacher's judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (Tschannen-Moran & Woolfolk Hoy, 2001, p. 783). The study of teacher efficacy finds its origins in a study conducted by the RAND Corporation that examined teacher characteristics and student learning (Armor et al., 1976). Studies of teacher efficacy have been conducted to develop a conceptual understanding of teacher efficacy (Gibson & Dembo, 1984; Guskey & Passero, 1992; Rose & Medway, 1981; Tschannen- Moran, Woolfolk Hoy, & Hoy, 1998), attempt to understand other relationships or outcomes in teaching situations through the lens of efficacy (Allinder, 1995; Meijer & Foster, 1988; Midgley, Feldlaufer, & Eccles, 1989), and identification of factors influencing teachers' sense of efficacy (Capa, 2005). Within the profession of agricultural education studies have been conducted to better understand the teacher efficacy of preservice, early career, and experienced teachers (Burris, McLaughlin, McCulloch, Brashears, & Fraze, 2010; Knobloch, 2006; Roberts, Harlin, & Briers, 2008; Roberts, Harlin, & Ricketts, 2006; Stripling, Ricketts, Roberts, & Harlin, 2008; Whittington, McConnell, & Knobloch, 2006).

Researchers agree that the preservice teacher education programs have an impact on beginning teachers' sense of teaching efficacy (Whittington, McConnell, & Knobloch, 2006). Ross, Cousins, and Gadalla (1996) noted that adequate preservice teacher preparation may influence teaching efficacy by reducing uncertainty about one's ability to perform teaching behaviors. Still more, Rubeck and Enochs (1991) found that university level coursework related to future teaching requirements predicted teaching efficacy.

Researchers have noted that teachers' perception of their preservice teacher preparation program was significantly related to their sense of efficacy about their teaching effectiveness (Darling-Hammond, Chung, & Felow, 2002; Raudenbush, Rowen, & Cheong, 1992). Furthermore, Ross (1992) found evidence that teachers' sense of efficacy increased when they had received learning opportunities that improved their teaching skills. Teachers who felt better prepared were more likely to believe they could reach all of their students, manage classroom problems, and teach all students to high levels (Darling-Hammond et al., 2002). "Those who felt underprepared were

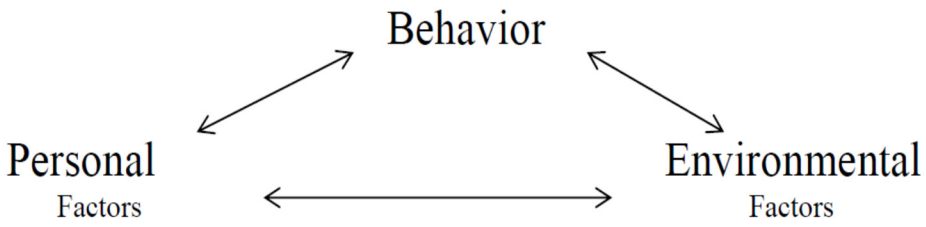
significantly more likely to feel uncertain about how to teach some of their students and more likely to believe that students' peers and home environments influence learning more than teachers do" (Darling-Hammond et al., 2002, p. 294). These same teachers also indicated that they would less likely choose teaching again if given the choice and were more likely to leave teaching for another profession (Coladarci, 1992; Evans & Tribble, 1986).

The support for beginning teachers with in a school organization is a key element in assisting those teachers as they address the major job demands they encounter. A quality relationship with an effective principal "… may alleviate the influence of job demands (e.g. work overload, emotional and physical demands) on job strain" (Bakker & Demerouti, 2007, p. 316). This is supported, as teachers who report greater efficacy beliefs tend to do so when they receive more effective principal support (Tschannen-Moran & Woolfolk Hoy, 2001). As important as effective leadership and support is to a beginning teacher's efficacy, a lack of or ineffective support is just as damaging. Lack of administrative support has been linked to disengagement from work (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

Principal support has been found to be a significant predictor of school effectiveness (Hoy, Tarter, & Wiskoskie, 1992), which has been linked to collective efficacy (Goddard & Goddard, 2001), which has, in turn, been linked to personal teaching efficacy and school administration satisfaction (Pajares, 2002). Hoffman, Sabo, Bliss, and Hoy (1994) identified trust in the principal as significant. Lewandowski (2005) noted, "since trust is a part of organizational support, it is believed to influence teacher performance," (p. 32).

Research has indicated the perceived collective efficacy of a school may have significant influence on the perceived teaching efficacy of its faculty (Goddard, Hoy, & Woolfolk Hoy, 2004). However, teachers tend to work almost exclusively in their own classrooms and, from an outside perspective, may appear to be oblivious to external school climatic forces. However, Bandura (1997) noted, people working independently with a group do not function in isolation and are not totally immune to the influence of those around them. Bandura (1997) further noted, the resources, impediments, and opportunities provided by an environment determine, in part, how efficacious individuals within the environment can be. Therefore, as Bandura (1997) noted, it is within acceptable reason to expect a positive relationship between a teacher's sense of efficacy and the perceived collective efficacy of a school. To take the concept a step further, the influence of perceived collective efficacy of a school "may be especially pronounced for novice teachers as they are socialized into the teaching profession" (Tshannen-Moran, et al., 1998, p. 221).

The theoretical framework for this study was grounded in Bandura's (1986) social cognitive theory. Causation of human behavior as explained by Bandura's (1986) social cognitive model is a triadic reciprocal interaction between personal factors, behavior, and environmental factors. Therefore, human behavior is determined by the bidirectional interaction of these factors. However, the influence of each factor on one another may not be equal (Bandura, 1989). One factor may be stronger or weaker than the others and may not occur simultaneously (Bandura, 1989).



Bandura's triadic reciprocal determinism model. Adapted from Pajaras (2002).

Bandura's (1986) social cognitive theory is rooted in the belief that human action is a result of a variety of influences, in addition to environmental factors only (Pajares, 2002). Behaviorists would argue that inner thoughts or processes transmit behavior, rather than cause it, and therefore, do not warrant investigation (Pajares, 2002). Conversely, Bandura (1986) argued that people make sense of their psychological world through introspection. However, behaviors are influenced by environmental factors but, it is vital that people use cognitive processes to determine their behavior based upon those environmental factors (Bandura, 1986). To substantiate the point, James (1981) argued that ". . . introspective observation is what we have to rely on first and foremost and always" (p. 185). Bandura (1986) added, ". . . a theory that denies that thoughts can regulate actions does not lend itself readily to the explanation of complex human behavior" (p. 15).

Found within Bandura's (1986) social cognitive theory is the concept of self-efficacy. Perceived self-efficacy refers to the beliefs one holds regarding the capabilities to perform actions at designated levels (Bandura, 1997). Efficacy judgments are "…concerned not with the number of skills you have, but with what you believe you can do with what you have under a variety of circumstances" (Bandura, 1997, p. 37). Bandura (1997) further noted self-efficacy beliefs influence the courses of actions people choose to pursue, how much effort is put forth, and how long they tend to persevere in challenging situations.

Self-efficacy beliefs are formed based upon four main sources of information: enactive mastery experiences, vicarious experiences, verbal persuasions, and physiological states (Bandura, 1997). Enactive mastery experiences produce ". . . stronger more generalized efficacy beliefs than do modes of influence relying solely on vicarious experiences, cognitive stimulations, or verbal instruction" (Bandura, 1997, p. 80). Therefore, people need opportunities to practice behaviors in order to master them (Knobloch & Whittington, 2002). Consequently, Capa (2005) noted, ". . . as learners master skills, they tend to raise the expectation that they will be able to master those skills further" (p. 20). Further, Bandura (1997) explained, as failure tends to lower self-efficacy, success tends to raise it.

Purpose of the Study

The purpose of this study was to identify the perceived level of teaching efficacy of beginning agricultural education teachers in Missouri and Kansas and to investigate the factors that may affect their self-perceived teaching efficacy. Teaching efficacy factors included support within

the organization (principal), teacher preparation program quality, and perceived efficacy of the organization.

The research objectives were:

1. Describe selected personal demographic characteristics of beginning agricultural education teachers.
2. Describe the professional characteristics of the beginning agricultural education teachers including, teaching efficacy, perceived teacher preparation program quality, perceived principal support, and perceived collective efficacy.
3. Describe the relationships between the study variables teaching efficacy, perceived teacher preparation program quality, perceived principal support, and perceived collective efficacy.

Methods and Procedures

The population for the study (*N*=213) included secondary agricultural education teachers in Missouri and Kansas who had been teaching four years or less, and were licensed or completing licensure through an approved program. Teacher names and contact information were obtained from the Missouri Department of Elementary and Secondary Education and the Kansas Department of Education. Nonresponse error was controlled by comparing on-time (*N*=103) respondents to late (*N*=77) respondents (Miller & Smith, 1983), and by the use of procedures outlined by Dillman, Smyth, and Christian (2009). No significant differences were found between the two groups; therefore, the data were combined, resulting in a final response rate of 84.5% (*N*=180). Data were collected using an instrument developed by the researcher and administered using the internet survey provider SurveyMonkey®.

Data were collected during June and July. Following the procedures outlined by Dillman et al. (2009), an initial pre-notification e-mail informing the participants of the study and requesting their participation. Subsequently, the participants were sent the online instrument. Approximately one week later, participants who had not responded to the first request were sent the first reminder (third contact) requesting their participation. Two weeks after the initial contact participants who had not yet responded were sent a reminder e-mail with a request to participate and a link to the online survey. One week later, those who had not responded were contacted via telephone and their participation was again requested.

The scale used to measure teaching efficacy was a modified, with permission from the authors, version of the Teachers' Sense of Efficacy Scale-Short Form (TSES-SF) (Tschannen-Moran & Woolfolk-Hoy, 2002). The TSES-SF is a 12-item scale that measured teaching self-efficacy across three constructs: Efficacy in Student Engagement, Efficacy in Instructional Practices, and Efficacy in Classroom Management.

Principal support was measured using the Principal Behavior Scale which is a sub-scale of the larger Organizational Climate Description Questionnaire for Secondary Schools (OCDQ-RS) (Hoy, Tarter, & Kottkamp, 1991). This scale contained seven items and measured a teacher's perception of their principal's efforts to motivate teachers by indicating the observed frequency of practices such as the principal using constructive criticism and setting an example by working

hard while being helpful and genuinely concerned with the personal and professional welfare of the teachers. Perceived collective efficacy was measured using the Collective Efficacy Scale-Short Form (CES-SF) (Goddard, 2002). The CES-SF is a shortened version of Goddard, Hoy, and Woolfolk Hoy's (2000) Collective Efficacy Scale. The CES-SF contained 12 items and measured, as perceived by the beginning teachers, the shard perceptions of the teachers in a specific school that the efforts of the faculty will have positive effects on students (Goddard, 2002). Perceptions regarding teacher preparation program quality were measured using a researcher prepared scale. This scale was developed based upon the National Quality Program Standards for Secondary (Grades 9-12) Agricultural Education established by The National Council for Agricultural Education (2009). It contained 10 items in Likert-type format and elicited data from the participants regarding how they perceived the preparation to teach that they received from their preservice teacher education program. The scale included five response choices and ranged from 1 "Not At All" to 5 "Very Well".

Since the Preservice Teacher Preparation Scale was specifically designed to collect information regarding a single dimension, preservice teacher education program quality, the use of factor analysis was used to determine if the scale was unidimensional. However, before the factor analysis was conducted, a Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA) was computed to determine if conducting a factor analysis was appropriate. An MSA of .83 was found and according to Hair et al (2010) an MSA of .50 should be obtained before factor analysis should be occur. Upon the computation of the component factor analysis and initial factor matrix, only one factor was identified. Factor loadings for the items on the scale ranged from .72 to .89. The combined scale was pilot tested with a group of 30 early career agriculture teachers who taught in a state not used in the research study. Internal consistency was determined to be $\alpha = .94$.

Findings

The age of the beginning teachers ranged from 23 to 55 with a majority of the teachers between 23 and 27. Ninety-four of the respondents were female (52%), and 86 (48%) were male. Most of the teachers (85%) completed a traditional route to teacher certification, which included a student teaching experience. The majority of the teachers (89%) were enrolled in agricultural education in high school and were FFA members.

Objective two sought to describe the professional characteristics of the participants including teaching efficacy, teacher preparation program quality, principal support, and perceived collective efficacy. Perceived teaching efficacy data were reported through summated mean scores. The respondents tended to agree to very strongly agree with the statements regarding their perceived ability to engage students and manage their instructional strategies. The respondents tended to feel more efficacious about their instructional strategies of ($M = 7.02$; $SD = 1.33$) than for classroom management ($M = 6.87$; $SD = 1.23$) and student engagement of ($M = 6.47$; $SD = 0.89$). These data can be found in Table 1.

Table 1

Teaching Self-Efficacy Constructs for Beginning Agricultural Education Teachers

Efficacy Constructs	*M*	*SD*
Instructional Practices	7.02	1.33
Classroom Management	6.87	1.23
Student Engagement	6.59	1.07

Note. 9-point scale.

According to the overall mean score for the scale (*M* = 3.47, *SD* = .80), the beginning agriculture teachers indicated their teacher education program adequately prepared them to teach agricultural education. The beginning teachers indicated they were well prepared to "pursue professional growth through continued participation in professional development," (*M* = 3.76, *SD* = 1.00) "deliver curriculum in an integrated model that incorporates classroom and laboratory instruction, experiential learning, and leadership & personal development," (*M* = 3.74, *SD* = .93) "provide students with opportunities for the development and application of knowledge and skills," (*M* = 3.74, *SD* = .91). On the other hand, the teachers indicated they were least prepared to "utilize advisory councils to determine areas for program improvement," (*M* = 3.09, *SD* = 1.14) and "manage students supervised agricultural experience programs." (*M* = 3.07, *SD* = 1.10). It should be noted that 14 participants did not complete these questions as it was indicated they did not complete a teacher education program. These data are found in Table 2.

Table 2
Level of Teacher Preparation Program Quality as Perceived by Beginning Agricultural Education Teachers

Program Quality Statements	*M*	*SD*
Pursue professional growth through continued participation in professional development.	3.76	1.00
Deliver curriculum in an integrated model that incorporates classroom and laboratory instruction, experiential	3.74	0.93
Provide students with opportunities for the development of knowledge and skills.	3.74	0.91
Assess student learning.	3.73	0.88
Motivate students to participate in FFA programs and activities.	3.58	1.06
Coordinate year-round instruction & laboratory instruction, experiential learning, and leadership & personal development.	3.46	1.05
Market the agricultural education program to community stakeholders.	3.28	1.13
Create and foster partnerships to assist in developing and supporting the agriculture education program.	3.27	1.04
Utilize advisory councils to determine areas for program improvement.	3.09	1.14
Manage student supervised agricultural experience programs.	3.07	1.10
Scale Total	3.47	0.80

Note. *N* = 166. Response options: 1 = Not At All, 2 = Somewhat, 3 = Adequately, 4 = Well, 5 = Very Well. Interpretive scale: 1.00 – 1.49: Not At All; 1.50 – 2.49: Somewhat; 2.50 – 3.49: Adequately; 3.50 – 4.49: Well; 4.50 – 5.00: Very Well.

Respondents rated the level of perceived principal support regarding seven behaviors displayed by their building principal. A 4-point anchored scale, with the response choices: 1 = *Rarely Occurs*, 2 = *Sometimes Occurs*, 3 = *Frequently Occurs*, and 4 = *Very Frequently Occurs*, was used to obtain the respondents' perceptions regarding each item. The means for this scale were interpreted as follows: 1.00 – 1.49: Rarely Occurs; 1.50 – 2.49: Sometimes Occurs; 2.50 – 3.49: Frequently Occurs; 3.50 – 4.00: Very Frequently Occurs.

With a summated scale mean of 2.80 (*SD* = .70), the principals were perceived by the beginning agriculture teachers as frequently displaying supportive behavior. The beginning agriculture teachers identified "the principal sets an example by working hard," (*M* = 3.07, *SD* = .84) and "the principal looks out for the personal welfare of the faculty" (*M* = 2.96, *SD* = .93) as the areas where they perceived the most supportive behavior. Conversely, the beginning agriculture teachers were least likely to perceive "the principal goes out of the way to help teachers" (*M* = 2.65, *SD* = .94). These data can be found in Table 3.

Table 3
Level of Principal Support as Perceived by Beginning Agricultural Education Teachers

Principal Support Statement	*M*	*SD*	Rarely Occurs	Sometimes Occurs	Frequently Occurs	Very Frequently Occurs
The principal sets an example by working hard	3.07	0.84	7	36	74	63
The principal looks out for the welfare of the faculty	2.96	0.93	11	49	57	63
The principal uses constructive criticism	2.80	0.79	8	54	84	34
The principal explains their reason for criticism to teachers	2.72	0.88	16	53	76	35
The principal compliments teachers	2.71	0.88	15	58	72	35
The principal is available after school to help teachers when assistance is needed	2.70	0.93	22	46	76	36
The principal goes out of the way to help teachers	2.65	0.94	16	73	49	42
Scale Total	2.80	0.70				

Note. Response options: 1= Rarely Occurs, 2 = Sometimes Occurs, 3 = Frequently Occurs, 4 = Very Frequently Occurs. Interpretive scale: 1.00 – 1.49: Rarely Occurs; 1.50 – 2.49: Sometimes Occurs; 2.50 – 3.49: Frequently Occurs; 3.50 – 4.00: Very Frequently Occurs.

To assess perceived collective efficacy, the participants completed the Collective Efficacy Scales – Short Form (Goddard, 2002). This scale is designed to determine the collective efficacy of an entire school faculty as perceived by each member of the faculty. In practice, each member of a teaching faculty would complete the instrument and all would be totaled and a mean score computed. The mean score would then be standardized and compared to a normed set of data to determine the collective efficacy of the teaching faculty of a specific school. In this specific study, the scale was used to determine how the agriculture teachers perceived the collective efficacy of the faculty with whom they taught. Goddard and Goddard (2001) indicated how a teacher perceives the teaching efficacy of colleagues has an influence on individual teaching efficacy.

The agriculture teachers in the study tended to perceive their school as a safe location for students to learn (M = 691.54, SD = 124.11). They also perceived their fellow faculty members as efficacious regarding their abilities to produce meaningful student learning (M = 621.14, SD = 149.29), motivating their students (M = 526.41, SD = 136.86), and managing student disciplinary issues (M = 522.93, SD = 171.54). However, the teachers in the study were less positive about the opportunities that their community presented to ensure that students will learn (M = 473.39, SD = 168.05) or that the home lives of their students provided advantages for them to learn (M = 291.74, SD = 206.54). These data are presented in Table 4.

Table 4
Faculty Collective Efficacy Scores as Perceived by Beginning Agricultural Education Teachers

Collective Efficacy Statement	*M*	*SD*
Learning is more difficult at this school because students are worried about their safety. [a]	691.54	124.11
Teachers here don't have the skills needed to produce meaningful student learning. [a]	621.14	149.29
Teachers in this school believe that every child can learn.	619.40	129.45
If a child doesn't want to learn, teachers here give up. [a]	530.75	169.83
Teachers here are confident they will be able to motivate their students.	526.41	136.86
Teachers in this school do not have the skills to deal with student disciplinary problems. [a]	522.93	171.54
Teachers in the school are able to get through to the most difficult students.	496.86	127.13
Drug and alcohol abuse in the community make learning difficult for students here. [a]	476.00	211.06
The opportunities in this community help ensure that these students will learn.	473.39	168.05
These students come to school ready to learn.	398.64	160.70
Students here just aren't motivated to learn. [a]	378.65	155.41
Home life provides so many advantages that students here are bound to learn.	291.74	206.54
Perceived Collective Efficacy Scale	502.29	99.66

Note. Response options: 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4

= Slightly Agree, 5 = Agree, and 6 = Strongly Agree. [a] Reverse coded.

Following the procedures outlined by Goddard (2002) a mean collective efficacy score was computed and standardized using the following formula: CE = 100(CE – 4.1201) / .6392 + 500. Utilizing the formula proposed by Goddard (2002), the mean standardized collective efficacy score of the participants in the study regarding how they perceived the collective efficacy of the faculties with whom they taught was 502.29 (*SD* = 99.66). Goddard (2002) indicated that a collective efficacy score of 500 indicated a faculty that was average with regard to collective teaching efficacy when compared to the representative sample of schools used to standardize the scale. The distribution of collective efficacy scores was documented by Goddard (2002) and modeled a normally distributed bell curve. Therefore, the teachers in this study perceived the collective efficacy of the individual faculty with whom they taught as neither overly positive nor negative.

Objective 3 sought to describe the relationships between the study variables teaching efficacy, teacher preparation program quality, principal support, and perceived collective efficacy. The results of the Pearson product-moment correlation revealed statistically significant relationships among the selected variables. For those relationships that were statistically significant, the set of descriptors published by Davis (1971) were used to interpret the strength of the relationship. It should be noted that correlations including the preservice teacher education variable included an $n = 166$ as fourteen teachers indicated they had not completed a preservice teacher education program, and thus, data was unavailable for those teachers.

Low correlations were identified between principal support and perceived teacher education program quality ($r = .153$, $n = 166$, $p = .048$), principal support and teaching efficacy ($r = .173$, $n = 180$, $p = .022$), and principal support and perceived collective efficacy ($r = .267$, $n = 180$, $p < .001$). Moderate correlations were identified between preservice teacher education program quality and perceived collective efficacy ($r = .391$, $n = 166$, $p < .001$); and teaching efficacy and preservice teacher education program quality ($r = .400$, $n = 166$, $p < .001$). A substantial correlation was identified between teacher efficacy and perceived collective efficacy ($r = .513$, $n = 180$, $p < .001$). These data can be found in Table 5.

Table 5
Correlations Among Teaching Efficacy and Study Variables

Variable	Teaching Efficacy	Collective Efficacy	Teacher Preparation	Principal Support
Teaching Efficacy	1.00			
Collective Efficacy	.513[a] (<.001)	1.00		
Teacher Preparation	.400[b] (<.001)	.391[b] (<.001)	1.00	
Principal Support	.173[c] (.022)	.267[c] (<.001)	.153[c] (.048)	1.00

Note. [a] substantial association; [b] moderate association; [c] low association

Conclusions/Recommendations/Implications

From the findings of this study it can be concluded that perceived collective efficacy, preservice teacher preparation program quality, and principal support are all interrelated and provide varying degrees of influence on the teaching efficacy of the beginning agricultural education teachers. How the beginning agriculture teachers perceived the faculty with whom they worked significantly impacts their beliefs about their own teaching. Tschannen- Moran, Woolfolk Hoy, and Hoy (1998) indicated collective efficacy's influence on teaching efficacy may be especially pronounced for beginning teachers. From a cultural context standpoint, perceived collective efficacy is the aspect most strongly related to teachers' sense of efficacy (Goddard, Hoy, & Woolfolk Hoy, 2004). Bandura (1997) noted people working independently within a larger group are influenced by those around them. Coleman (1990) further suggested that social norms within an organization develop in order for members of the organization to influence the actions of others in the group especially when the consequences of those actions impact the collective whole.

The quality of the preservice teacher education program completed by beginning agriculture teachers significantly influences their personal teaching efficacy beliefs. Ross (1992) indicated teachers' sense of efficacy increased after participating in learning activities that improved teaching skills. Participation in teacher preparation programs provide authentic teaching opportunities for preservice teachers, which beginning teachers can reflect upon as prior experiences thus, providing a foundation for efficacy beliefs. Darling-Hammond et al (2002) indicated teachers who felt better prepared were more likely to believe they could teach all students to high levels. Since completing preservice teacher education programs are an influence on beginning teachers' sense of efficacy, providing a quality program is vital to teacher success. In this study, the beginning teachers felt the least prepared to manage advisory councils and support supervised agricultural experience programs. These are needs which cannot be denied and must be included in all preservice programs. Further investigations identifying the deficiencies within in teacher preparation programs should be conducted to improve the quality of instruction and experiences provided preservice teachers.

However, in this study, the concept of principal support and its relationship with teaching efficacy is mixed, at best, when compared to the relationships of collective efficacy and teacher preparation with teaching efficacy. This conclusion is not entirely surprising as researchers in areas outside of agricultural education have published conflicting results about this phenomenon. Tschannen-Moran and Woolfolk Hoy (2001) indicated teachers who reported greater teaching efficacy beliefs tended to do so when they perceived more effective principal support. Conversely, as Tschannen-Moran and Woolfolk Hoy (2007) pointed out, teachers are going to form personal beliefs about their teaching abilities whether there is support from an administrator or not.

The beginning agricultural education teachers viewed their principals as supportive. The principal is responsible for fostering a supportive and productive atmosphere (Hoy, Tarter, &

Wiskoski, 1992). Furthermore, a supportive principal has been found to be a predictor of school effectiveness (Hoy, Tarter, & Wiskoskie, 1992), and has been associated with collective efficacy (Goddard & Goddard, 2001), which has been linked to teaching efficacy (Pajares, 2002a). However, teaching efficacy is not solely based upon principal support Tschannen-Moran and Woolfolk Hoy (2007). Even though the principal may not directly influence the teaching efficacy of beginning teachers, it is safe to assume that there is an indirect influence by creating a quality educational environment. Although the influence may be indirect, developing quality relationships with the building principal is still paramount to the success of beginning agricultural education teachers. Beginning teachers should be allowed to develop quality professional relationships with building principals to ensure that effective mentoring and support is provided.

It has been suggested that a potential solution to the teacher shortage issue facing agricultural education may be supporting beginning teachers to increase their perceptions about their abilities to teach. This belief is not necessarily unfounded. Burley et al (1991) documented that teachers who were more efficacious about their teaching abilities remained in the profession longer than their less efficacious counterparts. So far, engaging beginning teachers in professional development programs focused on agricultural education topics and mentoring relationships have been the profession's most valid attempt to address this challenge. These programs provide opportunities for beginning teachers to further develop their skills through vicarious and mastery experiences, which as Bandura (1997) noted, are sources of efficacy beliefs. With regard to content specific skills needed by agricultural education teachers, this model is still valid. In this study beginning teachers felt less prepared to manage advisory committees and supervised agricultural experience programs. Development programs focused on these areas will continue to provide the resources for beginning teachers to develop the competence and confidence to manage these components of the agricultural education program.

However, as found in this study, with the relationship collective efficacy has with beginning teachers' perceptions of their own teaching efficacy, a new model for teacher support may be warranted. Through the use of collective efficacy building programs for faculty a more confident academic atmosphere can be created which will, inherently, support beginning teachers and influence positive efficacy beliefs. Building instructional knowledge and skills of all faculty, creating opportunities for faculty to share skills and experiences through collaboration, providing actionable feedback on teachers' performance, and involving teachers in school wide decision making are known to build collective efficacy and are suggested as foundation actions for all collective efficacy building programs (Brinson & Steiner, 2007).

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International Rural Development Nonprofit Organizations' Use of Facebook: A Content Analysis

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Abstract

The growing popularity of social networking sites has encouraged organizations to incorporate virtual communication strategies into their public relations plans. While previous studies have explored the concept of communicative functions present in nonprofit organizations' posts, none has explored the influence of posts characteristics and combinations of communicative functions on stakeholder response, engagement, and advocacy. This study examined how international rural development nonprofit organizations (NPOs) use Facebook to disseminate messages, facilitate dialogue, encourage mobilization, and boost stakeholder engagement. Through a content analysis of 84 posts over two weeks from 25 international rural development nonprofit organizations' Facebook pages, this study examined how Facebook is used to meet the financial and strategic goals of nonprofits. Overall, the organizational presence and practice of Facebook varied between organizations and the interactive features of Facebook were not fully utilized to generate dialogue with key audiences. The study found the information communicative function to be the most prevalent. To generate more audience engagement, researchers suggest utilizing community-building communicative functions and interacting with stakeholders through liking and replying to comments on the organizations' pages. This study provides theoretical and practical implications to enhance our understanding of nonprofits' social media use and provides insight for nonprofit public relations practitioners.

Introduction/Literature Review

Nearly 11% of the global population, or 795 million people, are malnourished and impoverished (FAO, 2015). Developing regions make up the overwhelming majority of this hungry population, accounting for 98% of the world's undernourished (FAO, 2015). With population experts projecting the worldwide population to exceed nine billion by 2050, it is dire for nonprofit rural development organizations to tailor their communication strategies to engage stakeholders, increase donations, recruit volunteers, and meet their goals (Pardey, Beddow, Hurley, Beatty, & Eidman, 2014).

In this online era, it is essential for an organization to have a social media presence (Bergstrom & Backman, 2013). For nonprofits relying heavily on stakeholders for donations and volunteer efforts, virtual communications strategies are particularly significant (Kent, Taylor, & White, 2001). Internet users want and expect organizations to engage in a two-way online dialogue with them through a social media presence (Cone, 2008). Engagement is a crucial component in mobilizing stakeholders and erecting communities (Lovejoy & Saxton, 2012). With its far reach and unique features, social media provide "dynamic updating and messaging capabilities, numerous interactive applications and media-sharing opportunities, and formal social networks"

(Saxton & Waters, 2014, p. 284) to facilitate the demands of organization stakeholders and publics (Meredith, 2012; Nah & Saxton, 2012). The incorporation of engagement features such as liking, commenting, and sharing on Facebook posts has engendered a new standard of immediacy in two-way dialogic communications that was not previously attainable through print outlets or websites (Lovejoy & Saxton, 2012; Saxton & Waters, 2014). Nonprofit organizations often rely on stakeholder communities for monetary, volunteer, and advocacy aid to achieve their philanthropic missions. Because the success of nonprofit organizations is often derived from the strength of relationships with their stakeholders, more research is necessary to develop virtual communication strategies that facilitate the dynamic features of social media and drive stakeholder engagement (Ramanadhan et al., 2013).

Facebook serves as a valuable communication outlet for nonprofits to reach their stakeholders, provide information, and strengthen support for a cause (Barnes & Mattson, 2010; Chiulli, 2014; Frye, 2014; Kanter & Fine, 2010). Supporters are able to look at the social media sites, learn what they need to, and send a message to the organization if need be (Chiulli, 2014). Previous research suggests Facebook is an affordable means to more efficiently meet organizational goals and missions (Curtis et al., 2010; Frye, Armstrong, Calongne, & Sanden, 2014; Shirky, 2008; Waters, Burnett, Lamm, & Lucas, 2009). Waters and Lo (2012) recognized Facebook as a dialogic platform for organizations to involve their fans and build a devoted community, but the majority of nonprofits have not incorporated the vast majority of Facebook features available to them in their social networking presence (Waters et al., 2009).

The use of dialogic, symmetrical two-way communication allows audiences to engage while concurrently cultivating and maintaining healthy relationships between an organization and its stakeholders (Grunig & Hunt, 1984; Kent & Taylor, 2002). Kent and Taylor (1998) suggested five principles to follow to achieve effective dialogic communications in an online environment: a) provide a navigable site, b) conserve followership, c) generate return visits, d) provide useful information tailored to the needs of the audience, and e) maintain a dialogic loop where users can contribute through the form of comments and questions. Recent studies and public relations practitioners recommend organizations use social media to facilitate dialogic communication and maintain relationships with stakeholders (Kent & Taylor, 2002; Kent, Taylor, & McAllister-Spooner, 2008; Kent et al., 2001; Lovejoy, Waters, & Saxton, 2012; Saxton & Waters, 2014). Barnes and Mattson (2010) found that, of the 200 largest U.S. charities, 89% were using some form of social media. Cho, Schweickart, and Haase (2014) specifically identified Facebook as a platform that can facilitate two-way communications and also as the leading social media tool actively organizations used. With more than 1.5 billion active users on Facebook (2016a), organizations are seeking to tap into the relationship development potential social media sites offer (Frye, 2014; Waters et al., 2009).

Nonprofits generally share information about their programs and results through news stories, discussion forums, photographs, and other information exchange outlets Facebook provides (Chiulli, 2014). While previous research investigated the use of Facebook among nonprofits has been limited to the largest nonprofits with annual budgets of more than US$10 million (Cho et al., 2014; Guo & Saxton, 2012; Lovejoy et al., 2012; Nah & Saxton, 2012; Saxton & Waters, 2014; Waters & Feneley, 2013), nearly two-thirds of nonprofits have annual expenditures less than US $500,000 (McKeever & Pettijohn, 2014). At this time, research is somewhat lacking

concerning the strategies and effects of social media use by nonprofit organizations of varying sizes (Macnamara & Zerfass, 2012; Svensson, Mahoney, & Hambrick, 2015) and no studies have been completed exploring the use of Facebook among international rural development nonprofit organizations (NPOs).

Despite the fact that messages, in the form of statuses and updates, are the chief dynamic element of most social media sites, prior research has primarily focused on static content such as organization-level information available on profiles (Saxton & Waters, 2014). Focusing on the actual messages the organization is sending is much needed and aligns with Rafaeli and Sudweeks' (1997) "message-based conceptualization of interactive communication" (Saxton & Waters, 2014, p. 9). This interactive communication includes a completed loop of dialogue, or a direct response related to the initial message (Sundar, Kalyanaraman, & Brown, 2003).

Conceptual Framework

Saxton and Water's (2014) research served as the conceptual framework to examine how nonprofits use Facebook as a communications platform to promote their mission and engage stakeholders. Saxton and Waters inductively developed a categorization scheme informed by Lovejoy and Saxton's (2012) study, an analysis of the top 100 largest nonprofits in the United States Twitter usage to identify communicative functions for organizational tweets. Saxton and Water's (2014) coded 1,000 randomly selected Facebook messages by the 100 largest nonprofits in the United States in terms of revenue. Their analysis yielded three overarching communicative functions for organizational posts as described in Table 1. These communicative functions have been researched in other studies regarding Twitter (Guo & Saxton, 2012; Lovejoy & Saxton, 2014; Neiger, Thackeray, Burton, Thackeray, & Reese, 2013; Svensson et al., 2015). Information-sharing is primarily a form of one-way communication while community-building and promotion and mobilization both facilitate two-way communication. In each of these studies, the authors concluded that most nonprofit organizations primarily used information-sharing messages on social media even though messages with community-building and call-to-action communicative functions resulted in more dialogue with stakeholders (Saxton & Waters, 2014).

Table 1
Communicative Functions of Organizational Facebook Messages (Saxton & Waters, 2014)

Communicative Function	Description
Information-sharing	Spread information about the organization, its activities and events, related facts, stories, organization reports, or anything of potential interest to followers
Community-building	Attempt to build relationships, networks, and communities though messages that promote interactivity and dialogue
Promotion and mobilization	Solicit donations or sales; promote organization's upcoming events; solicit the public's help in specific lobbying, advocacy, or volunteering efforts

Purpose and Research Questions

To address Priority 1 of the AAAE's *2016-2020 National Research Agenda,* more research is needed to better understand the "amount, type, accuracy, and quality of agricultural information provided to the general public" (Enns, Martin, & Spielmaker, 2016, p. 15). The current study used Saxton and Water's (2014) three communicative functions of nonprofit organizational communication on social networking sites as the framework for analysis to examine to how international rural development nonprofits organizations (NPOs) use Facebook to disseminate messages, facilitate dialogue, encourage action, and boost stakeholder engagement. The following research questions were used to address the purpose of this study:

1. What was the general Facebook presence of the organizations?
2. What post characteristics were present in individual posts?
3. What communicative functions were present in individual posts?
4. Did audience engagement differ between post characteristics?
5. Did audience engagement differ between communicative functions?

Methodology

The researchers used a content analysis as the research design to analyze international rural development NPOs Facebook posts. Purposive sampling identified the study population of 501(c)(3) registered nonprofits on social media with a mission to assuage poverty and hunger through international development. These nonprofits are commonly referred to as charitable organizations and are eligible to receive tax-deductible contributions (IRS, 2015). The researcher first reviewed a recent compilation of the most followed nonprofits on social media and selected only organizations whose mission statement aligned with the criteria in this study (Top Nonprofits, 2014). Because this compilation was skewed toward organizations with a more established online presence and higher annual expenditures, the sample was expanded to include lesser-known organizations with similar missions. These organizations were identified after asking key informants for suggestions and conducting online searches. Only organizations with an existing social media presence of at least an organizational Facebook page were included in the study. The sample consisted of 25 organizations with annual expenditures ranging from $.11 million to $1 billion according to fiscal year 2014 IRS-990 forms (M = $104.92 million, SD = $247.92 million). Seven (28%) of the organizations in the study had annual expenditures less than $500,000, while the other 72% (n = 18) were larger organizations with expenditures exceeding $500,000.

Sampling errors are the seemingly random differences between the characteristics of a sample population and those of the general population (Ary et al., 2010). One way the researcher minimized sampling error was by analyzing two weeks as opposed to only one. The two weeks analyzed were four weeks apart to avoid seasonal posts and to be more reflective of the typical posts the organization might post throughout the year. Posts analyzed were from Monday through Sunday, October 12-18, 2015 and November 9-15, 2015.

To determine the message characteristics used in the organizations' posts, the researcher developed a codebook adapted from previous literature (Guo & Saxton, 2012; Jamal & Waters,

2011; Lovejoy & Saxton, 2012; Saxton & Waters, 2014; Waters et al., 2009). The codebook had four sections to address the research questions: general Facebook page attributes, post characteristics, communicative functions, and engagement. Facebook page attributes were the presence of the mission or goals of the organization, a link to the organization's website, an official logo, contact information, a social media policy, a link to volunteer and/or donate, links to other social networking sites, and the frequency and origination of posts (i.e. post or share). The presence of post characteristics within each post was determined with the following nominal variables: text, graphic, video, hyperlink, audience ability to comment, if organization replies to comments, and if organization likes comments. Engagement for each post was measured by a count of likes, comments, and shares by the audience. The communicative functions (information, community, and action) present within each post were also identified. Although prior researchers only acknowledged the primary communicative function of each Facebook post (Saxton & Waters, 2014), this study recorded all communicative functions present within each post. "Not Identifiable" was added to account for messages with an unclear purpose, often the result of poorly composed messages with grammatical errors or sentence fragments. The codebook was developed prior to coder training, revised during the first coder training session for clarity, and then revised again through an inductive approach after the pilot test phase. Two undergraduate students served as coders. Before collecting data, the researcher conducted a 1 ½-hour coder training session to introduce the coders to the concepts of the study without pre-coding any material. This training served to increase the coders' comfort level with the content being analyzed, address initial concerns, and clarify any discrepancies or unclear explanations within the codebook (Riffe, Lacy, & Fico, 1998). Intercoder reliability is a critical component of content analysis that measures the level of agreement among different judges (Tinsley & Weiss, 2000) when studying features of each message (Lombard, Snyder-Duch, & Bracken, 2002). To establish intercoder reliability, the two coders independently coded an amount equal to approximately 10% of the total study sample (Kaid & Wadsworth, 1989; Wimmer & Dominick, 2013). The one week (September 20-26) of posts included in this pilot phase were from five organizations outside of the time frame in the study population.

After the 10 posts were coded in the pilot test, an interrater reliability analysis using Cohen's kappa was performed to determine consistency among raters. Cohen's kappa "refers to the proportion of consistent classifications observed *beyond* that expected by chance alone" (Ary, Jacobs, Sorensen, & Razavieh, 2010, p. 273) and is commonly used and highly recommended in communications research where there are two coders (Bakeman, 2000; Dewey, 1983; Lombard et al., 2010; Riffe et al., 1998). Table 2 provides Cohen's interpretation of κ values.

Table 2
Interpretation of Cohen's kappa coefficient

Value of kappa	Level of Agreement
≤ 0	Chance agreement
0.01 – 0.20	Slight agreement
0.21-0.40	Fair agreement
0.41-0.60	Moderate agreement
0.61-0.80	Substantial agreement

0.81-0.99	Almost perfect agreement
1.00	Perfect agreement

Intercoder reliability for each item within the Facebook page attributes and engagement were found to be $\kappa = 1.00$ (95% CI), $p < 0.0005$). This perfect agreement exceeded the standard previously set by the researcher and was considered acceptable for Cohen's kappa and exploratory research (Landis & Kock, 1977; Lombard et al., 2002). Within post characteristics, photos (later revised to graphics) were found to be $\kappa = 0.60$ (95% CI), $p < 0.0005$). All other post characteristics had a perfect agreement $\kappa = 1.00$ (95% CI), $p < 0.0005$). The intercoder reliability for the four communicative functions (information, community, action, and not identifiable) varied from $\kappa = 0.40$-0.80 (95% CI), $p < 0.0005$) and did not meet expectations set by the researcher. In an additional 1½-hour session with the coders, these items were discussed until 100% agreement was reached. The codebook was then revised and an additional item was added to the communicative function section to identify direct quotes. These were often Bible verses with no accompanying text that made identifying a function difficult.

To address internal validity, we set "a maximum length of time governing a coding session" (Riffe, 1998, p. 120) of no more than one continuous hour and a mandatory re-familiarization with the communicative function descriptions prior to each new coding session. Another threat to internal validity may be the experimenter effect. To address any "unintentional effects that the researcher has on the study" (Ary et al., 2010, p. 272), we trained external coders to complete the coding process, per recommendation by Lombard, Snyder-Duch, & Bracken (2010). Subsequently, the coders independently recoded the original pilot test sample to retest for intercoder reliability of the communicative functions. For the 10 messages in this sample, the coders reached moderate agreement and met the researcher's standards with 80% agreement and $\kappa = 0.56$ ($p < 0.0005$), 95% CI (Landis & Koch, 1977). The coders were then randomly assigned organizations and proceeded to collect data and independently code the study sample. Data were first entered into Microsoft Excel then analyzed using the Statistical Package for the Social Sciences version 22.0. Descriptive statistics and independent samples t-tests were used to address the research questions. To determine effect size, the t-value was converted into an r-value (Rosenthal, 1991; Rosnow & Rosenthal, 2005), then this effect size was interpreted according to Cohen's (1988 & 1992) descriptors (Field, 2005). An r-value of .10 is a small effect size and explains 1% of variance. An r-value of .30 is a medium effect size and explains 9% of the variance. An r-value of .50 is a large effect size and explains 25% of the variance.

Results

In October 2015, the nonprofits had an average number of 323,886 fans on Facebook (*SD* = 1,078,563.2), which ranged widely from a minimum of 370 to a maximum of 5.4 million followers. The median number of fans was 10,809.

Research question one sought to understand the attributes of the organizations' Facebook pages. All the organizations had a description of the organization's mission and goals and a link to the organization's website included on their Facebook profile page. One organization (4%) did not use the organization's official logo as the profile picture while the others did. The majority (*n* =

22, 88%) provided contact information. Only seven had a written social media policy present on the page. Nearly all (n = 21) had a clear link to donate or to volunteer with the organization. Some organizations provided links to other social networking sites: Pinterest (n = 7), Instagram (n = 6), Twitter, (n = 5), YouTube (n = 4), Vimeo (n = 1), Flickr (n = 1), and a blog (n = 1). The total number of posts analyzed during the two weeks studied was 85 posts. The frequency of posts during this timeframe ranged from 0 (3 organizations) to 12 posts. Organizations posted an average of 1.4 posts (SD = 1.4) in the first week studied and 1.9 posts (SD = 1.7) in the second week studied. Twenty-three organizations did not post any "shared" posts while the remaining two only posted one "shared" post during the study timeframe.

Research question two was to understand the post characteristics present in individual posts: text, graphics, videos, hyperlinks, audience ability to comment, if organization replies to comments, and if organization likes comments. Within the entire sample, 14% (n = 12) of posts contained just a link or graphic with no accompanying text. Graphics, identified as any visual aspect except videos, were present in 77% (n = 65) of the posts. The majority of posts (n = 72, 84.7%) did not include embedded videos. Fifty-three percent (n = 45) of posts included hyperlinks. Of these, 58% (n = 23) linked to an organizational page, such as another social media site, a website, or other web-based page managed by the organization. All the posts (n = 85) allowed comments. Of the posts that had comments from the audience, only 26% (n = 10) had replies and 21% (n = 8) had likes from the posting organization.

Research question three sought to find what communicative functions were present in individual posts. This study is unique from previous studies of micro-blogging communicative functions in that it does not restrict the communicative function of posts to only three possibilities. This study identified the communicative functions present in each post whether that be none, one, or a combination of functions. Table 3 provides examples of each function and the frequency of individual posts according to their communicative function(s).

Table 3
*Communicative Functions of Facebook Posts (*N = *84)*

Communicative Function	*Example*	*n*	*%*
Information	Tap stands in Mali bring clear water to the center of communities, making it possible for families to take as much as they need. <Graphic>	20	23.5
Information and Community	Today on World Food Day, we want to take a moment to celebrate our farmers. Their work ethic and discipline are transforming the lives of thousands of Kenyans and Ethiopians. Thank you for working together with them to cultivate a better world! #Hashtag <graphic>	19	22.4
Not Identifiable	[Organization] updated their cover photo.	15	17.6
Information and Action	Clean water is important to families everywhere. Honor your family by making a donation at <Link> <Graphic>	11	12.9
Information, Action,	#Hashtag is the day we give back amidst the holiday season.	7	8.2

and Community	It's in its fourth year & we're ready to make this year better than ever! Join [Organization] on 12/1. Mark your calendars! <Link> <Graphic>		
Community	[Organization] depends on our volunteers! <Graphic>	6	7.1
Community and Action	This #Hashtag, join millions of people calling for a better world. Watch and share this video if you believe in [Organization], #Hashtag! <Video>	4	4.7
Action	Help these hardworking families lift themselves out of poverty and increase food security within their communities. Double the impact of your donation with our matching gift challenge! Give now at <Link> <Graphic>	2	2.4

Note. Each post was uniquely identified.

Of the posts analyzed, only one (1.2%) was recorded as a quote with no accompanying text and not eligible to be coded for its communicative function. After removing this post, 84 posts remained to be coded based on their communicative function(s). Figure 1 displays the communicative functions found in the posts with the overlap indicating where multiple functions were identified. Sixty-eight percent (n = 57) of the identified communicative functions in the posts contained the information communicative function. About one-third of the posts (n = 36, 32.9%) included the community building function, and 28.6% (n = 24) of posts included the action communicative function. Poorly composed messages with grammatical errors, sentence fragments, or an unclear purpose were categorized as Not Identifiable (n = 15, 17.9%). Sixty percent (n = 9) of these posts were automatic updates that the organization had updated their cover photo. Another 20% (n = 3) of these posts included a link or hashtag accompanied by a graphic but no additional text.

Research question four sought to determine if audience engagement differed between post characteristics. Eight posts with likes, comments, and shares beyond two standard deviations away from the mean were removed as outliers before running an independent samples t-test to determine how audience engagement (measured by the average number of likes, comments, and shares) differs with the absence or presence of different post characteristics. The “allows comments” variable was not measured for its impact on engagement because comments were allowed on 100% of posts in this study.

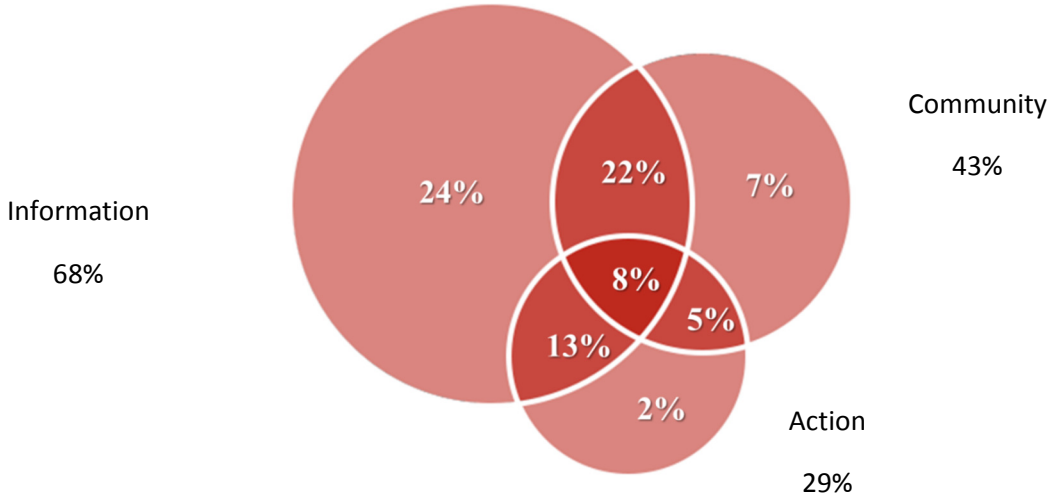

Figure 1. Communicative Functions Present in Facebook Posts.

Posts including text experienced a higher average number of likes (M = 122.1, SD = 188.9), comments (M = 2, SD = 3.6), and shares (M = 24.6, SD = 44.9), when compared to posts lacking text in terms of likes (M = 67.3, SD = 98), comments (M = 0.4, SD = 0.7), and shares (M = 4, SD = 5.7). These differences were not statistically significant, but did represent between small and medium effect sizes, which accounted for 1-9% of the total variance. Posts containing graphics had more average likes (M = 124.3, SD = 186.4) than those without graphics (M = 78.9, SD = 151.5). This was not statistically significant $t(31.3) = -1.0$, $p > .05$, but did have a small to medium sized effect $r = .18$, explaining 1-9% of the variance. Posts that contained videos had more likes (M = 3.3, SD = 5.5) than those without videos (M = 1.6, SD = 2.9), but this difference was not statistically significant, $t(74) = -1.5$, $p > .05$. It did, however, represent a small to medium sized effect $r = .17$, which accounts for 1-9% of the total variance. Posts that contained videos also were shared more (M = 41.3, SD = 65) than those without videos (M = 18.7, SD = 37.4), and this difference was not statistically significant, $t(9.9) = -1.1$, $p > .05$). It did represent a medium sized effect $r = .33$, which explains at least 9% of the total variance.

Posts that included organizational replies to comments experienced more likes (M = 448, SD = 228.6) than posts that did not (M = 207.6, SD = 188.6). This was statistically significant, $t(6.8) = -2.4$, $p = 0.05$, and represents a large effect size $r = .68$, which explains more than 25% of the variance. Similarly, posts that included organizational replies to comments also received more comments (M = 10, SD = 4.2) than posts that did not (M = 3.2, SD = 2.6). This was statistically significant, $t(28) = -5$, $p < 0.05$, and represents a large effect size $r = .69$, which accounts for more than 25% of the variance. A similar pattern holds as posts with organizational replies to comments also garnered more shares (M = 102.5, SD = 60.9) than posts that did not (M = 36.1, SD = 47.3). This was also statistically significant, $t(6.6) = -2.5$, $p < 0.05$, and represents a large effect size $r = .7$, which explains more than 25% of the variance. Similarly, posts where organizations liked stakeholder saw more dialogic engagement in the form of comments (M = 7.8, SD = 6.4) than posts that did not (M = 3.9, SD = 3.2). This was also statistically significant, $t(28) = -2.1$, $p < .05$ and represented a medium sized effect, explaining more than 9% of the total variance.

Research question five aimed to know if there was a difference in engagement among communicative functions. We removed eight outliers then ran descriptive statistics on all posts, including the one (1.2%) post identified solely as a quote, to describe communicative functions and engagement measured by the likes, comments, and shares. As Table 4 displays, average engagement of the total sample studied ($N = 76$) was 114.2 for likes ($SD = 179.2$), and 1.8 for comments ($SD = 3.4$), and 21.6 for shares ($SD = 42.2$). Posts identified as Community resulted in the most engagement averaging 205.5 likes ($SD = 213.1$), 3.7 comments ($SD = 4$), and 63.7 shares ($SD = 80.2$).

Table 4
Comparison of Engagement Means Based on Facebook Posts' Communicative Functions

		Likes		Comments		Shares	
Communicative Function(s)	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Community	6	205.5	213.1	3.7	4.0	63.7	80.2
Information	20	157.0	238.4	2.2	3.3	22.3	43.5
Information and Community	19	142.9	206.3	2.4	1.4	31.1	50.5
Information and Action	11	83.0	119.9	0.6	1.3	12.1	19.0
Not Identifiable	15	63.2	94.5	0.3	0.7	3.8	5.5
Information, Community, and Action	7	50.3	105.5	2.6	6.4	9.0	16.6
Action	2	37.5	23.3	1.0	1.4	17.0	22.6
Community and Action	4	36.0	46.1	1.0	1.0	17.0	29.4
Quote	1	7.0	-	0.0	-	0.0	-
Total		114.2	179.2	1.8	3.4	21.6	42.2

To determine whether the average engagement was statistically different for the communicative functions used in messages, a one-way ANOVA was conducted. The results of the ANOVA revealed no statistically significant difference among the nine categories in relation to likes ($F(8, 67) = 0.79$, $p = 0.61$), comments ($F(8, 67) = 0.88$, $p = 0.54$), and shares ($F(8, 67) = 1.4$, $p = 0.23$).

Conclusions and Implications

The dynamic features available on social networking sites, such as Facebook, are creating unique ways for organizations to communicate and interact with their stakeholders (Saxton & Waters, 2014). Social media tools provide organizations with a platform to meet public demands for transparency and mutually beneficial information while facilitating stakeholder response, dialogue, and advocacy (Kent & Taylor, 1998; Saxton & Waters, 2014). As international rural development NPOs strive to alleviate poverty and hunger in populations around the world, they need to effectively engage stakeholders and encourage advocacy through social media, specifically Facebook, to increase support (Pardey et al., 2014).

All the organizations in the study had a description of the organization's mission and goals and a link to the organization's website included on their Facebook profile page. This is a larger percentage than previous research had found (Waters et al., 2009). Although Facebook pages allow organizations to provide links to other social media platforms (e.g. Pinterest, Instagram, and Twitter) very few of the organizations actually provided this information, which limits the ability to cross promote their social media presence. All except four had the "Donate" button on their profile page to make it easier for visitors to contribute.

On average, the organizations posted less than two times per week and during the study's time frame, three organizations did not post at all; therefore the results of the post-specific research questions are limited to the remaining 21 organizations. Some posts were not very descriptive (contained only a link or graphic with no accompanying explanation). Graphics were present in 77% of posts in this study, but only 15% had videos. As video becomes a more common feature on Facebook, these organizations should seek opportunities to integrate the form of visual communication. Hyperlinks were present in 53% of posts, similar to findings of a previous study (Waters et al., 2009). Of these, over half (58%) linked to an internally-managed page, which helps drive traffic to organization-controlled content while also providing links to valuable supporting content from other sources. Although comments were allowed on all the posts, the organizations weren't actively replying or liking comments to strengthen relationships. This limits the ability to engage in dialogic, two-way communication.

This research expands upon our knowledge of Saxton and Waters' (2014) social networking communicative functions: information-sharing, community-building, and action (i.e. mobilization and promotion). The most common communicative function was information alone. The information-sharing function is an example of the one-way communication model and serves to disseminate information about the organization's mission, goals, activities, history, and reports related to finances and programs. This presence of this function in 68% of the posts may be due to the relative ease of passing along happenings within the organization or other news items. The dominance of this function was also found in previous studies of nonprofits' posts (Cho et al., 2014; Saxton & Waters, 2014).

The community-building function, identified in 43% of the posts in this study, is reflective of the two-way symmetrical communications model and meant to facilitate dialogic communications while recognizing supporters and strengthening community ties. The action communicative function, present in 29% of the posts, explicitly tells stakeholders what to do, know, and/or feel in an attempt to meet financial and strategic goals. It seems reasonable for action to be the least common function as organizations work to provide information and build community first to help stakeholders feel able to engage in action. Fifteen posts had no identifiable communicative function. These primarily included automated updates related to an updated cover photo and posts with graphics but no accompanying text. No statistical differences in engagement (likes, shares, or comments) based on the presence or absence of text, graphics, or videos. However, a statistically significant difference was found in engagement for posts that demonstrated the organization responded to comments. These posts had more subsequent comments, likes, and shares. When the organization made the effort to comment, this led to more comments from audience members.

A surprising find in this study is that audiences were more prone to share than to comment on all types of communicative functions. Overall, the public is most responsive in the form of likes to Community posts and least responsive to Action posts and Community-Action posts. In terms of dialogic engagement, the publics are also most engaged by Community posts and least engaged with Information- Action posts. A similar pattern holds with respect to sharing. Publics are more prone to share Community posts over any other type of communicative function present in

messages. The combination of Information-Community-Action communicative functions were the least likely to be shared by publics. As Saxton and Waters (2014) found, the community-building function yielded more stakeholder responsiveness in terms of likes and more dialogic interaction in terms of comments. This study also found that audiences were more likely to advocate by sharing a post when the community-building communicative function was present, although the difference was not statistically different. Providing two-way symmetrical messages that encourage community-building is the most effective way to nurture relationships and lead to more meaningful dialogue with stakeholders, which could also have a positive impact on donations.

Recommendations

The findings from this study have several important practical and theoretical implications. For instance, the findings confirm that organizations are better at using disclosure features of Facebook profiles to create transparency. Organizations are not, however, fully utilizing the interactive features of Facebook to engage in dialogue with stakeholders and encourage advocacy. Based on these findings, communications strategies of international rural development NPOs should include liking and replying to audience comments in order to more effectively drive audience engagement. Posts should also facilitate more two-way symmetric communications, such as community-building communicative functions, to foster relationships with key stakeholders.

This study enhances our understanding of the use of social media by nonprofits and further supports broader theories that many nonprofits are not fully utilizing the two-way communicative features capable within Facebook. While this study explored an emerging area, it does have several limitations that can be addressed with additional research. This study only examined two weeks of content, so future research should examine more content to provide a more thorough understanding of how nonprofit organizations of varying sizes and platforms are using Facebook throughout the year to interact with stakeholders and meet organizational goals. The researcher did not identify if Facebook boosted posts were used to expand reach. The presence of outliers could have been attributed to the use of boosted posts. This increased reach through inorganic means may have skewed the data and not provided a look into the raw opportunities for engagement pertaining to post characteristics and communicative functions. Posts in the study sample were categorized by as many communicative functions as were present. There was no particular order or ranking recorded in this analysis. Future research should weigh the functions according to the most prevalent or primary purpose. This could contribute to research and help practitioners to understand the most effective primary and accompanying communicative functions to combine.

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Building an Online Community: A Qualitative Study of Online Media Use by International Rural Development Nonprofit Organizations

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Abstract

The use of online media, including social media platforms, help nonprofits reach key stakeholders and attain goals because these platforms provide affordable and easily accessible virtual communications. Understanding how and why practitioners use online media is necessary so analyses may be conducted to indicate areas of improvement. The purpose of this study was to understand the motivations and strategies behind international rural development nonprofit organizations' use of online media communication tools. Qualitative, in-depth, semi-structured interviews were conducted to achieve this purpose. The results revealed the low cost of social media allows small and large organizations alike to use online communications as a way to attain organizational goals. Internally, organizations are working across different departments to structure dynamic communications plans. While most organizations in the study developed best practices of social media use, they did not fully utilize analytic features to understand resulting engagement and action. Additional recommendations for research and practice are provided.

Introduction

World leaders have been collaborating to reach global initiatives in alleviating poverty and hunger, yet there are still more than 795 million people, or 10.9% of the global population, malnourished and impoverished (FAO, 2015). Developing regions represent the greatest portion of those hungry, comprising up to 98% of the world's malnourished (FAO, 2015). With the global population anticipated to reach at least nine billion by 2050, it is imperative for nonprofit rural development organizations to utilize effective communication strategies to engage supporters, raise funds, and meet their goals (Pardey, Beddow, Hurley, Beatty, & Eidman, 2014). For a nonprofit organization that relies heavily on stakeholders for donations and volunteers, the methods through which it communicates are especially significant (Kent, Taylor, & White, 2001). These communication efforts include online efforts such as websites, email, and social media.

Today's communication tools allow information to be shared at a faster rate from more outlets than ever before (Rahrig, 2010). The Internet, multitudes of 24-hour news sources, and other advances in communication have made people around the world become immediately knowledgeable of international, national, and interpersonal information. The Internet consumer, not just organizations and media outlets, is creating more consistent, targeted, and advanced messages than ever before. All the while, more people are accessing these personal messages due to the availability of the Internet and social media (Laurie, 2010).

The far reach of social media provides inventive ways for nonprofits to engage with their publics (Bankert, 2014; Meredith, 2012; Nah & Saxton, 2012). Engagement is a key element in mobilizing and building communities and the benefit of social media is not maximized unless it engages members of the community (Lovejoy & Saxton, 2012). Through the creation and exchange of content, social media offers leaders of organizations the potential to forge stronger bonds with and to facilitate the demands of key stakeholders (Campbell, Lambright, & Wells, 2014; Meredith, 2012; Nah & Saxton, 2012).

Nonprofit organizations often depend on their relationships with their stakeholders for philanthropic reasons and for aid in spreading the organization's message and supporting its cause. Developments in social media and other communication technologies have made two-way communication more important, readily available, and in demand (Laurie, 2010). As technology evolves, international rural development nonprofit organization (NPOs) need to stay current with advancements in communications, including online tools. Because the effectiveness of nonprofit organizations is often a result of the relationships they have with the community and their stakeholders, more research is needed to better understand not only how and why international rural development NPOs are using online media, but also to make sense of effective communication models that facilitate the dynamic features specifically on social media and drive stakeholder engagement (Ramanadhan, Mendez, Rao, & Viswanath, 2013).

Literature Review/Conceptual Framework

Social media sites are varied, thus providing options for just about everyone to participate in online social media activities and to find a culture or realm of diversity that fits each individual (Boyd & Ellison, 2007). These platforms allow people to seek and create change within a community, and social media act as an individual agent for publics to create their own messages (Cranston & Davies, 2011). Internet users expect organizations to have social media accounts and they want to engage in two-way online dialogue (Supa, 2014). While some organizations are hesitant to embrace social media technologies and develop written policies and strategies for social media (Grunig, 2009; Kietzman, Hermkens, McCarthy, & Silvestre, 2011), many practitioners have adopted social media as an integral aspect of their communication campaigns (Supa, 2014).

Social media can be an affordable means for nonprofit organizations to engage, strengthen relationships, and build trust with current stakeholders and reach new supporters (Chiulli, 2014; DiStaso & Bortree, 2012; Meredith, 2012; Yang & Lim, 2009) while working toward more efficiently reaching organizational goals (Frye, 2014; Phethean, Tiropanis, & Harris, 2013; Waters, Burnett, Lamm, & Lucas, 2009). Nonprofit organizations have a variety of goals for using social media such as reaching the public (Curtis et al., 2010), developing relationships (Waters et al., 2009), increasing civic engagement and collective action (Obar, Zube, & Lampe, 2011), and providing opportunities for fundraising (Quinton & Fennemore, 2012). Recent studies and public relations practitioners recommend using social media to facilitate dialogic communication and maintain relationships with stakeholders (Kent, Taylor, & McAllister-Spooner, 2008; Lovejoy, Waters, & Saxton, 2012; Saxton & Waters, 2014).

Previous studies show that nonprofits are using at least one form of social media regularly, including "anything from blogs, podcasts and message boards to social networking sites such as Facebook, Myspace, Twitter, YouTube, LinkedIn, and Foursquare" (Kemmerer, 2013, p. 27). However, organizations still seem to pay less attention to tracking their audience's perception of the organization and, instead, emphasize quantifying financial values such as the number of new donors (Bennett, 2007). With the varying goals of nonprofits, it is difficult to assess the social media presence of a nonprofit without first understanding how and why particular nonprofit organizations use social media (Phethean et al., 2013).

Researchers have found that nonprofit organizations using social media platforms are not capitalizing on the interactive nature and dialogic capabilities of social media (Kent, Taylor, & White, 2003; Saxton, Guo, & Brown, 2007; Waters et al., 2009; Wright & Hinson, 2008). Instead of involving audiences and building devoted communities, the majority of nonprofit organizations are primarily using social media as a means of sharing information (Lovejoy & Saxton, 2012; Phethean et al., 2013; Waters & Jamal, 2011; Waters et al., 2009). Social media provides potential growth and opportunities through connecting, building, and maintaining relationships with a variety of key audiences; however, these have not been fully employed (Graybill, 2010; Herring, Bonus, Scheidt, & Wright, 2004). Once organizations have a thorough understanding of how and why key constituents gather and share information they can more effectively tailor communication strategies (Key, 2005).

This study's theoretical framework draws from the theory of relationship management, which is used as a central concept of cultivating, managing, and growing relationships between organizations and key publics (Ledingham, Bruning, Ki, & Kim, 2000). The theory encourages using two-way symmetrical communications to maintain relationships with key publics rather than manipulating these publics. The theory gained popularity as public relations practitioners worked to create better relationships with publics and publics demanded that organizations listen to their demands and needs (Sallot, Lyon, Acosta-Alzuru, & Jones, 2003). Drawing from this theory, organizations can establish positive relationships with publics and make improvements in subsequent behavior and attitudes (Ki & Hon, 2007). When researching online communication, this theory concentrates on the use of two-way communication and discussions between organizations and publics (Levenshus, 2010).Relationship management theory has been studied with publics in a physical setting, but limited work has been done analyzing online communications (Merry, 2010; Waters & Bortree, 2011; Waters et al., 2011).

Purpose and Research Questions

The American Association for Agricultural Education's *National Research Agenda* noted the need for agricultural professionals to be flexible in how they communicate with the public, which includes identifying the best methods to reach audience members (Enns, Martin, & Spielmaker, 2016). The research agenda also places emphasis on the need to address complex problems, specifically pertaining to food insecurity, which is most prevalent in developing nations (FAO, 2015; Roberts, Harder & Brashears, 2016). The purpose of this study was to explore international rural development NPOs use of online media communication tools to communicate with key stakeholders and achieve organizational goals. The following research questions were used to address the purpose of this study:

1. How did nonprofit organizations incorporate online media into their communications plans?
2. What motivated nonprofit organizations to establish a social media presence?
3. How did nonprofit organizations use social media?
4. What were nonprofit organizations representatives' opinions of using online media?
5. How did nonprofit organizations assess their social media presence?

Methodology

This study used a qualitative approach to a phenomenology research design consisting of in-depth interviews with communications practitioners at selected international rural development NPOs to understand the essence of the experience (Creswell, Hanson, Clark, & Morales, 2007) of implementing online communication efforts. The purposive sample was identified by reviewing a list of the most followed 501(c)(3) registered nonprofits on social media (Top Nonprofits, 2014) to identify those that focus on alleviating poverty and hunger through rural development in international settings. Additional organizations were identified after asking key informants for suggestions and conducting a keyword search on Google. Only nonprofit organizations with an existing Twitter and Facebook accounts were included in the study. The total study population included 25 organizations, made up of nine found in the Top Nonprofits report and 16 from questioning faculty members who have experience with international extension effort and conducting online searches.

Eighteen organizations were initially contacted because they had a publicly-available email address on their Facebook page. Of these, four organizations responded and declined to participate in the study. After a reminder email, representatives from five organizations agreed to participate in the study and were interviewed from February 1 to 15, 2016. Texas Tech University's Institutional Review Board approved this research prior to participant interviews. A questioning guide was used to collect the data during in-depth, semi-structured telephone interviews. The questions addressed how the organizations incorporate online media into their communications plan; the organization's motivation to establish an online media presence; how the organization is utilizing online media; the organization's opinions of the use of online media; and how the organization measures success of online media. The interviews (35-52 minutes in duration) were audio recorded with a digital recording device, per the participants' permission.

Four of the five participants were female. Participants ranged from 27 to 46 years old with a mean age of 35.2 years. Three participants had a graduate or professional degree and the other two had at least a bachelor's degree. Time spent in their roles ranged from one month to nearly 2.5 years. Participants were assigned a pseudonym prior to analyzing data and writing findings. The following sentences briefly describe the participants. Casey holds an executive position within the organization and is responsible for everything from fundraising to program development to recruitment and budgeting. As the marketing and communications manager, Riley's responsibilities include, but are not limited to, developing communication strategies pertaining to donors and constituents. Peyton serves as communications coordinator and handles all internal and external communications. Avery's role as communications director includes managing donor communications, nurturing relationships with international staff members, and

handling all social media platforms. Jody serves as senior account major and oversees project management, account strategy, and online media presence. Jody was the only one who worked outside of the nonprofit. The communications department for this nonprofit outsources a team, which Jody leads, to manage social media communications.

The lead researcher took brief notes during the interviews to make the transcription process more efficient and to add personal comments, preliminary conclusions, and recommendations for future research. Each interview was then transcribed to document the discussion. We analyzed the data using the constant comparative method (Glaser & Strauss, 1967) and analytic coding "to explore and develop new categories or concepts" (Morse & Richards, 2002, p. 158). This method guided us as we looked for common themes and compared the current response to previous ones in the same category while coding. The data were analyzed in multiple steps. Following the transcription of each interview, we read and marked prominent themes within the collected data. These themes or codes included consistent phrases, expressions, or common ideas common among research participants (Kvale, 2007; Tuner, 2010). We placed information in the relevant existing theme and created additional themes as needed during the coding process based on logical conclusions.

We implemented strategies to ensure the trustworthiness of the study in terms of establishing credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). After all interviews are completed and data transcribed, we reviewed the transcriptions with the digitally recorded files to address credibility and ensure the accuracy of the transcribed data to the recorded data. In this study, the data were collected to inform and educate other agricultural communicators and public relations practitioners on the current state and future of nonprofits' online media use. The research is transferable to organizations similar to those represented in the study. We maintained a file of written notes, audio recordings, and typed transcripts to reach a level of dependability. Confirmability for this study was achieved by conducting interviews to obtain data directly from the primary sources.

Findings

RQ1: How did nonprofit organizations incorporate online media into their communications plans?

Four participants claimed to have a communications plan within the organization. Of these, two were under revision and not yet formalized. The organization without a communications plan expected to create one over the coming year once best practices for online communication had been established. During the data analysis, three themes emerged to answer this research question: dynamic strategies, multiple platforms, and team collaboration.

Dynamic Strategies. With the ultimate goal of sharing the organization's vision to generate funds, these organizations built communications plans based upon the development plan.

> PEYTON: Here, it is a very dynamic process because we are ever-evolving, and we have the lingo of what our programs are, and we know certain things. We always start there and then I try to pair it with the vision the founder is talking about.

One common tool shared across organizations was the use of editorial calendars. Some organizations had more structured editorial calendars. Jody said: "The editorial calendar is an Excel sheet with different tabs for each platform. These are separated into different types of days and categories and then the blanks are filled in with a specific message and the accompanying link, graphic, etc." Other organizations took a more informal approach to their editorial calendar. Avery said, "I have a set of reminders set up on my computer. I use Google calendar reminders."

Multiple Platforms. These organizations have a heavy online footprint. All had websites and were present on multiple social media sites including Facebook and Twitter. To address goals of the social media portion of the communications plan, the participants were most actively using Facebook. Peyton and Avery said their organizations also have LinkedIn, Instagram, YouTube, and email newsletters. These organizations use a wide range of online media platforms; however, they do not allocate funds for social media endeavors. Casey said his organization uses free platforms and has a volunteer intern to complete communications activities. Communications budgets were available for other services such as print materials, video creation, and photography.

Team Collaboration. Multiple people, often across a variety of departments, were involved with the development and enactment of the communications plan. The participants claimed that reaching out across the organization provided a more thorough plan that was more reflective of the organizations' broader mission. Many of the organizations were going through restructuring or had recently filled new positions with the intent of further broadening their communications team. Casey said his organization has several people who work together on communication efforts from a student intern to recruiters to the executive director. Jody commented that her in her organization several groups of people work together on communication efforts.

> JODY: We work directly with the CEO, the digital manager, and the public relations team because all of these disciplines touch each other. Everything works in a big circle as the website is driving to the social media and the social media driving back to the website and donor site. And the public relations team is pushing all of that information out there.

RQ2: What motivated nonprofit organizations to establish a social media presence?

Most organizations identified Facebook as the first social media platform the organization established as far back as 2007 to as recent as 2014. Casey said: "We use Facebook because of its versatility and its ease-of-use. It was easiest to start conversations between our followers and the organization on Facebook." When attempting to understand the motivations for organizational social media use, we identified the theme of necessity.

Necessity. Many of the participants said their supporters expect them to be on social media. The participants joined social media because they felt the organizations had to be

connected online. Avery said: "People were asking us if we had a Facebook page, and the answer was always 'no.' We finally decided to make one after so many people had asked." Riley said her organization recognized online media's ability to inform constituents and donors quickly and easily about what the organization is doing to meet its mission.

> RILEY: They don't have a lot of opportunity to see the impact of their work. The websites and social media such as blogs and Facebook and using webinar services provide powerful communication channels for us to convey impact, for them to find us, and for them to be connected.

The practitioners also wanted to share what the organization was doing with donations, and social media provided an ideal platform to share that message. Jody said using social media allows her to reach her donor base, which is spread out all over the United States, about the work the organization does around the globe.

> JODY: The biggest thing with nonprofit work is transparency. If you are a donor, you want to know exactly where your dollar goes and how it's being used…Social media allows us to show you the progress and the endpoint of the dollars that you donated.

RQ3: How did nonprofit organizations use social media?

Data analysis from the in-depth interviews identified three themes pertaining to organizations' use of social media: variety of key messages, unified voice, unique posting patterns and strategies across platforms.

Variety of Key Messages. All organizations acknowledged they had a formula for the messages they try to post. That included a combination of three to four purposes. Jody said, "This all depends on the different time of the year, the season, current events, and the content we are getting from program managers." Riley said: "I try to post 'likeable' content through Facebook...This content could be about the mission or encouraging posts. These aren't going to be long, blog-like posts. The smaller percentage can be calls to action around donating or attending a webinar."

The primary goal of online communication efforts expressed by most organizations was to create a community for people who shared values and goals to gather and interact online. These community members could include those who donate money, volunteer time, sponsor children, work in the field, or provide grants. Participants expressed the importance of creating a place for these audience members to be recognized and engage with each other.

> RILEY: There's definitely a goal for us to create a community where our donors can interact with each other and feel like there's a place where their values are shared. This is a place for donor's voices. It is important that donors see the importance and the role that they play. We are a conduit for what our donors want to see done in the world.

The participants emphasized the importance of sharing impact messages to raise awareness not only about needs but also about what the organization is doing to address those felt needs with

the assistance from supporters. Peyton said: "We share information with the followers about globalizing funding to ensure that we can continue our work. We want to inspire people about the transformation that is happening." All the participants identified updating constituents as a primary strategy within their communications plan. Avery said her organization's communication efforts focus on providing a personal story of those who are the beneficiaries of the organization's programs. She said this personal connection is essential to raising money and keeping donors. "These donors aren't just about money; they are about people who believe in what you do," she said.

The majority of the participants try to include a lot of visuals to provide a clearer understanding of the story and be more appealing to their audience. Riley said: "We live in a visual world, so we cater to this through providing a lot of visual content and graphics on every channel. A Facebook post without a picture would just tank." Peyton said: "We want to use more photos in Twitter than we have in the past because it encourages engagement. In Facebook, if you have a photo, people will pull that in."

Unified Voice. While all of the organizations used teams to generate ideas for online content, some stressed the importance of having a single content curator posting the final edited message to the platform. Jody said: "The contributors to the content are the different program mangers across different locations. They send the content, then it is filtered and curated by the sole author. We choose to have one author so we have a unity of voice."

Some used an editor to filter and approve content but did not restructure to create a recognizable voice. Riley said: "Different staff within the organization post about travel, what fundraising means, and what donors mean to us. I have also had interns and student workers who helped with the blog and wrote for Facebook."

*Unique Posting Patterns and Strategies across Platform*s. Most of the participants had particular strategies for each of the platforms such as posting every weekday or five times a week on Twitter and Facebook. Instagram posts were often less frequent. New content was created even less frequently for e-newsletters, blogs, and YouTube videos. Avery said: "We try to put something out there almost every day…If we don't really have anything compelling to post today, we might wait until tomorrow, but our goal is at least five times a week to have something new on the page."

Most recognized unique audiences across different platforms and the need to tailor the message according to the platform being used. Peyton said: "We write all the posts on each channel individually. We are utilizing each channel for conversation rather than to just push out content." Avery said, "They are seeing a consistent message, but it is targeted for each group based on the channel." Only one organization did not have specified strategies unique to the individual platforms. Casey said, "We try to post at least three times a week and it may be a little bit more than that. A lot of our posts are automatically pushed through to Instagram and Twitter."

RQ4: What were nonprofit organizations representatives' opinions of using social media?

The participants in the study had very positive experiences with the use of organizational online media. Data analysis uncovered three major themes pertaining to organizations' opinions of using online media: value, conversation, and time.

Value. Participants said they took advantage of the inexpensive or free features of social media to improve their research online such as encouraging employees and current contacts to like and share content; promoting online content at speaking engagements; leveraging partnerships with other organizations to cross promote content; and incorporating links to social media or icons on all forms of communications. Facebook was mentioned specifically as a useful online communications tool due to its reach. Avery said she encourages online audience members to like and share Facebook stories as a way to gain new followers and improve engagement. Online one participant mentioned the use of boosted posts or paid ads on social media platforms.

Conversation. Most of the participants identified the major benefit of online media as the ability to join in real-time conversations and listen to constituents. Peyton said, "The major benefit is that it supports real-life relationships and you can participate in conversations that people care about."

> AVERY: Our original intention of getting online was to connect with donors. It's been so successful that it has just blossomed into more than a way to connect and listen. It's a way to build a community of people who believe in what we do. The major benefit is community building. Our online media presence generates donations, but if you build a community then the donations will come.

The participants did not experience many negative comments on the organizations' pages. Peyton said, "We haven't had to deal with any conversations that were incongruent on Facebook, Twitter, or LinkedIn." While most of the participants did not experience many inappropriate comments, most saw them as an opportunity to engage in conversation and had policies in place in case this became an issue. Riley said: "I would likely remove an obscene post and move the conversation to a private message. If it is a respectful conversation or question, I would like to lean in and have that conversation in a public space."

One participant did not encourage conversation on the organization's page. Casey said, "We would like to, but there's nothing that we are really doing to create that conversation." All other participants were actively trying to engage in conversations with constituents. Jody said: "We don't want to just be a billboard. We are trying to engage, be conversational, and be a community of [Organization] supporters online."

***Time*.** While conversations were identified as one of the most rewarding facets of social media, they also can lead to a negative aspect when people expect answers right away. Jody said: "People expect immediacy. Sometimes things don't move as fast in a third world country. Because of that, there's more pressure to show results more quickly. It is sometimes difficult to share the complicated interworkings in these countries." Only one organization did not find any drawbacks to using online media while the other practitioners interviewed recognized time as the only constraint related to social media use. Peyton said: "The major drawback is time. You can't

do it half-heartedly. You have to be all in. It takes expertise and time." Avery said: "If you're not careful, it can be very time consuming. You have to be very aware and self-disciplined."

RQ5: How did nonprofit organizations assess their social media presence?

Each participant described a specific target audience and a unique means to measure the success of their online platforms. When attempting to understand how organizations assess their social media presence, data analysis revealed two themes: audiences and measurement.

Audiences. The participants had a wide range of strategies and target a variety of audiences across their different platforms. Jody said her organization uses Instagram to "reach a demographic outside of the typical 45- to 50-year-old group that make up our typical donors." She said this is because "the college and young adult age is really a sweet spot for nonprofits because you can start somebody as a volunteer and then turn them in to a donor as they have more disposable income." Avery said her organization uses Facebook to disseminate information to anyone who will listen while the e-newsletter goes to a more targeted audience of those who have donated or attended a sponsored event.

Most of the organizations strive to reach audiences with characteristics similar to their existing donors. They recognized these audiences as the most valuable because they fit the demographic of those who already support the organization. Riley said: "We target ads at people who like our page and their friends. We have also uploaded email addresses and gotten Facebook to serve them ads." Jody said her organization targets those who already like the Facebook page and their friends because: "They are a better lead and more likely to give."

Measurement. Means of measurement also varied from organization to organization. Some used analytics to track engagement. Jody said: "We track analytics on a monthly basis. We use multiple key performance indicators like follower growth, engagement, reach, highest performing post and why, best times of day to post, and best days for engagement." Peyton created a custom spreadsheet to compare engagement across platforms: "What we are looking for more than anything is for conversations that were most interesting to our audience. We are primarily looking at engagement, which varies across different platforms, and comparing the same posts on different platforms each month."

Other participants did not gather metrics to evaluate their posts. They instead tracked from where donors and interested persons were coming. Casey said: "We ask people who come to our website requesting more information where they heard about us. About 10-15% say they learned about the organization through social media." Avery said her organization tracks the source of donations: "The only way we track whether social media is successful or not is whether people are clicking in to donate. Basically, the only metric we have is, 'Does it generate money?'"

Conclusions, Discussion, and Recommendations

The pervasiveness of the Internet allows us to connect to information and each other almost anywhere and anytime (Lauri, 2010). Nonprofit organizations can leverage this communications reality to accomplish strategic goals such as engaging supporters, raising donations, and meeting

their goals (Pardey et al., 2014). Even organizations that are addressing vital issues such as hunger and poverty in international rural settings can and should use a variety of communication strategies to accomplish their missions. This study set out to explore how communicators in international rural development NPOs use online media (including social media) to meet their organization's broader goals.

The findings indicated the way organizations incorporated online media into their communications plans differed, but all the study's participants agreed the use of teams to develop a communications plan led to creative strategies that were more reflective of the organizations' development plans. Although the participants discussed the significance of using social media, they did not allocate an equivalent amount of financial resources to these communication efforts. The inexpensive nature of social media was one of the reasons the participants said they had integrated these platforms in their communication efforts. This finding is consistent with previous authors who noted social media as affordable options for organizations to engage with stakeholders and new supporters (Chiulli, 2014; DiStaso & Bortree, 2012; Meredith, 2012; Yang & Lim, 2009).

Participants viewed social media as a necessity in current times, as did previous research (Supa, 2014). Nearly all organizations ranked Facebook considerably higher in terms of usefulness for facilitating conversation and driving civic engagement than any other social media service, similar to Obar et al. (2011). Prior studies have also found that nonprofit organizations have a presence on multiple platforms (Kemmerer, 2013) and primarily use Facebook (Graybill, 2010; Obar et al., 2011).

By proving a variety of interesting and useful content across multiple platforms, the organization representatives strive to create two-way communication that leads to stronger relationships with stakeholders. An important concept in the theory of relationship management is the need for organizations to listen to their audience members' demands and needs (Sallot et al., 2003). These communication platforms were an effective way for organizations to communicate with supporters, similar nonprofits, the media, and prospective members. Social media platforms provided a place to join existing and create new conversations with audiences and encouraged the application of the two-way symmetrical communications model. By first listening on social media, organizations have the opportunity to understand the audiences' desires and then communicate about the organizations aspirations (Campbell et al., 2014; Meredith, 2012; Nah & Saxton, 2012).

The key messages disseminated through social media differed, but participants agreed posts should ultimately drive a desire for the audience to support the organization. The participants viewed social media as an online community for like-minded people to gather and have a voice. Creating an online community through social media allows nonprofits to work together for the mutual benefit of building better relationships with each other and their supporters (Chiulli, 2014). Participants also viewed social media as a forum for sharing the happenings within the organization. Some participants stressed the importance of having a consistent, unified voice throughout all platforms. Across each of these platforms, most participants tailored their message to address the unique audience on that platform. Wright and Hinson (2008) recommended organizations develop new communication strategies to specifically target audiences through

social media. All the participants agreed it is pertinent for organizations to be online to generate awareness and show transparency (DiStaso & Bortree, 2012; Wright & Hinson, 2010).

The participants discussed time, energy, and the effort it takes to fully utilize all the features of and variety of platforms provided through social media as constraints, but the benefits of being on social media outweighed the drawbacks. The participants found great value in social media for the return they were getting with little, if any, investment, which supports the concept that social media provide cost-effective communications outlets for nonprofits with small budgets and large expenditures alike can use (Frye, 2014; Obar et al., 2011).

The incorporation of engagement features such as liking, commenting, and sharing on Facebook posts and favorites and retweets on Twitter has engendered a new standard of immediacy in two-way dialogic communications that was not previously attainable in stagnant print communications (Lovejoy & Saxton, 2012; Saxton & Waters, 2014).

Key (2005) said public relations and communicating in the digital age requires knowing and understanding an organization's audience. The findings indicated participants valued social media's ability to research current audience members while also exposing others to the organization. To assess their social media presence, some organizations tracked engagement through analytics while a couple merely measured the success of platforms based on donor traffic, which Bennett (2007) deemed an insufficient strategy.
As others who work in IRDNPOs work to maximize their communication efforts to make their overarching missions a reality, this study provides support for the use of online and social media to help meet those goals. Others can refer to this study's findings to perhaps convince organization directors that spending time and energy online is worth the investment to reach new and current supporters and engage them in the larger cause.
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From a practitioner standpoint, organizations need to encourage more feedback from stakeholders and sincerely consider this feedback when formulating and addressing organizational goals. More analytical approaches to engagement measures should also be used to gain a more competent understanding of what drives audience engagement. This will allow organizations to better tailor their messages to their specific and unique stakeholders. Tracking online donations from social media platforms in relation to the posted message may also provide insight to organizations as to which posts result in action.

More research is needed to examine the differences in usage among the different platforms of social media and websites in general. Without a thorough understanding of an organization's unique approaches to these different platforms, rules of best practice cannot be generalized across all online communication efforts. Additional studies should examine the impact of social media strategies on non-virtual engagement in the form of donations or volunteerism. Addressing the significant issues of global hunger and poverty will take a variety of organizations using effective communication strategies to reach stakeholders, raise funds, and implement programs that lead to positive outcomes. While communication alone cannot solve the issue of food insecurity in a growing global population, it will help facilitate the development, implementation, and evaluation of germane efforts.

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A Quasi-Experimental Examination: Cognitive Sequencing of Instruction Using Experiential Learning Theory for STEM Concepts in Agricultural Education

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Abstract

Understanding methods for effectively instructing STEM education concepts is essential in the current climate of education (Freeman, Marginson, & Tyler 2014). Kolb's experiential learning theory (ELT) outlines four specific modes of learning, based on preferences for grasping and transforming information. This quasi-experimental study was conducted to test the effect of cognitive sequencing of instruction in the dimension of grasping information through ELT. Two units of STEM-enhanced instruction were develop, each with two separate sequences; one with concepts presented beginning with a concrete experience and moving to an abstract conceptualization and the other in the opposite sequence. Introductory agricultural science courses in four Texas high schools were randomly assigned to one of four experimental groups (n = 121). This experiment utilized a crossover design to allow each student to experience both cognitive sequences (Shadish, Cook, & Campbell, 2002). This portion of a larger study examined the independent variables of cognitive sequence of instruction and student preference for grasping information in relation to the dependent variables of student change score from pretest to posttest for both units of instruction. Findings indicated significant interactions on both units of instruction ($F(2,115) = 38.19$, $p = 0.01$, $\eta_p^2 = 0.40$ and $F(2,115) = 17.58$, $p = 0.01$, $\eta_p^2 = 0.23$) between student preference for grasping information and cognitive sequence of instruction.

Introduction

In the last ten years, secondary education has been called upon for more than preparing students for a recall of basic information (Carnoy & Rothstein, 2013). This shift in focus is not without warrant. According to the World Economic Forum, the United States ranked fifty-first in quality of math and science education when compared to all nations worldwide (Schwab, 2011). Secondary students in the U.S. have demonstrated declining comparative performance in STEM areas over the last two decades (Carnoy & Rothstern, 2013), and there are growing concerns that students are not completing their education with the skills and knowledge required to enter higher education and skilled careers (Maltese, Potvin, Lung, & Hochbein, 2014).

The abstract nature of many STEM concepts has led researchers to conclude that these topics are best taught using subjects that allow a connection to their real-world application (Boaler, 1998; Kieran, 1992; Stone, 2011; Woodward & Montague, 2002). Career and Technical Education (CTE) courses, including agricultural education, have been seen as a possible solution to teaching STEM concepts, as these courses often include a contextual frame for abstract STEM topics (Stone, 2011).

Agricultural education is rooted in experiential learning (Baker, 2012; Roberts, 2006). The process of integrating abstract concepts in an agricultural setting can be facilitated through the use of Kolb's (1984) experiential learning theory (ELT) as the model through which to deliver, reinforce, and evaluate student learning (Baker, 2012; Roberts, 2006). Quality educators use multiple instructional methods during a given unit, and even within the same class period to help facilitate learning (Marzano, Pickering, & Pollock, 2001).

Although research on single instructional methods may not be a realistic approach to examining effectiveness, studies of the overarching principles of instruction common to all instructional methods could yield viable results (Eggen, Kauchak, & Harder, 1979; Tallmadge & Shearer, 1971). One of the overarching principles of instructional methods is the concept of sequencing instruction (Reigeluth, 2013). One approach to understanding how agricultural education could assist students in grasping STEM concepts would be to use the ELT model as a framework for exploring the sequencing of STEM instruction in agricultural education courses.

Conceptual Framework

The conceptual framework for this study was developed from both Gagne's (1965) theory of instruction and Kolb's (1984) experiential learning theory. Gagne's (1965) theory of instruction accounts for an independent analysis of student, school and teacher, and instructional factors which may impact student learning. Gagne's model is widely accepted as a complete overview of the instructional process, and addresses specific actions that should be present when delivering information to students (Driscoll, 2004; Reigeluth, 1983). This study was also heavily influenced by Kolb's experiential learning theory as the method for presenting the stimulus to students. The model shows the cyclical process of learning as a relationship between the four modes of active experimentation (AE), concrete experience (CE), reflective observation (RO) and abstract conceptualization (AC) (Kolb, 1984, 2015). The resulting conceptual model for this study is shown in Figure 1.

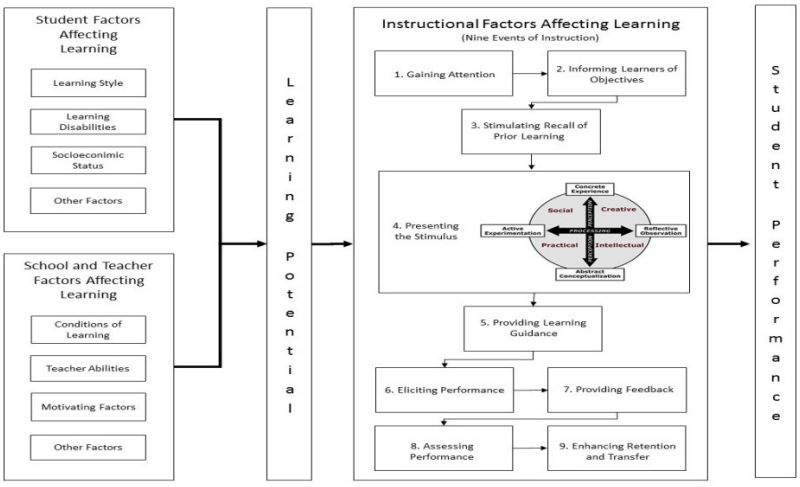

Figure 3. Conceptual model of student learning. Based on Gagne's (1965) nine events of instruction and Kolb's (1984, 2015) experiential learning theory.

This study was designed to employ the conceptual model in an examination of student performance by using experimental curricula developed to standardize the events of instruction as outlined by Gagne (1965), manipulating only the cognitive sequence with which information was presented. Resulting changes in learning between dependent measures were examined in relation to student learning preference and cognitive sequence of instruction.

Review of Literature

Almost every country has examined the importance of integrating STEM concepts into their educational programming (Freeman, Marginson, & Tyler, 2014). In the US, nearly 91% of American adults feel as though science and technology education gives students opportunities for growth and success, and over 60% believe current math and science education is inadequate (Maltese, et. al., 2014). In late 2013, a joint report from the National Science Foundation and the Department of Education highlighted suggestions for STEM education. Among these suggestions was to "provide more opportunities for hand-on, real-world STEM activities at the secondary level" (Ferrini-Mundy, 2013).

Career and Technical Education (CTE) courses have been suggested as a platform for teaching STEM concepts (Stone, 2007, 2011). Stone (2011) analyzed shifts in the pressure applied to CTE courses to integrate STEM concepts beginning in the 1970s. He concluded that models integrating STEM concepts into CTE courses were viable, and noted "STEM-focused education can be incorporated into any CTE delivery system, program, or curricular or pedagogical approach within CTE" (Stone, 2011, p. 13). Both the Math-in-CTE initiative (Stone, Alfeld, & Pearson, 2008) and the Science-in-CTE initiative (Pearson, 2015; Pearson, Young, & Richardson, 2013) have been conducted to examine the successful learning of STEM concepts in CTE courses. These programs have yielded positive results and longitudinal studies are underway.

Contextual learning is not new to CTE or agricultural education. Furner and Kumar (2007) and Shinn et. al. (2003) have examined the important role of agricultural education in bridging the gap between the known and unknown through contextualized learning. The contextual bridge between agricultural education and STEM concepts is well established; agriculture teachers rate the importance of integrating STEM concepts high and have an awareness of shifts in educational structure mandating integration STEM concepts (Myers & Dyer, 2004; Smith, Rayfield, & McKim, 2015). Stubbs and Myers (2015) found that integrating STEM concepts was an essential component of a quality agricultural education program.

Experiential learning theory is based on the premise that learning is a dynamic interaction between the learner, methods through with information is gathered, and methods by which information is processed in the mind (Kolb, 1984, 2015). The resulting model is the cyclical process of the experiential learning cycle. This cycle includes two sets of dialectically opposed modes of learning: Active Experimentation (AE) and Reflective Observation (RO) related to transforming experience, and Concrete Experience (CE) and Abstract Conceptualism (AC) related to grasping experience. Through ELT, Kolb outlines two distinct modes of grasping experience; apprehension, based on concrete experiences, and comprehension, based on abstract

conceptualization (Kolb, 2015), and highlights that individuals will have a preference between the opposing modes of learning (Kolb, 2015).

There are those who argue learning preference cannot be used as a standalone assessment of learning ability (Pashler, McDaniel, Rohrer, & Bjork, 2008). Others have noted the importance of understanding individual student learning factors in education (Brokaw & Merz, 2000; Claxton & Murrell. 1987; Coffield, Moseley, Hall, & Ecclestone, 2004a, 2004b; Duff, 2004; Dunn and Dunn, 1989; Felder & Silverman, 1988; Fleming, 2001; Gregorc, 1979; Kolb, 1985, 2015; Tomlinson, 1999). Sousa (2011) noted, "there is little argument that people have various internal and external preferences when they are learning" (p. 59). Due to the close tie between *Kolb's Learning Style Inventory (KLSI)* and ELT, we used this instrument as an assessment of student learning preference for grasping information.

Several researchers have examined sequence of instruction in general (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956; Reigeluth, Merrill, Wilson, & Spiller, 1980; Scandura, 1983; Webb, 1997). These concepts of sequencing instruction have often included only the sequencing of concepts and topics, rather than sequencing the modes of learning or type of instruction. The concept of sequencing an initial exposure to instructional information from a specific end of the ELT continuum has not been fully examined. Baker, Brown, Blackburn, and Robinson (2014) conducted an initial examination into presentation order of concepts within the context of experiential learning theory for post-secondary students using agriculture as the context. While their findings failed to reveal significant differences between order of abstraction and type of reflection, they recommended further research in this area, specifically within the secondary classroom.

Research into effective methods for integrating STEM concepts into agricultural education within the framework of ELT may yield important results related to instruction for individual students. Cognitive sequencing may play an important role in allowing students to grasp abstract concepts as applied in a contextual setting (Garlick, 2010; Marzano, et. al., 2001; Reigeluth, 1983). This research was conducted to fill the gap in the knowledge base by analyzing cognitive sequencing in STEM education concepts through the pedagogical approach of ELT, allowing for the most effective sequences for students based on learning preferences to be revealed, and giving agricultural education students access to the most efficacious methods for learning STEM content.

Purpose and Objectives

The purpose of this portion of a larger study was to determine the effect of cognitive sequence of instruction and student learning preference for grasping information on student learning of STEM concepts in agricultural education. To guide the research, the following objectives were developed:

1. Describe the effect an interaction between student learning preference for grasping information and cognitive sequence of instruction has on student change scores on STEM content assessments.

2. Describe the variance of student change scores attributed to student preference for grasping information.
3. Describe the variance of student change scores attributed to cognitive sequence of instruction.

This quasi-experiment was developed to test the following null hypothesis:

Ho: There is no interaction between student preference for grasping information and cognitive sequence of instruction for student change scores on STEM-based content assessments in agricultural education

Methods and Procedures

This study was conducted using a quasi-experimental design, utilizing students enrolled in Principles of Agriculture, Food, and Natural Resources (AFNR) courses in Texas as the functional experimental units. Quasi-experimental research was popularized by Campbell and Stanley (1963) and can be defined as "an experiment in which units are not randomly assigned to conditions" (Shadish et. al., 2002, p. 511). The experiment used a repeated measures crossover design including a control group (Campbell & Stanley, 1963; Shadish, et. al., 2002) to allow for multiple data collection points from each student.

Sites were recruited through purposive selection based on the diversity of school population, regional differences, location in relation to [University], and teacher qualities including commitment to project and teaching history. Fraenkel, Wallen, and Hyun (2006) noted that purposive sampling is sometimes necessary in quasi-experimental educational research due to the need for collaboration between researchers and school personnel. Of twelve identified sites, four were successful in completing authorization and data collection for both experimental rounds. The final population included students enrolled in the Principles of Agriculture, Food, and Natural Resources courses at four high schools in Texas, $n = 121$. Experimental treatments were randomly assigned to each site, as shown in Table 1. According to Shadish, et. al. (2002) quasi-experimental research may require groups of experimental units to be randomly assigned to a treatment collectively, if they are pre-organized into logistically viable groups.

Table 1

Experimental Treatment Profiles by Site

	Round One				Round Two			
Site		Curriculum	Sequence			Curriculum	Sequence	
1	O_1	--	--	O_2	O_3	--	--	O_4
2	O_1	Water	AC-CE	O_2	O_3	Soil	CE-AC	O_4
3	O_1	Soil	AC-CE	O_2	O_3	Water	CE-AC	O_4
4	O_1	Soil	CE-AC	O_2	O_3	Water	AC-CE	O_4

Two units of experimental curricula were developed for this study. Each unit was developed in two formats; one cognitively sequenced with each new concept beginning with a concrete experience and moving toward abstract conceptualization, and another with each new concept beginning with abstract conceptualization and moving toward a concrete experience. To

ensure curricula met the rigorous requirements for use as experimental treatments and to establish content and face validity, they were designed with guidance from a cognitive psychologist and agricultural curriculum developers. Gagne's nine events of instruction (1965) were held constant during each round of testing except "presenting the stimulus" which varied based on which mode of grasping experience was presented first. Gagne (1965) theorized that by following the nine events of instruction, external learner variables can be controlled in test groups. Each test site received both content areas, sites were randomized as to which content area and cognitive sequence they would receive first. The crossover design allowed each student to experience both units of instruction and both cognitive sequences.

Experimental treatments for this study were designed to be instructed exactly as developed, using provided lesson plans, worksheets, laboratories, and information. Completing this research within the parameters of the study design relied on teachers at each experimental site instructing the curricula exactly as designed. The possibility of deviation from the intended curricula posed a limitation to this study. To overcome this limitation, extensive training and instruction on the use of the curriculum materials was provided to teachers and agreements of compliance were signed and collected from teachers administering the experimental treatments.

Three instruments were used in this study; content knowledge assessments for both the water and soil science units, and *KLSI v 3.1*, which was used to determine student preference for grasping experience in study participants. Unit assessments were developed to directly assess each of the unit objectives with exam questions at multiple levels of cognition. Linkages between individual instrument items and objectives, along with cognitive levels of exam items were established during instrument development. According to Frisbie (1988), the most appropriate method for determining the reliability of a typical teacher-made test using multiple question formats is through the employment of a *KR-20* coefficient. Resulting coefficients (*KR-20*) were 0.75 for the water science pretest and 0.78 for the water science posttest. For the soil science tests, the resulting reliability coefficients (*KR20*) were 0.81 for the pretest and 0.86 for the posttest. Reliability coefficients for teacher-made tests are considered to be acceptable at a minimum level of 0.65 (Frisbie, 1988), therefore the reliability of both unit assessments were deemed acceptable for the intended purpose of this study.

The paper version of the *KLSI v. 3.1* instrument was used to determine the learning style preference for respondents in regard to grasping information. The format of *KLSI v. 3.1* is a forced-choice response to 12 instrument items. Each item contains a statement prompt and asks respondents to rank their preferences for four answer choices, which correspond to the four learning modes of Kolb's (1984) experiential learning theory (ELT). Respondent rankings are ordinal from 4 "most like me" to 1 "least like me" (Kolb & Kolb, 2013). Validity of the *KLSI v. 3.1* has been widely established for use in the field of education (Kolb & Kolb, 2005), and was determined to be acceptable for the purposes of this study. Previous measures of reliability for the four learning KLSI learning modes range from $\alpha = 0.77$ to $\alpha = 0.84$ (Kolb & Kolb, 2005), and reliability was determined to be suitable for use in this study. To maintain group sizes large enough for statistical examination, student preference for concrete experience or abstract conceptualization was classified dichotomously, using the cut scores provided with the *KLSI v 3.1* manual (Kolb & Kolb, 2005). This decision is similar to the decision to use a bipolar classification of preference for grasping and transforming information by Baker (2012).

This quasi-experiment was conducted in the fall semester of 2015. Data were collected in two phases: collection of student characteristics, and collection of STEM assessment knowledge. The first phase of data collection was the collection of information related to participant demographic and classification variables. Per Institutional Review Board requirements, parental consent and student assent were obtained by each student in the Principles of AFNR courses for each participating school. Consent and assent were obtained for $n = 121$ of the students for an overall inclusion rate of 94.5% of all students ($N = 128$). We travelled to sites to collect information regarding student demographic characteristics and to administer the *KLSI v. 3.1* instrument to students.

The final phase of data collection was completed by the agriculture teachers who participated in the study. Prior to teaching each unit, teachers administered a pretest, and at the completion of each unit of experimental curricula, a posttest was administered. These assessments included no names, only a unique identifier for each student. Tests were hand-scored once by the teacher according to the predefined answer key, and again by the research team to ensure scoring was consistent and correct. Scores on the pre and posttests were added to the encrypted spreadsheet, and a change from pretest to posttest score was calculated.

Initial data were analyzed with an omnibus multivariate analysis using IBM SPSS v. 23. A multivariate analysis of variance was determined to be the optimal statistical tool for interpreting information from this study (Meyers, Gamst, & Guarino, 2012; Stevens, 2009). Tabachnick and Fidell (2007) mentioned the need to carefully examine the use of MANOVA in crossover designs, as the variation in treatment across measures may be due to the effects of crossing treatments, rather than true interaction when assumptions are violated. After running a MANOVA analysis, two of the assumptions of MANOVA were violated, and the decision was made to examine the two units of instruction separately using two univariate ANOVAs (Howell, 2012; Mayers, 2013; Tabachnick & Fidell, 2007). The resulting univariate analyses yielded two ANOVAs from the same data set. The alpha level for significance was adjusted using Bonferroni's adjustment (Meyers, et. al., 2013; Stevens, 2009; Tabachnick & Fidell, 2007), resulting in an adjusted alpha level of $p < 0.02$ for determining significance.

Findings

Prior to analyzing the results related to the research objective, data were analyzed using ANOVA to determine if statistically significant differences existed in the four test sites on the pretest measures. An initial examination of prior knowledge was necessary to interpret subsequent differences which may have existed based on teacher or school factors rather than the independent variables. No significant differences ($F(3,117) = 1.22$, $p = 0.30$, $\eta_p^2 = 0.03$) were found in the pretest water science assessment scores between students at the sites. The ANOVA examination of the raw scores on the soil science unit exams revealed statistically significant differences ($F(3,117) = 5.10$, $p = 0.02$, $\eta_p^2 = 0.15$) in the means between sites on the soil science pretest assessment. Post hoc analysis showed differences only between sites three and four. The nature of this study allowed for an examination of change from pretest to posttest (Shadish, et. al., 2002), and as such, the differences in pretest scores were noted for examination in the

outcomes of hypothesis testing, but deemed no threat to the analysis of findings related to the objectives.

To begin the analysis related to the research objectives, the descriptive results of change from pretest to posttest on both the water science and soils science unit assessments were calculated and are shown in Table 2.

Table 2

Means and Standard Deviations of Change in Score for Water Science and Soil Science Units by Independent Variable Group

		Water Science Unit		Soil Science Unit	
Variable	Category	*n*	*M* (*SD*)	*n*	*M* (*SD*)
Grasping Preference	Apprehension	85	41.82 (24.57)	85	47.69 (26.62)
	Comprehension	36	30.53 (28.93)	36	32.31 (23.84)
Sequence of Respective Unit	AC to CE	72	43.69 (17.97)	31	33.81 (16.87)
	CE to AC	31	48.45 (31.04)	72	57.64 (19.52)
	Control	18	0.33 (3.24)	18	1.06 (2.56)

Note: The crossover design allowed for students receiving the water science unit in the AC to CE sequence to receive the opposite treatment for the soil science unit, which accounts for the differences in *n* between sequences

Following an analysis of the descriptive means, the means for each of the units of instruction were compared by using univariate analyses. The results of the omnibus ANOVA examination for the water science unit revealed significant differences ($p \leq 0.02$) in the dependent variable. Significant differences were found for both preference for grasping experience ($F(1,115) = 11.07$, $p = 0.01$, $\eta_p^2 = 0.09$) and cognitive sequence of instruction ($F(2,115) = 60.65$, $p = 0.01$, $\eta_p^2 = 0.51$). These findings were superseded by the finding of a single statistically significant ($F(2,115) = 38.19$, $p = 0.01$, $\eta_p^2 = 0.40$) interaction involving both preference for grasping experience and cognitive sequence. Based on the guidelines set forth by Cohen (1977), this difference had a large effect size $\eta_p^2 \geq 0.14$, and showed a high level of power. Based on the findings, the null hypothesis was rejected, and it was determined that interactions between cognitive sequence and preference for grasping experience did exist. Results of the omnibus ANOVA are shown in Table 3.

Table 3

ANOVA Table for the Effect of Preference for Grasping Knowledge and Cognitive Sequence on Change in Pre and Posttest Scores on Water Science Unit Assessments

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Grasping	2922.20	1	2922.20	11.07	0.01*	0.09	0.91
Sequence	32014.49	2	16007.24	60.65	0.01*	0.51	1.00
Grasping*Sequence	20160.22	2	10080.11	38.19	0.01*	0.40	1.00
Error	30352.84	115	263.94				
Total	262248.00	121					

Note: Significant alpha level was determined *a priori* at an adjusted level of $p \leq 0.02$ to account for analysis of both units of instruction

The analysis of the soil science unit yielded similar results, which are shown in Table 4. A significant difference ($F(2,115) = 69.17$, $p = 0.01$, $\eta_p^2 = 0.55$) was found related to student preference for grasping information which was superseded by a significant interaction ($F(1,115) = 17.58$, $p = 0.01$, $\eta_p^2 = 0.23$) between sequence of instruction and preference for grasping information.

Table 4

ANOVA Table for the Effect of Preference for Grasping Knowledge and Cognitive Sequence on Change in Pre and Posttest Scores on Soil Science Unit Assessments

	SS	*df*	*MS*	*F*	*p*	η_p^2	1-β
Grasping	93.95	1	93.95	0.41	0.53	0.01	0.10
Sequence	32028.74	2	16014.37	69.17	0.01*	0.55	1.00
Grasping*Sequence	8138.91	2	4069.46	17.58	0.01*	0.23	1.00
Error	26624.92	115	231.52				
Total	310351.00	121					

Note: Significant alpha level was determined *a priori* at an adjusted level of $p \leq 0.02$ to account for analysis of both units of instruction

Following the results from the ANOVA analyses, the simple main effects tests were conducted to further investigate differences. The results of the simple main effects tests revealed that, for both units of instruction, students had significantly higher scores in the unit sequenced to begin with their preferred method of grasping information. The resulting profile plots for both units are shown in Figure 2.

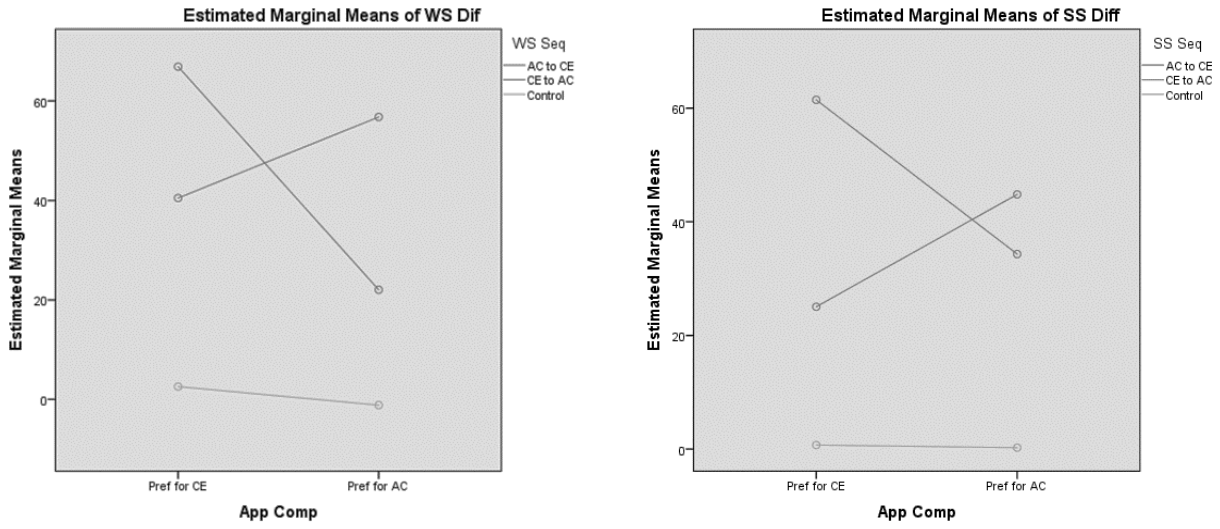

Figure 2. Profile plots for both units of instruction

Conclusions/Implications

This study was an exploratory examination of cognitive sequencing of STEM concepts in agricultural education, in an effort to gain insight into how the cognitive principle of sequencing instruction might play a role in student understanding of STEM concepts. The study was developed using the foundational underpinnings of experiential learning, which is already at the foundation of agricultural education (Baker, 2012; Roberts, 2006). Through this examination, we can begin to frame methods for instruction which might help agricultural educators better guide students through the abstract STEM concepts they are being asked to teach (Myers & Dyer, 2004). The findings of this study lend support to the fact that it is not only what agricultural educators are teaching in regards to STEM concepts in agricultural education, it is how they are teaching it that may make the critical difference for students.

The results of this study highlight the importance of cognitive sequencing as a factor related to change in score from pretest to posttest. By using a crossover design, each student could be evaluated in relation to their preference for grasping experience and their performance on purposively sequenced units. For the $n = 121$ students involved in this study, differences were evident. The results reveal that sequencing of instruction resulted in greater changes in assessment scores as an interaction with preference for grasping experience. Student differences based on cognitive sequence have direct implications for agricultural educators as they work to instruct STEM concepts.

Three main findings emerge from this study: students in this study who preferred to grasp experience through apprehension had higher change scores from pretest to posttest when the units were sequenced to begin with a concrete experience, students who preferred to grasp experience through comprehension had higher change scores when the units were sequenced to begin with abstract conceptualization, and students performed with higher change scores in the unit cognitively sequenced to match their preferred learning style, regardless of unit content.

Many of the concepts in STEM education are abstract in nature (Maltese, et. al., 2014), and the hands-on nature of agricultural education and other CTE courses have been seen as a platform for delivering these concepts (Stone, 2010). For students who prefer to grasp information through apprehension, the presentation of abstract concepts through abstract conceptualization, which is common in traditional education (Reigeluth, 2013), may not provide the stimulus they need to effectively grasp the new information.

The majority of students in this study ($n = 86$) had a preference for grasping experience through apprehension. If the proportion of students who prefer apprehension over comprehension is similar in the total population of agricultural education students to the proportion in this study, there could be a large number of students who would benefit from a sequencing instruction to begin with concrete experiences. Providing students preferring apprehension over comprehension a concrete experience at the beginning of the instruction allows them to have an experience to tie the abstract concepts to (Garlick, 2010; Kolb, 2015). According to Kolb (2015) those who prefer concrete experience (apprehension) have "a concern with the uniqueness and complexity of present reality as opposed to theories and generalizations" (p. 105).

Students with a preference for grasping experience through comprehension were found to have higher changes in scores when new concepts were presented with an abstract conceptualization focus first. What implications does this have for agricultural education? First, the traditional model of curriculum design, which includes instruction in abstract concepts followed by concrete application of those abstractions is well-suited for students who prefer to grasp experience through comprehension (Reigeluth, 2013). These students are more suited to learning abstract concepts through traditional educational methods.

Students with both types of preferences exist in an agricultural education classroom, so which of the cognitive sequences is better suited for development of curriculum materials? Sequencing instruction based on individual student preferences for grasping information has close ties to the literature related to differentiated instruction. Tomlinson (1999) stated the importance of tailoring educational practices to meet the needs of each student. The findings of this study give an example of just how critical differentiated instruction is when dealing with STEM concepts in agricultural education classes. Students in this study showed drastically higher scores when they were given the opportunity to grasp information in a sequence tailored to their preference. This small change to educational methods may have broad-reaching effects, not only for STEM concepts in agricultural education, but for education as a whole.

It is important to note that, within the confines of ELT, the entire learning cycle must be completed in order for learning to occur. Students who have a preference for apprehension are not likely to learn only through the concrete experience, it must be supplemented by reflective observation, abstract conceptualization, and active experimentation in order for the intent of ELT to be met (Baker, 2012; Kolb, 2015).

Recommendations

These conclusions serve as a starting point for a discussion on how our practices can best meet the needs of our students. Agricultural education is charged with providing context to abstract STEM concepts (Myers & Dyer, 2004). To this point, there has been little research on the best ways to deliver this content effectively (Stone, 2010). Perhaps by returning to our ELT roots (Roberts, 2006; Baker, et. al. 2012) and differentiating our instruction based on individual learning preferences (Tomlinson, 1999) through cognitive sequencing, we can stimulate the change our field needs to meet the challenge.

Because both preferences for grasping information exist in a secondary agricultural education classroom, it is recommended to alternate and combine instruction in STEM concepts from both apprehension and comprehension of the prehension dialectic. Careful attention should be paid during the design of instruction to ensure that students are receiving exposure to the complete learning cycle as defined through ELT. In addition, we recommend continued emphasis on both sequencing instruction and the design of lessons using ELT for preservice and in-service agricultural educators. Pre-service teachers should be made aware of the potential effects of cognitive sequencing on student learning. They should be given the opportunity to develop lessons which are not sequenced in a traditional AC to CE format. Professional development should be created and presented to in-service teachers to highlight the effects of

cognitive sequencing based on learning style. In-service should include instruction on how to present new concepts using both an apprehension and comprehension beginning point.

Additional research is needed to completely understand the role sequencing of instruction might play in both STEM education and agricultural education as a whole. Examining the role of the transformation dimension, replicating this study in with engineering and mathematics concepts, and examining units of instruction with alternating or combined sequences of instruction are all recommended areas for continued exploration. We also recommend a replication of this study in fields outside of agricultural education, to test the interdisciplinary reach of instruction purposively sequenced based on ELT.

Experiential learning theory is a valuable tool which many believe may be at the very core of agricultural education. Attention to this theory as a systematic method for instruction, rather than a suggested principle could yield the understanding of how to integrate content and STEM concepts more effectively for all students. This study is the initial examination of a much larger concept. Combining purposively sequenced instruction with the foundations of ELT could bridge the gap between abstract concepts and STEM knowledge, and may allow agricultural educators to effectively integrate STEM concepts for all students.

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Adult 4-H Clientele Content Preferences for County Extension 4-H Facebook Pages

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Abstract

The use of social media as a means for reaching a targeted audience is a tool that has grown in prevalence over the last decade. The purpose of this study was to discover the Facebook usage levels and demographics of adult Extension 4-H clientele in six counties throughout Idaho. Survey sampling was used to collect data from adult 4-H clientele, who use and/or are affected by Extension 4-H programs. Results were analyzed for frequencies and chi-square tests for independence of demographics and Facebook usage. The results of this study demonstrated a need to promote awareness of the county Extension 4-H Facebook Pages, and showed a relationship between respondent age and desired content of county Extension 4-H Facebook Pages.

Introduction and Literature Review

Now, over a decade into the 21st Century, educators and learners alike rely more than ever on electronic methods for communicating with each other. As of August 2015, 72% of all online American adults and 82% of all online adults ages 18-29 used the online, social-networking site Facebook (Duggan, 2015). Leading the way in this trend is Facebook, with U.S. users spending a total of 114 billion minutes per month on the site (Adler, 2014). According to a report from the Pew Research Center 70% of Facebook users visited the site daily, and 43% of users logged in several times each day (Duggan, 2015). With this volume of traffic, it is clear why businesses and organizations have turned to Facebook to reach their clientele.

Historically, Extension offices have turned to a number of different communication methods to communicate with clientele and support educational programs, from printed publications, leaflets, and newsletters, to radio spots, and more recently to e-mail communications; each method came with its own set of benefits and drawbacks. Social media is a comparatively new addition to the communication toolbox, and Extension offices are in the early stages of adopting this tool. Extension professionals are grappling with how to effectively use social media, and Facebook in particular, to communicate with their clientele.

The review of literature investigated common problems with regard to adoption of social media as a platform for communicating with constituents and clientele. This analysis consisted of: (a) social media use at the local, state, and federal government level, (b) a review of existing social media programs within other state's Extension programs, (c) common barriers to adoption of social media, (d) measures of an effective social media presence, and (e) national Facebook usage statistics.

Social Media Use at Various Levels of Government

In her book on social media use in the public sector, Mergel (2012) outlined the main barriers to government adoption of social media, which include: 1) systemic challenges, (2) organizational and cultural challenges arising from bureaucracy, (3) informational challenges, and (4) legal challenges arising from the use of relatively untested technologies in the public sector. Many of these same challenges trickle down to the county and regional levels for Extension professionals; for example, a 2014 study found that 75% of Extension professionals surveyed indicated that their current system of practices did not leave time to add the use of social media into existing practices (Newbury, Humphreys, & Fuess, 2014).

In a study of the usage of social media by local municipalities, Bonson, Torres, Royo, and Flores (2012) stated that citizens are discussing local governments in social media platforms, whether the government body has an online presence or not. Government bodies that are not tuned in to the dialogue are not hearing what citizens are saying about them, thereby missing an important source of information about opinions and feelings about local policy, public services and daily life.

Research indicates that less than 10% of the U.S. population actively contributes to online content, undermining the validity of representation on user-generated content sites and leading to a quick burn-out of participants (Linders, 2012). It would not be practical to rely solely on Extension clientele to create content posts and distribute timely information. A strong central author role is necessary to create and maintain an effective Facebook presence.

Existing Extension Social Media Programs

In a study of social media utilization at the university level, Pikalek (2010) pointed out that the incoming generations of adults, often identified as Generations X and Y, were raised with almost constant access to and use of online technologies. Therefore, many institutions of higher education are in the process of integrating these technologies into marketing and educational efforts. Over the course of four years of case studies, Pikalek determined that the best lessons to be gained out of program planning included maintaining a mix of new technologies with traditional methods, collaboration of multiple departments and specialties, and clearly defined goals at the onset of a new marketing effort or educational program. Understanding the needs of clientele from the start of the planning process facilitates the identification of these goals.

Mains, Jenkins-Howard, and Stephenson (2013) described a multi-dimensional impact created by Facebook, "through the sharing of educational information, establishing and improving communication, and marketing both Extension and its programs," (p. 3). Gharis et al. (2014) pointed out that social media platforms can provide Extension professionals with useful tools for measuring their programming efforts. Many social media sites include built-in metrics that track the number of visitors, fans, friends, followers, mentions, incoming links to your site, and likes (2014).

Oregon State University Extension (OSUE) has developed a strong social media presence. Their 2009 Strategic Plan for Outreach and Engagement, outlined specific strategies including to, "develop technology that supports learning within social networking communities. Identify opportunities to use technologies such as podcasts and iTunesU to deliver program and product resources," (Oregon State University, 2009, page 8). As a result, OSUE has created numerous blogs and Facebook Pages (Oregon State University, n.d.) as well as a successful Twitter account with over 3,300 followers (Twitter, 2016). OSUE uses this site to disseminate timely information about the diverse range of topics covered by Extension, as well as links to scientific news releases and publications.

The University of Missouri provided another example of incorporating social media usage into an existing web presence. The University of Missouri recommended that Extension offices embed their Facebook activity feeds onto their respective county websites (University of Missouri, n.d.). This efficient approach supports both the traditional website and the newer social media activities, and reduces redundancy of efforts for an Extension professional. For example, if they are updating the Facebook Page frequently with timely announcements, these same announcements will appear simultaneously on the website.

In 2011, University of California Cooperative Extension (UCCE) professionals utilized social media to solicit support and donations for a wildlife research program (Kocher, Lombardo, & Sweitzer, 2013). Utilizing several social media channels including the UC Green Blog, Facebook Page, and Twitter, UCCE researchers were able to reach beyond their traditional donors and received donations from 20 states and Canada. This communication strategy was successful because it met both the goal of soliciting donations to help support wildlife research, and the goal of extending outreach to new, non-local audiences across the state, region and nation (2013).

A primary reason for an organization such as Extension to use social media is to generate clientele engagement and interaction. Doyle and Briggeman (2014) examined levels of clientele engagement with the Kansas Farmers Insurance Association's (KFIA) Facebook Page. For the study, Doyle and Briggeman measured the types of posts made by KFIA, as wells as the total number of posts, average user views per post, and average engaged user views per post for each post type (2014). The authors' conclusion was that a successful social media marketing strategy is built by first determining social media objectives, then researching the target audience, followed by creating targeted posts and staying involved on the social media site, and finally by tracking the progress made.

Barriers to Adoption of Social Media

The perceived lack of privacy when using social networks is a particular area of concern. In a case study of older adult social media users, researchers found privacy to be a frequent concern among their participants, aged 65 and older (Xie, Watkins, Golbeck, & Huang, 2012). One participant expressed concern that advertisers could access her personal data from the blogs she visited. Though the researchers in this instance were able to assuage her fears through education, the fact that this perception existed among potential audiences remains a hindrance to more widespread adoption of social media.

Working professionals also expressed a variety of concerns related to privacy when using social media. Some users worried about the widespread accessibility of their online conversations. An action research study found a desire for private chat rooms within professional development blogs (Worrall & Harris, 2013). In another study, the surveyed Extension professionals expressed fears that posting online comments might expose them to criticism (Cater, Davis, Leger, Machtmes, & Arcemont, 2013). These studies suggest that further educational efforts toward both social media developers and audiences are needed to help mitigate the privacy concerns.

Additional factors impacting the widespread adoption of social media include the organizational costs and investments necessary to make effective use of new technologies. Pilakek (2010) argued that at least 10 hours of labor were needed each week to effectively manage a social network presence. Cater et al. (2013) also cited workload constraints and a lack of employee time as the biggest obstacles keeping Extension professionals from integrating new forms of social media into their programs. Similarly, in a study of barriers to social media adoption for Extension professionals in New York and Wisconsin, lack of time was cited as a factor that negatively impacted both getting started with social media, as well as for maintaining content development in daily work schedules (Newbury, Humphreys, & Fuess, 2014).

Finally, Seger (2011) stated that Extension programs have an organizational structure that does not cater to the short turn-around new technologies demand, ideological generational divides among all who are affected by the organization, and overall issues with technology in general. With these common roadblocks in mind, there are a number of key strategies that local, state, and federal government programs have implemented, to mixed results.

Measures of an Effective Social Media Presence

There are many tools available to measure social media use. For example, in the KFIA case study, Doyle and Briggeman utilized Facebook Insight Statistics, a tool within every Facebook Page, to generate their results (2014). Facebook Insights provides statistics for: 1) post reach, the number of unique people who have seen any content associated with a Page; 2) engagement, the number of people who have clicked, liked, commented on or shared a post; and 3) Page likes, the number of unique people who follow a Page (Facebook, 2016). These usage metrics are helpful to determine which posts and activities are getting the most attention.

Many Extension professionals have recognized the potential benefits of using social media to enhance Extension programs. Facebook can improve long-term programmatic outcomes through: 1) building personal connections, 2) providing a venue for education, and 3) marketing of programs (Mains, Jenkins-Howard, & Stephenson, 2013). Utah State University Extension professionals produced a Social Media Marketing Map, which outlined a week-by-week marketing strategy for seven different social media tools for optimal long-term effects of program efforts (Christensen, Hill, & Horrocks, 2015). Planning for a social media event should begin 3-5 weeks prior to implementation, to ensure effectiveness.

National Social Media Usage

Of all the social media platforms, Facebook has the greatest number of users, as well as the widest range of users in terms of many demographic categories. In total, 72% of all adult Internet users used Facebook. In comparison, Twitter was used by only 23% of adult Internet users (Duggan, 2015). The average number of adult Facebook users increased to 79% of Internet users ages 30-49, and increased further to 82% of Internet users ages 18-29.

Furthermore, Facebook is commonly used by parents to form support groups and to monitor their children's activities. A 2014 survey of parents found that 80% of mothers and 65% of fathers turn to social media for parenting advice and support from online communities (Duggan, Lenhart, Lampe, & Ellison, 2015). Additionally, 79% of parents used social media to research parenting. Parents were avid users of Facebook, with 75% logging in daily, and 51% of those logging in multiple times each day (2015). Finally, 83% of parents surveyed reported that they were friends with their children on Facebook (Gao, 2015).

Theoretical Framework

Richard Emerson posited that all social behavior is based on each actor's subjective assessment of the costs and benefits of contributing to a social exchange (Emerson, 1976). They communicate or exchange with each other contingent on reciprocal actions from the other communicating party, (as cited in Pan & Crotts, 2012). This was defined in Emerson's (1976) seminal paper on Social Exchange Theory as "The Success Proposition," where "for all actions taken by persons, the more often a particular action of a person is rewarded, the more likely the person is to perform that action," (p. 339).

The Social Exchange Theory can be applied to the interactions between Extension professionals and adult clientele. Washington State University Extension implemented a citizen involvement program which utilized the Social Exchange Theory as a foundation for the work (Howell, Olsen, M.E., & Olsen, D., 1987). The Extension specialists for this project stated that Extension offices must focus on three things in order to stimulate clientele participation: minimize costs to the clientele; maximize the rewards associated with involvement; and establish a climate of trust that perceived rewards will be consistently delivered (1987).

The concept of the Social Exchange Theory can be applied to the interactions between adult clientele and the county Extension 4-H Facebook Pages. The idea holds that clientele will not interact with Extension via Facebook unless benefits out-weigh costs. For example, the type and quality of the information clientele find on the Extension Facebook Page should be perceived to be of great enough value for the clientele to invest their time in seeking it out. It is the imperative of the outreach program designers to create a program that is mutually beneficial to Extension professionals and to adult clientele.

Need for Study

As social media platforms gained popularity, Extension offices have expanded their communication strategies to utilize Facebook in addition to traditional methods of communication, such as e-mail, printed newsletters, and flyers. The adoption of social media,

such as Facebook, is in its infancy within Extension. Many Extension professionals have limited knowledge and experience with communicating through the social media platform, and resources which would facilitate training are often lacking. While it appears to be well received, research into what types of content clientele want to find, as well as knowledge of effective Facebook communication strategies, would benefit Extension professionals.

Many county Extension offices have struggled with the best manner by which to communicate effectively using new technologies, and the extent to which these should supplant other methods of communication (Typhina, Bardon, & Gharis, 2015). Information regarding adult clientele Facebook skill level, as well as social media use behaviors and preferences would help Extension professionals understand adult clientele's communication needs and desires. Greater knowledge of the targeted audience's social media capabilities and preferences would enable Extension professionals to use social media more efficiently and effectively.

Many Extension professionals have embraced the use of social media in their programs. Gharis, Bardon, Evans, Hubbard, & Taylor (2014) stated that social media "provides Extension professionals the ability to reach new audiences, provide professional guidance and direction, and encourage peer-to-peer interactions while meeting the land-grant Extension mission of increasing knowledge, changing behavior, and assessing the impacts of their programmatic efforts," (p. 1). The authors explained that social media tools are already in use, informing the public on important events, and that many Extension clients are willing to receive information electronically and are able to use electronic technologies.

Objectives

1. Determine Internet and Facebook usage characteristics of adult Idaho Extension 4-H clientele in selected counties.
2. Identify content preferences of adult Idaho Extension 4-H clientele for the county Extension 4-H Facebook Pages.
3. Determine if content preferences for county 4-H Facebook Pages differs from their content preferences for information posted on county 4-H websites.
4. Determine if demographic characteristics impact content preferences for the county Extension 4-H Facebook Pages.

Methodology

The study population was composed of Idaho adults who are county Extension 4-H clientele, including parents and volunteers, from six conveniently selected counties. A total of six county offices were chosen to provide a range of geographical locations throughout the state, and a variety of land types, including urban areas, forests, farmland, and rangeland. This range also provided a diverse representation of county population sizes. Each of these six counties maintains an active county Extension 4-H Facebook Page. This heterogeneity purposive non-probability sampling was accomplished by contacting Extension professionals whose counties form a representative, socioeconomic sample of the state, and roughly constituted Extension 4-H offices from one small county, one joint office of two small counties, two medium sized

counties, and two of the larger counties in the state, as determined by total numbers of adult and youth members.

The researcher reviewed recommendations for survey design and developed the questionnaire using Dillman, Smyth, and Christian's *Internet, Mail and Mixed-mode Surveys: The tailored design method* (2009). Recommendations were also gathered from the researcher's graduate committee and other faculty and staff members, Extension 4-H professionals and survey design faculty. The questionnaire consisted of 30 questions, including five which gathered demographic information from the respondent. Four questions were used to determine what technologies the respondent possessed, to collect a baseline knowledge of the respondents' technology access. Six Likert-type scale questions gathered information on the respondents' frequency of use of various Internet activities, such as checking e-mail, reading the news, searching for information about businesses, and entertainment. Six additional Likert-type scale questions gathered information on the respondents' frequency of use of Facebook activities, such as communicating with family and friends, searching for local companies, searching for events and activities, and clicking on links to external websites. Two of the questions were open-ended, and solicited comments from the respondent on areas to improve the county Extension 4-H website and the county Extension 4-H Facebook Page. The remaining six questions were closed-ended and addressed which types of content respondents sought from the Extension 4-H website and from the Extension 4-H Facebook Page.

A unique cover letter was constructed for each of the six counties, and was signed by the respective county Extension 4-H professional. This strategy was utilized to establish trust in the sample population, by issuing the survey from a known individual in their community. The same survey questions were used for all six counties.

In the spring of 2015, the survey was administered to the adult Idaho Extension 4-H clientele e-mail listserv of each of the six counties. The e-mail contained a hyperlink to the survey, generated by the Qualtrics software. A series of follow up e-mails were sent through the listserv to remind clientele to complete the survey, sent at one-week post-implementation, two-weeks post-implementation, and three-weeks post-implementation. The surveys closed and no more responses were accepted at four-weeks post-launch. Survey responses were collected in Qualtrics, then exported into Microsoft Excel spreadsheets and IBM SPSS predictive analytics software.

Response rates varied by county from 52% to 11%, with an overall total response rate of 35%. The low 11% response rate in one county may have been due in part to the fact that no reminder e-mails were sent to the county listserv.

Statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) for Windows software. Variables were grouped into frequency distributions and percentages and descriptive statistics were used to analyze the data. Chi-square testing was used to assess the relationships between respondent demographic variables and respondent preferences for content to be found on county Extension 4-H Facebook Pages. Open ended questions were qualitatively analyzed for frequency of common themes, including positive or negative reception of the county Extension 4-H Facebook Page, and awareness of the Page.

The primary limitation of the study was related to the researcher's ability to communicate with the study population. The Extension 4-H program's confidentiality policies prohibit the distribution of e-mail address information for 4-H members and volunteers to unaffiliated individuals or groups. The privacy rules required that all communication to the sample population be managed by the county-based Extension 4-H professional. As a result, the Extension 4-H professional in each county was ultimately responsible for distribution of the survey instrument and the follow-up reminder messages.

Findings and Results

A total of 1503 e-mail invitations to participate in the survey were distributed across the six counties. Data and results are derived from information gathered from 484 completed surveys returned from the study population who received the survey. The results were analyzed in aggregate, based on respondent demographics, and by county. The data for this study were obtained using a convenience sampling method, therefore the results are not generalizable.

Overall, 82.4% of respondents identified as female, and 66.9% of respondents indicated that they were between the ages of 35 and 54. The majority of respondents, 56.3%, had obtained an Associate's degree or higher, and 82.9% of respondents described themselves as White/Caucasian. Survey respondents also had on average greater educational attainment than the state average, as compared to 36.6% of the state population having obtained an Associate's degree or greater. Respondents were given the option to not answer the demographic questions.

Overall, 95.0% of respondents had Internet access in their homes. In comparison, a 2013 report published by the U.S. Census Bureau stated that 74.4% of households surveyed had some Internet access (File & Ryan, 2014).

Respondents were asked how frequently they used the Internet during the week. The majority, 82.9%, used the Internet daily, and an additional 6.4% used the Internet 5-6 times per week. With regard to using the Internet to find information on local businesses, 89.4% of respondents indicated that they utilized the Internet for this task.

When asked about Facebook usage, 85.3% of respondents indicated that they had a Facebook account, more than the national average of 72% (Duggan, 2015). When asked how often they logged in to Facebook, 59.8% answered that they check Facebook daily, with an additional 8.0% logging in 5-6 times per week (Table 1). This level of Facebook usage is below the national average of 70% of Internet users over the age of 18 who log in to Facebook daily (Duggan, Ellison, Lampe, Lenhart, & Madden, 2015).

Table 1
Adult Idaho Extension 4-H Clientele Frequency of Facebook Usage

Number of times per week respondents used Facebook	n	Frequency
Daily	247	59.8%
5-6 times per week	33	8.0%
3-4 times per week	44	10.7%
1-2 times per week	68	16.5%
Never	13	3.1%
No response	8	1.9%

A majority of respondents, 53.0%, used Facebook to communicate with family and friends at least three times a week, but almost half of respondents (47.9%) never used Facebook to find information about local companies. Similarly, 43.8% of respondents had never used Facebook to find information about local events and activities. More Facebook users (68.5%) had at least occasionally clicked on links that lead from Facebook to external content.

The respondents who indicated that they have a Facebook account were asked how often they visited their county Extension 4-H Facebook Page. In four out of the six county offices surveyed, more than 50% of respondents reported they had never visited the county 4-H Facebook Page (Table 2). This idea was further reflected in the comments gathered from the survey. Many respondents indicated that they were not aware of the presence of a county 4-H Facebook Page.

Table 2
Adult Extension 4-H Clientele Frequency of Interaction with Extension 4-H Facebook Page

County	n	Never	1-2 times per week	3-4 times per week	5-6 times per week	Daily
County 1	14	57.1%	35.7%	7.1%	0.0%	0.0%
County 2	120	70.0%	23.3%	4.2%	1.7%	0.8%
County 3	41	34.1%	46.3%	4.9%	2.4%	12.2%
County 4	15	46.7%	40.0%	6.7%	6.7%	0.0%
County 5	170	62.4%	32.4%	3.5%	1.8%	0.0%
County 6	46	52.2%	41.3%	6.5%	0.0%	0.0%
Overall	406	59.9%	32.5%	4.4%	1.7%	1.5%

Facebook Content

Table 3 illustrates the types of content respondents indicated they would like to find on the county 4-H website, and on the county 4-H Facebook Page. No significant relationships were found between size of county and the preferred types of content.

Table 3
Percentage of Adult Extension 4-H Clientele that Desire Content Types by Medium

Content Type	County 4-H Facebook Page		County 4-H Website	
	n	frequency	n	frequency
Membership Information	179	37.0%	316	65.3%
Events Calendar	351	72.5%	370	76.4%
Forms / Paperwork	236	48.8%	361	74.6%
Youth Projects	261	53.9%	332	68.6%
Adult Leadership	160	33.1%	271	56.0%
Volunteer Opportunities	241	49.8%	304	62.8%
Livestock Information	213	44.0%	293	60.5%
Awards	201	41.5%	264	54.5%
Event Photos	267	55.2%	279	57.6%

Across all counties, the greatest number of respondents indicated a desire to find event calendars and event photos on the county 4-H Facebook Pages, with fewer respondents indicating interest in other types of content. In contrast, greater than 50% of respondents were interested in finding all relevant 4-H content, except for award information on the county 4-H website.

A chi-square goodness-of-fit test was performed to test for a relationship between the demographic variables and the type of content respondents desired from the county Extension 4-H Facebook Pages. Significant correlations were found which demonstrated a relationship between the age of the respondents and four of the categories for content type: events calendar, X^2 (5, N=333) = 19.9, $p < .05$; volunteer opportunities, X^2 (5, N=230) = 11.61, $p < .05$; livestock information, X^2 (5, N=203) = 12.8, $p < .05$; and event photos, X^2 (5, N=255) = 13.44, $p < .05$.

Suggestions by respondents for improvements to the Facebook Page focused primarily on the need for timely and up-to-date information. Respondents also commented that the frequency of posting by the Extension office should be increased to at least daily. When asked about suggestions for improving the county 4-H Facebook Page, one respondent said, “To be really successful at getting out to your members, you need to post daily, even multiple times per day in order to reach your fan base.”

Many respondents indicated a desire for county 4-H events to be posted in advance via Facebook, where they could accept an invitation to the event and then receive reminder notices. For example, the Extension professional responsible for administering the county Extension 4-H Facebook Page would create an event for a youth program, such as livestock weigh-in, and then invite all followers of the Page to the event. Clientele could then either indicate their attendance or decline the invitation.

Objective 1. Determine the Internet and Facebook usage characteristics of 4-H adult clientele in selected counties.

In general, the respondents demonstrated Internet and Facebook usage above the national averages. Though not a directly comparable statistic, it is promising that 95% of respondents had Internet access in their homes when, on a national scale, there are still 16% of American adults

do not use the Internet (Perrin & Duggan, 2015). Respondents to this survey also surpassed the national average in technology ownership, as 96.1% reported owning a computer, compared to the national average of 73% (Anderson, 2015).

The level of respondent Facebook usage supports the notion that the social media platform can be a good avenue for reaching Extension clientele. In this study, 85.3% of respondents reported that they had a Facebook account, and more than half logged in to the site at least 5-6 times per week. However, as 59.9% of overall respondents reported never visiting their county Extension 4-H Facebook Page, each office needs to devote more effort to promoting knowledge of the existence of these Pages.

Objective 2. Identify the content preferences of 4-H adult clientele for Extension County 4-H Facebook Pages.

Participants were asked to indicate what information they wanted to find on the County Extension 4-H Facebook Page. Respondents were able to select from eight common content categories. Only two of the eight content choice options were selected by more than 50% of the respondents. The two content types most sought after for the Extension 4-H Facebook Pages were calendar of events (65.9%), and photos from past events (50.1%). Information about youth projects was the third most popular content item and was selected by slightly less than half of the respondents (49%).

Objective 3. Determine if content preferences for county 4-H Facebook Pages differs from their content preferences for information posted on county 4-H websites.

In addition to identifying their content preferences for the County Extension 4-H Facebook Page, participants were also asked to indicate what information they wanted to find posted on the county 4-H website. There were several differences in the content preferences for the Facebook Page and the county 4-H website. More than half of the respondents selected seven of the eight response options as being information they wanted to find on the county 4-H website (as compared to only two of eight Facebook Page content types being selected by more than 50% of respondents). Awards information was the lone website content type that was selected by less than half of the respondents and it was still selected by 49.5% of them. These results indicate that the participants would like to see more types of information posted on the county 4-H website and fewer types of information shared by county Extension 4-H program on the Facebook Page.

Objective 4. Determine if demographic characteristics impact content preferences for the county Extension 4-H Facebook Pages.

Analysis of the relationship between demographic characteristics and content preferences for Extension County 4-H Facebook Pages indicated that there were significant differences in respondent content choices responses based on age group. Younger respondents wanted to find more content choices available on Extension County 4-H Facebook Pages. Conversely, older respondents sought fewer types of content for the Extension County 4-H Facebook Pages.

Respondents were asked to provide additional comments or suggestions for improving their county's Extension 4-H Facebook Page. A total of 172 respondents provided comments; 50 (29.1%) offered suggestions for improvement and support, 28 (16.3%) indicated that they were

unaware of the Page's existence, and 16 (9.3%) indicated an opposition to using the Facebook Page.

Conclusions and Recommendations

A majority of respondents indicated they had never visited the county Extension 4-H Facebook Page. Additional comments reinforced this lack of awareness of the Page. A number of strategies have been identified as being effective methods to increase awareness of a Facebook Page (Typhina, Bardon, & Gharis, 2015). These strategies include: (1) asking clients to like or to follow the Page, (2) including a link to the Page within e-mail signature blocks, (3) using plugins and other tools to prominently display social media postings on websites, and (4) cross promoting social media accounts in all social media feeds.

A frequent suggestion from respondents for improving the quality of the online content was to insure that the online material was current and uniform across all platforms. An effective method for organizing and delivering online content is to utilize planning tools like the Social Media Marketing Map, created by Utah State University Extension professionals. This tool was designed to help professionals more effectively manage time spent across multiple social media platforms and the traditional website. The Social Media Marketing Map helps users "map" out a clear plan of when and where to post content. Regular and consistent postings on social media would help build relationships and improve engagements with Extension audiences (Christensen & Hill, 2015).

Extension 4-H Facebook Pages are not intended to replace the Extension 4-H website for each county. More than two-thirds (67.4%) of the respondents indicated they visit the Extension County 4-H website. Furthermore, 69.8% of respondents reported they have clicked on links in Facebook that have led to external content. Thus, there are additional opportunities to cross-promote the county 4-H website content via the Facebook Pages. The social exchange theory posits that the benefits gained by clientele from interacting with the Page must outweigh the costs to this activity.

Future research could further define the types of content that clientele want to find on the county 4-H Facebook Pages. This study indicated that clientele are most interested in event reminders and event photos from the 4-H Facebook Page. Content analyses and comparisons of existing county 4-H Facebook Pages and posts that generated the most and the least levels of engagement could yield information about effective content strategies.

This study showed that adult 4-H clientele have distinct preferences for the types of content they wanted to find on county Extension 4-H Facebook Pages. Data collected also indicated a critical need for Extension professionals to promote awareness of their county Extension 4-H Facebook Pages. The widespread use of Facebook by respondents indicated the importance for local county Extension offices to incorporate the social media platform as a primary communication channel. Increased use of social media communication planning principles and tools will help Extension professionals communicate and engage with adult Extension 4-H clientele in a more effective and efficient manner.

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Improving Agricultural Education at an Annual Community Outreach Event Showcasing Locally Produced Agricultural Products

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Abstract

Understanding consumer perceptions and purchasing behaviors provides valuable information for extension educators in their creation of curricula, workshops, and communication materials. Agricultural community outreach events provide a relevant and social education experience to adult learners. The purpose of this study was to measure the success of the 20th Annual Mealani's Taste of the Hawaiian Range (Taste). The objectives of this study were to identify attendees' knowledge and perceptions of locally produced agricultural goods and identify attendees' general perceptions of the event. A survey instrument was used to measure Taste success. Attendees indicated they had positive perceptions of locally produced agricultural goods, but the data, in conjunction with the literature, show the attendees may have overestimated the nutritional and environmental benefits. Overall, attendees were satisfied with Taste. To improve educational efforts, organizers should incorporate more scientific facts about locally produced agricultural goods in event communications and more information about wild-game proteins and variety meats.

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Introduction

Mealani's Taste of the Hawaiian Range (Taste) on the Island of Hawai'i is one of Hawai'i's premier agritourism events. Taste began 20 years ago as a companion event to the College of Tropical Agriculture and Human Resources Cooperative Extension Services' Mealani Forage Field Day to show consumers how to cook with less expensive cuts of locally produced meat, such as off-cuts (e.g., oxtail, tri tip, chuck, etc.) and variety meats (e.g., tongue, liver, heart, etc.) of local pasture-raised beef, pork, lamb/mutton, goat, and wild boar. The board of directors now includes individuals from across the agricultural industry (Mealani's Taste of the Hawaiian Range, 2016).

Taste is a two-hour event held at a large convention center. There are two types of exhibitors to encourage consumer education: Product awareness/educational exhibitors and culinary exhibitors. Product awareness/educational exhibitors are local businesses, farmers and ranchers, agricultural organizations, and researchers presenting topics related to local agriculture and food sustainability. Local chefs serve as culinary exhibitors and they are each assigned to prepare specific off-cuts and variety meats to introduce attendees to underutilized, locally available protein sources that can be prepared in innovative ways (Mealani's Taste of the Hawaiian Range, 2016). The two types of exhibitors are intermingled so while attendees sample the variety of foods, they can also meet local farmers and ranchers, food researchers, and local agricultural business owners (Mealani's Taste of the Hawaiian Range, 2016).

The event has grown into an educational venue to encourage and support the production of local agricultural products through cultural, social, and scientific exchanges (Mealani's Taste of the Hawaiian Range, 2016). This event is largely perceived to be successful from a longevity standpoint, but there have been no previous efforts made to measure the overall success of the event or the participants' perspectives of locally produced foods—a goal area of the event board of directors and the associated extension agents and specialists.

Understanding consumer perceptions and purchasing behaviors provides valuable information for extension educators in their creation of curricula, workshops, and communication materials. However, this is challenging because consumer bases are constantly changing as a result of natural progression and outside influences. Research has shown that perception, knowledge, and behavioral differences exist in social groups and cultural groups (Brown, 2003; Canniford, 2011). Research has also found that socio-demographic factors, such as age (Yue & Tong, 2009), gender (Brown, 2003; Campbell, Lesschaeve, & Bowen, 2010; Carpio & Isengildina-Massa, 2008; Yue & Tong, 2009; Yue et al., 2011), and education (Brown, 2003; Kezis, Gwebu, Peavey, & Cheng, 1998; Yue & Tong, 2009) affect consumer behavior.

Food-centered social and marketing movements are also indicators of how consumers perceive and behave in response to their food sources. Recent food movements have emphasized the importance of product point of origin. Although many consumers indicate a preference for locally grown foods, based on taste, environmental impact, and nutrition (Weatherell, Tregear, & Allinson, 2003), many times their understanding and reasoning are formed from marketing communications and social/cultural values (Luna & Gupta, 2001) instead of scientific evidence (Hopp & Gussow, 2009; Paarlberg, 2013; Weatherell et al., 2003; Weber & Matthews, 2008).

In the face of much complexity, social marketing movements have had much less success in influencing actual consumer behavior. Consumer behavior is dependent on many factors. Ajzen's (1988) theory of planned behavior illustrates behavior as a product of a consumer's intention, which is comprised of their attitude toward the behavior, "perception of social pressure to perform or not to perform the behavior" (p. 117), and perceived behavioral control. Ajzen also notes the inconsistency of behavior due to personal and situational factors and non-motivational factors, such as product availability. As this pertains to food-centered social and marketing movements, studies have found that self-reported behaviors are overestimated in regards to actual behavior (Feldmann & Hamm, 2015). For example, consumers generally indicate a willingness to pay more for organically grown, locally produced foods (Brown, 2003; Loureiro & Hine, 2002), but when actual purchasing behaviors are measured, few are willing to do so (Onken, Bernard, & Pesek, 2011; Shafie & Rennie, 2012; Weatherell et al., 2003). In light of these factors, providing information to create behavioral change is often difficult.

In an effort to change the knowledge, perception, and behavior of consumers, information must be presented in a relevant format (Knowles, Holton, & Swanson, 2011; Rogers, 2003). Stern (1999) found that simple information presentation is rarely effective and posits that well-presented information "captures the attention of the audience, gains their involvement, and overcomes possible skepticism about its credibility and usefulness for the recipients' situation" (pp. 467-468). Knowles et al. (2011) have further shown that adults prefer to learn in a relaxed

and informal climate. Thus, an informal agricultural education event could provide extension with a medium through which research-based information is conveyed to the general public.

Agricultural community outreach events, such as annual agricultural functions (i.e., fairs, place-based education events, and other exhibitions), are pathways to well-presented, social education for the local community. Studies have shown that socialization is a motivational factor behind consumer attendance at local agricultural events (Gumirakiza, 2013; LaFollette, Knobloch, Schutz, & Brady, 2015). LaFollette et al. (2015) found that consumers would attend an educational dairy farm event if it were fun, interesting, enjoyable, and if they could gain knowledge to meet a challenge. Additionally, outreach events are ideal venues to expose consumers to innovations in production and animal agriculture and to community-applicable knowledge and innovations, such as cooking and gardening demonstrations. The exchange of information between agricultural scientists, farmers, and local businesses with the general public at social education events allows for this type of motivational and educational climate (LaFollette et al., 2015).

In order to design more effective and efficient methods for public education, we must understand the actual impact of these types of ongoing programs in terms of attendee knowledge gain and behavior change. This type of research aligns with priorities one and four of the American Association for Agricultural Education National Research Agenda: 2016-2020 (Roberts, Harder, & Brashears, 2016). By identifying consumer perceptions of locally grown agricultural products and examining relationships between these perceptions and demographic characteristics, including previous attendance of a social agricultural education event, extension educators will begin to identify efficient and effective ways to better communicate agricultural information to the general public.

Framework

Adult education theories were used to frame this study. Adult learners differ from young learners in how and why they approach education and how they learn and engage in the process (Boone, Safrit, & Jones, 2002; Knowles et al., 2011). Where young learners are often the recipients of information (i.e., adults tell students what they need to know), adults are more involved in crafting their learning experiences. Adults actively seek information for specific situations, they are self-directed, have experience to build from, and are intrinsically motivated. Rogers (2003) further iterates these points by explaining that for an individual to engage in the innovation-decision process, of which the first stage is learning about the innovation or decision, they must have experience with the situation and perceive a need or problem. Knowles et al. (2011) also account for individual and situational differences, goals, and purposes for learning.

Based on the principles of adult education, alternative processes are required to meet knowledge acquisition needs. In his andragogical process model, Knowles et al. (2011) describes a collaborative learning experience between the educator and learner. When creating a program design, there are eight elements to consider: preparing learners, climate, planning, diagnosis of needs, setting of objectives, designing learning plans, learning activities, and evaluation (Knowles et al., 2011). To prepare adult learners, educators must provide them with enough information so they may preflect (Jones & Bjelland, 2004), the process of thinking about their

learning experience before it begins. Preflection may also assist in the evaluation of learner knowledge acquisition.

In terms of climate, adult learners prefer informal settings where the interaction is relaxed, respectful, and authentic (Knowles et al., 2011). The concept of mutuality is a common thread for program planning, diagnosis of needs, and objective setting. Educators should set expectations in these three areas with input from the participating adult learners. In designing learning plans, Boone et al. (2002) and Knowles et al. (2011) suggest using a logical sequence based on knowledge building and to use learning activities that are experiential in nature. Evaluation should also be a mutual experience and collect information about learner reaction to the program and learner knowledge acquisition as a result of the program. This model allows learners to take ownership of their learning experience (Knowles et al., 2011).

Purpose

Although Hawai'i's agriculture industry sponsors place-based educational events for consumers, little is known about consumers' perceptions of the events, their motivation for attending them, or about event attendees' purchasing behaviors. The purpose of this study was to explore the success of the 20th Annual Mealani's Taste of the Hawaiian Range on the Island of Hawai'i through the following objectives:

1. Identify attendees' knowledge and perceptions of locally produced agricultural goods.
2. Identify attendees' general perceptions of the event.

Methods

A survey instrument was created to measure the impact of Taste by determining attendees' perceptions of locally produced agricultural products, attendees' perceived behavior, consumer satisfaction of the event, and demographic information. There were a total of 20 questions. Five items on a four-point summated scale ranging from 1 = *Strongly Disagre*e to 4 = *Strongly Agree* (Trochim & Donnelly, 2007) were used to measure attendee knowledge and perceptions of locally produced agricultural products. Five true/false and yes/no questions also measured attendee perceptions as they related to general knowledge, purchasing, and influencing others to purchase locally produced agricultural products; one question allowed them to indicate the types of locally produced proteins with which they cook. Event satisfaction was measured with three items on a four-point scale with identical scale anchors to the one measuring attendee perceptions and an open-ended question for comments and suggestions. Demographic questions collected data on event attendance, age, and gender.

The instrument was created with the event in mind. Because this was a two-hour event where people were eating, drinking, and socializing, the instrument was designed to be short, require minimal typing, and to be administered on tablets using offline survey software. A panel of experts established instrument face and content validity (Fraenkel, Wallen, & Hyun, 2012). The panel included administrative faculty and staff of the event who assessed and corrected the language and concepts used in the instrument. The panel also provided feedback on the ease of response, layout, and other aspects that contributed to the overall validity of the instrument. A post-hoc reliability analysis revealed the consumer perception of locally produced agricultural

goods (Cronbach's α = .74) and attendee satisfaction of the event (Cronbach's α = .89) subscales had acceptable reliability.

Four researchers, each with a tablet, collected data from a convenience sample during the event (Fraenkel et al., 2012). A convenience sample was used due to the size of the event and because the attendees were constantly moving from one exhibitor to the next, in no particular order. Attendees were individually approached and asked to complete the instrument. There were approximately 1,200 in attendance; a total of 112 surveys were collected. The demographic data are listed in Table 1. A majority of the respondents were aged 51 – 69 (45%, $f = 50$), female (60%, $f = 67$), had attended the event for 1- 5 years (86%, $f = 96$), and had come to support local agriculture (38%, $f = 43$) or for entertainment (38%, $f = 42$). The data were uploaded after the event and were analyzed. Objectives one and three were descriptive. The associated data were reported using frequencies, percentages, and means, as appropriate (Field, 2009). The open-ended question was analyzed using the first two steps of the constant comparative method—comparing incidents applicable to each category and integrating categories and their properties—to identify emergent themes (Glaser & Strauss, 1967).

Table 1

Demographic Data of Respondents (N = 112)

Item	*f*	%
Age (years)		
18-20	3	3
21-38	36	32
39-50	20	18
51-69	50	45
70-85	3	3
Gender		
Male	45	40
Female	67	60
Years of event attendance		
1-5	96	86
6-10	8	7
11-15	5	5
16-20	3	3
Primary reason for attendance		
Support local agriculture	43	38
Entertainment (Social event, family time, etc.)	42	38
Information about local products	12	11

Cooking tips	4	4
Other	11	10

Note. Totals of percentages are not 100 for every characteristic because of rounding.

Limitations of this study were in the instrument development and implementation opportunity. Because Taste is a two-hour, highly social—coming and going, moving from exhibitor to exhibitor, and holding food and drink—and ticketed event (approximately $60 per person plus additional expenses), the instrument was designed to be taken quickly as to not take away from their experience. This affected the type and number of questions being asked and the severely impacted the sampling methods. Convenience samples introduce limitations, such as bias and the inability to generalize to a larger population (Fraenkel et al., 2012). The knowledge gained from this experience will allow the researchers to ask better questions and use more appropriate sampling and survey methods at the next iteration of this event.

Findings

The purpose of objective one was to identify attendees' knowledge and perceptions of locally produced agricultural goods, including their self-perceptions of purchasing behaviors. Overall, respondents had positive perceptions (see Table 2) and, in a true/false question, indicated locally grown products to be more nutritious than imported products (86.6%, $f = 97$). While a majority of the attendees had strong agreement with four of the five statements, they only had agreement with the statement indicating they would pay more for a locally produced item over an imported item (52.7%, $f = 59$); the frequencies from a true/false question corroborated this point (72.3%, $f = 81$). This item also had the most frequency of disagreement (9.8%, $f = 11$) of all the perception statements. Further, 92% ($f = 103$) of respondents indicated they encourage their family and friends to buy locally sourced products.

Table 2

Attendee Perceptions About Locally Grown Agricultural Goods at Mealani's Taste of the Hawaiian Range

Item	Strongly Disagree *f (%)*	Disagree *f (%)*	Agree *f (%)*	Strongly Agree *f (%)*
I will pay more for a locally produced item over an imported item. ($n = 112$)	1(0.9)	10(8.9)	59(52.7)	41(37.5)
Local products have less environmental impact than imported. ($n = 112$)	2(1.8)	5(4.5)	46(41.1)	59(52.7)

I buy locally grown products to stimulate the local economy. (*n* = 112)	—	5(4.5)	49(43.8)	58(51.8)
I prefer the taste of locally grown products over imported. (*n* = 112)	—	3(2.7)	52(46.4)	57(50.9)
I will buy a locally produced item over an imported item if they cost the same. (*n* = 112)	—	2(1.8)	25(22.3)	85(75.9)

Note. $M = 3.48$. Cronbach's $\alpha = .74$.

Three questions specifically asked attendees about their purchasing of variety meats and off-cuts because the founding motivations behind the creation of Taste was to increase these proteins in the local diet. Although a majority of respondents do not purchase variety meats (55.4%, $f = 62$), the remaining 44.6% (f =50) indicated they do purchase them regularly or seasonally. Conversely, 79.5% (f =89) of respondents indicated they do purchase off-cuts regularly or seasonally. When asked with which locally sourced proteins they cook (see Table 3), a majority indicated grass fed beef (90.2%, $f = 101$). The least indicated proteins were deer/venison (25.9%, $f = 29$) and goat (15.2%, $f = 17$).

Table 3

Locally Produced Proteins Used for Cooking by Attendees of Mealani's Taste of the Hawaiian Range

Item	*f*	%
Grass fed beef	101	90.2
Pork	84	75.0
Poultry	79	70.5
Lamb/Mutton	42	37.5
Wild boar	37	33.0
Venison/Deer	29	25.9
Goat	17	15.2

Note. $N = 112$

The purpose of objective two was to identify attendees' general perceptions of the event as a measure of event success. Overall, the respondents were satisfied with the event (96.4%, $f = 108$)

and believe the event did a good job of educating the public about locally grown products (99.1%, *f* = 111; see Table 4).

Table 4

Attendee Perceptions About Mealani's Taste of the Hawaiian Range

Item	Strongly Disagree *f (%)*	Disagree *f (%)*	Agree *f (%)*	Strongly Agree *f (%)*
The Taste event does a good job educating the public about locally grown products. (*n* = 112)	—	1(.9)	59(52.7)	52(46.4)
I am satisfied with the Taste event. (*n* = 112)	—	1(.9)	40(35.7)	68(60.7)
My experience at Taste is worth the ticket price. (*n* = 112)	—	1(.9)	38(33.9)	70(64.2)

Note. M = 3.58. Cronbach's α = .89.

Attendees' responses to the open-ended question revealed general satisfaction of the event. "Awesome! Keep it up!" (A1); "Love this event" (A10, A34); "Very satisfying event" (A50); and "Great event!" (A6-8). Comments for improvement centered on a desire for additional information through more exhibitor interaction (A2, A102) and additional time (A14, A33, A87, A88).

Conclusions, Implications, and Recommendations

Analysis of objective one revealed Taste attendees have positive perceptions of locally produced agricultural goods. Perhaps as a result of food-centered social and marketing movements, consumer perceptions about locally produced agricultural goods are becoming more and more favorable (Weatherell et al., 2003). Attendees in this study indicated locally produced agricultural products are better for the environment, taste better, and—although there was less tolerance—they would pay more for locally produced items over imported items. This last point is encouraging for producers and food retailers, but it should be noted that when people are allowed to self-report behaviors, they often overestimate their behaviors to fit into the perceived social expectation (Feldmann & Hamm, 2015). Based on these findings, we recommend that the event directors continue to center the event on locally produced agricultural goods. This will keep the event relevant to current food-based social and marketing movements.

In terms of knowledge about locally produced agricultural goods, attendees seem to also overestimate locally grown benefits. Although previous studies have shown a wide spectrum of advantages and disadvantages of locally produced goods (Hopp & Gussow, 2009; Paarlberg, 2013; Weber & Matthews, 2008), attendees of Taste found them to be better for the environment

and more nutritious than imported goods. In an effort to increase and expand attendee knowledge and understanding of these and related topics, we recommend that the pre-event messaging and communications and interactive event activities highlight scientific facts, evidence, and benefits of locally produced agricultural goods. This combination of messaging will encourage preflection (Jones & Bjelland, 2004) and experiential knowledge application (Knowles et al., 2011) during the event, therefore enhancing knowledge acquisition.

Objective one also asked attendees about their purchasing of locally produced proteins and specific cuts, as increasing the purchases of these was one of the initial goals of Taste. Few attendees purchase goat, venison/deer, wild boar, and lamb/mutton and few purchase variety meats (e.g., tongue, liver, heart, etc.) regularly or seasonally. Both of these areas were primary goals of the event when it began 20 years ago. If there is to be an increase in the purchasing of these proteins and cuts, future events should focus specifically on how to access and prepare them in ways that are convenient and appealing. Perhaps integrating educational demonstrations by the culinary exhibitors would provide this type of relevant and needed (Knowles et al., 2011; Rogers, 2003) information and experience for attendees.

The results of objective two indicate attendees are satisfied with Taste and believe it is achieving its goal to educate the public about locally produced agricultural goods. The quality of information provided to consumers (Stolzenbach, Bredie, Christensen, & Byrne, 2013) and consumer preference (Chamberlain, Kelley, & Hyde, 2013) are critical to consumer acceptance of marketing messages. Carpio and Isengildina-Massa (2008) further explain that messages encouraging hometown pride may provide consumer motivation to buy locally grown products. Taste is currently providing these experiences for attendees and perhaps explains why attendee perceptions of the event are positive. By taking into account the suggestions for improvement, the board of directors for this event can increase the interaction between the attendees and exhibitors to further enhance educational opportunities.

Overall, Taste was successful as an agricultural community outreach event. The relaxed, social environment and the presence of relevant information (Gumirakiza, 2013; Knowles et al., 2011; LaFollette et al., 2015; Rogers, 2003; Stern, 1999) allowed the event directors to educate adult learners in an effective and fun manner. Future research surrounding this event should take advantage of this study to collect longitudinal data about attendee knowledge acquisition and event satisfaction. Further, future evaluation of this and similar events should explore surveying and sampling methods that will allow for the exploration of relationships between demographic characteristics and relevant responses. This will allow for the identification of education techniques that will be focused for the audience at hand.

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Supervision of School-based, Agricultural Education: A Historical Review

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Abstract

The purpose of this study was to understand the historical evolution of the supervision of school based, agricultural education (SBAE). Supervision as a concept was described, including its emergence as an integral part of public school education in the United States. Moreover, the perspectives of early leaders of vocational education, such as Charles Prosser, were examined, as well as the impact of the Smith-Hughes Act of 1917 and other key federal legislation that came afterward. Supervision of SBAE as inspection and administrative oversight and for the purpose of instructional improvement was explored. We also discuss the early supervisory role of teacher educators of agricultural education, the ascendance and, in some cases, later decline of state staff as supervisors, and the role of local school administrators in the supervision of SBAE, including the philosophical tensions and divergent views among and between these stakeholders. Implications and recommendations are offered regarding the supervision of SBAE in the future, including the role of professional organizations, such as NAAE, AAAE, and NASAE, and their working in concert with The National Council for Agricultural Education.

Introduction

Vocational agriculture education faced a shortage of teacher educators in 1917 (Hillison, 1999), and the existing professionals were in desperate need of assistance and support. In many cases, it was teacher educators who were providing supervision and oversight of local vocational agriculture programs in addition to fulfilling professional duties at their respective institutions (Anderson, Barrick, & Hughes, 1992). It was at this critical juncture the idea of state supervision for vocational agriculture education was first proposed (Hillison, 1999). Soon thereafter, this idea became a reality as formal state supervision of vocational agriculture education was mandated with passage of the Smith-Hughes Act in 1917 (Herring, 1999).

In its infancy, supervision was formal, strict, and oriented toward rules enforcement; however, during the next few decades a slow but gradual shift occurred (Hillison, 1999). Hillison (1999) concluded the influence of state supervisors peaked in the 1960s. At this time, state supervisors had two major roles: supervision and inspection (Herring, 1999). The supervision and inspection model guided the oversight models employed by most states' departments of education.

Supervision is defined in a variety of ways reflecting the perspectives of multiple fields (Glatthorn, 1984). The idea of *supervision* is a necessity in "business, political, commercial, social religious or other enterprises in which group effort is to be directed toward a common goal" (Seimer, 1973, p. 6). Seimer (1973) defined supervision, in general, as "includ[ing the] combination of planning, organizing, directing, measuring, controlling, assembling resources,

supervising, coordinating, motivating, commanding and integrating" (p. 3). Glatthorn (1984) proposed a broad definition of the act or actions as *general supervision*, i.e., a comprehensive approach, versus *clinical supervision* or a direct approach.

If analyzing the direct approach in regard to instruction, "supervision is a process of facilitating the professional growth of a teacher, primarily by giving the teacher feedback about classroom interactions and helping the teacher make use of that feedback in order to make teaching more effective" (Glatthorn, 1984, p. 2). Glickman (1990) compiled a list of those typically considered supervisors in education, such as "school principals, assistant principals, instructional lead teachers, department heads, master teachers, teachers, program directors, central office consultants and coordinators, and associate or assistant superintendents" (p. 6).

Olivia (1993) defined "supervision [as] a means of offering teachers specialized help in improving instruction" (p. 11) presented in the context of "both individuals and in groups" (p. 11). Therefore, the

> [c]ollaboration and partnership between supervisors and teachers became important. Supervisors began to realize that their success was dependent more on interpersonal skills than on technical skills and knowledge; they had to become sensitive to the behavior of groups and individuals within groups. (Olivia, 1993, p. 9)

"To put it simply, supervision is a means of offering to teachers specialized help in improving instruction" (Olivia, 1993, p. 11); hence, "[e]xpanding curriculum revealed the need for specialists in instructional supervision" (p. 6). This need for supervisory oversight included school-based, agricultural education (SBAE).

During the first decades after enactment of the Smith-Hughes Act, a debate over who should be leading or supervising state vocational agriculture education programs, and, therefore, providing oversight of teachers and departments, became a significant point of contention (Stewart, 1999). Arguments were offered for and against by teachers, teacher educators, state department officials, and other stakeholders, as different approaches to supervision were proposed. If state staff were expected to only oversee "[the] responsibility for funding, teacher placement, and program quality" (p. 6) and local school administrators were mostly responsible for supervising the quality of instruction provided by vocational agriculture teachers, the state supervisor's role might have been criticized or even lacked teachers' respect (Stewart, 1999). On the contrary, if state staff focused on providing instructional leadership for local programs, the need to expand their capacity would have been opened to debate (Stewart, 1999). However, according to Roberts (1971), the primary goal of state supervision was to *improve instruction.* To that aim, federal funding was established to promote and enhance the quality of SBAE programs in each state (Straquadine, 1990). Even though state supervisors became a norm for SBAE in a majority of states' education agencies or departments, these units experienced gradual reductions in staffing levels beginning in the 1980s (Stewart, 1999).

Nonetheless, the U.S. Department of Agriculture and the Department of Education were encouraged by Congress through the Agricultural Research, Extension and Education Reform Act of 1997 to work together to support SBAE (Case, 1999). Case (1999) explained: "It is the sense of Congress that the Secretary of Agriculture and the Secretary of Education should

collaborate and cooperate in providing both instructional and technical support for school-based agricultural education" (p. 5), as indicated by Public Law 105-185 (S. 1151 Public Law 105-185). This position also implied the need to provide program supervision and oversight. Early in the history of SBAE, decisions needed to be made regarding the role of state supervisors, as well as the qualifications for such positions (Hillison, 1999). Many state supervisors, of what was then called vocational agriculture education, were required to have three to five years of teaching experience in that field (Swanson, 1940). However, little is known about how these individuals influenced SBAE, especially in its formative years. An important part of this story includes the relationships between supervisors and teacher educators of agricultural education as well as local school officials also responsible for supervising aspects of SBAE programs. This study sought to explore the historical roles and actions of those charged with supervising SBAE.

Purpose and Research Questions

The study's purpose was to examine the historical role of supervisors of SBAE. Three research questions guided this inquiry: 1. How was SBAE supervised before passage of federal legislation that mandated supervision by government agencies? 2. What key federal legislative acts formalized supervisory regulations and procedures for SBAE programs? 3. Were the programmatic philosophies of those charged with the supervision of SBAE unified or divergent over time?

Methods

Historical research methods were used to answer this study's research questions. McDowell (2002) proposed using historical evidence to understand our past and elaborated that our responsibility is to provide the best interpretation of events as supported by primary and secondary sources. To further ensure this study met the standards for rigor and trustworthiness, we also followed Tracy's (2010) recommendations for worthiness, rich rigor, sincerity, credibility, resonance, significant contribution, ethics, and meaningful coherence.

We developed an outline of historical events presaging as well as fomenting the emergence and evolution of the supervision of SBAE over time. Primary sources used for this study included federal legislative acts, bulletins, and circulars. The study's secondary sources were comprised of peer-refereed journal articles, books, peer-reviewed articles, and the website of a relevant professional organization. We relied on Internet search engines made available by the Edmon Low Library at Oklahoma State University as well as Google Scholar. Search terms included instructional leader, school-based, agricultural education, state supervisors, supervision, supervisors of teacher education, vocational agriculture education, and vocational supervisors. All data sources for this study were subjected to internal and external criticism by the researchers (McDowell, 2002). This was accomplished by examining multiple sources to triangulate findings and verify authenticity and accuracy (McDowell, 2002; Tracy, 2010). Our aim was to produce a logical, coherent, and explanatory account of historical events and actors surrounding the phenomenon studied (McDowell, 2002).

Findings

Research Question #1 – How was SBAE supervised before passage of federal legislation that mandated supervision by government agencies?

In regard to the formal enterprise of education, *grammar schools* were the first educational units for which supervision was required from authoritative figures, such as *headmasters* or *headteachers* (Gwynn, 1967; see Figure 1). "By 1721, visiting committees were being used to investigate the work [of teachers] in the Latin Grammar School" (Gwynn, 1967, p. 7).

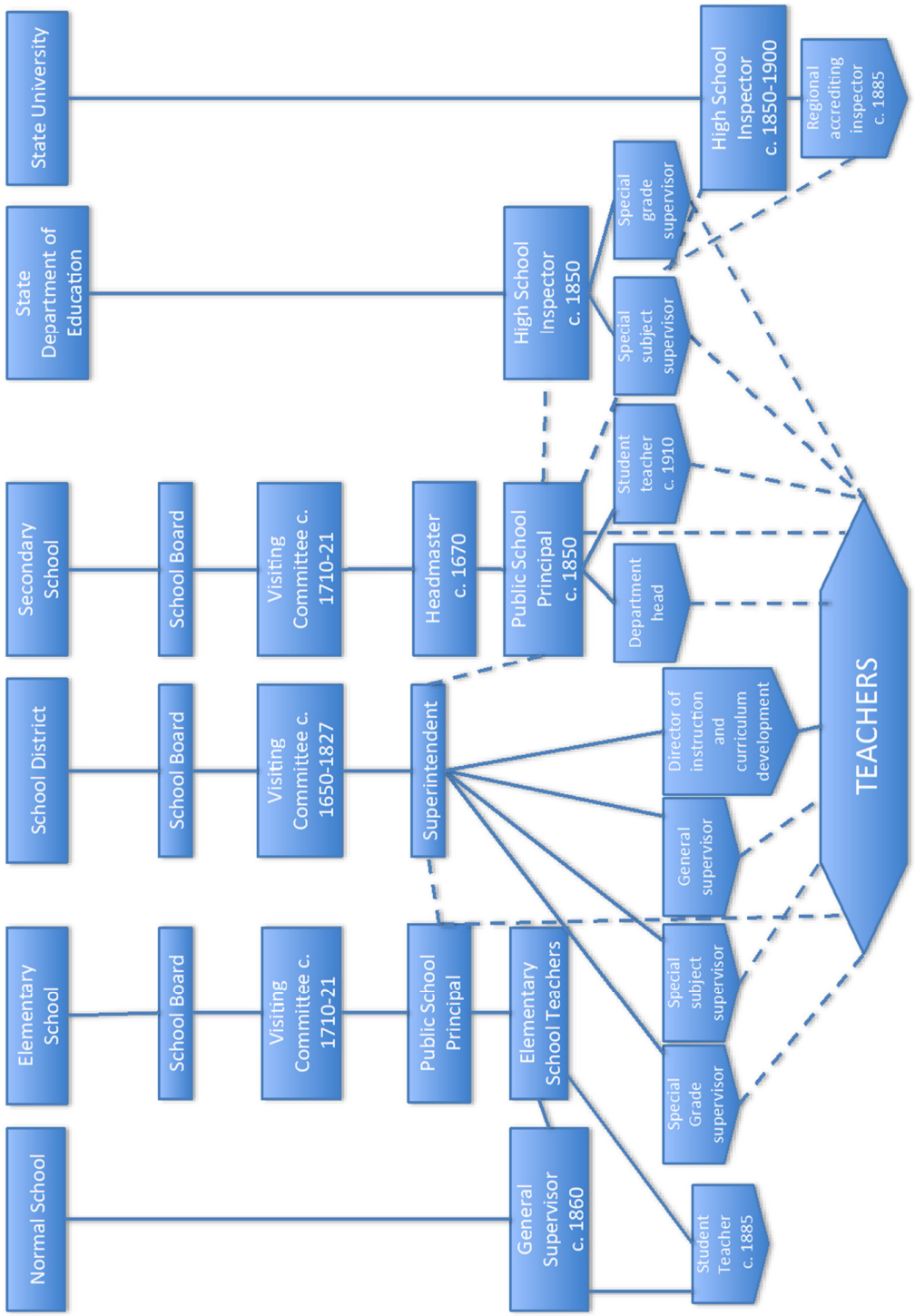

Figure 1. Historical Development of School Supervision in the United States: The kinds of supervision that grew out of each major type of school or educational agency in the United States. Adapted from *Theory and Practice of Supervision* by J. Minor Gwynn, 1967, p. 6. Copyright 1967 by the Dodd, Mead, & Company

The school principal position emerged in 1821 with the continued development of secondary education (Gwynn, 1967). "After 1827 this power [, i.e., to oversee the school administratively,] gradually became vested in a single person, a local superintendent, who was to administer and inspect the schools" (Gwynn, 1967, p. 5). In addition,

> [w]ith the establishment of legal support for the secondary school (1874), and the passing of compulsory attendance laws which greatly increased secondary school attendance, experienced teachers were often used to supervise other teachers in the same subject fields; thus the position of department head as supervisor was created. (Gwynn, 1967, p. 7)

Before passage of the Smith-Hughes Act of 1917, the idea of state departments' of education supervising SBAE programs was close to nonexistent (Hillison, 1999). Local school administrators, in most cases principals, provided the primary supervision of SBAE (Field, 1929). Hence, the need for administrative supervision of SBAE was recognized before passage of the Smith–Hughes Act of 1917.

Nonetheless, Payne (1875) asserted the purpose and benefits of supervision were recognized in mechanical, trade, and government environments, but significant "reluctance [existed] to admit its value and necessity in the management of school systems" (p. 21) in many cases. Payne (1875) also recognized the need for secondary education supervision and stated the importance of implementing supervisory roles in public schools: "A school system requires direction by one responsible head. – It is thus seen that the work of instruction follows the law which prevails in all other industries . . . " (p. 17). In the context of the late 1800s in the United States, Payne (1875) defined the roles and characteristics of school supervisors:

> To superintend the work of instruction with advantage requires, at least, considerable executive ability, a somewhat complete knowledge of the branches taught and ready skill in discipline. With these qualifications alone, a system of instruction may be kept from deterioration. (p. 19)

Early school supervisors were responsible for developing plans of study, classification of students, discipline procedures, teacher evaluations, and record keeping (Payne, 1875): "He [, the supervisor,] is to prepare plans of instruction and discipline, which the teachers must carry into effect; but the successful working out of such a scheme requires constant oversight and constant readjustments" (p. 76). The initial contributors to supervisory practice in regard to SBAE programs, such as Rufus Stimson, maintained supervisors were responsible for two tasks, *teacher training and state supervision* (Moore, 1988). To this end, "Bawden, [a vocational agriculture instructor], after his 1913 visit in Massachusetts, point[ed] out that Stimson's visits [to schools teaching agriculture] were not merely supervisory and inspectional but also furnished guidance and help for the teachers" (Moore, 1988, p. 14).

"The Nelson Amendment of 1907 provided [the first] federal support to land-grant universities to provide training for the purpose of teaching agriculture and mechanical arts" (Hillison, 1999, p. 57). After 1917 and enactment of the Smith-Hughes Act, the number of supervisors, in regard to specific subject areas, increased as a result of "compliance with the provisions of federal grants for vocational education, such as vocational home economics and agriculture and trades and industries" (Gwynn, 1967, p. 8). "Early inspectional services of state departments [of education],

however, usually had their origin in the state university or in other institutions for higher education in the state or region . . .” (Gwynn, 1967, p. 8).

Moreover, Charles Prosser (1918) asserted that supervision of vocational education emanated through the advancement of work and inspection with the continuation of program funding attached to the outcomes derived from conducting supervision. Gwynn (1967), however, questioned the roles and responsibilities of the early supervisors, and highlighted consequences associated with the lack of qualified supervisors in the education workforce. “The supervisor is no longer an inspector, however, for in the years since 1920, a number of broadened concepts of the supervisory role have gradually developed from the administrative function” (Gwynn, 1967, p. 3). Gwynn (1967) further stated: “Recognition must be given to the understanding of both the public and the professional educator as to the nature of both supervision and successful teaching” (p. 4). The supervisor’s role before implementation of the Smith-Hughes Act and their duties in more contemporary times have shifted and evolved (Moore, 2006).

Research Question #2 – What key federal legislative acts formalized supervisory regulations and procedures for SBAE programs?

The concept of formal, state–provided supervision for SBAE programs emerged as a result of the Smith-Hughes Act of 1917 and that approach to administrative oversight peaked in the 1960s (Hillison, 1999). It was through this Act that federal funding was provided to expand and sustain SBAE, as well as home economics and trade and industrial education, in the public schools (Finch, 1999).

> Under the vocational education act [of 1917] the Federal grant available each year for the promotion of vocational education in the States increase[d] . . . to the maximum of $7,167, 000 available in 1925-26 and annually thereafter. For each year that amounts shown as Federal grants must, if expanded, be matched dollar by dollar by State or local money, so that for any year the joint fund available, made up of Federal, State and local money, is double the Federal grant. This joint fund must be expanded for salaries of *teachers* and *supervision* and for a maintenance of teacher training. (Vocational Summary, 1921, p. 10)

Prosser was a leading advocate for federal funding in regard to vocational education, and its *administration*; and therefore should be recognized for his leadership toward “initiating the formal supervision of vocational teaching, academic teaching and teacher education” (Finch, 1999, p. 200). His influence guided many of the early mandates and actions in that regard. According to the Federal Board for Vocational Education, nine incorporated responsibilities of the state supervisor of agricultural education were to guide his practice:

1. Supervision of all schools receiving Federal money for the salaries of teachers or supervisors of agricultural subjects.
2. The supervision of all other schools or departments of agriculture in the State meeting the standards set up by the State board and approved by the Federal Board, even though such schools are not to receive Federal aid.
3. The supervision of the training of teachers of agriculture.

4. Studying the agricultural conditions of the State and the school facilities of particular communities which seem best suited to the establishment of vocational schools or classes of agriculture.
5. The preparation from time to time of manuscripts for bulletins of information concerning the teaching of agriculture in schools or classes in State and the setting forth of the possibilities of such instruction.
6. The preparation of reports for the State board and concerning agricultural subjects.
7. Holding conferences of teachers engaged in the teaching of agricultural subjects.
8. Promoting in other ways of vocational agriculture in the State.
9. Assisting teachers of agriculture to improve their method of instruction. This improvement may be done by personal consultation, by conferences, by correspondence, and through publications. (Agricultural Education: Some problems, 1918, p. 10)

The George-Deen Act of 1936 allotted 1.2 million dollars to "vocational guidance and occupational information . . . including supervisor travel" (National Association of Supervisors of Agricultural Education [NASAE], 2015). Thereafter, the George-Barden Act of 1946 was implemented, "allowing the [use of] funds for state director salary and expenses; vocational counselor salary and expenses; training and work experience programs" (NASAE, 2015).

The Vocational Education Act of 1963 would signal a significant philosophical shift and presage a changing approach to vocational education in the United States (Finch, 1999). And according to Moore (2006), "[the] Vocational Education Act of 1963 diminished the power of the supervisors" (p. 2). The increased federal control of education, or that perception, was viewed negatively due to the public's doubts regarding the power of local education officials to resist such pressures (Keppel, 1966). For example, in some cases local administrators attempted to balance school financing to meet community needs in a holistic way versus the delivery of exceptional special services (Keppel, 1966), which were being increasingly mandated. To that point, according to Anderson (1977), local school officials voiced concerns about "a decline in quality and quantity of leadership at the state level due to the assignment of reduced authority and visibility to vocational directors by chief state school officers" (p. 8). On the other hand, Anderson (1977) indicated the financial support of and attention to vocational education had been a progressive trend that appeared to be continuing. State supervisors and teacher training faculty had been given the responsibility of directing state programs of vocational education, including SBAE (Weiler, Hemp, & Hensel, 1966).

In the late 1980s, however, states would begin requesting block grants to support their vocational education programs. During this time, educational programs faced the possibility of consolidation.

> In education, Title I of the Administration's bill would have repealed and consolidated four major education programs: Title I of the Elementary and Secondary Education Act (ESEA), the Education of the Handicapped Act, the Emergency School Aid Act, and the Adult Education Act. Title II proposed consolidation of virtually all other federal aid programs with the exception of bilingual education, impact aid, and vocational education. (Verstegen, 1990, p. 358)

Moreover, Jennings (1991) stated:

> Channeling federal money to programs that integrate academic and vocational education, targeting money more carefully toward programs that produce results, emphasizing programs that serve poor and otherwise disadvantaged people, and easing state regulatory burdens by pushing authority down to the local level. (p. 18)

"[T]he Carl D. Perkins Career and Technical Education (CTE) Improvement Act was passed by Congress and signed into law by President Bush [in the fall of 2006]" (Threeton, 2007, p. 66). The Act

> focuse[d] on three of the roles and responsibilities found within legislation which include the title change to that of CTE, the inclusion of counselors and CTE instructors in the guidance and student development process and the integration of academics into career and technical curriculum. (Threeton, 2007, p. 66)

In response to the sweeping changes impacting CTE, Moore (2006) suggested university agricultural educators should supplement federal legislative guidelines by providing *leadership* directed specifically toward SBAE.

Research Question #3 - Were the programmatic philosophies of those charged with the supervision of SBAE unified or divergent over time?

"Supervision, one of the oldest forms of educational leadership, is currently one of the most controversial" (Gwynn, 1967, p. 3). Key players occupy multiple leadership roles in the education system who, at times, express mutual respect for one another, and, at other times, may hold contrarian views about important issues (Keppel, 1966).

The programmatic views held by state supervisors, teacher educators, and instructors of SBAE may not always be aligned or congruent. For example, different opinions regarding the admission of girls to SBAE and solutions to teacher shortages were not uncommon (Weiler et al., 1966). As early as the 1870s, Payne (1875) stated educators are held accountable and responsible for quality instruction and classroom management all *while implementing their own perspective* of teaching methods fitting the evaluation paradigm.

> The conflicting pressures on the school supervisor to teach; to work with student teachers and beginning teachers and to evaluate experienced teachers; to supervise across subject areas; to direct curriculum projects, and to discharge a host of administrative and clerical tasks, complicate the problem of defining the job. (Mosher & Purpel, 1972, pp. 2-3)

Historically, it was noted "there is a lack of skilled labor, and especially of that variety of labor which is most truly productive – supervision [of the education enterprise]" (Payne, 1875, p. 24). A century later, Mosher and Purpel (1972) indicated:

> We lack sufficient understanding of the process of teaching. Our theories of learning are inadequate, the criteria for measuring teaching effectiveness are imprecise, and deep disagreement exists about what knowledge – that is what curriculum – is most valuable to teach. There is no generally agreed-upon definition of what teaching is or of how to measure its effects. (p. 3)

Mosher and Purpel (1972) described a longstanding issue in regard to teaching, learning, and educational outcomes. This continues to impact suppositions and practices of instructional supervision as well as other aspects of educational administration and leadership. SBAE has not been immune to the controversies and contradictions surrounding its purposes, including how the program should be supervised and by whom.

The role of program supervision and who should supervise often led to disagreements among key stakeholders of SBAE. To this point,

> Dr. Melvin Barlow, writing in The 1974 AVA Yearbook, reminded us of the following: It is important to draw distinction between basic philosophical foundations and convenient administration decisions. The former are stable and the latter are more transient in quality. (as cited in Anderson, 1977, p. 3)

The incorporated responsibilities of state supervision manifested Charles Prosser's (1918) views on the administrative supervision of vocational education:

> I feel that our supervision and inspection must be, which would be pictured by a man holding large power in his hands (so far as the use of funds, for example, is concerned) that would be exercised and yet letting the leash loose as far as is necessary consistent with the proper use of the funds and keeping the schools acting in good faith and headed in the right direction, constantly making improvements in their work. (p. 2)

Further, in regard to the responsibilities of state supervisors of SBAE, the supervisor must "render assistance to the teachers, and at the same time check up [on] their work" (Agricultural Education: Some Problems, 1918, p. 75).

> Acting in this capacity, provided he is administering a system of education in which the state has responsibility for the success or conduct of a school, he is a policing officer charged with the duty of determining whether or not the school meets the standards set up for the state. (Agricultural Education: Some Problems, 1918, p. 12)

Anderson (1977) expressed his concern for standards fearing the loss of integrity and purpose of the vocational education program; in particular, the idea of looser quality program standards in exchange for higher student enrollment concerned him. Decades before, others had expressed concerns with the idea of transitioning supervisory control of SBAE from state education agency personnel to local school principals.

> The first concern was that principals had little time for supervision of instruction. The second concern was that frequently principals were young and inexperienced; often the agricultural teacher was more mature and more experienced. Thirdly, the agricultural education teacher had more education and background in agriculture than did the typical principal. (Hillison, 1999, p. 58)

As the supervision of SBAE shifted more and more into the hands of local principals, in some cases, the aims of state supervision may have shifted to goals reflecting specific aspects of program achievement. To that end, Anderson (1977) asserted: "With rare exceptions, agricultural educators have tended to concentrate their efforts on those students who could win the largest number of awards or activities" (p. 4). Such an emphasis may have ultimately impacted the way teachers of SBAE were prepared. Even further, Anderson essentially asked this: Should

programs that condone the "misuse of vocational resources and rewards vocational teachers who send many of their students to college, or win contests and awards, but place very few of their graduates in occupations for which they were trained" (Anderson, 1977, p. 5) be considered weaker or inferior programs?

Career and technical education programs, including SBAE, are less likely to be supervised by persons who have such backgrounds, which may result in ineffective instructional leadership (Zirkle & Cotton, 2001). As a result of the changing and weakening of the state supervisor, classroom teachers have turned to teacher educators for leadership advice (Hillison, 1998). Moore (2006) questioned from where leadership for the agricultural education profession was emerging and who were its driving forces: "At one time it was very clear who was driving the profession – state supervisors" (p. 1) but, arguably, at least in the case of many states, no more.

"Teacher educators have assumed a greater role in the hiring process of teachers, as well as in the perennial battles with Congress and state legislatures" (Hillison, 1998, p. 6). According to Hillison (1998), the

> teacher educator [should be] one who [is] able to prepare future teachers and in-service current teachers, but do other things as well . . . including teach agricultural communications courses, work with cooperative extension agents, coordinate distance learning, work with rural sociologists, teach leadership courses, coordinate technology, and work with Agriculture in the Classroom. (p. 6)

Indeed, Hillison (1998) described a long and robust list of professional tasks and responsibilities for teacher educators of agricultural education notwithstanding involvement in the supervision of local SBAE programs.

In a study completed by Garton and Chung (1996), Joint State Staff of Missouri and first year in-service teachers prioritized and identified areas of importance for first year teacher in-service. (*Joint State Staff* implies state education agency personnel and teacher educators.) In comparing the inservice needs of the two groups, "the four highest rated inservice needs for beginning teachers, as perceived by the Joint State Staff, were included in the 13 highest rated inservice needs as prioritized by the beginning teacher" (Garton & Chung, 1996, p. 57). Although those similarities emerged between the beginning teacher and the Joint State Staff, in general, the "ranking of the inservice needs as perceived by beginning agriculture teachers did not correspond with the rankings of the inservice needs as perceived by the Joint State Staff" (Garton & Chung, 1996, p. 57). Some *is versus ought* thinking and philosophical divergence may have been revealed by the study's findings.

Conclusions and Implications for the Supervision of SBAE in the Future

Teachers' experiences, beliefs, and efforts largely determine the success of SBAE programs, and teacher educators play a role in influencing the standards and practices implemented in local programs (Anderson, 1977). Gwynn (1967) reflected on the growth of U.S. education supervision in 1920; some of his points still resonate today:

1. Supervision originated as inspection of schools and continued with that as its major emphasis to about 1920.
2. Much overlapping of the responsibilities and duties of the administrator and the general supervisor communicated itself later to the office of the assistant superintendent or the special supervisor. Among educational writers and school administrators, there was still no clear-cut distinction between the administrative and supervisory responsibilities of the supervisor.
3. Because of the confusion among administrative and supervisory officers as to their authority, teachers on both elementary and high school levels did not know whose instructions to follow. For example, should teachers follow the suggestions of the principal? Or of the supervisor?
4. Both educational theorists and practicing schoolmen were at variance as to the functions of supervision. Such disagreements were forcing educators to define and delimit supervision.
5. *Both teachers and administrators agreed in two respects - that supervision should be more than inspection and that the improvement of instruction was one of its major tasks* [emphasis added]. (pp. 8-9)

Moreover, "supervision, regardless of how it is defined, involves talk between a teacher and a supervisor about teaching" (Mosher & Purpel, 1972, p. 140). Further, "whatever the causes of these difference[s between stakeholders, including supervisors and teacher educators], there is need for an improved working relationship" (Anderson et al., 1992, p. 48).

Writing about state supervisors 50 years ago, Weiler et al. (1966) stated: "[W]e must increase and improve state professional staff for vocational education" (p.15). In addition, Weiler et al. (1966) specified six points addressing state education department personnel:

1. Variety of programs demand more supervision and leadership from the state level.
2. Someone must keep up to date on specialized programs. Delegation of responsibility is essential.
3. We are working with more groups and individuals, consulting committees, local school boards, colleges, area schools, etc. Contacts must be made, informational materials are needed.
4. New occupations are emerging.
5. Consider need for advanced study, research, sabbatical leave, instructional aids, etc.
6. Let's maintain continuity of leadership by locating and employing younger people into state positions. (p. 15)

In the second decade of the 21st century, these points still resonate as well as many other issues and challenges. If the goals of state supervisors and teacher educators of agricultural education are to prepare and support teachers who, in turn, develop students for employment in the agricultural sector and its allied industries, or for post-secondary education, candid discussions about priorities and expectations should be ongoing. To this end, nearly four decades ago, Anderson argued for less importance on "FFA training future mayors, councilmen, legislators, governors, and congressmen and [more] emphasis [on] evaluating percentage of past FFA members employed at less than college level" (Anderson, 1977, p. 6) jobs or career pathways

involving the agricultural sector. Anderson's (1977) position notwithstanding, increased emphasis on ever-advancing technology coupled with an increasingly globalized economy would appear to support the need for more students to receive post-secondary education and training than he may have envisioned in 1977.

Nearly four decades ago, Stewart, Shinn, and Richardson (1977) concluded supervisors and teacher educators shared a concern to improve the identity of agricultural education with the goal of recruiting and retaining highly effective teachers. A sustained teacher shortage today continues to echo their position. Ten years ago, Moore (2006) spoke to the shortage of agricultural educators and suggested university agricultural educators provide leadership through preservice programs. Their concerns still stand today and have implications for a modern approach to the supervision of SBAE.

Recommendations

To assist in retaining highly effective teachers of SBAE, teacher educators must prepare future practitioners to address the current learning needs of students through collaboration with fellow school colleagues (Darling-Hammond, 2006), including the professionals who supervise or oversee their efforts. Anderson et al. (1992) suggested "more frequent contact with teachers and administrators by teacher educators and State Division of Vocational Education personnel is needed in order to keep in touch with the current school situation" (p. 48). In the present era, however, extensive supervision by state education agency officials is little more than a distant memory in many states (Barrick, 2015; Herring, 1999; Moore, 2006). Nonetheless, "because of increased public demand for teacher accountability and technical advancements in the occupational areas of vocational programs, vocational teacher professional development has never been more important" (Anderson et al., 1992).

Although written nearly 25 years ago, the position of Anderson et al. (1992) still stands. School-based, agricultural educators, university agricultural educators, and program supervisors have a responsibility to provide leadership in furthering the profession. At minimum, these stakeholders should be encouraged to align their philosophical positions in regard to program aims and standards to increase the likelihood of meeting students' needs and expectations of employers or the post-secondary education institutions to which program graduates matriculate. University faculty should collaborate with state supervisors, where the latter exist, to provide meaningful and relevant professional development and leadership to preservice agricultural educators and inservice SBAE teachers such that standards and accountability are supported and maintained. In states where state staff do not exist or their capacity is insufficient, university agricultural educators coupled with teacher organization leaders should unite to fill the supervisory void. In some states, this appears to have occurred (or is occurring) *organically* but it is likely more remains to be done.

For SBAE to continue to thrive, instructors, teacher educators, and state staff personnel must strive to guide change through their leadership efforts, individually and collectively. This could include initiatives sponsored by their respective professional organizations such as the National Association of Agricultural Educators, the American Association for Agricultural Education, and the National Association of State Supervisors of Agricultural Education. The National Council

for Agricultural Education and its *Team AgEd* initiative (Barrick, 2015) should serve as the *convener* for guiding and facilitating such efforts.

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Agricultural Communications Student Confidence Level and Preparedness for Employment at Texas Tech University

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Abstract

As the agricultural communications discipline grows and develops, the academic programs and of faculty who teach and conduct research in these programs are challenged to keep up with increasing responsibilities including teaching, advising, recruitment, mentoring, club sponsorship, and placement of graduates (Weckman, Withham, & Telg, 2000). In order for a discipline to maintain relevancy, curriculum evaluation and development is necessary to keep up with industry's demands and trends. However, the industry's needs are only one of three measurements that should be analyzed when developing content. To be considered effective, any curriculum must balance student interest with faculty vision and industry need (Coffey, 1987). The purpose of this research was to determine if students are confident in their communication skills and prepared for employment. A survey instrument was utilized in this study. Results showed students feel fairly well prepared for post-graduation employment. Results also showed that students are most confident in their English and written communication skills. Recommendations include integrating more public speaking opportunities in the classroom, as well as increasing awareness of internship opportunities.

Introduction

The agricultural communications profession has evolved to inform both rural and urban audiences using various mediums (Tucker, Whaley, & Cano, 2003). As the profession changes, agricultural communications academic programs and faculty are challenged to keep up with increasing responsibilities including teaching, advising, recruitment, mentoring, club sponsorship, and placement of graduates (Weckman, Withham, & Telg, 2000). The agricultural communications discipline has become more popular as an academic major in recent years. Miller, Large, Rucker, Shoulders, and Buck (2015) identified 19 universities with an agricultural communications major in the United States; another eight universities offer a minor or concentration/specialization.

In higher education, it is the goal and responsibility of universities to adapt and modify the learning environment to create the most prepared student. It can be seen as failure upon the university when a student's needs are not met, and progress is not encouraged (Krumrei-Mancuso, Newton, Kim, & Wilcox, 2013). Previous researchers have noted curriculum development and evaluation is necessary to keep up with industry trends, issues, and problems (Doerfert & Miller, 2006; Morgan, 2008; Simon, Robertson, & Doerfert, 2003; Sprecker & Rudd, 1998; Terry, 1996). However, the industry's needs are only one of three measures used in

curriculum development and evaluation. To be considered effective, any curriculum must balance student interest with faculty vision and industry need (Coffey, 1987).

Of the three categories responsible for curriculum development —industry, faculty and students —most agricultural communications research in the past decade has focused on the industry's view of curriculum (Doerfert & Miller, 2006; Irlbeck & Akers, 2009; Morgan, 2008; Sprecker & Rudd, 1997, 1998; Watson, 2010). Students should be allowed to share their opinion regarding what is taught in the classroom. Allowing all students, not just the individuals who are about to graduate, the opportunity to weigh in on curriculum matters goes a long way toward designing a curriculum that is relevant and sufficient and in the best interest of students (Meyers, 2005). Students' opinions about their degrees, their satisfaction with their collegiate experience, and their feelings of preparedness for employment are an important factor to consider in curriculum revision and development. With the rapid change of technology and shifts in communications strategies with the growth of social media and mobile technologies, university faculty are in need of information based upon industry and student needs to create new curriculum and/or guide curriculum revisions.

Literature Review/Theoretical Framework

As graduates of a communications department, students should be confident in their abilities to communicate effectively in a variety of settings; yet finding an individual with agricultural knowledge and communications skills has challenged agricultural media and business owners for years (Boone, Meisenbach & Tucker, 2000). A shortfall of recent graduates with agricultural knowledge is expected in the next few years (Goecker et al., 2010), and the ability to translate unique science into a language or image understandable to an average person is a desirable skill (Treise & Weigold, 2002).

Agricultural communications employers expect their newly-graduated employees to have a sound understanding of the current issues, trends, and problems associated with agriculture (Doerfert & Miller, 2006). Sprecker and Rudd (1998) found communications skills trumped agricultural knowledge among agricultural communications professionals in Florida. Students must be able to understand the diversity of media, create and edit publications, write effectively, and create good strategies for clients (Morgan, 2008). Morgan (2009) said all students must enter the communications industry equipped to identify and understand audiences, develop plans for desired outcomes, edit, organize thoughts, and write strategically. Therefore, agricultural communications curriculum should include courses to teach writing, public relations, public speaking, advertising, journalism, and computer applications (Terry & Bailey-Evans, 1995).

One specific way to ensure student confidence upon entering the workplace is to offer internships, and to make known the opportunities available to the students. Terry et al. (1994) noted how invaluable an internship was to an agricultural communications student's success. Cannon, Specht, and Buck (2014) found 14 of 17 agricultural communications programs had internship courses. Internship programs can reinforce technical competencies, improve analytical skills, and, most important, foster an awareness of the constant need for adaptability and creativity in a changing world. The right internship can be the key to a great job, because it gives the student a chance to take on real responsibilities while working side-by-side with

seasoned professionals (Coco, 2000). Fry, Irlbeck, and Akers (2012) found that 26.7% of the students completing an agricultural communications internship at Texas Tech University received a full-time job offer from their internship employer upon graduation.

Cannon et al. (2014) found written communication skills ranked high in importance in agricultural communications collegiate curriculum. In confirmation of previous literature stating the importance of written communication skills for students (Sprecker & Rudd, 1998; Terry et al., 1994; Morgan, 2010, 2012; Morgan & Rucker, 2013), the writing category was far and away the leader (Cannon et al., 2014). Although writing has long been the most emphasized element in agricultural communications curriculum, these students exhibit little anxiousness and fear in their writing abilities, which relates to them having higher self-efficacy in their writing performance (Ahrens, Meyers, Irlbeck, Burris, & Roach, in press).

This study was guided by Bandura's (1977) self-efficacy framework within his social cogitative theory. Bandura (1995) defined self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to manage prospective situations" (p. 2). Self-efficacy is confidence in one's ability to perform a task, behave, and socialize (Carey & Forsyth, 2016). Bandura (1977) identified four specific areas called efficacy expectations, in which individuals judge themselves: performance outcomes, vicarious experiences, verbal persuasion, and physiological feedback. These components help individuals determine if they believe they have the capability to accomplish specific tasks. "An efficacy expectation is the conviction that one can successfully execute the behavior required to produce the outcomes" (Bandura, 1977, p. 193). Efficacy expectations are important performance implications. For this study, the researchers focused on performance outcomes and vicarious experiences as those two factors are most relevant for an academic program to measure, and they are the two factors most within the program's control.

Performance outcomes, or past experiences, are the most important source of self-efficacy. If one has performed well at a task previously, he or she is more likely to feel competent and perform well at a similarly associated task (Bandura, 1977). For example, in agricultural communications if students performed well in a writing course, they are more likely to feel confident and have high self-efficacy in another writing-intensive course.

Vicarious experiences mean that **p**eople can develop high or low self-efficacy through other people's performances. A person can watch another perform and then compare his own competence with the other individual's competence (Bandura, 1977). An example of how vicarious experiences can increase self-efficacy in the work place is through mentoring programs or internships, where one individual is paired with someone on a similar career path who will be successful at raising the individual's self-efficacy beliefs.

Verbal persuasion is encouragement or discouragement pertaining to an individual's ability to perform (Bandura, 1977). **Physiological feedback,** or **emotional arousal, is** sensation from the body, which can influence a person's self-efficacy; examples are agitation, anxiety, sweaty palms, and/or a racing heart while giving a speech (Bandura, 1977).

Purpose and Research Questions

This study fits within the National Research Agenda, Priority 3: Sufficient Scientific and Professional Workforce That Addresses the Challenges of the 21st Century, which states that research should be "developing the models, strategies, and tactics that best prepare, promote, and retain new professionals who demonstrate content knowledge, technical competence, moral boundaries" and "creation of programs that develop the skills and competencies necessary to improve the communications and knowledge sharing effectiveness of all in the agriculture-related workforces of societies" (Doerfert, 2011). With agricultural education, communications, and governmental services projected to generate nearly 6,000 jobs annually (Goecker, Smith, Smith, & Goetz, 2010), it is important for agricultural communications programs to look inward to ensure students feel prepared for the workforce. Students' perceptions about their own preparedness for employment is an important piece to consider when planning and/or revising curriculum (Coffey, 1987). The purpose of this research was to explore if agricultural communications students at Texas Tech University (TTU) feel prepared for employment and are confident in their communication skills. The following questions guided this study:

1. What are the perceptions of current agricultural communications students at TTU regarding post-graduation employment?
2. How confident are current agricultural communications students at TTU in their communication skills?

Method

A quantitative exploratory research design accomplished the objectives of this study. The instrument utilized for this study was an online questionnaire developed mostly by the researcher; however, some questions were derived from previously developed instruments (TTU Career Center, 2015; Watson, 2010). The instrument included questions about the students' agricultural communications degree, skill confidence, campus involvement, internships, projected post-graduation employment, and demographics. The instrument contained five point Likert-type scale, yes/no, and select all that apply-type questions.

Six experts in agricultural communications were consulted to review the instrument for face validity preceding the pilot test; four experts were from within the university and two were external. From April 6-10, 2015, the researcher pilot tested the instrument with five current graduate and undergraduate students who were not included in the sample.

Instrument reliability of data was measured post-hoc using Statistics Package for Social Sciences®. The constructs related to post-graduation plans and employment had a Chronbach's alpha of 0.86. The construct related to student confidence in communication abilities had a Chronbach's alpha of 0.91.

The population for this study was undergraduate agricultural communications students enrolled in agricultural communications courses at TTU in the spring 2015 semester ($N = 110$). The researcher obtained a list of students from each professor or instructor's class roster. In order to reduce frame and selection errors, the list of students was purged of any duplicates.

Prior to data collection, the researcher obtained Institutional Review Board approval. The researcher hung flyers in the department building and visited each agricultural communications class to inform students about the study to encourage student participation. Students were informed the study was for agricultural communications majors only. The data collection period was from April 15-24, 2015. Data collection began with the graduate student sending a recruiting email to the population. The email included a link to the instrument, which was distributed using Qualtrics, an online questionnaire distribution site. The email explained the opportunity to share their experiences to help the department better understand the needs of its students. The email also outlined the opportunity to be included in a drawing for a prize for participating in the study: a selfie stick, external hard drive, or a tripod.

The researcher revisited classes on April, 22, 2015 to remind all eligible participants to complete the instrument. The instrument was closed on April 24, 2015. A follow-up email was sent to the students on April 30, 2015, thanking them for their time and cooperation. Participant incentive prizes were awarded. The following were limitations to this study:

- The researcher's sample population was limited to students enrolled in the agricultural communications courses at one university at the time of the study.
- The IRB limited interaction between the graduate student researcher, faculty member, and undergraduate students.
- Freshmen participants may not have had much experience or knowledge of the degree.

Of the respondents, 49 were female (84%) and nine were male (16%). Twenty of the respondents (34%) classified themselves as junior, 18 (31%) identified as a senior, 16 (28%) identified as a sophomore, and four (7%) identified as freshmen. The majority of respondents classified themselves as Caucasian (95%). Hispanics made up five percent of the sample population.

Findings

Research Question 1: Preparedness for Post -Graduation Employment

Performance outcomes (Bandura, 1977), or previous experience, include college level courses. To determine how well courses (in general) at TTU prepared the respondents, four questions addressed their feelings of preparation, or confidence, post-graduation employment (Table 1). At TTU, students take agricultural communications-specific courses, as well as courses in agricultural education and leadership, general agricultural courses, and courses in the College of Media and Communication. On a 5-point Likert-type scale where 1 = extremely unprepared and 5 = well prepared, students reported the courses in agricultural communications prepared them most for future jobs (M = 3.93, SD = .88), followed by general agricultural courses (M = 3.72, SD = .80), and mass communications, (M = 3.51, SD = .88). No one had extremely negative feelings about any of the agricultural or communications courses. The score for "overall, how well do you feel your courses prepared you for employment" was on the positive side (M = 3.60, SD = 1.06).

Table 1
Student attitudes about how well courses prepared them for employment

	Extremely unprepared	Unprepared	Neutral	Prepared	Well prepared	*M*	*SD*
Ag comm courses[a]	0	3	16	23	18	3.93	.88
General agriculture courses[a]	0	3	21	21	10	3.72	.80
Mass comm courses[b]	0	7	23	23	8	3.51	.88
Overall feelings of preparedness[a]	1	10	14	22	13	3.60	1.06

[a]$n = 60$, [b] $n = 59$

Internships can be a form of vicarious experiences (Bandura, 1977), so four questions sought to gauge students past and future internship experiences while in college. Answers varied from zero to five (Table 2). Twenty-six respondents had not completed an agricultural communications internship, four of the total respondents were freshmen.

Table 2
Internships completed and expected to complete during college

	0	1	2	3	4	5
Agricultural communications internships completed[a]	26	14	10	3	2	1
Agricultural communications internships expected to complete[b]	5	18	13	9	2	2
Non-agricultural communication internships completed[c]	29	12	6	3	4	0
Non-agricultural communications internships expected to complete[d]	14	21	10	2	5	0

Note. a = 56, b = 49, c = 54, d = 52

Respondents were asked about their post-graduation goals related to employment, higher education, and salary. Participants could select what type of organization they expected to work for after graduation in a select-all-that apply format. Of the respondents ($n = 60$), 71% reported they expected to work in an agricultural organization, 40% reported they would work for a non-agricultural organization, 31% self employed, 22% in government, 19% non-profit, 16% higher education, and 12% on a family farm or ranch. Full-time employment was expected by 59% of participants, 33% planned to attend graduate or professional school. In an open-ended question, 53 students provided the type of job they were pursuing, such as public relations, news, or design. Public relations was the most popular response with 30%, followed by marketing and

advertising (15%), sales (13%), reporting or journalism (11%), lobbying or government relations (7%), design (7%), law (5%), and farming or production agriculture (5%).

Respondents were asked what they expected their salary range to be in their first job after graduation, and what their expected salary range would be five years after graduation. The majority (33%) of respondents reported they expect a salary of $40,000-$60,000 in their first job with an expected salary of $60,000-$80,000 in five years (Figure 1).

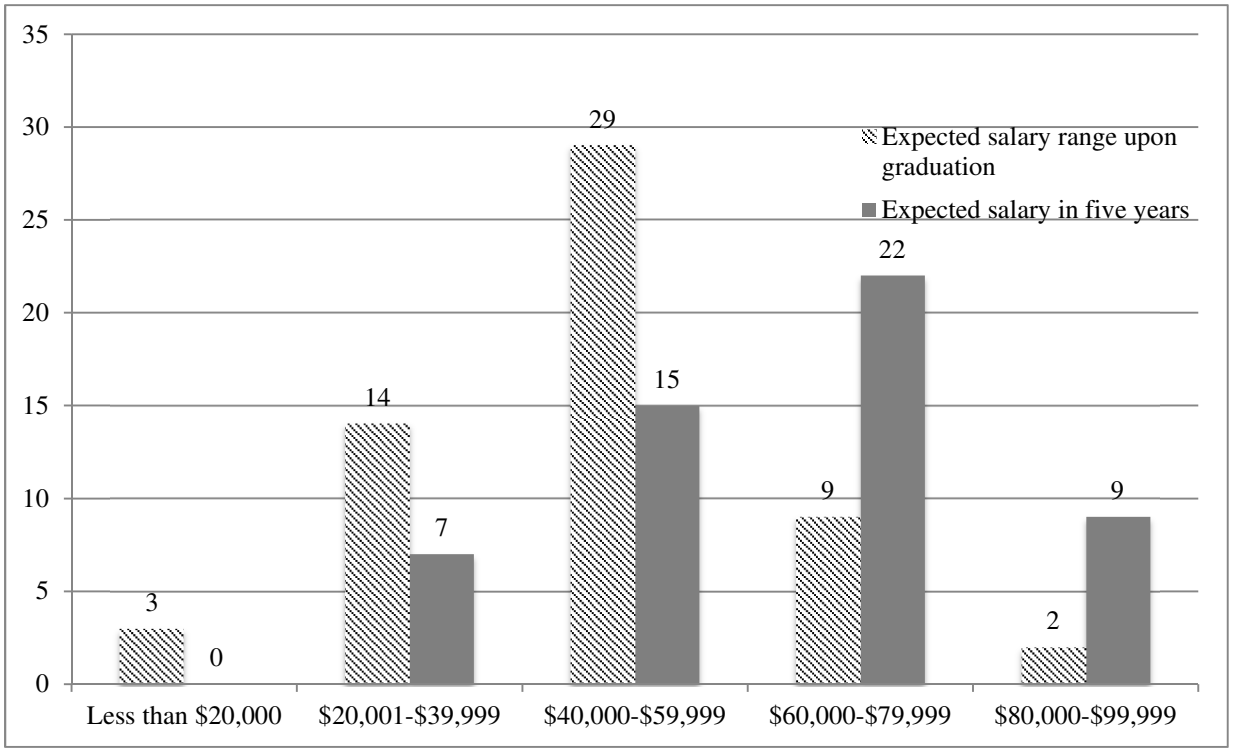

Figure 1. Comparison of expected starting and five years post-graduation salary (n = 57)

On a five point Likert-type scale with 1 = very low and 5 = very high, participants designated their likelihood of pursuing a master's degree. In agricultural communications, respondents reported a mean score of 2.48 (SD = 1.33, n = 60), with 12 reporting likely or very likely. The mean score for the likelihood of students seeking a master's degree in an area other than agricultural communications was higher at 2.80 (SD = 1.45, n = 60) with 20 reporting likely or very likely. Students were asked if they believed that education level past a bachelor's degree played a role in salary earned. Out of 60 responses, 33 (55%) reported that they did believe a degree beyond a bachelor's affected salary earned.

Research Question 2: Student Communication Confidence Level

This research question sought to determine the student's confidence level in their ability to perform skills specific to the agricultural communications degree (Table 3). Confidence level was based on a 5-point Likert-type scale ranging from *1 = not confident at all* to *5 = very confident*. A choice of "not applicable" was also given for those who had not taken the course. The lowest mean score was in economics (M = 2.60, SD = 1.17), and the highest was English (M = 4.24, SD = 0.86).

Additionally, students were asked "after taking courses in agricultural communications, do you have more positive or negative feeling toward this field of study?" On a 5-point Likert-type scale with *1 = extremely negative* and *5 = extremely positive*. The mean score for the question was 4.25 (*SD* = 0.68) with no one responding extremely negative and one negative response.

Participants were asked to name any course they wish were offered in the agricultural communications curriculum. More than half of the 38 students who answered the question said they would like to take an agricultural advocacy and public speaking course. Other desired courses included advanced graphic design, event planning, business management, social media, and general agriculture.

Table 3
Student's self-perceived confidence in their ability to perform specific communications skills

	n	Mean	SD
English	58	4.24	0.86
Public speaking	49	4.18	0.95
Graphic design (Illustrator)	56	4.00	1.06
Photo editing (Photoshop)	55	3.87	1.16
Video production	33	3.82	1.26
Page layout (InDesign)	44	3.77	1.12
News writing	34	3.62	1.50
Advertising	44	3.57	1.07
Web design	42	3.55	1.19
Photography	44	3.48	1.11
Campaign planning	28	3.46	1.14
Magazine development	25	3.44	1.23
Sales	26	3.15	1.41

Note: Mean scores based on a 5-point Likert-type scale where *1 = least confident* and *5 = most confident*.

Conclusions & Discussion

Finch and Crunkilton (1999) claimed students are the major force driving the shaping and molding of curriculum content. Student characteristics, skills, interests, and expectations should receive close scrutiny when selecting content for a curriculum (Finch & Crunkilton, 1999). The characteristics revealed in this study can help agricultural communications professors and administrators understand some areas of improvement or additions to the curriculum. Doerfert and Miller (2006) noted, "it is the responsibility of higher education and agricultural communications programs to observe and keep pace with the ever-changing workplace to ensure that they can provide the preparation and skills that produce high quality graduates" (p. 21).

The purpose of this research was to explore if students felt prepared for employment and were confident in their communication skills. Along with data to be collected from industry professionals, the data gleaned from this study will assist administrators at TTU in making future curriculum decisions. When making decisions about curriculum, it is extremely important to gather input from students as well as from the industry (Clem, 2013; Coffey, 1987; Krumrei-Mancuso et al., 2013).

In general, students felt their courses are giving them the performance outcomes, or experiences, to prepare them for employment, especially the agricultural communications-specific courses (M = 3.93, SD = .88). Preparedness for employment relates to self confidence or self-efficacy, which has been defined as the "beliefs in one's capabilities to organize and execute the course of action required to produce given attainments" (Bandura, 1986, p. 3). From this definition, it can be inferred that students have some level of confidence in their agricultural communications skills they have gained from courses at TTU. The self-reported level of "how well do you feel your courses prepared you for employment?" received a mean score of 3.60 (SD = 1.06); however, one student reported extremely negative feelings toward preparedness, 17% had negative feelings, and 23% were neutral. This shows potential for improvement, yet it is possible the negative scores were reported by underclassmen that do not yet feel prepared for employment.

As Ahrens et al. (2016) noted, students in agricultural communications at TTU are only required to take one speaking course, which is not offered in the home department or college. Because of this, students stated they did not get enough experience speaking publicly (Ahrens et al., 2016), and the data in this study endorsed this claim as 38 respondents proposed the idea of having an agricultural advocacy and public speaking course. This course could give students the opportunity to practice more oral communications and also teach techniques to intelligently communicate about agriculture. More training to communicate about agricultural topics could possibly help students feel more adequately prepared for the workforce.

When asked about internships, 26 of the 58 respondents reported never having completed an internship. Agricultural communications students at TTU are encouraged to seek internships during their first year in the program. Internships can help ensure student confidence for the workforce and is a critical piece in their post-graduation success (Terry et al., 1994). The opportunity to work alongside a professional and take on responsibilities can lead to a great job upon graduation. Although an internship may not make a difference in starting salary, it could lead to getting the first job (Fry et al., 2012). Bandura (1977) argued that past experiences are the most important source of self-efficacy; therefore, if a student has completed a productive internship, preferably multiple internships, he or she will fill more competent to enter the agricultural communications profession. Additionally, the vicarious experience, or being mentored and supervised, aids in building self-efficacy. The number of students in this study reporting they had completed an internship was low, especially for juniors. Perhaps if more participants had completed internships earlier they would have possibly reported feeling more prepared for a career.

A majority (59%) of respondents stated their primary activity after graduation would be full-time

employment, followed by full time graduate or professional school (33%). Of the respondents, 40% reported they do not plan to work in the agricultural industry. An increasing number of graduates with expertise in agriculture will be needed in the workforce now and in coming years (Goecker et al., 2010). Individuals with knowledge of the agricultural industry plus solid communications skills are in high demand (Boone et al., 2000).

Although 33% of the respondents plan on graduate school, employers of agricultural communications graduates do not see improved communications skills in employees that hold a master's degree (Irlbeck & Akers, 2009). Fry et al. (2012) found a master's degree did not make a significant difference in starting salaries of agricultural communications graduates. However, national data across various professions found that a master's degree does indeed make a difference in salary, sometimes as much as $10,000 annually (National Association of Colleges and Employers [NACE], 2013).

NACE (2013) estimates the average national starting salary for recent graduates working in general communications to be $43,835; for public relations specifically, the national average was $22,600. Most of the students who completed the instrument reported an expected starting salary between $40,000 and $60,000, and an increase to $60,000-$80,000 five years after graduation. Specifically focusing on agricultural communications graduates, Fry et al. (2012) found the average starting salary for those with a bachelor's degree was $31,326.

For recently graduated new employees, employers stated that most recent agricultural communications graduates nationwide have a satisfactory skill set in photo editing, page layout, and graphic design (Irlbeck & Akers, 2009). The results of this study are similar in that agricultural communications students at TTU are most confident in their graphic design and video editing skills. However, graduates could improve upon writing, photography, news editing, and Web design (Irlbeck & Akers, 2009); this is similar with the results of this study in that students' confidence levels in photography (M = 3.48), news writing (M = 3.62), and Web design (M = 3.55) could use improvement.

Bandura (1977) identified four specific areas in which individuals judge their efficacy, or confidence: performance outcomes, vicarious experiences, verbal persuasion, and emotional arousal. If one has performed well at a specific task, the individual is more likely to feel competent and perform well in other tasks that are similar (Bandura, 1977). Respondents reported they felt most confident in English. Specific to agricultural communications, students reported the most confidence in graphic design (Adobe Illustrator) and video production. However, students reported they feel least confident in economics (M=2.60), but agricultural communications students may not have solid performance outcomes, meaning they have not previously performed well in that subject. Although economics is an important component of the agricultural industry, not all agricultural communications students have vicarious experiences in economics, and thus confidence in that area is lacking.

Recommendations

A limitation of this study is that these results are specific to the agricultural communications program at TTU, and though some results may apply to other programs, generalizations should

be made with caution. The researchers recommend the program continue stressing the importance and value of internships. An internship is mandatory for graduation at TTU, but with 44% of the respondents not completing an internship, it is clear more emphasis needs to be placed on their importance in building confidence and getting the first job. This is especially true for the agriculture industry. Employers want graduates that can communicate and understand agriculture (Boone et al., 2000), and jobs will be available for graduates with this skill set. With 40% of students planning to work outside of agriculture, it is possible faculty at TTU are not communicating to students the opportunities available in agriculture-specific communications. Faculty should also set realistic expectations about beginning salary potential. Students at the time of the study were expecting nearly $10,000 more than what the average agricultural communications alumnus makes right out of college.

Students crave to know more about the industry they will soon communicate about; therefore a broad overview course about advocating for agricultural systems and issues would be well received by the respondents.

Additional research should be conducted with graduates of the program to assess how well prepared they felt when entering the workforce. This study could also assess the salary range for graduates of the program and identify areas of employment. This research should be replicated at other universities to determine if these issues are areas of concern nationwide. Although prior research indicated a master's degree did not make a significant difference in starting salary in agricultural communications graduates (Fry et al., 2012), additional research is needed to determine if a master's degree improves long-term earning potential.

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An International View of Agricultural Communications

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Abstract

Internationalization has always been an important component of the agriculture industry. As the industry continues to globalize, it is now more important to effectively communicate to producers, consumers, and other agricultural organizations in other countries. The purpose of this study was to determine what agricultural communications looks like in different countries so this information can be utilized in collegiate agricultural communications classes. Through the lens of the Diffusion of Innovations theory, a closer view of agricultural communications was achieved through qualitative interviews of international students studying agriculture at Texas Tech University. This study found that communications with consumers, in general, is not prevalent, but change agents use various media to communicate with producers. Radio, mobile phones, and face-to-face communication are most prevalent in the countries represented in this study. Communication about agriculture to the consumer is needed in foreign countries, just as it is needed here in the United States.

Introduction/Theoretical Framework

The globalization of agriculture began in the 19th century when innovations in farming, communications, marketing, and transportation created a shift toward commercialization and contact with agriculturalists around the world (Coclanis, 2003). The trade of food between regions, countries, and continents has occurred throughout history (Phillips, 2006). The food supply and availability of food was critical in helping develop, maintain, and grow civilizations throughout the ages (Godfray et al., 2010). "Migrant laborers, refugees and resettled populations, immigrants, students, business consultants, nutritionists, agronomists, tourists, and other travelers all play a role in the reproduction and expansion of ideas about food and food systems" (Phillips, 2006, p. 45). When individuals visit new places, whether in the same country or a new one, they experience new food types and production styles (Phillips, 2006); they will in turn bring the ideas of what they have experienced home with them and impact the local food and culinary cultures. This increases the importance of food trade, and thus, globalization in agriculture.

Globalization describes the two-way bridge of social relations worldwide that creates a link between distant areas and connects different localities miles away (Giddens, 1990). It includes the study of how things are transferred, adopted, and impacted between communities, states, and nations on the global scale. In order for globalization to occur, communication, or information sharing, is imperative. There must be a connection and sharing of information in order to develop a global society, and it is the responsibility of professionals and educators to increase knowledge to promote a global understanding of agriculture (Shinn, Wingenbach, Briers, Lindner, & Baker,

2009). Information sharing can happen in a number of ways: producer-to-producer, food company to producer, direct to consumer, or through a method similar to the cooperative extension program in the United States.

Leeuwis (2004) explained there has been a pattern of or information exchange, through people in advisory roles or positions throughout history worldwide. Today, there is still a practice of agriculture extension globally. Translations of extension mean "lighting the pathway ahead" in Holland, Indonesia, Germany, and Austria; "advisory, education work" in Great Britain, and Western Europe; "rural guidance" in Korea; "simplified message for common man" in France; and "training or improving skills" in Spanish speaking countries (Leeuwis, 2004).

Spreading information and knowledge through communication is a larger challenge than most realize. Because of low access to information sources and literacy in lesser-developed countries (LDCs), producers may not have access to or understand the information being presented to them, resulting in a limited exchange of knowledge to only inside their own social interactions (Parikh, Patel, & Schwartzman, 2007). It is necessary to aid producers with technology that is useful to them and their needs (Moriba, Kandeh, & Edwards, 2011). Parikh et al. (2007) described that agricultural information, which could include market prices, is critical for all those involved in the agricultural chain to make decisions in the best interest of the products.

Agricultural extension and advisory services play an important role in aid for LDCs (McCole, Culbertson, Suvedi, & McNamara, 2014). In 1984 the Association for International Agricultural and Extension Education (AIAEE) was established to increase the understanding of agricultural education and extension around the world (Garrett et al., 2014). Shinn et al. (2009) defined international agriculture and extension education (IAEE) as a "knowledge exchange system that engages change agents in a participatory persuasive process of educating global stakeholders and preparing future farmers, agricultural specialists, and agribusiness leaders in a changing world" (p. 83).

In order to understand agriculture globally, it is necessary to know what communications tools are currently being used in different countries, both with consumers and producers. For example, some researchers have found a large amount of mobile phone use to communicate with producers (Warschauer, Said, Zohry, 2006), and apps on smart phones provide Internet and access to a wealth of information. The Govi Gnana Seva group in Mexico has employees who walk through the local markets every day to find the prices of goods for the day, and share the information on a posted board in the market, on a website, and the next day's newspapers and radio broadcasts (De Silva & Ratnadiwakara, 2008). Farm Radio International, is a non-profit organization from Canada that has been supporting broadcasters in developing countries to increase farming aid to rural communities since 1979 and is currently serving 460 organizations in 38 African countries (Farm Radio International, 2016).

Information about communication strategies and technologies in foreign countries is important for higher education coursework. There is a need for an available global perspective for not only students, faculty and instructors, and individuals who will eventually work overseas, but all professionals in agriculture to increase diversity appreciation and prepare for careers globally (Acker & Scanes, 1998). Briers, Shinn, and Nguyen (2010) found an increase in students' desires

and readiness to experience international learning, gain a global perspective, and have international experiences to prepare for leadership roles in a global society. Colleges of agriculture have the responsibility to provide the positive vision and excitement for internationalization and the importance of it in today's global society (Brooks, Frick, & Bruening, 2006). Employers today are hiring agriculture graduates with the expectation they will have the ability and skills needed to work in a global workplace and understand the importance of globalized agriculture (Irani, Place, & Friedel, 2006).

International agricultural communications applies the idea of multiple communication methods and channels about agriculture to every country. Educating future agricultural communicators about these changes in communication technology and the communication methods used in other countries is important to understanding how agricultural communications happens in different regions. As technology continues to improve, agriculture will have to embrace each new communication and technology tool in order to maintain the sharing of information to the non-agriculture public (Rhoades & Aue, 2010).

Purpose/Objectives

Since agricultural globalization continues to evolve, understanding which communications techniques are effective in different regions and countries is important. There is very little literature about communication methods used in the agriculture industry worldwide. This is a problem because graduates of collegiate agricultural programs need to be knowledgeable of global agriculture and how to communicate within the industry worldwide.

This is an exploratory research study to modify and update agricultural communications curriculum on the undergraduate and graduate levels of university and collegiate instruction. The communications methods studied and utilized in technologically advanced countries does not always match what is used or needed in developing countries. This can also help provide a guide to agricultural communications in various regions around the world. Businesses and companies can utilize this to see which methods of communication have a better response in different countries where they operate on the consumer and producer levels.

This study sought to determine how agricultural communications is utilized, understood, and how it impacts different regions around the world. This descriptive case study was guided by four research questions relating to international agricultural communications:

1. What methods of communication about agriculture are used in specific countries to producers and to consumers?
2. How are the channels of communications similar by geographic region?
3. What is the perceived importance of agricultural communications locally within a region and globally?
4. What impact does agricultural communications have for the national and international agricultural industry?

According to the National Research Agenda Research Priority Area 3: Sufficient Scientific and Professional Workforce that Addresses the Challenges of the 21st Century, graduates need to

understand global perspectives and be prepared to live and work in a global society (Roberts, Harder, & Brashears, 2016). Shinn et al., 2009 encouraged future research to identify what essential knowledge is required for professionals working in international agricultural and extension education in the future.

Theoretical Framework

This study was conducted through the lens of Rogers' (2003) Diffusion of Innovations Theory. Specifically, it focused on the role of the change agent and his or her ability to communicate to audiences in different regions around the world. The researcher studied the different methods of communication used, who the main sources of the communication are, and the type of messages shared. In relation to Rogers' (2003) model, the researcher examined how this study's participants thought change agents were utilizing communication to disseminate knowledge and information in their home countries. From here, the researchers inspected what would be the best ways for change agents to share information and communicate with locals in different countries based on the participants' knowledge of the countries and the people. Rogers (2003) stated an innovation is "any idea, practice or object that is perceived as new by an individual or other unit of adoption" (p. 12). Change agents cover a wide range of professionals from teachers and agriculture extension agents, to salespeople and development workers that help diffuse an innovation into society (Rogers, 2003).

This connection is required because there is a gap between the audiences and the companies including technology, languages, education, socioeconomics, and attitudes or beliefs. Rogers (2003) describes this practice as the change agent having one foot in each world in order to understand both sides and be the communication between them. Overcoming the barriers of miscommunication and understanding can be aided by targeting communication to an opinion leader in the region of the audience to gain more trust from the audiences (Rogers, 2003). Oleas, Dooley, Shinn, and Giusti (2010) described opinion leaders being selected by the community based on their credibility and trustworthiness mostly, but gender, ethnicity, and geographic demographics have an impact as well. The leaders or elders in the community possess knowledge and appreciate the cultural values which gives them influence over how, when, or if a region will adopt and implement a new innovation (Shinn, Ford et al., 2012). These can be the elders of the community or even the younger generations who are beginning to participate in agriculture and understand the changing technologies within the industry.

Methodology

Case studies are the exploration of systems bounded by space and time with detailed collection of multiple sources (Creswell, 2012). Because this research focused on gaining insight to agricultural communications in various countries, a case study was the appropriate choice. Yin (2012) said exploratory research answers a specific question through fieldwork and data collection. This type of case study fits the research study because there is an overarching question of what agricultural communications looks from a global perspective.

The primary instrument for collecting and analyzing data was the researcher. Prior to contacting any possible participants, the researcher obtained IRB approval. International students studying

agriculture were the sample for this study. The individuals were chosen based on agricultural background, country of origin, and field of study. The first participants selected were a convenience sample through personal contacts that met the stipulations set by the researcher for a total of six initial participants. At the conclusion of the first six interviews, the participants were asked if they knew of anyone who would be useful for the study or interested in participating. From there, the researcher was able to gain three additional participants; resulting in nine total participants. See Table 1 for a description of the participants.

The researcher created a semi-structured interview guide with questions that helped answer the over-arching research questions. Because the interview was semi-structured with open-ended questions, and the interviews took several different directions. However, the interview guide ensured all the necessary questions were asked.

The interviews took place in the same building on the Texas Tech University campus in a small, quiet conference room so there were no promotional or informational signs or posters on the walls to distract the participant or sway their responses. This was also to eliminate noise interference, interruptions during the interview, and provide a neutral environment to the participants and researcher. During the interviews, a voice recorder was used. A notepad was also used to write notes about any physical influences of the participant, such as mannerisms, emotions, voice inflections, and behaviors. The interviewer also observed behaviors and emotions of the interviewee during the study. The interview process continued until data saturation was reached. Data saturation, or rich data, can be described as being high quality and thick data being quantity (Fusch and Ness, 2015). This occurs when there is no new data being gained from the research.

Table 1. Description of the participants. Pseudonyms were given to ensure anonymity.

John	From Central Africa. He worked in the public, government, and education sectors of the agriculture industry.
Susan	From Central America. She has worked in agriculture in surrounding countries in regional committees and government offices.
Cindy	From Central Africa. Has worked with agricultural agencies in her country.
Cate	From South America. Grew up in an urban area but has a strong interest in employment in agriculture.
Beth	From Central America. Worked in the agriculture industry
Gayle	From South America. Her work has been in the agricultural industry of her home country in the public sectors.
Amy	From South America. She has worked in agriculture for the public and educational industries.
Luke	From Central America. He worked in the private sector of the agriculture industry.
Brody	From Southeast Europe. Family works in agriculture and farms.

Each interview was conducted in one phase. The process lasted between 20 and 30 minutes for each participant. All participants' names were excluded from the study and replaced with a pseudonym to ensure additional confidentiality of the study. After the interview, the audio recordings were transcribed and the notes of personal behaviors and actions were aligned with the transcription. After all the interviews were completed, they were transcribed and sent to each

corresponding participant. Each participant received the transcript of his or her individual interview. This was to ensure no misinterpretation or miscommunication occurred during the interview. Proper understanding and representation of what the participants wanted to say was critical in the analysis of the study. These documents along with the audio files were uploaded and stored on a password protected computer where they will remain for at least three years.

Open and axial coding was used to categorize the interview responses after they had been transcribed. Individual responses were analyzed and not the interviews in their entirety. To aid with the organization and structure of the coding, Nvivo 10 was used by the researcher to sort the interviews into the categories and sub categories that were apparent from the research.

Merriam (2002) explained choosing participants with various experiences, backgrounds, and demographics aids in eliminating bias of the researcher. The researcher's background roots itself deeply in agriculture and communications with a strong interest in international travel. This study mixes the researcher's background and how others understand their connections. The researcher kept an open mind during the interviews to other peoples' perceptions of agriculture and descriptions of agricultural communications in their home countries. Reactions or interpretations did not influence the findings of the research.

Lincoln and Guba (1985) stated trustworthiness is the qualitative version of quantitative reliability and validity to ensure the research and results are credible, and can be measured using credibility, transferability, dependability, and confirmability. Credibility was ensured in the research study through the means of triangulation of multiple sources of as they are defined by Merriam (2002). Transferability was applicable because of the descriptive adequacy used in the study. An audit trail was used to show dependability. Confirmability was established through reflexivity and audit trials.

Findings

Research Question 1 sought to identify what communication methods, if any, are being used to share information about agriculture to consumers and producers in the participants' home countries. Three themes emerged from the data: communication to consumers, communication to producers, and types of messages. In general, the participants reported little-to-no communication to consumers about agriculture. If anything, there were commercials to eat certain foods or promote brands to the urban areas. "We do have some advertisement on TV about 'let your kids drink milk', but those are sponsored by the companies producing milk. So, we don't really have like more awareness stuff" (Susan, p. 4).

Amy said there is more communication in Central and South America than in the Caribbean; however, she said these efforts are not as good as in the US. There was one example of consumer communication about agriculture being rooted in the government. The president stressed the importance of agriculture to all the citizens of Cindy's country in Central Africa. Because of this lack of communication to the urban consumers, there is limited understanding about agriculture. Brody said in his country there is a large gap between the urban consumers and knowledge about the agriculture industry. Susan said opinions, viewpoints, and understandings Americans have are influencing other how countries around the world view agriculture.

When it came to communication to producers, mobile phones and text message technologies are being used to contact the remote producers in many regions. John said the majority of producers own a mobile phone, and they are relatively inexpensive. Susan said radio is the number one method of communication for rural populations in her country. John stated that low literacy is the main reason print media is ineffective. Luke said his country does not have the resources to do everything they need, so they get producers together in the communities for meetings and assemblies.

Cindy said the youth spread messages to explain to their parents about new developments in the agriculture industry in Africa, such as pests and fertilizers. "Now that we are trying to get youth on board and the youth they use social media a lot. Mostly all the telephone companies [provide] free browsing or cheap, very, very cheap affordable. So, I think social media and Facebook pages Twitter and all the social media will be good" (Cindy, p. 3). New products are always being created for the agricultural industry, and Beth said companies promote products, such as fertilizers and pesticides, through advertising.

Research Question 2 sought to answer whether communication methods are similar based on geographical region. There were four themes apparent as a result of the research participants in relation to this question based on the geographical areas: radio, television, ICTs, and workshops.

Luke, Beth, and Susan said in the rural areas of Central America, radio is the preferred communication channel because it can reach everywhere. Amy said the best ways to communicate in South America would be television and radio channels. Cate and Gayle said the television was especially effective to reach urban populations. John said in his country in Central Africa, communication about agriculture mainly falls on extension agents and face-to-face communication, but this is expensive. To cut costs, John and Cindy both noted some of the extension agents switched to the cheaper mobile phones. Many younger producers or children of producers are using different apps to collect information. Cindy added that Internet is gaining popularity to reach younger people working in Africa.

Brody was the only participant from Southeast Europe and said workshops and face-to-face communication are the most used way to share information. However, he added these are usually held in the urban areas causing producers to have to travel. Eastern Europe has better travel conditions such as road accessibility, travel costs, and vehicle availability than other regions. Meetings are also popular in South America, according to Susan, but varying languages and dialects within a country can sometimes be a barrier.

> People are now coming together as groups because reaching one farmer is not very easy. But the best approach to reach farmers is through groups. And even among the groups, they talk among themselves. Among even the group members, those have been farming for long, those have been exposed to channels the others. So, even before the technology is coming, the farmers themselves talk among themselves. Those that talk pick up very quickly and also take initiative to show others on how to do the best methods of farming (p. 4).

Research Question 3 sought to answer how important communications about agriculture is in the participants' home region or country. In relation to this objective, two themes were evident in the data: importance of agriculture and the impact of the messages.

Many of the regions rely solely on agricultural production for revenue. John and Susan said agriculture is extremely important to the society in their countries in Africa because it is the main source of livelihood, and everyone is involved in agriculture. Agriculture is also very important in Central America.

> I think it is really important because we have a lot of potential. I know that agriculture it's one of the best ways that we can achieve more development in our countries. We just need to be responsible how we use it and educate farmers more and on technology (Beth, p. 2).

Producers are becoming concerned about the business side of agriculture (John). Cindy said there has been a shift to target messages toward the young generation so that the older generation gets the message.

> Even if the parents are not educated, when the kids know a little bit of something, they rely on their kids to explain to them. So, if the social media, especially Facebook, if we use social media pages for the agriculture sector with a lot of pictures, attractive pictures, that will tell that this is something that we need to invest in (Cindy, p. 3).

Messages targeting consumers have increased awareness and knowledge, especially in Susan's home of South America. These messages are changing how people think about agriculture, and Susan said there is a collective increase in understanding how important agriculture really is. However, Susan also stated that her country is highly influenced by the US, and my of the misconceptions about agriculture that we see here are being communicated there.

Research Question 4 sought to determine the perceived importance of international agricultural communications within individual countries and between multiple countries. Two themes with subthemes were found in the data: impact of agricultural communications and ways to increase agricultural communications.

In general, the participants stated that knowledge and awareness are increasing because of communications about agriculture in their home countries. Susan said that she notices more attention, both nationally and internationally, about the issue of food safety. Beth said she believed it would be beneficial for everyone if there were an increase in education and access to technology because this would allow people to be more aware of opportunities in the industry. In order for international agricultural communications to work, there needs to be two way understanding of the culture, traditions, and interests of the different countries, according to Cate. Communication can increase the awareness and accessibility of production from different regions. Cindy said there are many cases where things are happening in villages and production areas that no one knows about, and they are surprised when they visit because of the lack of visibility about agriculture and projects. The consumers' knowledge and understanding of agriculture is limited in different regions around the world. Agricultural communications can help bridge this gap and create a more educated consumer, according to Cate.

> Internationally, I think it is also important that [communications occurs] both directions because I think that it's happening in one place. I think you got the US [who] don't understand a lot of what is happening [in other countries] and vice versa. So, I think culture, it is important to take care when we are communicating about agriculture in this case (Cate, p. 3).

All the participants said there is a need to increase international agricultural communications. Gayle said the best way to do this is to find the community leader, as this person will share information with the audience so it is heard and understood. Luke said in order to increase understanding about agriculture worldwide, the efforts should be targeted toward the local producers because they do not have the resources or education as much as the urban areas. Brody said the messages should focus on education about crops, land, climate, and markets.

Conclusions/Recommendations/Implications

Extension agents are helping consumers, producers, and agriculturalists expand their understanding from the local community to include a more global view (Parikh et al., 2007). This is where the change agents have had an impact on improving the awareness of new agricultural innovations or ideas. In Cindy's country in Central Africa, the president became involved in the agriculture industry and stressed the importance of it on the society and the need to invest in agriculture. Agriculture and food availability have been critical in developing, maintaining, and growing civilizations (Godfray et al., 2010). The increase in agricultural globalization has created the ability for countries to have food and reach their market potential (Ufkes, 1993). Amy said her country in South America is heavily influenced by America and they try to increase the quality and nutrients of food by focusing on homemade products.

This study confirmed previous research in that radio, mobile phones/apps, and face-to-face communication are effective ways to reach agricultural producers. However, the data collected for this study found that radio is more effective in South and Central America, and mobile phones are more popular in the African nations. Face-to-face communication may be more effective in Europe because of better transportation.

Internet based communication has seen growth in rural areas of various countries creating easier access to information (Parikh et al., 2007). John said mobile phones are in every home in his home country in Africa, and because of this, people are relying more on mobile phones and apps to share information to producers. Farm Radio International has been a leader in providing radio access to remote areas of developing countries around the world (Farm Radio International, 2016). This is a popular method of communication because it removes the barriers such as geography, literacy, and education (Parikh, et al., 2007). Beth said radio is popular in her country especially for educational programs to increase knowledge on more than just agriculture. The transfer of information and knowledge is also popular in face-to-face contact situations (Nigh, 1997). To win trust and diffuse an innovation, face-to-face communication is required, but because of remote areas and difficult travel areas, this type of communications is not always available said Beth. Cate said languages and cultural differences also create barriers that make it difficult to share information and transfer messages in person.

Communication between producers is an important method of knowledge sharing because this is how they learn about what works and what does not when it comes to technology, practices, and management (Parikh et al., 2007). John said the main message of the communication about agriculture in his country is to grow from subsistence farming to a larger scale commercial farming to create a business that will provide an income. End-to-end communication is used to share constantly changing information such as markets or new technologies (Parikh et al., 2007). However, this practice is not always executed to its best potential. Third party communications, or change agents, are available but not used because of the challenges in communication with the rural populations including language and social culture (Parikh et al., 2007). Gayle said the communication in her country is trying to promote the government programs, share information from specialists, and provide a platform for people to trade their products.

The countries represented in this study from Central America have radio as the main communication method to the rural areas. This is because of the ease of access to the radio that face-to-face communication cannot always reach. Parikh et al. (2007) also touted radio as the best way to communicate with producers in the remote areas to eliminate barriers. The participants from South American also said radio is the main method of communication with the rural producers. However, in urban areas, television and Internet are important forms of communications. Participants from Africa said it is common to see mobile phones in their home countries. The phones may not all have the ability to access the Internet, but producers can use them for sharing information through messaging systems. Text messages and other similar technology are being utilized through the mobile phones. Mobile phone access was more than 50% in 2009 and offered opportunities for producers to share knowledge through private and public channels (Aker, 2011).

Travel conditions and access is becoming easier for countries in Southeast Europe, creating the ability to have meetings and workshops to share information. This eliminates the difficulties explained by McCole (2014) including transportation, road access, and cost of travel. Brody said television and radio are utilized for agricultural communications, but workshops are preferred.

The globalization of agriculture has increased the amount of agricultural products traded worldwide (Hazell & Wood, 2008). This has increased the economic wealth and industrialization of many LDCs around the world (Coclanis, 2003). Beth said that it is important to communicate about agriculture, because her country, and other similar countries, have great potential for growth. However, producers must be educated about technology advances to increase production, and consumers must understand agriculture's importance to bring money into the economy.

Because of the increase in globalization in the agriculture sector, new trends are appearing worldwide. Change agents diffusing new innovations, such as new seed, machinery, farming practices, or business management strategies, is part of creating an intention to change (Rogers, 2003). Another example of this is the producers' increased concern about the business side of agriculture. Communications can raise awareness about the agriculture industry to the consumer; an example would be information about different food choices, food safety, and or food preparation techniques. This increased information can boost demand, and possibly increase

profit for producers (Nigh, 1997). Susan said an increase in agricultural communications in her country would greatly affect the urban populations who are influenced by the US and have the same misconceptions and misunderstandings about agriculture.

Rogers (2003) stated change agents have the role of diffusing new innovations to communities, regions, and countries as needed. Beth said she believed it would be beneficial for everyone if there were an increase in education because this would allow people to be more aware of opportunities in the industry. The channel and message that best fit the audience is important to them receiving and understanding the message (Rhoades & Aue, 2010). Cate said that for communications efforts to be affective, the communicator must understand the culture within that country.

As stated by Rogers (2003), people are more willing to listen to people they know, trust, and respect, so it is important to have these influential leaders involved in the agricultural communication message. Gayle said it is important to find the leader of the community to share information because they are the person the people will watch, listen, and understand more than anyone else. As Rhoades and Aue (2010) stated, communication needs to focus on the best method for each region because what works in one area may not work in another. One of the roles of a change agent is having the ability to understand the audience to better meet their needs (Rogers, 2003). Cate said the type of communication is important to know when dealing with an international audience because cultural understanding is one of the biggest barriers. Someone cannot go into a community and tell the local producers everything they have been doing is wrong and they must change, but people will change their practices if the message is communicated effectively and from a trustworthy source.

Recommendations

For communications about agriculture to be effective in any country, it is imperative for the change agent (or communicator) to have an extensive understanding of available communications channels in both the rural and urban areas. Not one message or one channel will work for both. This study did not focus on communicating agriculture to the consumer other than to establish if there is any. However, the data shows a need and importance of agricultural information for consumers. In many of the developing countries, face-to-face communication from a community leader or influential person is preferred. This is because of their traditions and cultures, and it is important to identify these individuals and work closely with them to gain the audiences trust and respect.

The researcher recommends for agricultural communications programs to increase their interest in the international scope of the industry. Because of the growing globalization occurring in the agriculture industry, communicators who understand the industry are going to be continually required for more international positions in the work field. Many of the communications methods and channels currently taught in agricultural communications programs can be adapted to fit the technology and literacy needs of LDCs around the world.

This research study focused on identifying the communication methods and channels to apply these findings into agricultural communications degree programs. This study did not go into

depth about the types of messages required for consumers and producers to create the largest change. Future studies should be done on the process of implementing new communication methods and the different messages and information that should be shared. More in-depth research can be done on a single region or country to identify more clearly the best communication practices and messages to share information with consumers and producers. This research was limited to only a few regions, and future studies can apply this research to the unexplored areas in the world. Future research could be conducted within the different regions. This would allow the researchers to gain a hands-on first look at the communication being used and how it impacts and is important to the countries in the region.

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Employer Expectations of Entry-Level Agricultural Leadership Graduates: A Qualitative Study

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Abstract

Preparing students for the agricultural and natural resource workforce requires university agricultural programs that consider the needs of industry. This study sought to explore employer expectations of entry-level agricultural leadership graduates through a qualitative lens. The purpose was to determine the knowledge competencies desired and needed by employers and determine if graduates are meeting these needs. Five purposively selected employers who had hired agricultural leadership students following participation in the Texas A&M University career fair during the last three years participated in interviews. Cross comparative analysis was used to analyze the data, revealing 17 categories. Those categories were further sorted into 5 themes: culture, criteria for hire, high impact experiences, innate characteristics possessed by agricultural leadership students, and evaluation of first-year hires. Findings revealed that students majoring in agricultural leadership are meeting a portion of employer needs; however, there are employer needs that remain unmet. The importance and need for career and professional development in the university classroom was a critical finding. Additionally, this research supports the need for future research related to high impact experiences for college students and further research to determine techniques to prepare students to gain workforce skills.

Introduction & Literature Review

Discussions related to workplace readiness and competencies needed for college graduates to meet industry needs is common; however, literature focused on agricultural leadership graduates is somewhat limited and what is available is dated. Recent literature has focused on how to improve classroom teaching to better prepare students for the workplace (Rateau, Kaufman, & Cletzer, 2015), the importance of team-based projects for students (Lamm, Carter, & Melendez, 2014), and student perceptions of an agricultural leadership degree (Moore, Odom, & Moore, 2013). Rateau et al. (2015) expressed that "students must accept their responsibility in learning" (p. 61) while Lamm, et al. (2014) illustrated that team-based learning was an opportunity for students to gain "interpersonal and management skills" (p.110). And, while it is important to understand how students interpret their degree (Moore, et al., 2013), these studies do not address the question related to industry and employer needs.

In order to prepare students for the highly competitive global market, industry and higher education must form lasting and meaningful partnerships. These partnerships have huge implications for the future of graduates from colleges of agriculture (Graham, 2001). Industry is constantly changing and agricultural educational systems must stay current. Reviewing industry competency needs and requirements to guide curriculum is important. The 1997 study by Andelt, Barrett, and Bosshamer found that many jobs require competencies that are not routinely part of

the curriculum. With the changes in college curricula, the need for increased technical competencies, and a changing industry, there is a need to determine skills and competencies required and desired by entry-level agriculture employers (Graham, 2001).

There are multiple factors that contribute to a student's job readiness for a career in agriculture (Graham, 2001). Graham (2001) continues explaining the impact that partnerships between higher education and industry can have on agriculture graduates. The background of students earning degrees in agriculture are ever-changing (Long, Straquadine, & Campbell, 1992). As far back as 1998, a report by the W. K. Kellogg Foundation supported the need to find out whether undergraduate teaching programs of land-grant institutions were still relevant to employers. The W. K. Kellogg Foundation study looked further into the balance of teaching and research, globalizing student learning, diversity, values, and traditional education, encouraging 13 project teams to rethink the relationship between higher education and society. "The workforce is continually reorganizing, and graduates should possess the knowledge and skills required by the industry today" (Graham, 2001, p. 22).

Agricultural curricula should be continuously reviewed and revised in order to remain up-to-date and relevant (Kunkel, Maw, & Skaggs, 1996). "As the agricultural industry changes over time, the educational systems pertaining to agriculture and related subjects must not fall behind" (Graham, 2001, p. 22). Furthermore, college curricula should be designed to prepare graduate students who are at the cutting-edge of knowledge and technology (Coorts, 1987). Studies show a well-rounded curriculum is important to meet the needs of employers (Andelt, Barrett, & Bosshamer, 1997). However, Coorts (1987) had previously suggested that former modifications led to increased specialization in a time when employers wanted students to be more broadly educated and trained. "The task of producing marketable graduates requires on-going sensitivity to changing needs and perceptions of prospective employers" (Andelt et al., 1997, p. 47).

Universities are encouraged to increase awareness and knowledge of career opportunities through strengthening relationships between faculty and industry (Suvedi & Heyboer, 2004). This can be accomplished through faculty member's participation in workshops, conferences, and career fairs. Moreover, interactions between industry and higher education has enormous implications for agricultural students (Graham, 2001). Looking to improve skills and competencies, industry and academic institutions have partnered in various ways to achieve common and separate goals (Graham, 2001). The author continues to explain that the input of industry has become increasingly more important to consider in the curricula decision making process due to advances.

Research related to career opportunities and job placement for students enrolled in colleges of agriculture have included both a focus on career preparedness as well as studies focused on specific skill needs. Graham (2001) found that students are prepared for entry-level positions. Andelt et al. (1997) explains the commitment to education and industry preparedness by industry leaders. Managers rank interpersonal and communicative skills as an extremely high skill need (Coorts, 1987). Andelt et al. (1997) ranked computer, quantitative, and management of information skills high among employers. Litzenberg and Schneider (1989) found interpersonal skills to be increasingly important and encouraged classes to be taught on these topics at the undergraduate level. Andelt et al. (1997) and Litzenberg and Schneider (1989) found consistent

results, and reflected that similar results would be found at other colleges of agriculture. Leadership preparation was a skill found to be missing (Brown & Fritz, 1994). Suvedi and Heyboer (2004) suggested that graduates need more preparation related to résumés, cover letters, and interview skills. Litzenberg and Schneider (1989) identified six key categories as important to success in agricultural firms: business and economics; computer, quantitative, and management information; technical skills; communication skills; interpersonal skills; and work experience. A study to determine employers' opinions ranked interpersonal and communications skills as the most important abilities needed for pursuing careers in agriculture (Wehner, 1994). Irlbeck and Akers (2009) suggested a stronger need for communication and creativity in the workplace. Moreover, Wehner (1994) articulated the real world need for agricultural students to be able to explain and defend production agriculture practices to a public that could be trying to derail or deter agriculture. Litzenberg and Schneider (1989) found a need for students to possess both science aptitude and a high level of interpersonal skills.

Character traits, career expectations, and level of knowledge, skills, and abilities related to agriculture are important to agricultural employers industry wide. Doerfert and Miller (2006) explained the existence of a gap in college graduate's communication abilities, specifically their writing skills and persuasive skills. Graduates can also lack the ability to meet the challenges of a high-performance workplace (Graham, 2001). Andelt et al. (1997) found that there was a lack in leadership abilities, particularly in problem solving and team work, in agriculture students. In a study by Irlbeck and Akers (2009), researchers found "several participants commented that recent graduates have unrealistic expectations about pay and promotions" (p. 69). According to Graham (2001), some graduates exhibit "on-the-job awkwardness" (p. 22) and do not have maturity or business-savvy possessed by more experienced employees. The author continues to explain that all character traits were very important to employers. It was reported in 1997 that the market was saturated with positions for agriculture graduates and students were unprepared to fill these roles due to lack of knowledge, skills and abilities (Andelt et al.). The basic competencies taught do not always meet the needs of employers. Thus, there is motivation for institutions of higher education to partner with industry to help prepare graduates to work in a highly competitive market (Graham, 2001). According to Doerfert and Miller (2006), there is discourse between academia and industry as each entity has varying ideas related to skills and workplace habits.

As we graduate increasing numbers of agricultural graduates into the workforce, it is imperative to measure how well academic institutions are meeting the needs of employers. Litzenberg and Schneider (1989) found that more information is needed related to demand levels for specific skills and competencies. Irlbeck and Akers (2009) posed the question, "Are we teaching what the industry needs us to teach?" (p. 65). The study by Andelt et al. (1997) asked, "Did your students learn what was taught and can today's students compete in the job market?" (p. 48). The author continued to explain, "The more that is known about competencies needed in these careers and taken into account in curriculum development, the more employable graduates will be in the marketplace" (p. 48). There have been multiple student follow-up studies to assess how well an academic institution has met its objectives, but no qualitative, open-ended questions have been asked (Suvedi & Heyboer, 2004). "Due to changes in college curricula, increased technical competencies, and changing industry, there is a need to determine the entry-level knowledge, skills, and abilities required of college graduates" (Graham 2001, p. 4). In order to examine

workplace readiness and competencies needed across agricultural industries, a cooperative effort between academic institutions and industry is imperative.

Problem Statement

Little is known about the competencies desired and needed, specifically related to High Impact Experiences, by employers of entry-level graduates with a focus on agricultural leadership. The current American Association for Agricultural Education (AAAE) National Research Agenda (2016) encourages studies related to competencies needed for an agricultural and natural resource workforce. This study specifically addressed the AAAE research priority question, "What competencies are needed to effectively educate, communicate, and lead?" (Roberts, Harder & Brashears, 2016, p. 31).

Purpose and Research Objectives

The purpose of this qualitative study was to determine the knowledge and competencies desired and needed by employers of entry-level graduates with a focus on agricultural leadership and to determine if the graduates hired are meeting the identified needs. The research objectives were as follows:

1) determine the desired competencies for entry-level positions for agricultural leadership graduates,
2) determine the level of importance of desired competencies for entry-level positions for agricultural leadership graduates,
3) determine the high impact learning activities valued by entry-level employers of agricultural leadership graduates,
4) determine how high impact learning activities are valued by entry-level employers of agricultural leadership graduates, and
5) determine how Texas A&M University is preparing agricultural leadership graduates for entry-level employment.

Methodology

Currently, over 50 companies recruit and hire agricultural leadership graduates from Texas A&M University (Moses, personal communication, April 15, 2016). Utilizing non-probability, purposeful sampling, the researcher identified five employers to interview. These five employers were called upon to gain meaningful information as they each possessed special experience and competence (Merriam & Tisdell, 2016). Each employer selected had participated in the Texas A&M University Career Fair consecutively for the last three years and had hired at least five students who had majored in agricultural leadership. Thus, these five employers had hired a combined total of 75 graduates who had focused on agricultural leadership. Each purposively-selected employer was requested for participation by the researcher based on varying levels of experience and company profile. The companies represented were all agribusinesses or an agriculturally related non-profit. Specifically, three men and two women were selected for participation. One participant had been with their respective company less than a year, one participant had been with their company from 10 – 14 years, and three participants had been with their companies for 35 – 39 years. Additionally, one participant was from south Texas while the

other four were from central Texas. This purposive sampling resulted in an accurate depiction of the categories of employers who hire agricultural leadership students.

Each participant took part in a semi-structured interview via telephone (Kvale, 1996) and focused on preferred knowledge and skills needed as well as an understanding of the importance of high impact experiences related to entry-level undergraduate hires. Each semi-structured interview lasted approximately 45 minutes. An interview guide was used during each interview to help facilitate the order of topics addressed during the interview (Kvale, 1996). Representative questions included: a) What kinds of experiences do you look for students to integrate knowledge in their discipline?; b) What makes a quality candidate in today's job market?; and c) How is the institution teaching competencies needed by the industry?. Each participant was assigned a pseudonym to ensure confidentiality. Member checking was accomplished by requesting the participants to review interview transcripts and respond with any changes or additions. A peer debriefing was held between the researcher and a colleague with expertise related to career readiness prior to data analysis (Erlandson, Harris, Skipper, & Allen, 1993).

The constant comparative data analysis method was employed to analyze the data and thus, the data was organized into categories and themes. Merriam and Tisdell (2016) define a category as "the same as a theme, a pattern, a finding, or an answer to a research question" (p. 204). Each set of data resulting from an interview was analyzed immediately following member checking and compiled with the previous interview data. This allowed analysis to be a constant and progressive process which allowed the emergence of categories and themes throughout data collection. Open coding was used as the researcher took into account the transcripts and observations made during the interviews (Merriam & Tisdell, 2016). Codes were assigned to pieces of data and categories were formed. The researcher repeated these step at the conclusion of each interview.

Table 1
Categories that emerged from Round One of data analysis related to interviews with employers to determine desired and needed knowledge and skills of agricultural leadership graduates

Categories	*f*	%
Ag Knowledge	5	100
Career Fair Prep	5	100
Company Culture	5	100
Demonstrated Ability	5	100
Evaluating Hires	5	100
GPR	5	100
High Impact Practices (HIP)	5	100
Internship/Work Experience	5	100
Ranking of HIP	5	100
Relocation	5	100
Research	5	100
Soft Skills	5	100
Study Abroad	5	100
# of ALED Students Hired	5	100
Texas A&M University +	5	100

Texas A&M University –	5	100
Texas A&M University Culture	5	100

The original categories were sorted into themes identified as being repeated frequently and accounting for the most data (Merriam & Tisdell, 2016). This was done using note cards with each note card representing a unit of data. The themes from Round One were further analyzed and refined to result in the following categorizations:

- Innate Characteristics
- Culture
- Criteria for Hire
- HIP
- Evaluation

Trustworthiness was established through member checks, multiple peer debriefings, and triangulation. Archival data collected from previous Texas A&M University Career Fairs was also used to triangulate the data collected in the interviews. The following pseudonyms were assigned to allow confidentiality: Ray, Carlie, David, Joe, and Hannah. Each participant worked in a human resources capacity and held a degree related to agriculture. Four of the five companies represented were for-profit enterprises and one of the companies was a not-for-profit enterprise.

Results

Innate Characteristics Possessed by Agricultural Leadership Students

Positive and negative attributes related to Texas A&M University were identified in the statements made by employers. For instance, there were frequent comments related to the need for more business curriculum to be taught to undergraduate students. Additionally, more hands-on curriculum was expressed as a need related to teaching within the academic structure. Ray eagerly stated, “My only issue is that I wish some disciplines had more emphasis on accounting and finance. There needs to be a stronger emphasis on those areas.” He goes on to state, “There are so many more complex operational structures now and I really wish that Texas A&M University would increase the course load for those areas.” Other employers spoke of agricultural leadership students needing to be better prepared for the professional workforce as compared to other disciplines. Carlie was quick to say, “Working with a lot of departments, I see the differences. Overall, business students know more about how to dress and have overall polish.”

In reference to students being prepared for entering the workforce, the participants expressed that graduates have characteristics that they need. Carlie stated, “Agricultural leadership students are more real world and understand what it takes to really make it in the world.” Carlie’s experience with graduates had been extremely positive. She said that students she has hired with degrees in agricultural leadership typically work the hardest and are the most willing to stay late or come in early. Students from agricultural leadership seem to be ready for the on-the-job training that often comes with a new job. Moreover, Ray stated, “Because of the quality of education these students are receiving, they are coming in ahead of the other students.” His company has been

extremely satisfied with the students hired with a focus on agricultural leadership. Ray explained what a great fit agricultural leadership students are for his company and although his supervisor would like for him to diversify in his recruiting, it simply "doesn't make sense."

Cultural and Academic Fit with Company

Fit within a company was expressed by many participants as an aspect that was just as important as a student's skills and abilities. However, "fit" was described differently by various participants, each provided their own perspective on what this meant. One of the first statements shared by Ray was, "First off, they must be a cultural fit." When asked for more information on what that meant, Ray stated, "I love the cultural fit within our organization to start with. It attracts people who have the same values as us." Similarly, David expressed the importance for a new hire to care about people. He explained, "If they are interested in what people are doing and they show that interest to those people, they tend to be more successful than those who only care about agriculture."

A positive attitude and the ability to take part in friendly competition were expressed by all participants. The idea that new hires needed to be able to be competitive without unnecessary animosity was expressed as critical. It was further expressed that when a cultural fit truly works, it is an extremely positive experience for both the hiring manager and the new hire. Ray excitedly explained, "It is the most satisfying feeling when someone I have identified makes it in the business. Nothing gives me more satisfaction than identifying young talent and sharing with them what I have been able to experience in this business." Carlie's idea of cultural fit was expressed as working as a team to accomplish a goal. She stated, "I want my new hires to bring ideas to the table. Students see things hierarchal and that is not always the case [in business]. I want everyone on my team to grow and lead others." A sense of community was expressed by all participants to be important in order to accomplish a goal. New hires need the ability to form a community. Ray passionately explained, "There is a closer feeling among ag leadership students. They are supportive of each other and have a huge sense of community."

One aspect that was addressed by participants was the level of production agriculture experience possessed by most recent graduates with agricultural leadership. Participants expressed that they had noticed a decrease in the number of students who possess a production agriculture background and instead are finding that the students they interview possess a general interest in agriculture without first-hand experience. David explained, "I have to adjust my thought pattern related to production agriculture experience in my students. I am finding more individuals who have an interest in agriculture, but did not grow up in that setting."

Criteria for Hire

Multiple factors influence a company's decision to hire one student over another. Grade Point Average (GPA) or Grade Point Ratio (GPR) was valued by all participants, particularly if the student had limited experience in terms of work or extracurricular activities. Joe stated that his company maintains a strict 3.0 GPR threshold. He explained, "That threshold teaches us something about the individual." The focus on the GPR was more related to the ability of the student to work hard and apply themselves rather than a true measure of academic success.

Technical skills (i.e., computer, agricultural, and language) were also expressed as important. Employers who utilize software and spreadsheets prefer to see students who hold a proficiency in Microsoft Office products such as PowerPoint and Excel (e.g., pivot tables). Agriculture and Natural Resource knowledge was mentioned by four of the five participants. Basic farming and water resources knowledge that can be learned via academic coursework provided within a College of Agriculture becomes transferable as a student begins working. David preferred for students to be "versed in a certain discipline," while Joe expressed that simple agronomic knowledge and the ability to operate farm equipment provided a great deal of value to an entry-level hire. The most mentioned technical skill was being bilingual, particularly in Spanish.

Soft skills such as drive, professionalism, and initiative were expressed as important but hard to measure. Employers expressed that students should acquire these skills prior to entering the workforce. Communication skills were specifically identified as important by David. He stated, "I look for students who can communicate well. They approach me, they visit well, and they know how to ask questions. Both verbal and written communication is important." Joe expressed that he wants new hires to be self-motivated and self-driven. He explained, "They have to do it without me telling them to. They must find the motivation on their own." As his company is moving towards the addition of an increasing number of virtual locations, being self-directed is key. Being resilient and open-minded were expressed as important to Carlie. Moreover, she expressed a desire to hire an individual "who cares to be there early, is adaptable, and has held leadership positions." All participants commented that you can see work ethic in students who have worked multiple jobs, held officer positions in various clubs, and have accomplished these tasks while balancing the completion of academics. All participants expressed a desire for a new hire who would push themselves and participate in learning beyond the completion of their degree.

While all five participants interviewed were geographically located in Texas, all participants expressed a need for new hires who are geographically flexible and willing to relocate. Often, a new hire must be willing to relocate outside of Texas in order to secure increasingly higher level positions within a company. Carlie explained, "Sometimes moving is a stepping stone and sometimes it is permanent. You must be willing to go where we need you."

Importance of High Impact Experiences

The researcher specifically asked the participants about their opinion of high impact experiences such as student participation in internships, study abroad, and research mentorship. Four of the five participants in this study highly valued high impact experiences. Joe was quick to say, "High impact experiences are extremely important. They help build the attributes I discussed earlier (self-motivation, initiative, and drive)." Carlie was the only participant who did not highly value these experiences. However, she did state, "I do like to see someone who has put themselves outside their comfort zone and is adaptable." The participants expressed that students must communicate high impact experiences clearly on their resume and verbally in the interview so that the potential employer can understand what the student truly gained from their experience.

Participants were also specifically asked which type of high impact experience they valued the most. Four of the participants valued internships as the most important high impact experience. One participant valued study abroad as the most important high impact experience. All five participants saw low value in research mentorships for agricultural leadership students. However, participants conceded that research mentorships would be seen as important when the student is either leading a research team or when they are directly responsible for a significant part of a research project.

All participants spoke highly of internships and were extremely impressed when internships tied directly to what the student wanted to do in terms of a career. "Getting experience in the field related to my company is key," explained Ray. He continued, "A lot of students think they know what they want to do, and then they don't like it. If they have been through something that translates well with us, then it helps us separate them to the top."

Appearing indifferent about study abroad, Ray commented, "Study abroad might tell me the student is comfortable and more independent." Joe explained in a concerned tone, "Sometimes study abroad is a vacation." He was not impressed by study abroad experiences. Hannah, however, stated, "study abroad shows me they have studied another culture and been exposed to the idea of adapting."

In addition to the traditional high impact experiences presented by the researcher, the participants spent a great deal of time talking about part-time work and extracurricular experiences outside of internships, study abroad, and research mentorship. Joe mentioned that he finds students who have worked in food service typically have an advantage with his company. Joe went on to say, "Specifically think of someone who was a waiter or waitress and how they handled people. Typically, those students have had to push tables, be high producers, and meet expectations." Students involved in student organizations also rise to the top, according to all participants. "If they hold leadership positions and demonstrate ability to manage school plus a little more, I will give them a stronger look," explained Carlie.

Evaluating and Following Up with First Year Hires

The evaluation of new hires was a topic that all participants addressed. Participants shared that most companies have some form of evaluation process for new hires whether it be monthly, quarterly or annually. These evaluations were described as taking place on a continuum of evaluations throughout the year via simplistic, unstructured observations to a much more formal process.

Each participant represented a unique company and as such, a unique evaluation process. Carlie's company was described as results driven. She shared that she looks at a new hire's sales results and believes that is the most tangible way to evaluate a hew hire. She explained, "Their tangible results tell me what actions they are doing." Carlie also expressed that she pays special attention to how coachable the new hire appears to be. She assesses whether or not they are listening and how well they are receiving instruction. Joe's company was described as evaluating the new hire each and every day. He pays attention to small aspects such as how willing they are to go the extra mile and whether or not they are focused on the job at hand. He mentioned two

specific incidents where students either were on their personal cell phone during an intense work moment or when a student did not stay late to help clean up a testing area. Both of these students were participating in an internship and were not asked back for a second opportunity to work for the company. The evaluation process used by Ray's company was described as both a formal and informal process. His company had adopted a new assessment process that each new hire must go through. This process ensures consistency. In this process, the new hire's jobs are broken down by specific tasks. Once the student gains proficiency in a task, they are set up for the next stage of development. Additionally, Ray explained that the informal process allows independent observation, "We know the ones that really stand out. You hear their names over and over again. The ones that are good—people talk about them. You just know. You hear, people take notes, and it counts." The company represented by David was described as conducting formal annual performance evaluations for every employee. For new hires, his company conducts a 4 month evaluation, a 7 month evaluation and finally, an annual evaluation. Following the first year, each employee participates in an annual evaluation. Hannah's company requires employees to put together a report each quarter. The new hire must quantify what he/she has accomplished in these reports, reporting the number of people reached and programs conducted. These reports are compiled and assessed by the direct supervisor of the new hire.

Conclusions and Implications

It is clear that although each company is looking for specific competencies in new hires recruited from an agricultural leadership program, there are many similarities in what companies recruiting these students are looking for and need for their respective positions. The participants in this study were all employers located in Texas. Participants were from millennial (1 participant), Gen X (2 participants), and Baby Boomer (2 participants) generations. Although the researcher was not looking to find differences in generational perspectives, evidence of varying opinions was found among generations.

Technical skills related to agriculture were expressed as key by each employer. Continuing to incorporate agriculture courses into curriculum is important. Employers also expressed business courses as a needed place of emphasis for their new hires to be successful. A recent change to the Agricultural Leadership curriculum at Texas A&M University is the requirement of a specialized minor. This addition could prove to be valuable to employers if students select business as their minor. Soft skills, such as self-directedness, communication skills, and the ability to make decisions, were expressed as important by all participants. All five employers found these skills to be important and encouraged Texas A&M University to do a better job of equipping students with these skills. It was concluded that bringing about awareness of these skills to students and incorporating soft skill development into coursework was needed.

Through this study, it is evident that high impact experiences are important to the participants. Internships, research mentorships, and study abroad trips are all valuable high impact experiences. However, study abroad and research mentorship experiences did not generate as much excitement for participants as internships. The employers interviewed did not appear to be aware of how these opportunities benefit students. Employers were well-versed in internships and their benefit. Further, employers valued extracurricular activities such as student

organization participation and part-time work. In some instances, these activities were valued higher than study abroad or research mentorship experiences.

Texas A&M University has a unique culture and atmosphere that employers noted as an advantage to the students. The employers who participated in this study expressed that Texas A&M University is preparing students for industry, but there is room for improvement. In terms of the industry workforce, employers are the customer and students are the product. Employers must be satisfied with the end product or Texas A&M University is not doing the job needed. As the agricultural and natural resources industry continues to evolve at a rapid pace, curriculum and employer expectations should be continuously studied in an effort to keep agricultural leadership curriculum current and relevant.

Recommendations for Research

Future research should be conducted to include employers from across the nation. Looking at other states or regions could shed light onto what employers who hire students from a wide variety of states need in their new hires. Further, the participants in this study were from three distinct generations. Future research should determine if differences exist among employer expectations based on the generation of the hiring manager.

Defining exactly what technical skills were needed from an employer standpoint seemed to puzzle three of the participants. Further research should be conducted with more employers to determine additional specificity related to technical skills needed by companies employing agricultural leadership students. Additionally, further research should be conducted to determine which soft skills students are in need of the most. Relocation to another state or country may be necessary depending on employer needs. Further research should include a study on a student's likeliness to relocate after completing an internship out of state. Moreover, research related to why students do or do not complete an internship would provide guidance for academic advisors.

Research related to competencies achieved through involvement in extracurricular activities would be helpful. Given the lack of knowledge by participants related to study abroad and research mentorships, future research should be conducted to determine which competencies are learned through these experiences and how those competencies can benefit employers.

Research should also be conducted at individual universities and compared and contrasted. Studies similar to this one should be conducted every three to five years related to all majors, academic departments, and colleges. Employers must be satisfied with the end product or the university is not doing the job needed. As the agricultural and natural resource industry grows and changes, curriculum and employer expectations should be continuously studied in an effort to keep Agricultural Leadership curriculum current and relevant.

Recommendations for Practice

All departments offering degrees in Agricultural Leadership should require students to pursue a minor in an area of study to provide employers with a specialized skill set. This minor should

complement the Agricultural Leadership degree while adding a unique knowledge base of a different discipline.

Some might argue that soft skills cannot be taught; however, this study supports the idea that these skills be incorporated into curriculum. Sessions focused on professional development and career success should be implemented to expose students to various ways to attain soft skills. These sessions should not be limited to a certain classification level, but should be accessible to students across classifications. Making these sessions mandatory would increase the likelihood that students will be able to enter the business environment with confidence. A professional development certificate program could serve as an incentive for students to acquire soft skills and articulate these skills to employers. Learning outcomes could be developed and programming could be developed to ensure students in the certificate program are at a level of professional development that is workforce ready. This certificate program would allow an employer to be more confident in the student's soft skills and professional ability.

Making a high impact experience mandatory for agricultural leadership students would satisfy the employer's need for these experiences. Furthermore, students would enter the workforce more prepared and more aware of their goals. Academic departments and career services professionals at the university level should work towards educating employers on all aspects of high impact experiences. Promotional material and webinars could be used to explain both study abroad and research mentorship. Furthermore, programming to educate students on how to articulate their study abroad and research mentorship experiences should be implemented. Encouraging students to participate in these activities should take place at all levels within the university.

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POSTER PRESENTATION SESSIONS

Research Posters
Tuesday, September 20, 2016- 7:30-9:00 AM

Arizona Senior 4-H Members' Perceived Life Skill Development in Animal and Non-Animal Projects
Amanda Zamudio, University of Arizona
Robert Torres, University of Arizona
Ryan Foor, University of Arizona
Dean Fish, University of Arizona

A Measure of Safety Climate Attitudes in the University Agricultural Mechanics Lab
Dr. Steven Boot Chumbley, Texas A&M University-Kingsville
Dr. Curtis Langley, Tarleton State University
Mark Hainline, Texas Tech University

Activating Arousal: A Content Analysis of Message Sensation Value and Social Media Engagement of Value-Congruent Messages on YouTube
Kayla M. Wilkins, Texas Tech University
Laura M. Gorham, Texas Tech University
Dr. Courtney A. Meyers, Texas Tech University

Assessing a Food Safety Training Program Incorporating Active Learning in Vegetable Production
Kyle A. Gavin, Montana State University
Carl G. Igo, Montana State University
Dustin K. Perry, Montana State University

Behavioral Dispositions of Beginning Farmers and Livestock Producers in the Southwestern U.S.: Context Variables with Potential to Inform Education and Communication Programming
Kyle C. Gilliam, Texas Tech University
Laura M. Gorhum, Texas Tech University
Matt Baker, Texas Tech University
Scott Burris, Texas Tech University
Glenn Cummins, Texas Tech University
Erica Irlbeck, Texas Tech University

Comparing Creativity Assessments in Higher Education
Hope Hancock, Texas Tech University
Dr. Courtney Gibson, Texas Tech University

Developing Agricultural Communications Graduate Student Recruitment Strategies
Lindsay West Kennedy, Texas Tech University
Laura Gorham, Texas Tech University
Troy Tarpley, Texas Tech University
Dr. Erica Irlbeck, Texas Tech University

Developing Agricultural Literacy Outcomes: A Synthesis of Research-based Expectations
Debra M. Spielmaker, Utah State University

Exploring School-Based Agricultural Education's Influence on Students' Choice of Major
Melissa Lucas, Utah State University
Tyson J. Sorensen, Utah State University
Brian K. Warnick, Utah State University

Exploring the Outcomes of Using Problem-Based Learning in an Agribusiness Sales Course
John L. Hawley, Utah State University
Kelsey Hall, Utah State University
Michael Pate, Utah State University

Farm Field Days as a Learning Model for Agricultural Literacy
Paige Wray, Utah State University
Debra M. Spielmaker, Utah State University

Issues Facing Beginning Agriculture Teacher in Idaho, Oregon, and Washington
Travis Hoyle, University of Idaho
Josette Nebeker, University of Idaho
Kattlyn Wolf, University of Idaho

Professional Development Needs Among School-based Agriculture Teachers in Arizona
Cheyanne M. Colville, University of Arizona
Robert M. Torres, University of Arizona
Matthew M. Mars, University of Arizona
Quintin F. Molina, University of Arizona

Program Evaluation of the 2016 Agricultural Communications Vision Consortium
Sydney Nelson, Texas Tech University
Erica Irlbeck, Texas Tech University
Emily Buck, Ohio State University
Cassaundra Dietrich, Ohio State University

Reporting Nonresponse in the Journal of Agricultural Education
Marshall Swafford, Eastern New Mexico University
Ryan Anderson, Iowa State University

Resources Needed for Dual Enrollment Agricultural Mechanics Teachers
Marshall Swafford, Eastern New Mexico University
Kassie Waller, Eastern New Mexico University

The Relationship Between Motivation to Learn and Self-Regulated Learning
Marshall Swafford, Eastern New Mexico University
Kassie Waller, Eastern New Mexico University

The Social Media Presence of International Rural Development Nonprofit Organizations
Joanna King, Texas Tech University
Hannah Ford, Texas Tech University
Savanna Barksdale, Texas Tech University
Dr. Courtney Meyers, Texas Tech University

To the Fair! Exploring the Influence of the FFA Agriscience Fair on Career Aspirations
Cassidy Dutton, Utah State University
Tyson J. Sorensen, Utah State University

View From The Top: A California Agricultural Education Leadership Delphi Perspective
Erin K. Gorter, Cal Poly State University
Benjamin G. Swan, Cal Poly State University
F. Nicole Ray, Texas A&M University and Texas Tech University Doc@Distance

Innovative Idea Posters
Tuesday, September 20, 2016 – 1:40-3:00 PM

2016 Agricultural Communications Vision Consortium
Sydney Nelson, Texas Tech University
Erica Irlbeck, Texas Tech University
Emily Buck, Ohio State University
Cassaundra Dietrich, Ohio State University

All for One and One for All: Improving Student Learning with Group Tests
Dr. Gaea Hock, Kansas State University
Emily Keeton, Mississippi State University
Dr. Christian Baldwin, Mississippi State University
Dr. Courtney Meyers, Texas Tech University

Building an Agricultural Teacher Pipeline through Community College and University Collaboration
Steven J. Rocca, California State University, Fresno

Connecting High School Students with Career Opportunities: The South Coast Region Agricultural Education Consortium Senior Industry Tour
Erin K. Gorter, Texas A&M University and Texas Tech University Doc @ Distance
Theresa Pesl Murphrey, Texas A&M University

Encouraging Students to Question: Inquiry-based Learning in the Agriculture Classroom
Kalynn Baldock, Texas A&M University and Texas Tech University
Theresa Pesl Murphrey, Texas A&M University

FFA Members' Perceived Benefits and Barriers to a Secondary Agricultural Education Teaching Career
Ethan A. Igo, Montana State University
Dustin K. Perry, Montana State University
Carl G. Igo, Montana State University

Going Viral: The Creation of Irresistible Social Media Content
Laura M. Gorham, Texas Tech University
Dr. Courtney A. Meyers, Texas Tech University
Troy Tarpley, Texas Tech University

Google Maps for Everybody
Michael Spiess, California State University, Chico

Learning by Doing: Flipped Lessons in the High School Agriculture Classroom
Dana M. Wise, Texas A&M University and Texas Tech University
Theresa Pesl Murphrey, Texas A&M University

Simplifying the Process: Agricultural Literacy Publication Search Framework
Emily Keeton, Mississippi State University
Dr. Gaea Hock, Kansas State University
Dr. Kellie Enns, Colorado State University
Dr. Michael Martin, Colorado State University
Dr. Debra Spielmaker, Utah State University
Denise Stewardson, Utah State University

Students Cultivating Ideas: Utilizing Focus Groups in Curriculum
Jessica Corder, Texas Tech University
Jenna Crayton, Texas Tech University
Hope Hancock, Texas Tech University
Erica Irlbeck, Texas Tech University

The Online Communications Plan: Communicating Agricultural Sciences to a Lay Audience
Garrett M. Steede, Texas Tech University
Troy G. Tarpley, Texas Tech University
Jenna Crayton, Texas Tech University
Laura M. Gorham, Texas Tech University
Courtney D. Gibson, Ph.D., Texas Tech University

The Quad Squad: Drones in Agriculture
Denise Stewardson, Utah State University
Gary Stewardson, Utah State University
Scott Bartholomew, Purdue University

The Struggle is Real: Learning Responsive Web Design with the Bootstrap Framework
Brandyl Brooks, Texas Tech University
Dr. Courtney Meyers, Texas Tech University

"There is no guru:" Mentoring maps for intentional agriculture teacher growth
Misty D. Lambert, Oregon State University

Using Horses As Teaching Tools: An Equine Guided Education Clinic
Shannon Arnold , Montana State University
Amy Prechter, Montana State University

Arizona Senior 4-H Members' Perceived Life Skill Development in Animal and Non-Animal Projects

Amanda Zamudio, Robert Torres, Ryan Foor, Dean Fish
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Arizona Senior 4-H Members' Perceived Life Skill Development in Animal and Non-Animal Projects

Introduction: 4-H Youth Development Programs reach youth utilizing non-formal education methods in an effort to improve the lives of young people in the community, county, state, and national level (Seevers, Graham & Conklin, 2007). Youth in the 4-H program are encouraged to explore the world around them by completing hands-on projects relevant to their lives and interests (Carlson, 1998). The 4-H program focuses on youth and their development by promoting life skill development and producing contributing members of society (Miller, 1991; Seevers, Graham, & Conklin, 2007). Adulthood demands skills for everyday living including: working with others, understanding self, communicating, making decisions, and leadership are considered leadership life skills. Seevers, Graham, and Conklin (2007) stated, "Life skills are defined as competencies that help people function in the environment in which they live" (p. 81). After reviewing research studies that have been conducted in Arizona, there was a void in studies on life skill development in 4-H members an evaluation was needed. Examining the difference in perceived life skill in senior members who participate in animal projects and non-animal projects will provide Arizona extension agents a closer look at the members perceived life skill development in different projects within 4-H and will aid in further research on life skill development and project development.

Framework: Youths' interests and self-beliefs as well as abilities change over time as individuals develop into responsible adults. Through this process of development in social and institutional environments, youth learn to cope with and manage the many unexpected proceedings in life, and as a result discover more about themselves as individuals (Lerner & Steinberg, 2004). Kolb's experiential learning theory defines learning as "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984). Cognitive learning, affective learning, and psychomotor learning make up experiential education in which youth learn by doing (Miller, 1991). 4-H members' needs, interests, and motivations must be acknowledged in order for a 4-H member to appreciate learning through experience, or "doing," and applying the learned material or skill (Hendricks, 2006). As 4-H aims to foster positive youth development and realizes criteria must be met to provide an environment where youth can succeed. 4-H curriculum is designed in such a way that knowledge and life skills are learned systematically and build on previously learned knowledge and skills (Van Horn, Flanagan, & Thomson, 1998). In 1986, USDA formulated objectives for the 4-H Program with three types of life skills, which are competency life skills, coping life skills, and contribution life skills (Miller, 1991).

Methodology: Survey research methods were employed for this descriptive – correlational study. A purposive sample was used including 142 Arizona senior 4-H members from Cochise, Pima, and Santa Cruz County. A researcher developed printed questionnaire was utilized for data collection. The instrument included seventeen life skills from the Hendricks (2006) Life Skills Model that were rated using a dual nine-point Likert-type summated scale. Content validity and face validity of the instrument were achieved through a review of a panel of experts. Reliability was determined by computing a Cronbach's alpha for a pilot test done in another county. Multiple points of contact were made utilizing a tailored version of Dillman's Method and data collection stated at community meetings with a printed questionnaire and incentive. A total response rate of (n=142) was achieved from the three counties. IBM SPSS, Version 19 was utilized to obtain descriptive and relational statistics to meet the research objectives.

Results & Findings: The characteristics of Arizona senior 4-H members were collected and frequencies reported for gender, age, years involved in 4-H, and residence. Female respondents (*n*= 91) made up 64% and the remaining 36 % were male (*n*= 51). The reported mean age was 15 years (*SD*= 1.31) and the average year in school was 10 years (*SD*= 1.36). The average years involved in 4-H was 5 years (*SD*= 2.69) and Arizona senior 4-H members residing in farm or ranch residences (*n*=53) accounted for 37 %. The most common residence type among the 4-H members was town rural non-farm areas (*n*= 65) accounting for 46% of the population the other 17% reported their residence as town or city (non-rural) (*n*=24). This study sought to describe the difference between type of project (animal, non-animal) and the level of perceived life skill development for senior 4-H members. Overall, all perceived life skills had a small effect. Looking at the difference between animal (*M*= 7.00, *SD*= 1.19) and non-animal (*M*= 6.68, *SD*= 1.57) projects effect size the difference in this construct reported Cohen's *d* as (*d*= 0.39), it was small but a difference worth recognizing.

Difference in Level of Perceived Life Skill Development in All Constructs (*n*=142)

	Animal (*n*=132)		Non-Animal (*n*=73)		
Construct	*M*	*SD*	*M*	*SD*	Cohen's *d*
Head	7.07	1.21	6.56	1.58	0.36
Managing	6.96	1.37	6.32	1.67	0.42
Thinking	7.20	1.30	6.80	1.61	0.27
Hands	7.44	1.39	6.88	1.65	0.37
Giving	7.38	1.47	6.70	1.84	0.41
Working	7.50	1.50	7.06	1.61	0.28
Overall	7.22	1.19	6.68	1.57	0.39

Note: Cohen's *d* – 0.2 small effect; 0.5 moderate effect; 0.8 large effect

Conclusions, Implications, & Recommendations: Senior 4-H members in animal projects perceive a higher level of life skill development (Head and Hands) when compared to members participating in non-animal 4-H projects. The greatest difference between the two project-types was in the Giving skill development construct. As new curriculum and resources are developed for 4-H projects, 4-H Youth Development agents and educators should not discount traditional 4-H animal projects. Cooperative Extension should continue to seek creative ways to engage both urban and rural 4-H members in 4-H animal projects. It is recommended that animal projects continue to be a strong educational tool in developing life skills (Head and Hands) and 4-H Youth Development program leaders should promote animal projects where possible. They should encourage youth to participate in these projects and help facilitate opportunities for youth in these project areas.

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A Measure of Safety Climate Attitudes in the University Agricultural Mechanics Lab

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A Measure of Safety Climate Attitudes in the University Agricultural Mechanics Lab

Introduction/Need for Research

Agricultural mechanics teachers have many different types of responsibilities, the most important of which is maintaining laboratory safety. According to previous research, laboratory activities have shown to be a large part of most agricultural education programs (Franklin, 2008; McKim & Saucier, 2011). Students in agricultural mechanics labs are exposed to metal working, wood working, agricultural machinery, chemicals and other processes which could pose serious injury to the students, teachers and other stakeholders. When utilizing such environments teachers have a responsibility to the students and all stakeholders to teach and maintain a high regard for safety of all who enter the learning laboratory.

Identifying and cultivating a culture of safety in students early on is a key to reducing injuries and accidents (Gillen, Goldenhar, Hecher, & Schneider, 2013). Safety culture can be defined as the product of individual and group attitudes, perceptions, and values about workplace behaviors and processes that collectively result safety work units and reliable organizational products (Cox & Flin, 1998). A Swedish study found that four of the main factors that contribute to safety standards were: project characteristics, organization structure, collective group safety values and individual competencies and attitudes (Torner & Pousette, 2009). Agriculture teachers have a unique opportunity to cultivate a climate of safety among their students. This early exposure of a culture focused on safety will allow those students entering the classroom to have appropriate safety competencies and lead to reduced accidents in the workplace. Teachers must be held accountable for students' safety and encouraged to keep safety as a focus in all areas of instruction within agricultural mechanics.

The purpose of this study was to gauge the safety climate within the post-secondary agricultural mechanics lab. To properly assess the application of safety in the laboratory, research must be conducted on what safety practices are being used, attitudes when learning safety and methods of teaching safety. By understanding how students feel about instruction in the laboratory, we can better develop future courses and positively impact leaning of these technical skills. It is the goal of the researchers to improve agricultural mechanics training at the post-secondary level, directly influencing what is taught the secondary level.

Theoretical Framework

The Theory of Planned Behavior (Ajzen, 1991) was used as the framework for this study. This theory suggests a person's behavior is influenced by their attitudes, subjective norms, and perceived behavioral control. Normative beliefs affect the subjective norm, or "perceived social pressure to perform or not perform the behavior" (Ajzen, 1991, p 188). Perceived behavioral control is how easy or difficult the individual perceives the performance of the behavior. Actual behavioral control describes the individual's actual skills, abilities, and other prerequisites needed to perform the behavior (Ajzen, 1991, 2002). The target behavior of students in this study was their overall feeling and ability to apply safe practices when working within the lab.

Methodology

The sample population for this study was agricultural science majors enrolled in an introductory agricultural mechanics course (n = 15). Attitudes towards safety were measured using the Safety

Climate Attitudes Questionnaire (Williamson, Feyer, Cairns & Biancotti, 1997). This consisted of 27 questions with a likert type scale of 1-5 related to safety personal motivation (ex. "*It would help me to work safer if my instructor praised me for safe behavior*"), practice (ex. "*There is adequate safety training in the lab"*), risk justification (ex. "*When working unsafely, it is because I was in a hurry*"), fatalism (ex. "*If I was worried about safety all the time then no work would be done*") and optimism ("*If I work safely I will avoid accidents*"). Demographic questions were also added at the end of the instrument. Validity was established through a panel of experts and previous use of the instrument (Williamson et. al, 1997). The Cronbach's Alpha reliability score was .78.

Findings

Table one includes the findings on student attitudes toward safety in the university agricultural mechanics lab.

Table One

Safety Climate in the Post-Secondary Agricultural Mechanics Lab (*n* = 15)

Construct	*M*	*Mode*	*SD*
Personal Motivation for Safe Behavior	3.59	3	.966
Positive Safe Practices	4.39	5	.849
Risk Justification	2.58	3	1.23
Fatalism	2.12	1	1.13
Optimism	3.33	3	.998

To further evaluate the safety climate within the alaboratory, two additional items were added to the instrument on a likert type scale of 1 (strongly disagree) to 5 (strongly agree); "We get adequate instruction on safety in the agriculture mechanics lab" (*M* = 4.27, *SD* = .594) and "Our instructor demonstrates safe habits in the lab" (*M* = 4.33, *SD* = .617).

Conclusions & Recommendations

Caution should be taken when making inferences beyond the sample population. Based on the above findings, students feel they could be motivated to act in a safer manner if others around them acted safer (*Positive Safe Practices*), they also feel like their environment is already safe (*Personal Motivation*). Further, it can be concluded feel they get adequate instruction and their instructor demonstrates safe habits. There was found to be low justification for risky behavior. Fatalism, the philosophical doctrine stressing the subjugation of all actions to fate, was the least prominent construct. Students were found to have a moderately positive opinion of safety instruction in the lab.

It can be implied that students perceive the university laboratory to be a generally safe place. Further, it can be implied there is always room for one to feel safer. By effectively developing a climate of safety, we can positively impact future teachers' practice and application of lab safety in their own lab. Researchers recommended university faculty members reinforce safety procedures on a regular basis and continue to demonstrate proper safety procedures. Further, it is recommended future research investigate specific events where safety procedures were compromised by students.

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Activating Arousal: A Content Analysis of Message Sensation Value and Social Media Engagement of Value-Congruent Messages on YouTube

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Activating Arousal: A Content Analysis of Message Sensation Value and Social Media Engagement of Value-Congruent Messages on YouTube

Introduction and Literature Review

Prior researchers have found an increasing gap between the public's and agriculturalist's opinions about many issues and topics (Funk & Raine, 2015; Ruth, Gay, Rumble & Rodriguez, 2015). To bridge the knowledge gap, researchers have suggested the agricultural industry needs to provide value-congruent message appeals to educate audiences (Krause, Meyers, Irlbeck, & Chambers, 2015; Center for Food Integrity, 2014). Message appeals must contain the information that satisfies the consumers' need for content while also being emotionally appealing to the consumer culture (Gorham, Rumble, & Holt, 2015). Value-congruent message appeals use narration, audio, visuals, and structure to emotionally appeal to the core values of the viewer (Brader, 2006).

In the current study, the researchers identified an agricultural organization that has used value-congruent messages in social media video campaigns. In addition to identifying the structure of the value-congruent messages via message sensation value (MSV), the social media reach and engagement was also examined. Jenkins, Ford, & Green (2013) indicated social media provides a place where organizations should create content to attract audience engagement and attention to influence attitudes and behavior. YouTube, the second largest search engine, allows individuals to watch videos and engage in the content via sharing, liking, and commenting (Susarla, Oh, & Tan, 2012). The more engaged an individual becomes with the video, the more likely the video will impact their behavior or attitude (Susarla et al., 2012).

Prior research has shown the need for value-congruent messages to help agriculturalists connect, relate, and inform the public about issues in agricultural sciences and natural resources. The purpose of this study was to understand how MSV in value-congruent message appeals relates to social media engagement. This research supports research priority 1: Policy Maker Understanding of Natural Resources as this content analysis will provide a model to demonstrate how to effectively inform the public and policy makers about agricultural sciences and natural resources (Roberts, Harder, & Brashears, 2016). To fulfill this purpose, the following objectives guided the study: 1) describe the videos in terms of length and structure, 2) identify the visuals, audio, and content in MSV, and 3) determine how value-congruent MSV relates to social media engagement.

Theoretical Framework

Previous research has identified that emotional arousal plays a key role in information processing. Emotional arousal influences an individual's motivation to processes a message as people seek out messages that fill their need for sensation (Harrington, Lane, Donohew, & Zimmerman, 2006). Sensation seeking, or the need for sensation, activates emotional arousal when a "need for varied, novel, and complex sensations and the willingness to take physical and social risk for the sake of such experience" is fulfilled by a message (Zuckerman, 1979, p. 10). MSV is operationalized as "the degree to which formal and content audio-visual features of a message elicit sensory, affective, and arousal responses" (Palmgreen et al., 1991). When the video creator manipulates to create a higher the variables of audio, visual, and content in videos, superior levels of message sensation are produced, resulting in greater stimulation of emotional arousal during information processing and higher social media engagement (Morgan et al., 2003; Paek, Kim & Hove, 2010).

Methods

To fulfill the purpose of this study, a quantiative content analysis of an organization's value-congruent message campaigns was completed. The videos were produced by a national checkoff advocacy group highlighting the importance of various issues and topics in agriculture. Krippendorff (1980) explained a content analysis may be used to make valid inferences to identify trends and patterns from data by assigning numbers to demonstrate variation. A researcher-developed codebook aided the resarchers in analyzing the social media engagement and MSV. Social media engagement was described through the number of views, the number of comments, and the number of ratings. MSV was calculated via Morgan et al.'s (2003) calculation where number of cuts and the presence or absence of certain message characteristics such as message visuals (i.e., special effects, text graphics, slow motion), message audio (i.e., sound saturation, music, sound effects), and content (i.e., acted out, unexpected format) were used to calculate a score from 0-12. To establish reliability, two researchers coded the fifteen videos and compared results using Krippendorff's inter-coder reliability test. The researchers were in agreement 73.3% of the time ($\alpha = .473$), and after discussion, the researchers came to agreement 96.7% of the time ($\alpha = .929$). Data were analyzed using SPSS 22.0 and statisical procedures outlined by Field (2013).

Results

The first objective provides a structural description of the videos using MSV. The videos had a MSV between 3 and 7 with five videos (33.3%) having a MSV of 3, four videos (26.7%) had a MSV of 4, four videos (26.7%) had a MSV of 6, and two videos (13.3%) had a MSV of 7. The second objective sought to describe the social media engagement and reach. The viewing frequency held a mean of 40364.6 (SD = 75318.64). The majority of the videos did not allow comments (60%); however, of those that allowed comments the mean number of comments was 19.33 (*SD* = 26.14). The overall rating had a mean of 131.67 (*SD* = 283.85). A general linear regresssion was used to determine if the level of MSV could predict viewing frequency. The model was found to be significant ($F(1, 14) = 15.14$, $p = .002$); therefore, an increase in MSV will lead to increases in number of views. The R^2 value was .538, which indicated the model explains 53.8% of the variance. While the regression model for rating frequencies ($p = .093$) was not significant, a one-way ANOVA was conducted and a significant difference was found to exist ($F(3,14) = 5.32$, $p = .016$). Post-hoc analysis was used to evaluate differences among the means. The post-hoc comparisons using the Tukey HSD test indicated that a MSV of 3 was significantly different than 6 ($p = .022$) and a MSV of 4 was significantly different than 6 ($p < .030$). The regression model for number of comments and the ANOVA model was found to be non-significant.

Conclusions, Implications, and Recommendations

This analysis was consistent with other research stating value-congruent message appeals use narration, audio, visuals, and structure to emotionally appeal to the core values of the viewer (Brader, 2006). Videos containing a higher level of emotional appeal did engage the viewer more as indicated by the number of likes and comments present on those videos. Based on the results found in this analysis, practicioners should incorportate higher levels of MSV in their videos by adding emotional appeal to further engage their audience. However, the study should increase its sample size to see if other organizations who use value-congruent campaigns find the same results. For future research, it would be interesting to dive deeper into MSV and measure emotional arousal levels via psychophysiology.

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Research Poster

Assessing a Food Safety Training Program Incorporating Active Learning in Vegetable Production

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Assessing a Food Safety Training Program Incorporating Active Learning in Vegetable Production

Introduction

Gilliss (2011) reported that "contaminated food consumed in the United States causes an estimated 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths annually" (p. 749). The risk of contaminated food reaching consumers can be reduced by the use of food safety training programs. As the number of vegetable consumers increases (Parker, Wilson, LeJune, & Doohan, 2012) and the consumers' concern for quality food grows (Miles et al., 2004), there is a need to improve food handler training programs.

The research purpose was to determine the influence of active learning strategies on the food safety training program among vegetable packing employees using Kirkpatrick's four level model of training evaluation. The purpose aligns with the American Association for Agricultural Education's National Research Agenda Research Priority Area Five: Efficient and Effective Programs (Doerfert, 2011).

Theoretical Framework

Kirkpatrick's (2006) model of training evaluation was widely used in industry for evaluating training programs. The model highlighted four program evaluation levels: reaction; learning; behavior; and results. The reaction level examined the degree to which participants reacted favorably to the learning event. The degree to which participants acquired the intended knowledge, skills, and attitudes was delineated in the learning level. Behavior focused on the degree to which participants applied the intended learning in their workplace. Results applied to which targeted outcomes occurred as a result of the learning event.

Methodology

This research incorporated mixed-methods to utilize each level of Kirkpatrick's model. Sixty-one ($N = 61$) subjects from one vegetable packaging facility participated in the assessment. The treatment group ($n = 27$) participated in active-learning based training while the control group ($n = 34$) participated in a traditional training series. Training topics included cross contamination, food security, hygiene, hand washing, and injury and illness. The pre-test and post-test consisted of 15 multiple choice questions based on industry regulations and company standard operating procedures (SOPs). The observations consisted of the researcher spending a minimum of 20 minutes observing each group on 20 specific observation points identified by the company's food safety staff and in consideration of industry SOPs. The training reaction survey consisted of ten statements related to the trainings and the trainer; the subjects were asked to rate their agreement with the statements using a four point Likert-type scale.

The two groups received the same training topics but were trained using different training methods. The traditional training method was used for the control group. These trainings were conducted using trainer centered lecture style teaching that offered little interaction between the trainer and the subjects or the subjects and the content. The treatment group covered the same content as the control group but used active learning methods. These trainings were learner centered and incorporated activities such as hands on demonstrations, skits, and subjects drawing on whiteboards.

Results

All participants were asked to self-identify their age group, highest level of education completed, number of years employed in the vegetable industry, number of years employed by Express Harvesting, and preferred language. The most frequently chosen age group was 35-44 years old. The overwhelming majority of both the treatment and control groups (86% and 92% respectively) reported completing high school or less. Both groups had subjects that ranged from ten or more years of work in the vegetable industry to less than one year of experience. One hundred percent of participants reported Spanish or Spanish and English as their preferred language; no subjects reported English only as their preferred language.

The groups' pre-test and post-test scores were analyzed using means and an one-way analysis of variance (ANOVA) for each test section related to a training topic as well total test score. The active learning training group showed statistically significant ($p < .01$) improvement in their test scores from the pre-test to the post-test on three of the test sections (Cross Contamination, Hand Washing, and Total Test Score). The effect size for each of these test sections suggested a large level of practical significance ($\eta^2 > 0.14$). The traditionally trained group improved ($p < .01$) on only one test section (Hand Washing) and their scores decreased on one test section (Injury and Illness). When comparing the treatment group's post-tests to the control group's post-test, the treatment group scored significantly higher ($p < .01$) on the hand washing section and the total test score.

On the training reaction survey, the treatment group chose agree or strongly agree more often than the control group on seven of the ten statements. The statement in which the active learning group chose strongly agree most often (93% of treatment group) was, "I plan on using the content of the training at my job." Only 79% of the control group chose strongly agree on this statement.

Primary observation goals were to observe food safety issues in the facility, to note when subjects recognized issues, and to record what was done to correct the issues. Most notably, unlocked doors leading into the facility were observed at the beginning of the study. After the food security training, subjects were observed locking these doors. Positive changes in behavior were observed in both the treatment and control groups.

Conclusions and Recommendations

Based on the results, it was concluded that both active and traditional training methods were received positively by the subjects and pre-assessment was critical to understanding the audience and training development. Further, it was determined that food safety training programs that incorporate active learning techniques can result in higher test scores than traditionally trained subjects. Based on the results from each instrument of this study, the addition of active learning methods was shown to positively influence subjects' reactions to the training program, overall test scores on the food safety knowledge exam, on-the-job behaviors and actions, and the overall effectiveness of the program.

Similar to the suggestions of Lillquist, McCabe, and Church (2005), it is recommend that vegetable food safety teams incorporate active learning strategies into their training programs. It also recommend that food safety trainers utilize pre-assessments to determine the knowledge levels and skills of their trainees and to better target individuals with active learning strategies. Food safety teams should continue to enhance and improve training programs to provide better trainings to employees with the goal of lowering risk of contaminated food causing food borne illnesses and outbreaks.

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Behavioral Dispositions of Beginning Farmers and Livestock Producers in the Southwestern U.S.: Context Variables with Potential to Inform Education and Communication Programming

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Behavioral Dispositions of Beginning Farmers and Livestock Producers in the Southwestern U.S.: Context Variables with Potential to Inform Education and Communication Programming

Introduction and Need for Study

Beginning farmers prefer a variety of instructional methods used by educational providers and look positively toward Extension as an educational provider (Trede & Whitaker 1998). Three behavioral dispositions which may provide important insight as to how beginning farmers and livestock producers (BFLPs) receive and process information include locus of control (LOC), tolerance for risk (RISK), and self-efficacy (SE). LOC characterizes how individuals perceive what happens around them (Rotter, 1966). Individuals are categorized into an external locus (belief that circumstances and related outcomes are not within an individual's control) or an internal locus (belief that one's ability, behaviors, and efforts determines circumstances and outcomes). RISK is associated with the tolerance levels of an individual's willingness to risk resources, and is presumed to be a major issue in formulating financial decisions (Grable & Lytton, 1999). SE determines an individual's perception of their own ability to perform over an assortment of diverse situations (Judge et al., 1998). Higher SE individuals perceive themselves as being able to perform most or any task given to them well, where lower SE individuals are less confident in their own ability to perform tasks they are presented.

Type of BFLP operation is likely related at some level to LOC, RISK, and SE. Much of the arable farm land in the southwestern U.S. is in semi-arid and arid climatic zones with annual production highly dependent upon irrigation. Beef produced in this region are started in cow/calf herds on large-acreage ranches, transitioned as stockers to winter wheat, and then onto feedlots in irrigated areas for finishing. Large-scale dairy operations are generally located close to sources of feed from irrigated areas. In a study of farmer's sustainability of water conservation practices, Kistler, Jones, Baker, and Doerfert, (2005) identified three categories of farmers including 1) environmentally conscious but open to changing their practices, 2) environmentally conscious but more risk averse, and 3) indifferent to environmental consequences and self-identified culturally by the crops grown.

Collectively, the behavioral dispositions, type of farming, and livestock production operation may be important context variables (Dunkin & Biddle, 1974) in the decision making process that BFLPs go through. These variables inform the teaching and learning dynamic which can be used by Extension, industry, or private educators (e.g. Crop or Livestock consultants). Thus, the objectives guiding this exploratory study were: (1) describe BFLPs on LOC, RISK, SE, and demographics; (2) determine bivariate correlations between these variables; and (3) identify the LOC, RISK, & SE dimension that explains the greatest differences in distinguishing type of farming/livestock production operation.

Methods

Data were collected on demographics and the three farm-level decision making factors from October 2015 - March 2016. An online instrument was distributed to a convenience sample of volunteers who self-identified as prospective BFLPs in the region. This descriptive correlational study was part of a larger study conducted by the authors. The LOC consists of 29 behavioral situations with external choices worth one point each and internal choices worth zero. Higher scores represent an external locus ($\alpha = 0.65 – 0.79$). RISK consists of eight, four point Likert-scaled items and five, three point Likert-scaled items. RISK scores are then summed where

individuals are categorized into one of the following groups, low (<19), below average (19-22), moderate (23-28), above average (29-32), and high (33>). The established reliability coefficient of this instrument is r = 0.75 (Grable & Lytton, 1999). SE consists of eight items measured on a five point Likert-type scale. Scores for this measure are summed and subjects are categorized into five groups, low (8-23), below average (24-27), average, (27-31), above average (32-34), and high (35-40). Cronbach's α for internal consistency range from 0.85 - 0.90 for the general self-efficacy scale (Chen, Gully & Eden, 2001).

Data were analyzed using descriptive statistics, bivariate correlations, and discriminant function analysis (DFA) in SPSS (v.22). Due to the small number of subjects (n = 20) and convenience sampling strategy employed, inferential statistics were not reported and readers are encouraged to limit these findings to the sample only. Additionally, the sample size did not satisfy the suggested sample size requirements for discriminant analysis, thus findings must be interpreted with caution.

Results

All the BFLPs were male (n = 20), 85% were pursuing an undergraduate degree, and 65% were involved predominately in crop production. The subjects could be described as predisposed to an internal LOC (M = 7.55, SD = 2.80), a moderate tolerance for financial RISK (M = 25.5, SD = 4.49), and a high SE (M = 34.90, SD = 2.77). A small relationship (Hopkins, 2006) was discovered between LOC and SE (r = .10), a trivial relationship (r = .06) between LOC and financial RISK, and a small relationship between SE and financial RISK (r = .16). In terms of type of operation, a low association existed with LOC (r = .26), a low association with SE (r = .26), and a moderate association with financial RISK (r = .39). In terms of the DFA results, collectively the weighted combination of the three discriminating variables (LOC, RISK, and SE) explained 31% of the variance in predicting BFLPs who identified as farmers and those who identified as livestock producers (Eigenvalue = .440, Canonical Correlation = .553, Wilks Lambda = .694). The standardized discriminant function coefficients for the discriminant function revealed that the three behavioral measures all demonstrated a high degree of utility in discriminating between the two groups. All structure matrix scores for the three measures were greater than .3, leading the researchers to conclude some level of practical significance. Both the standardized coefficients and structure score matrix identified RISK as the most influential measure of the three and was negatively related to the discriminant function, and LOC and SE as slightly less influential, but positively related to the function. The model correctly classified almost 70% of those identifying as farmers and 57% of those identifying as livestock producers.

Conclusions, Implications and Recommendations

There was an internal LOC exhibited by these subjects, suggesting they believe in their own ability to manage their operations and their own actions and choices will impact their success with their respective enterprises. There was a moderate tolerance for financial risk indicating that these BFLPs may be somewhat willing to change their production practices, from those of their parents or role models. There was a very high sense of self-efficacy suggesting participants are confident in their own ability to perform well across different conditions and situations. These BFLPs perceive themselves as being able to respond positively to crisis situations. Our team is following these findings by ongoing psychophysiological research in which we hope to identify underlying emotional and physical responses to specific communication cues. Neurocognitive research on cues to problems and messages may offer future solutions to practical Extension and industry programming serving the next generation of BFLPs.

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Comparing Creativity Assessments in Higher Education

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Comparing Creativity Assessments in Higher Educuation

Introduction/Need for Research

Priority Area 4 of the National Research Agenda (Doerfert, 2011) advocates the significance of meaningful and engaged learning in all environments to develop tactics that shape a society of diverse, highly educated professionals who will take on major societal problems and develop innovations that will spur economic growth. The cultivation of creativity is critical for the pursuit of knowledge, and having the means to assess creativity can help instructors to teach more effectively, help students develop into more effective learners and, in turn, successful people within the workforce and in life (Jackson, 2006).

Much of the research that exists in the realm of creativity in education makes the assumption that most students, at some level, are capable of creative work; that it can positively contribute to the lives of individuals as well as society; and that its encouragement among academics and students is essential to universities' missions (Edwards, McGoldrick, & Oliver, 2006). Moreover, educational psychologists are discovering and exploring the role that creativity plays in student development and taking note of its importance in classroom learning (Sawyer, 2012; Jackson, 2006). Of all the cognitive abilities, the concept of creativity it is arguably the most difficult to assess due to its complex and subjective nature. In industry and elsewhere, people demand innovation and are confused with the task of measuring it. Having a better grasp and knowledge of this subject will give faculty the means to assess and conceptualize creativity and creative work.

Theoretical Framework

This study was guided by the social constructivist theory (Sawyer, 2012). Knowledge is context dependent, ever changing, and can be built upon. Sawyer (2012) advocated the constructivist viewpoint stating that learning is always a creative process and may lead to better retention, understanding, and active use of knowledge. Since instructors are both facilitators and learners in this process, they determine appropriate responses to challenges students face, and, in turn, which creative assessments to utilize.

Purpose and Research Objectives

Several attempts at assessing creativity in higher education have been developed over the years. The purpose of this study was to examine literature for student creativity assessments utilized in higher education and compare their assessment measures. The primary research objective was to compare and contrast selected creativity assessments used within higher education.

Methodology

In order to accomplish the research objective, several data sources were used to collect literature for the investigation. Primary sources included peer-reviewed journal articles and book chapters in the realm of creativity. Sources were found using key words searches including the terms "create," "creativity," "creative thinking," "divergent," "divergent thinking," and "originality." Frameworks containing assessment measures for creativity were then evaluated to determine how the assessment was used, how it measured creativity, and how it was applied to higher education. Four creativity assessments are compared below and were chosen based on their relevancy in the field of creativity and higher education.

Results/Findings

The **Torrance Test of Creative Thinking** (1988) devised five measures, both written and verbal, of a person's creative production focusing exclusively on creative output. Perhaps the oldest of measures, this assessment has been utilized in children and adults spanning across various disciplines. The model uses three picture-based exercises to assess the following measures: fluency, or the number of responses; originality, or the novelty of responses; elaboration, or the detail of responses; resistance to premature closure; and abstractness of title. Torrance's approach is not comprehensive in measuring creativity, but rather evaluates the creative individual.

The **Taxonomy of Creative Design** (Nilsson, 2012) offers a holistic vision of how creative work can be understood or developed incrementally. Although relatively new, this method has been successfully utilized specifically within group settings in higher education to assess origin and influences of a work. The model views creative work as a final product, and it categorizes that work as an imitation of another product, a variation of a single product, a combination of two or more products, a transformation of a product into a new form, or an original creation. In this method, one can assess the degree to which a work is creative and where it fits on the model (Nilsson, 2012).

In the **Requirements Model (**Unsworth, Wall, & Carter, 2005), creativity is measured based on standards or requirements established before the work is made. This model has primarily been utilized within industry settings, but could easily be transferrable to assignments in higher education. It seeks to measure relevance, value, and effectiveness against concise guidelines and makes the assumption that creative work is often visually pleasing. However, most visual responses derive from distinct pieces of information that can be measured. In sum, if there are straightforward requirements for creative work, it can be straightforwardly assessed.

The **Systems Model** (Csikszentmihalyi, 1999) suggested the social value of a creative lies in the intersection between three entities: the person, or the individual work; the domain, or the area of knowledge; and the field, or the experts of the domain. Developed in the field of psychology, this widely known model has been utilized across various disciplines and found success within higher education (Jackson, 2006). The Systems Model measures creativity based on the social and community response to the work. It is in this creative intersection where the process of creativity happens—the person creates the work, the field accepts the work, and, as a result, the domain is changed.

Each model is distinctive in its own right, and it is the responsibility of the educator to determine which assessment method best aligns with desired outcomes. In regard to Torrance's approach, the model seeks to measure creativity in a concise, quantifiable method. Yet, it tells nothing of the relevance or value of the creative work. Likewise, the System's Model measures the relevance or value in a social context, but is highly subjective as society is always changing. The Taxonomy of Creative Design and Requirements model both thrive when comparing work against itself and not to others, but the Taxonomy Model differs in assessing novelty and influences of work.

Conclusions/Implications/Recommendations

These four models offer various ways to assess creativity or creative work. However, one can question if creativity can be confined to one agenda or model, as well as the extent to which a creative method is transferable. One can look at influence, output, requirements, or the social domain—evaluating which model to use depends on the situation as each model is met with its own strengths and weaknesses. Instructors and facilitators should look at the desired outcome to determine which assessment fits best with their program. Future research is needed to understand the nature of creativity so that an all-inclusive measure could be developed. Additionally, future research should seek to overview and update measures and assessments in place due to creativity's subjective nature so that researchers can stay relevant within the field.

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Developing Agricultural Communications Graduate Student Recruitment Strategies

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Developing Agricultural Communications Graduate Student Recruitment Strategies

Need for Research

The number of students interested in pursuing graduate programs has increased, which is a result of students' perceptions that improved skillsets provide higher earnings potential (Fry, 2014). With more students seeking additional education, many U.S. graduate programs are working to increase enrollment rates, creating a higher level of competition in the recruitment process. The Department of Agricultural Education and Communications (AEC) at Texas Tech University established a five-year graduate program growth plan in 2015 to increase graduate program admissions and course enrollment (Department of Agricultural Education and Communications, 2015). As the AEC department seeks to achieve its enrollment goals, more emphasis should be placed on recruitment messaging and implementation to compete with other graduate programs. Before recruitment messages are created, there is a need to gather information on what prospective students look for in graduate programs (Tas & Ergin, 2012). The purpose of this study was to identify prospective agricultural communications graduate students' perceived 1) benefits and barriers of attending graduate school, 2) effective recruitment messaging, and 3) influential recruitment message delivery method. These perspectives were used to develop a graduate student recruitment messaging strategy for the AEC department at Texas Tech University and could be beneficial for any agricultural communications or education program looking to expand its graduate enrollment. This study addressed Priority Three, Sufficient Scientific and Professional Workforce That Addresses the Challenges of the 21st Century, of the National Research Agenda for the American Association for Agricultural Education (Roberts, Harder, & Brashears, 2016).

Conceptual Framework

Chapman's *Model of Student College Choice* (1981) guided the development of focus group questions related to the recruitment of prospective graduate students. The model suggests a student's college choice is influenced by student and external influence characteristics. Two of the model's external influence categories were used in this study: (1) the fixed characteristics of the institution, and (2) the institution's effort to communicate with prospective students. The student characteristics of socioeconomic status and experiences were considered as impacting their level of interest in graduate school.

Methods

This study used a qualitative research design. Three voluntary focus groups were conducted to interview three groups of people: agricultural communications undergraduate students and industry professionals, who represented prospective graduate students, and current [university] agricultural communications graduate students. A convenience sample of six participants per focus group was obtained. A demographic survey was administered at the beginning of each focus group. Of the total focus group sample (n=18), 17 participants were female. The first two focus groups were held during annual agricultural communications industry conferences in 2015, Ag Media Summit and the National Association of Farm Broadcasters' annual meeting, where a sample population of industry professionals and undergraduate students could be easily recruited. Three agricultural communications industry professionals and nine undergraduate students representing seven universities participated in the two focus groups. Participants were recruited through one-on-one conversations and flyer distribution during conference trade shows to avoid

distracting attendees during breakout sessions. The interviews were held in on-site meeting rooms at each conference. A third focus group held on campus interviewed six current graduate students enrolled in the Texas Tech University agricultural communications graduate program to understand the messages and factors that influenced their decision to attend Texas Tech. The same moderator's guide was used in all focus groups to avoid researcher bias. Questions were generalized to be applicable to most agricultural communications graduate programs. Current graduate students who were interviewed in the third focus group were asked the same questions presented to the other groups but were asked to answer by reflecting on their own recruitment experiences. The moderator summarized the conversation and participants confirmed the content to ensure data dependability (Kreuger & Casey, 2002). Focus groups were video recorded and transcribed. Axial coding was used to develop themes and categories from the data (Glaser & Strauss, 1965). Two researchers individually analyzed the data to ensure credibility and accuracy. Peer debriefing was used to compare and contrast results (Huberman & Miles, 1994).

Results

Participants in the three focus groups collectively identified career advancement, potential salary increases, and the opportunity to further develop their skills as benefits of graduate school. Program and faculty reputation, tuition costs, campus location, and the availability of distance degree programs were identified as influential factors in an individual's decision to enroll in a graduate program. The identified recruitment messaging themes showed participants preferred to learn about the value of a graduate degree, the program's successes, and the reputation of the program and faculty during recruitment. Message implementation themes showed one-on-one communication with the program's faculty members is viewed as the most influential method of recruitment. The program's website and social media posts were viewed as important information sources during recruitment, but were secondary to personal communication. Video was the favored medium for sharing information about the program and application process.

Conclusions

The results of this study suggest the most important recruitment messages are the overall value of a master's degree and the opportunities within the program. One-on-one communication from a graduate program's faculty members is the most influential recruitment method. Digital communication resources, such as the department's website and social media posts, provide important supportive information about a graduate program's value, career benefits, course offerings, teaching and research opportunities, and application processes.

Implications and Recommendations

The data from this study is already being used by Texas Tech University to develop graduate student messages. Graduate program faculty members should focus on developing relationships with prospective graduate students within their own university and at professional conferences. Informative videos about the program should be available on the program's website and social media posts. Messages should address the career and skill development value of graduate school and information about the application process. Because ag communications programs are traditionally housed in multi-disciplinary departments, additional research is needed to understand the recruitment needs of prospective students in agricultural leadership, education, and extension to create a comprehensive recruitment plan for the department. Messages should be tested to ensure messages resonate with potential graduate students.

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Developing Agricultural Literacy Outcomes: A Synthesis of Research-based Expectations

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Developing Agricultural Literacy Outcomes: A Synthesis of Research-based Expectations

Introduction/Need for Research

In a recent meta-analysis conducted by Kovar and Ball (2013), analyzed 49 peer-reviewed articles on the topic of agricultural literacy published between 1988 and 2011. They found ten studies focused on K-12 teachers and 26 studies targeting K-12 students. In addition, they found seven studies that developed a framework or guide, 19 that evaluated programs, and 23 that assessed agricultural literacy generally. They concluded that "assessing agricultural literacy of a population and determining the effectiveness of a program are important goals" (p. 175); however, they noted that most agricultural literacy efforts are intermittent and varied, and they suggested that programs be more "national in scope" (p. 175) to determine impacts.

The American Association for Agricultural Education National Research Agenda (Roberts, Harder, & Brashears, Eds., 2016) establishes seven research priorities. Research Priority 1 outlines the need for research related to "Public and Policy Maker Understandings of Agriculture and Natural Resources" (p. 10). The research narrative on this priority states, "At the forefront of the discussion regarding public and policymaker understanding of agriculture and natural resources is the operationalization of what constitutes true agricultural literacy" (p. 14).

A great deal of agricultural literacy research has sought to answer questions about what K-12 teachers and students know about agriculture. In an effort to measure agricultural understandings, researchers have defined agricultural literacy, created instruments to measure understandings (Powell, Agnew & Trexler, 2008; Trexler & Hess 2004), and, to some extent, measured agricultural literacy related to standards and benchmarks (Hubert, Frank, & Igo, 2000; Igo & Frick, 1999; Pense & Leising, 2004). As Kovar and Ball (2013) noted there has been little consistency among researchers related to the measurement of agricultural literacy. In addition, none of the published frameworks connected understandings to content standards where curriculum might intersect agricultural concepts. This is essential as educators are required to cover these standards, not agricultural standards. Measurement is foundational to the development of models to operationalize agricultural understandings. This research is a synthesis of previous frameworks updating agricultural literacy benchmarks (Leising, Igo, Heald, Hubert, & Yamamoto, 1998) with explicit correlations to national science, social studies, and health education standards.

Conceptual Framework

In addition to the frameworks identified in the meta-analysis conducted by Kovar and Ball (2013), three additional frameworks were found (American Farm Bureau Foundation for Agriculture, 2012; Powell, Agnew, and Trexler, 2008; Wenzel, 2003). Nearly all of the frameworks were developed using modified Delphi methods (Dalkey, 1969). To develop a foundational framework with national scope, a constant comparison method (Gall, Gall, & Borg, 2015) was used as the conceptual framework to compare instances and discover commonalities among the frameworks. This qualitative analysis used frequency counts from previously published frameworks and guided the process for interpreting and correlating national education standards into themed National Agricultural Literacy Outcomes (NALOs).

Methodology

Using a content analysis rubric, concepts were unpacked from identified frameworks. Frequency counts were made on the items to determine the importance of the concepts. Concepts

with few instances were reviewed for relevancy related to current content standards. The *standards movement* in K-12 public education has required teachers to more effectively address core academic content. These correlations were essential to ensure the appropriate placement and relevancy of agricultural literacy outcomes within K-12 curriculum.

Concepts with a high frequency (noted on three or more frameworks) became part of a concept map and, from this map, five NALO themes emerged: Agriculture and the Environment; Plants and Animals for Food, Fiber and Energy; Food, Health, and Lifestyle; Science, Technology, Engineering and Math; Culture, Society, Economy and Geography. Each concept was written into a measurable outcome. To ensure outcomes were grade level appropriate, they were correlated with the national education standards in science (National Research Council, 2013), social studies (National Council for the Social Studies, 2010), and health (Centers for Disease Control and Prevention, 2013) using keyword searching. This evaluation resulted in the final grade level placement of each NALO. The draft NALO document was vetted through an online process by educators and researchers who were notified on three national list serves. The draft NALOs were viewed by 304 individuals. All comments were considered in the final document.

Results/Findings

The NALOs have been used as a framework to modify and develop over 250 curricular resources for the National Agriculture in the Classroom (NAITC) program (http://www.agclassroom.org/matrix). Over a six-month period, the NALO-integrated resources (as tracked by the researcher) have had over 35,000 page views. In addition, two graduate studies have been completed using the NALOs as a framework. Edwards (2016) found that 90% of the teachers engaged in her district's professional development wanted to learn more about the NALOs for integrating and contextualizing their teaching. In a second study conducted by Brandt (2016), instruments were developed to measure two NALO themes for students in grades 3-5. Brandt found the alignment to science standards made the NALOs easy to measure. She presented a viable theoretical construct for developing valid and reliable assessments for all NALOs and recommended improvements related to NALO and science standard terminology.

Conclusions

Researchers, curriculum developers, and educators have acknowledged the need for research-based, measurable agricultural literacy outcomes. The NALOs provide a foundation for creating instruments, developing instructional resources, and measuring baseline data that will provide consistency for measuring agricultural literacy models. Continued research on the NALOs is necessary to validate their content, appropriateness, and use as a baseline for measurement.

Implications

These foundational outcomes are an essential first step to measure with some consistency the delivery models used to *operationalize* and increase agricultural literacy. This synthesis work of outcomes correlated with national standards provides a research-based framework and an opportunity for those who wish to collaborate and conduct research in this area to address Priority 1 of the National Research Agenda for Agricultural Education.

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Exploring School-Based Agricultural Education's Influence on Students' Choice of Major

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Exploring School-Based Agricultural Education's Influence on Students' Choice of Major

Introduction and Need for the Study

A recent report predicted between the years 2015 and 2020, there will be more agriculturally related job openings nationwide than can be filled by graduates of agricultural programs (Goeker, Smith, Fernandez, Ali, & Theller, 2015). Priority area three of the 2016-2020 National Research Agenda places emphasis on attracting and developing the next generation of agricultural scientists (Stripling & Ricketts, 2016). These publications emphasize the importance of obtaining individuals to fill these positions as well as creating an educated workforce. With today's evolving workforce, the need to provide a highly educated, skilled workforce capable of providing solutions to 21st century challenges and issues has perhaps never been greater. One way to address these needs is through school-based agricultural education (SBAE). According to Phipps and Osborne (1988), the most important function of SBAE is to prepare youth and adults for careers in agriculture. Therefore, SBAE can be an important means for recruiting and training students for careers in today's agricultural workforce. This study sought to explore the influence of SBAE on students' decision to major in an agricultural field.

Theoretical and Conceptual Framework

The theoretical framework for this study is the Model of Career Choice (Dick & Rallis 1991). This framework is based on three key concepts that influence an individual's career choice which include socializers, past experiences, and self-concept. According to Dick and Rallis (1991), socializers, such as friends, family, or teachers, influence students by their actions, behaviors, and expectations. Past experiences influence students by providing them with opportunity and understanding in specific areas. For this study, the past experiences of interest were from SBAE. Self-concept occurs as a result of past experiences. When students realize they are capable of certain tasks and achievements, they are more apt to select a career that aligns with those self-perceived tasks and skills. We utilized this model as a framework to understand how participation in SBAE influences students' choice to major in agriculture.

Methodology

This qualitative study used a phenomenological research design. As part of a larger study, 12 students were purposefully recruited for this research. From a survey, undergraduate students at Utah State University who indicated a major in agriculture and who had participated in SBAE were selected. Participants were invited to participate in a 60-minute, seven-question semi-structured focus group interview with questions eliciting information about the influences of SBAE on their decision to major in agriculture. Five students participated in the focus group interview. Polkinghorne (1989) suggested that for phenomenology studies, between 5 and 25 subjects is sufficient. One female and four males participated in the study with student majors including agricultural education, veterinary science, plant science, and agricultural business. The focus group interviews were audio-recorded and transcribed verbatim. The data were analyzed and coded for thematic content using open, axial, and selective coding protocols outlined by Auerbach and Silverstein (2003). Two separate researchers performed the coding process with constant checks for accuracy and reliability in coding (Auerbach & Silverstein, 2003). Four themes emerged from the data. To establish trustworthiness (credibility, transferability, dependability, and confirmability) methods such as member checks, a reflective journal, and establishing an audit trail were utilized (Harrison, MacGibbon, & Morton, 2001).

Results/Findings

The purpose of this study was to explore how participation in SBAE influences students' motivations to major and pursue a career in an agricultural field. Participants identified several motivating influences regarding their decision to major in agriculture. Four themes with corresponding sub-themes were developed through the analysis of the data: 1) outside of class experiences, 2) socializers, 3) self-concept, and 4) career values. Theme one, outside of class experiences, was broken down into two sub-themes, which included SAE/experiential learning and away from school FFA experiences. One participant said "It was at national FFA convention… he gave this speech. It was pretty inspirational. And it was there that I knew I was going to go into agriculture." The second theme was socializers. Participants identified friends, family, teachers, and other individuals as key social influences in their decision to major in agriculture. Participants spoke about how these key people encouraged them to pursue a career in agriculture either through explicit conversations about it or just by example. One participant referred to his agriculture teacher as an example: "The impact that he's had on so many lives and on my life as well, it's pretty rewarding for him…so, I want that same experience." The third theme that emerged was self-concept. One student recalled, "I always thought that gaining the knowledge and having to remember it all would always be something that was unattainable for me…The vet science career development event definitely helped open my eyes to see that you don't have to be 4.0 Harvard student to get it done. I can be a veterinarian" The fourth and final theme was career values. This theme was divided into three sub-themes which included time for family/hobbies, job benefits, and making a difference or contribution. Participants spoke about alignment of their career choice with their personal values. Having a career that enabled time for family and hobbies, making a decent income, and making a difference in the world were concepts the participants communicated.

Conclusions

The findings for this study support the framework of the model of career choice (socializers, past experiences, and self-concept; Dick & Rallis 1991). Based on these findings, we suggest the addition of a fourth key concept to the model of career choice entitled personal career values. Quantitative research should be conducted to determine if this theme is generalizable to a broader population and to explore the strength of its influence on career choice. We conclude that socializer influences such as high school agriculture teachers and employers were an influencing factor in career choice. An impact such influencers can have on students is helping them realize their potential (self-concept). FFA events and experiential learning opportunities that occurred away from school were key influencers on participants' career choice and seemed to help students develop a sense of self-concept. We recommend high school agriculture educators continue to provide learning opportunities that occur away from school, such as FFA events, and encourage student participation in these experiences. These findings suggest SBAE does influence students' career choice decisions. Therefore, we recommend colleges of agriculture allocate their resources accordingly to target students from SBAE programs, including attendance at state and national FFA events. Finally, quantitative research is needed to determine how much of an influence these key findings have on career choice so resources can be directed accordingly. As more students recognize the opportunities that exist in agriculture through the influences of SBAE, more will enter the agricultural workforce, providing agriculture with the number of qualified workers it so desperately seeks.

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Exploring the Outcomes of Using Problem-Based Learning in an Agribusiness Sales Course

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Exploring the Outcomes of Using Problem-Based Learning in an Agribusiness Sales Course

Introduction/Need for Research

An average of 26,700 annual job openings will be available between 2015 and 2020 in the food and agriculture industries, including positions as marketing specialists and sales representatives (Goecker, Smith, Marcos Fernandez, Ali, & Goetz, 2015). Employers want knowledge and transferrable competencies including skills in critical thinking, problem solving, and communication (National Research Council, 2012). Research Priority 4 of the AAAE National Research Agenda encourages agricultural education programs to engage learners to solve problems whereby learners reconcile new knowledge with existing knowledge and transfer what is learned to future experiences (Edgar, Retallick, & Jones, 2016). Problem-based learning (PBL) is one instructional approach in classrooms, yet less research exists about students' perceptions of learning outcomes from PBL (McMay, Gradel, & Scott, 2013; Sulaiman, 2010). Knowing these perceptions is important because instructors can use PBL to connect course content to transferable competencies. The study's purpose was to explore the outcomes of using PBL in an agribusiness sales course. This abstract addresses one research objective of the study: identify students' perceptions of learning outcomes as a result of the Ready, Set, Sell (RSS) project.

Theoretical Framework

PBL allows students to own their learning by solving real-life problems and engaging in course content to understand their discipline's concepts or practices (Barrows & Tamblyn, 1983; Jonassen, 1997; McMay et al., 2013). Students in upper level psychology courses agreed that a semester-long PBL project helped to connect knowledge to application and increased their ability to obtain information from a variety of sources (McMay et al., 2013). Furthermore, physics students had positive attitudes about using the PBL approach, learning to share and communicate knowledge, understand concepts, and solve problems (Sulaiman, 2010). Agrometeorology students agreed that PBL improved their knowledge and critical thinking ability (DeWet & Walker, 2013).

Methodology

An agribusiness sales course at Utah State University used PBL to engage students in solving a company's sales problem with a product (agricultural equipment, feed or feed supplements, calf feeders, water trough, etc.). Students worked in teams of four to complete RSS, a semester-long PBL project that required a sales call plan and 20-minute sales call to sell their product to a prospective customer. During the last week of class, a paper survey was administered to the 36 undergraduate students enrolled in the course during fall 2015. Based on previous literature, the researcher-developed instrument asked students' preferences for using PBL over other teaching methods in the course and learning outcomes from the RSS project (McMay et al., 2013,). Likert-scale questions asked students to indicate their perceptions of the RSS project on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Post-hoc Cronbach's alpha was .93 for the learning outcomes construct. SPSS statistical software was used to analyze data.

Results

Academic ranks represented senior (n = 6, 17.1%), junior (n = 16, 45.7%), sophomore (n = 11, 31.4%), and freshman (n = 2, 5.7%). Academic majors ranged from agricultural education (n = 12, 33.3%), animal science (n = 7, 19.4%), agricultural systems technology (n = 6, 16.7%), agricultural communications (n = 3, 8.3%), agribusiness (n = 3, 8.3%), and other (n = 5, 13.8%). Overall, 19 students (53%) recommended the instructor use PBL in the course again, with 16 (44%) remaining neutral and one (3%) disagreeing. Thirty-six students agreed the RSS project integrated the material in the course (M = 4.36, SD = 0.64) and made the subject matter realistic (M = 4.22, SD = 0.72). As seen in Table 1, the RSS project promoted critical thinking by letting student formulate a sales strategy for a prospect's problem (M = 4.14, SD = 0.59).

Table 1

Student Perceptions of Learning Outcomes as Result of the Ready, Set, Sell (RSS) Project (n = 36)

Perception	*M*	*SD*
Promoted critical thinking by letting me formulate a sales strategy for a prospect's problem.	4.14	0.59
Helped me understand a prospect's response to selling approaches.	4.14	0.83
Illustrated practical problems within agricultural sales.	4.08	0.84
Helped me understand the course material better.	4.06	0.58
Promoted critical thinking by letting me evaluate solutions to a prospect's problem.	3.94	0.67
Assumed greater responsibility in independently learning material used for the RSS project.	3.89	0.71
Helped me learn how to obtain information from a variety of sources.	3.67	0.79

Note. Scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Disagree or Agree, 4 = Agree, 5 = Strongly Agree

Conclusions

Problem-based learning helped students better understand course material, critically think and solve a sales problem, which are desirable transferable competencies in agribusiness (Goecker et al., 2015). The findings are consistent with studies that found PBL can help promote critical thinking (De Wet & Walker, 2013). Contrary to McMay et al. (2013), agriculture students reported neutral attitudes toward assuming greater ownership and obtaining information from various sources. The RSS project's reliance on a company's product and marketing information could make it more difficult to find a variety of sources to use to write the sales call plan.

Recommendations

Future PBL research should compare students' learning style as a factor for how well they learned in the class from various instructional techniques, including PBL, lecture, discussion, and shadowing. Further research is warranted using quasi-experimental or experimental designs to determine if PBL is more effective than other teaching methods used in similar classes. The application of these competencies to agribusiness sales positions should also be assessed for the benefit of students pursuing careers in this field.

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Farm Field Days as a Learning Model for Agricultural Literacy

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Farm Field Days as a Learning Model for Agricultural Literacy

Introduction/Need for Research

Many of the counties in Utah have been conducting farm field trips or farm field day events—some for more than 20 years. The intended outcome of these farm field day experiences is an increase in agricultural literacy among the elementary students that attend (Utah Agriculture in the Classroom, 2016). While it is known that these field trips occur statewide and involve hundreds of volunteers, state Extension staff, farm organization staff, several thousand elementary students, and their teachers, little is known about specific numbers reached, the field day event configurations, or how these events influence or impact participant agricultural understandings.

The American Association for Agricultural Education National Research Agenda (Roberts, Harder, & Brashears, Eds., 2016) establishes seven research priorities to address issues related to agricultural education. Research Priority 1 outlines the need for research related to "Public and Policy Maker Understandings of Agriculture and Natural Resources" (p. 10). Within this priority, one specific research question asks, "What methods, models, and programs are effective in informing public opinions about agriculture and natural resource issues" (p. 10)? Farm field days in Utah are programs organized and promoted by farm organizations and county Extension leaders to educate elementary school students about agriculture to increase agricultural literacy.

Farm field days are not unique to the state of Utah; a Google search using the terms "farm field day" returns links to over 38,000 pages describing multiple locations and types of experiences nationwide. While the number of educational programs is substantial, "the amount, type, accuracy, and quality of agricultural information provided to the general public is unknown" (Enns, Martin, & Spielmaker, 2016, p. 15). Farm field day impacts in Utah have not been measured; however, this model is similar to other field trip experiences and have the potential to increase the agricultural understandings of future policy makers. Fieldtrips have been found to enhance the understanding of academic content (Pawson & Teather, 2002), using all the senses for memorable experiences (Balliel, Duran, & Bilgili 2011). Hofstein & Rosenfeld (1996) found that significant learning occurs on field trips and that this learning is retained over a long period of time.

Theoretical Framework

This descriptive study was designed to objectively study the variables of the farm field day model in Utah to develop descriptive categories or constructs for impact research (Gall, Gall, & Borg, 2015). This foundational benchmark data documents student and organizer participation, event durations, field day event seasons (i.e., fall, spring), the agricultural content presented, the types of resources used by field day presenters, the experiential activities provided, the types of student assessments used, and the use of teacher evaluations.

Methodology

An email was sent out to every [University] county Extension office statewide asking if they were the coordinator of their county farm field day and, if so, would they be willing to complete a 5-10 minute survey on their county farm field day. If they were not the coordinator of the event, they were asked if they could provide the name and contact information of the coordinator in their county. County offices not responding to the email were contacted with a

second email two weeks later with the same request. Counties that did not respond to this second email were then contacted via phone and asked if they would prefer to take the survey over the phone, or if they could provide the contact information of the coordinator for data collection.

An online survey with 19 items was developed to gather descriptive data regarding the following variables: participant numbers; grade level participation; the event season; location (urban, suburban, rural); the venue; the duration of the event, learning station topics; time spent at each learning station; number of students at each learning station; presentation selection procedures; practices for vetting presenters; the use of Agriculture in the Classroom resources; the use of student assessments, and to determine if teacher evaluation data had been collected.

Results/Findings

Data was collected from 28 counties (STATE has 29 counties, but two county offices have been combined into one). Of these 28 counties, 17 conduct an annual farm field day event, and two of the 17 conduct two or more events annually. The grade level of students participating ranged from preschool through sixth grade, for a total of 15,250 students. Most (37%) of the farm field day events are held in the spring (three for multiple days). Three counties held a farm field day in the spring and the fall. Farms and fair grounds were equal as venue choices accounting for 14 of the venues.

The number of the stations at each event ranged between six and fourteen, with students' time spent at stations ranging from six to thirty minutes. Station topics were determined based on local agriculture production, willing commodity group participation, related school curriculum topics, and the popularity of previous presenters. Learning stations included presentations on animals, including but not limited to, pigs, chickens, cattle and horses (100% of the events), farming/farm tour (82%), soil (76%), and healthy eating (59%). Two field days also reported opportunities for students to touch or hold baby animals.

Fifty-three percent of the farm field day organizers provided teachers with Utah educational resources that could be used after the farm field day. After the event, 41% of the farm field day coordinators asked teachers to complete an evaluation, 35% said they didn't request an evaluation, and 18% said they sometimes asked for an evaluation. Seven counties (42%) assessed student agricultural knowledge with only three (18%) doing it consistently.

Conclusions

This descriptive data indicates the widespread use of farm field days as a model in Utah for increasing agricultural understandings or agricultural literacy. However, with an average of 50,000 students per grade level in Utah, this model is potentially impacting only 30% of the target audience; additionally, with only 18% of the counties conducting student assessments, this model may not be as effective as other models for increasing agricultural understandings. Finally, research suggests an experience can be enhanced by the setting. With more than half of the venues being off-farm, the experience may be limited.

Implications

This descriptive study obtained baseline data regarding farm field day variables. The results indicate a need to measure the outcomes among students to determine the model's effectiveness. As this learning model (farm field trip) used in many states, this data can be used to develop constructs and conduct comparison and correlation studies to measure farm field day impacts.

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ISSUES FACING BEGINNING AGRICULTURE TEACHERS IN IDAHO, OREGON, AND WASHINGTON

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Introduction

Agricultural education teachers should be aware of issues that cause adversities in their professional and personal lives (Cano, 1990). According to Croom (2004) teacher education classes should provide students with suggestions and strategies for coping with stress and burnout. He further suggested that discussion of burnout among new professionals is vital to prevent it from happening (Croom, 2004). Linking issues that beginning teachers face may have implications on the retention and performance of beginning agricultural educators.

Rocca and Washburn (2008) examined pre-service agriculture teachers perceptions of barriers in their career path and reported that family responsibilities and relationships, living arrangements, and unwillingness to move were among the top issues (Rocca & Washburn, 2008). Mundt and Connors (1999) examination of outstanding young members in the agricultural profession stated that beginning teachers face issues including 'Managing FFA activities' and 'Proper management of time.' Myers, Dyer and Washburn (2005) analyzed additional problems facing new agricultural educators as 'Organizing an effective alumni chapter' and 'Organizing an effective advisory committee.' (Myers, Dyer and Washburn, 2005)

Furthermore, Boone and Boone (2004) noted beginning and current issues encountered by agricultural teachers. They reported that administrative support was a major issue faced by experienced teachers reflecting on their beginning teacher experience (Boone & Boone, 2007). Touchstone (2015) examined professional development needs of beginning agriculture teachers. She identified program funding, planning and prioritization, and administrative understanding as problems faced by beginning teachers. Consensus among the beginning educator's provides further information to assist a successful transition into the classroom (Touchstone, 2015).

Purpose and Objectives

The purpose of this study was to identify the issues faced by beginning agricultural educators (0-5 years) in Idaho, Oregon, and Washington. Beginning teachers provided personal perspective giving insight to the issues they face in their developing careers. Awareness of issues that restrict beginning agriculture teachers may allow for a systematic approach to addressing the issues (Meyer, Dyer, & Washburn, 2005). The objective for the first round of this Delphi was:

1. Describe the specific issues that beginning agricultural educators (0-5 years) face.

Methods and Procedures

Delphi technique is a designed group communication process that aims at examining and discussion of issues (Hsu & Sandford, 2007). Surveys try to identify what is, whereas the Delphi technique attempts to address what could/should be (Miller, 2006). Ludwig (1997) suggested that the number of experts utilized in the Delphi technique is determined by the capability of the research team; concluding that the number of experts is dependent on the discretion of the researchers (Hsu and Sandford, 2007).

Hsu and Sandford (2007) states that the Delphi technique incorporates three separate iterations. Round 1 of the Delphi process includes an open-ended questionnaire. As adapted from (Touchstone, 2015; Meyers, Dyer, & Washburn, 2005) Round 1 consisted of an open-ended question of "What are the major problem(s) you face as a beginning agricultural teacher?" 158 teachers were identified in Idaho, Oregon, and Washington. Beginning teachers (n=73) responded in 10 separate text boxes via Survey Monkey ® to identify a variety of issues. The data presented are only from Round 1, although the subsequent rounds will be described.

The Delphi methodology requires that Round 2 the participants will receive a second questionnaire and asked to review the items summarized based from the data collected (Hsu & Sandford, 2007). To establish validity, a team of researchers triangulated the responses into different categories (see Table 1). Respondents will then rank the categories from least importance to the highest of importance (1=least important;10= most important).

Hsu and Sandford (2007) concluded that the third and final round of the Delphi method seeks consensus among the group members. Each participant will receive a third and final questionnaire asking their judgments on the identified issues using a Likert-type scaling (1= Strongly Disagree; 2= Disagree; 3=Uncertain; 4= Agree; 5= Strongly Agree). This will give information on the issues to reach a final consensus from all participants.

Table 1
Round One: Major Issues Faced by Beginning Agriculture Teachers (n=73)

Category	Response
Classroom Management	46
Work-Life Balance/Stress	40
Curriculum/Resources	34
Administrative Support/Partnerships	29
Mentoring/Advice	28
FFA/SAE Application and Knowledge	25
Facility Management/Utilization	22
Time Management/ Preparation	18
Budgeting	14
CDE Knowledge/Preparation/Coaching	11
Content Knowledge	10
Community Support/Relations	10
Funding/Monetary Issues	7
Parent Support/Relations	6
Standardized Testing/Common Core	5
Special Needs Accommodations	3
Alumni/Advisory Board	2

Conclusion/Implications

This study will identified multiple issues that beginning agricultural education teachers face. Meyers, Dyer, and Washburn (2005) concluded that organizing an effective alumni chapter and Organing an effective advisory committee were two major concerns (Myers, Dyer and Washburn, 2005). Contrasting to these findings, major issues include Classroom Management and Work-Life Balance/Stress found in Round 1 of this Delphi study. As supported by Touchstone (2015) the development of appropriate professional development and mentoring activities to continue to build beginning teachers success in the classroom (Touchstone, 2015). Subsequent rounds will be conducted to further to describe the issues faced by beginning agricultural education teachers. Continuing to address the issues and provide proper resources and professional development to the beginning agriculture teachers will be vital.

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Professional Development Needs Among School-based Agriculture Teachers in Arizona

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Professional Development Needs Among School-based Agriculture Teachers in Arizona

Introduction/Need for Research

"Our aging population, its growing diversity, changing career patterns, and advances in science and industry have all contributed to the changing nature of education among adults" (Layfield & Dobbins, 2002, pg. 46). This statement points to the importance of continuing education to all teachers who are now more than ever challenged to keep pace with the rapidly evolving cultural, economic, and technological conditions of society. In this paper, we focus specifically on the professional development needs of agricultural education teachers. The dominant professional development model available to agricultural education teachers, regardless of career stage, has long centered on in-service programs.

Theoretical Framework

The theoretical principles of andragogy, as well as the conceptual constructs of the Teacher Career Cycle Model, guided this study. Andragogy, pioneered by Malcolm Knowles, encompasses the curricular approaches and practices to teaching adults, and is guided by a set of five theoretical principles for understanding how humans learn over the span of their adult years (Adult Learning Theories, 2011; Merriam, 2001). Fessler and Christensen's (1992) Teacher Career Cycle Model (TCCM) both complements, and adds to Knowles's (1984) andragogy theory model, as it details other areas that can affect teachers besides the way adults learn. Consistent with the premises of social systems theory, the TCCM frames the teacher career cycle as being influenced by personal, organizational, and environmental factors (Fessler & Christensen, 1992). In this regard, the career progression of teachers is viewed as occurring in an "ebb" and "flow" manner over the course of eight career stages (preservice, induction, competency building, enthusiastic and growing, career frustration, stable and stagnant, career wind-down, and career exit). Thus, diversified professional development programs are necessary to fulfill the various needs of each agriculture teacher.

Purpose and Research Objective

The purpose of this study is to identify and describe the professional development needs of Arizona agricultural education teachers. The research objectives of this study were to:

1. Describe and prioritize the professional development needs of Arizona agriculture teachers in six need areas (Program Development, Classroom/Laboratory Management, Teaching/Instruction, FFA, SAE, and Personal Development).

Methodology

Descriptive, or survey research was used to attain research objectives. The target population was all secondary Arizona agricultural education teachers, teaching during the 2014-2015 school year. The questionnaire was developed using the Borich (1980) needs assessment model, utilizing a 10-point slider scale. For this study, the scale ranged from the lowest importance and the lowest ability (1), to the highest importance and highest ability (10). Competency items in the questionnaire were selected around six, pre-defined constructs (Program Development, Classroom/Laboratory Management, Teaching/Instruction, FFA, Supervised Agricultural Experience's (SAE), and Personal Development). The questionnaire was distributed to the Arizona agriculture education teachers via e-mail. The final useable sample size was 44 (46%). The data were then analyzed using descriptive statistics (percentages, frequency, measures of

central tendency, and measures of variability). Additionally, Mean Weighted Discrepancy Scores (MWDS) were used to analyze the data for determining professional development needs.

Results/Findings

Teachers identified competency items related to personal development as most important. Of equal importance was classroom/laboratory management, and teaching/instruction, followed by program development, and then FFA. SAE was reported to be the least important of the six constructs. In terms of ability, the teachers identified competency items related to classroom/laboratory management as having the highest overall perceived ability to perform, followed by teaching/instruction, then by FFA, followed by program development, and then personal development. SAE was reported of having the lowest overall perceived ability to perform of the six constructs.

After determining the MWDS, and ordering the construct items, the scores were further divided into three tiers (I, II, III) of priority; tier I being the highest need for professional development, and tier III being the lowest need for professional development. The tier I competency items within each construct included: balancing priorities to make time for career and family/personal life, advocating for local/state/federal financial resources, repairing laboratory equipment/tools, engaging students in SAE opportunities, developing long-term plans for SAE programs, organizing fundraising activities for the FFA chapter, designing an effective chapter officer training program, and motivating students to learn.

Conclusions

The findings from this study conclude that Arizona agricultural education teachers have general and specific professional development needs that must be met. This was concluded from the relatively high MWDS throughout all six constructs. Within each of the six constructs there was a minimum of one tier I competency item (by design) that ranged as low as 11.44, and as high as 35.07; these values were relative within the respective competency item defining each construct. The demands of a teacher, and the nature of curriculum are ever changing. This suggests that professional development needs will continue to exist, and change over time.

Implications/Recommendations/ Impact on Profession

Professional development efforts ought to be prioritized by the tier of priority identified within each construct; where tier I competency items are considered the highest priority, and had the highest need for professional development. The tier I competency items within each construct included: 1) Balancing priorities to make time for career and family/personal life, 2) Advocating for local/state/federal financial resources, 3) Repairing laboratory equipment/tools, 4) Engaging students in SAE opportunities, 5) Developing long-term plans for SAE programs, 6) Organizing fundraising activities for the FFA chapter, 7) Designing an effective chapter officer training program, and 8) Motivating students to learn. The professional development can be given in the form of workshops and/or trainings. These workshops and/or trainings need to be accessible to all agricultural education teachers either online, or face-to-face at conferences and other professional gatherings. Moreover, the state agriculture teacher association should use these data to inform, and guide the development of a short-term/long-term professional development plan. Faculty at the University of Arizona, agricultural education teachers, and industry persons should be recognized as a source in providing these professional development activities.

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Program Evaluation of the 2016 Agricultural Communications Vision Consortium

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Introduction/need for research

On February 8th-9th in San Antonio, a group of agricultural communications industry professionals, faculty members, and graduate students came together for the 2016 Agricultural Communications Vision Consortium, held in conjunction with the Southern Association of Agriculture Scientists annual convention. The purpose of the consortium was to discuss curriculum, research, and the future of agriculture communications. An external facilitator led the discussion from approximately 70 attendees.

The event began with a panel discussion from agricultural communications industry professionals. The second activity was a stakeholder analysis to determine the audience of ag communications programs. Day Two began with a "speed dating" style discussion of various factors impacting agricultural communications collegiate programs, followed by small group discussion. The event concluded with a discussion of action items from the large group and suggestions for next steps following the event. It was agreed that an open channel of communication between industry and academia is imperative to moving the industry forward. A Higher Education Challenge Grant, from the United States Department of Agriculture, funded the consortium. At the conclusion of the event, the group concluded that writing, followed by visual communications were the core competencies that all degree programs should include. The vision for ag communications research was to be more theoretically grounded and to develop and progress theory.

The purpose of this research was to evaluate participants' feelings and opinions on the consortium and determine ways to improve future consortiums. This research was guided by two questions: What were the overall opinions of the Agricultural Communications Vision Consortium?; and What measures can event organizers take to improve upon future consortiums?

Conceptual or theoretical framework

This research was conducted through the lens of the Theory of Meeting Satisfaction (Briggs, Vreede, & Reinig, 2003). The theory states that people may feel satisfied with a meeting, as long as the meeting exceeded their expectations for participating. Further, a meeting satisfaction instrument should explicitly ask questions about the meeting process or outcomes (Briggs et al., 2003).

Methodology

The researchers developed an online survey instrument that was emailed all 70 attendees of consortium. The instrument consisted of 27 questions that related to the publicity of the meeting, organization, the facilitator, and activities. Questions were yes/no, short answer, and a Likert-type scale. The instrument was emailed approximately two weeks following the consortium to control for maturation threats to validity. The researchers emailed a reminder two weeks following the initial deployment. A total of 27 responses were received for a response rate of 39%.

Results

Scores related to the overall opinions of the Agricultural Communications Vision Consortium can be found in Table 1. The activities on Day One rated lowest with a mean score of 2.52 (*SD* = 1.22); however the Day Two activities rated highest overall (*M* = 3.92; *SD* = .74).

Table 1. Overall opinions of the Agricultural Communications Vision Consortium.

	M	*SD*
Event publicity	3.63	.84
Quality of moderator	3.26	1.02
Benefit of panel discussion	3.33	1.07
Day One activities	2.52	1.22
Day Two activities	3.92	.74
Benefit to ag communications research	2.73	.83
Benefit to ag communications teaching	3.08	.74
Benefit to ag communications industry	2.73	.83

Note. Scores based on a five point Likert-type scale with 1 = very low to 5 = very high. N = 27.

To determine which measures event organizers could take to improve upon future consortiums, participants answered open-ended questions. Participants wanted to have more discussion of a national agricultural communications research agenda and would like for future consortiums to center around research. Participants really enjoyed the activities during Day Two and said they would prefer more activities like that in future meetings; they also would like more industry involvement. Overwhelmingly, the participants stated that consortiums like this should be hosted every five years.

Conclusions

The survey showed that most participants thought the meeting was well publicized and organized and that overall the moderator did a good job. The activities and discussions of the second day were better received than the activities and discussions of the first day. However, there is room for improvement.

Recommendations

For future consortiums, the researchers recommend having a clearly stated goal for the event as a whole. Although the goals were listed in all communications materials about the event, a list of sub-objectives tied to the agenda would help the participants understand how the organizers planned to accomplish the overall goal. This process can be replicated in any discipline looking to bridge the gap between industry and academia, or any group wanting to come to a general consensus on almost any issue affecting a large group. If efforts are continued, the Agricultural Communications Vision Consortium will continue every five years with the goal of facilitating an open line of dialog between academia and the industry helping push the agricultural communications discipline forward. This type of consortium could be adapted for needs in agricultural education, leadership, and/or extension education.

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Reporting Nonresponse in the *Journal of Agricultural Education*

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Reporting Nonresponse in the *Journal of Agricultural Education*

Introduction

The research conducted in agricultural education has been criticized for lacking rigorous scholarly methodologies (Fuhrman & Ladewig, 2008). A majority of the research published in the *Journal of Agricultural Education* can be classified as quantitative, applied, and survey-based research (Dyer, Haase-Wittler, & Washburn, 2003). Dillman (2009) indicated that there are four cornerstones in conducting quality research in survey-based research. One of those cornerstones identified by Dillman (2009) is nonresponse error, he further suggested that when a non-response error occurs in a study, the results and recommendations should be considered suspect. Nonresponse error "exists to the extent that people included in the sample fail to provide useable responses and are different than those who do on the characteristics of interest in the study" (Lindner, Murphy, & Briers, 2001, p.44). Implementation of this method would support Tuckman's (1999) suggestion that consistent application of research design and methodology will ensure quality techniques and advance research efforts. Miller and Smith (1983) introduced five methods for controlling nonresponse error. Lindner, Murphy, & Briers (2001) identified eight general sampling procedures used in the *Journal of Agricultural Education* to address nonresponse leading to three recommended procedures to follow in future research. It should be noted that Ary, Jacobs, & Razavieh, (1996) suggested that social science research has advanced due to the efforts put forth by researcher's ability to design and produce research that is reliable and valid

Conceptual Framework

Improving research in agricultural education requires the periodic examination of methods and techniques (Lindner, Murphy, & Briers, 2001). "Nonresponse error should be handled through the systematic application of statistically sound and professionally accepted procedures" (p. 44). The purpose of the study was to determine the efforts of researchers to address nonresponse error in the articles published in the *Journal of Agricultural Education*. This study aligns to Priority are #3, by aligning with the key outcome to supply well-prepared agricultural scientists and professionals in academic settings. (Doerfert, 2011).

Methods

All articles (N=528), excluding distinguished lectures (N=10), published in the *Journal of Agricultural Education* during the years 2006-2015 were analyzed using content analysis techniques. Data were collected based upon a model suggested by Lindner, Murphy, and Briers (2001). Each article was analyzed and was coded as sampling procedures used or sampling procedures not used (Objective 1). Mentioning of nonresponse error as a threat was coded as mentioned nonresponse, did not mention nonresponse, or 100% response rate achieved (Miller and Smith, 1983) (Objective 2). How nonresponse error was handled and coded into categories proposed by Linder, Murphy, and Briers addressed Objective 3. Each article was read and analyzed independently by three researchers. Researcher-generated data were then entered into a data collection instrument. Results generated by the researchers were compared to determine discrepancies. When discrepancies existed the researchers reanalyzed and agreed on the correct code.

Findings

The first objective was to describe the number of articles published and whether sampling procedures were used. From 2006-2015, 528 articles were published in the *Journal*. Approximately 58% (n=305) of articles published used sampling procedures.

The second objective was to describe how often nonresponse error was mentioned as a threat to the external validity of the study. Approximately 51% of the articles published in the *Journal* for the years 2006-2015 mentioned nonresponse as a threat to external validity. For 12% of the articles published in the *Journal*, nonresponse error was not a threat to external validity as an 85% response rate was achieved (Lindner, Murphy, & Briers, 2001). The remaining 37% of the articles did not mention nonresponse error as a threat to external validity. Of the 305 research articles published in the *Journal*, nonresponse was a threat to external validity of the findings in approximately 88% of the studies.

The third objective was to describe how nonresponse error in which nonresponse was a threat to external validity (*f*=268) was controlled in articles published in the *Journal* during the years 2006 through 2015. No attempts were made to control for nonresponse error in 59% of the articles (*f*=99). Nonresponse error was controlled by comparing early and late respondents in approximately 32% of the studies. Approximately 5% of the studies attempted to control for nonresponse error by following up with nonrespondents. The remaining studies addressed nonresponse in a variety of methods not previously noted.

Conclusions, Implications, and Recommendations

Fifty-eight percent of the studies published in the *Journal of Agricultural Education* between the years of 2006 through 2015 used sampling procedures. This stands in contrast to the 83.5% of the studies published between 1990-1999 as noted by Lindner, Murphy, and Briers (2001). However, it should be noted that total number of published studies increased over 50% between 2006-2015 compared to 1990-1999. But, nevertheless, studies utilizing sampling procedures still constitutes the bulk of the research published in the *Journal*. Even as Lindner, Murphy, and Briers indicated the need for researchers to document and control nonresponse error to mitigate the threat to external validity, a disturbing trend in the research was found. Nearly 60% of the studies that were subject to nonresponse error did not attempt to control it through accepted procedures. This is a nearly 15% increase in the lack of control methodology employed, when comparing the data to that of the 1990s. Researchers must address this issue in order to ensure the quality of the data published in the premier journal in the profession.

Although a selected few articles did note that nonresponse error was controlled by an accepted 85% response rate (Lindner, Murphy, and Briers, 2001) there are still articles for which nonresponse is a threat, yet no measures were taken to control it. Comparing early to late responders is still the preferred method to address nonresponse error. However, is this option the most effective? Lindner, Murphy, and Briers noted researchers can attempt additional contact with the nonrespondents to compare their responses. By securing the responses of nonrespondents, researchers are able to truly compare their opinions to those who completed the instruments, thus providing true data to compare.

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Resources Needed for Dual Enrollment Agricultural Mechanics Teachers

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Resources Needed for Dual Enrollment Agricultural Mechanics Teachers

Introduction/Need for Research

Dual enrollment programs, also known as concurrent enrollment, have existed for a several years (Chumbley, 2015). Dual enrollment is an innovative program which allows high school students to simultaneously enroll in a high school class and a corresponding college course and earn credit for both (Estacion, et al., 2011). These courses are offered in a variety of modalities, including face-to-face taught by the high school teacher or college faculty, online, or in a hybrid model in which the post-secondary curriculum is facilitated by the high school teacher (Barnett & Hughes, 2010). Support for high school instructors, who teach face-to-face courses, is often left to the secondary school where they are employed. Although universities are increasingly providing adjunct faculty support through training and curriculum updates (Fagan-Wilen, Springer, Abrosino, & White, 2006), little research exists documenting the resources needed by face-to-face dual enrollment faculty. There is a greater void in the research documenting the needs of face-to-face dual enrollment faculty in the area of agricultural mechanics. Therefore, the primary objective of this study was to document the needed resources of face-to-face dual enrollment faculty in the area of agricultural mechanics.

Conceptual Framework

The conceptual framework for this study was taken from Buriak and Shinn (1989) who employed the Delphi method to identify a research agenda for agricultural education through the insights of content experts. The Delphi method was employed for its ability to identify teacher needs and create consensus among the panel of participating experts (Stackman, 1974). Helmer (1966) indicated that in absence of a developed knowledge base to make decisions, the opinions of experts are an acceptable alternative.

Methodology

The Delphi method is reliant upon the selection of an expert panel (Dalkey, 1969). For this study, all high school agricultural education teachers (N=20) who were currently serving or had served as a face-to-face dual enrollment instructor within the past two years for Eastern New Mexico University were selected to participate as panelists. The identified instructors were sent an email request to participate. Of the 20 instructors invited to participate, 13 accepted and returned the initial instrument. Thirteen completed the second and third round questionnaires. When Delphi studies include groups of 13 or larger, reliability has been identified as greater than .80 (Dalkey, 1969).

In the first round, panelists were asked to offer their response to one open-ended question. The question reflected the objective of the study, and remained unchanged throughout the study. In the second round, panelists were asked to review the responses from round one and assign a value rating based upon the level of agreement with the item. To identify those items on which the panelists held the strongest positions, a seven-point Likert-type scale was employed with items ranging from 1 “Strongly Disagree” to 7 “Strongly Agree”. Panelists were encouraged to further refine statements by adding comments and suggestions. The function of round three was to further refine statements and build consensus among the panelists. Frequency distributions were used to refine further responses from round two. A 66% consensus level was established for this phase a priori. Only those statements on which 66% of the panelists selected

"Somewhat Agree" (rating of 5), "Agree" (rating of 6), and "Strongly Agree" (rating of 7) were retained for the third round. Descriptive statistics were used to summarize the collected data. Means and frequency distributions and percentages were calculated for the statements on the third round instrument.

Findings

Panelists identified 10 needed resources to adequately teach dual enrollment agricultural mechanics courses (see Table 1). Their responses tended to center around resources typically associated with teaching agriculture. These included 1) course materials, 2) tools and supplies, 3) technology, and 4) communication and support.

Table 1. Resources Needed to Teach Dual Enrollment Agricultural Mechanics Courses

Statement	% "Agree" or "Strongly Agree"
Local school administration support	100.0
Adequate tools and supplies	90.9
Access to technology	83.3
Effective communication with partner university	83.3
Presentation materials	83.3
Adequate space for teaching activities	74.9
Course curriculum	66.7
Current Syllabi	66.7
Planning time	66.7
Detailed study guides	66.7

Conclusions

Local school district support is necessary for dual enrollment programs to be successful. Universities must maintain quality partnerships with school district officials to ensure continuity in the program and provide support to teachers and the district, in general. Since the classes were college level courses, communication with the partner university is important to the teachers, in order to teach the courses. However, communication with the partner university was not the most agreed upon needed resource. Agricultural mechanics teachers still desire adequate tools and supplies and technology access along with presentation materials. Interestingly, teachers indicated more of a need for presentation materials than curriculum.

Recommendations

As the popularity of dual enrollment courses continues to increase, maintaining quality relationships through effective communication with partner agriculture teachers and school districts is vital to program success. Teachers indicated tools and supplies and technology access as key needed resources. Although the partner university has limited influence in these areas, the university does have the ability to develop and modify current courses to better fit the tools and technology available to the high school programs. Furthermore, as university curriculum is updated and revised, it is required that these changes are provided to the dual enrollment teachers/partners to ensure program quality and rigor is maintained. Through effective communication, these course improvements can be made and teacher needs can be better accommodated.

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The Relationship Between Motivation to Learn and Self-Regulated Learning

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Introduction/Need for Research

Understanding and controlling one's learning environments is referred to as self-regulated learning (Schraw, Crippen, & Hartley, 2006). Schunk (1996) posited that to increase one's ability to manage self-regulated learning one must set goals, select strategies to achieve the goals, implement those identified strategies, and monitor the progress toward achieving the goals. Students with better self-regulation skills typically learn with less effort and indicate increased levels of academic satisfaction (Pintrich, 2000; Zimmerman, 2000). How and why a student learns, along with their performance is typically associated with their motivation to learn (Pintrich & Schunk, 1996). Motivation was found to be a predictor of student achievement in a course devoted to language acquisition via satellite television (Shih & Gamon, 2001). Schraw, Crippen, & Hartley (2006) argued that "motivation includes beliefs and attitudes that affect the use and development of cognitive and metacognitive skills" (p. 112), which impact one's self-regulated learning abilities. Therefore, the primary purpose of this study was to determine the relationship between student motivation to learn and level of online self-regulated learning.

Theoretical Framework

The theoretical framework for this study is grounded Bandura's (1986) social cognitive theory, particularly using motivation. Within the context of social cognitive theory, motivation is defined as an internal state that arouses, directs, and sustains goal-oriented behavior. Students are more motivated to learn when participating in activities and courses that are meaningful and worthwhile (Glynn & Koballa, 2006). As students become more motivated, their academic achievement increases by their engaging behavior including asking questions, participating laboratory activities, and working in groups (Schunk, Pintrich, & Meese, 2008).

Methods

Participants for this case study were selected from enrollees in an online agricultural science course at an institution in the southwest United States university during the spring semester. Specifically, the students were enrolled in an online dual enrollment crop science course and through direct administration, 52 students completed the instrumentation used to measure motivation and online self-regulated learning. Student motivation was measured using the motivation sub-scale of the Motivated Strategies for Learning Questionnaire (MSLQ). The MSLQ motivation sub-subscale is a 31 item instrument using a seven-point Likert-type scale to measure six constructs of motivation. Self-regulated learning in online courses was measured using the Online Self-Regulated Learning Questionnaire (OSLQ). The OSLQ is a 24 item instrument using a five-point Likert-type scale to measure six constructs of self-regulated learning in online environments.

Findings

Students enrolled in the dual enrollment agricultural science course tended to have the highest level of self-regulated online learning within the construct of environment structuring (M=3.73, SD=.89). Students tended to have the lowest levels in time management (M=3.30, SD=.96). In regard to motivation, students were highest in control of learning beliefs (M=5.17, SD=1.07) and lowest in task value (M=4.65, SD=1.40). These data can be found in Tables 1 and 2. A Pearson Product Moment Correlation was calculated to determine the relationship between the two variables. Motivation to learn had a very strong correlation (Davis, 1971) with self-regulated learning in online courses (r= .72, p= .01).

Table 1
Self-regulated learning of online dual enrollment students

Construct	*M*	*SD*
Environment Structuring	3.73	.89
Goal Setting	3.51	.73
Help Seeking	3.39	.98
Task Strategies	3.39	.98
Self-Evaluation	3.32	.92
Time Management	3.30	.96
Scale total:	3.45	.80

Table 2
Motivation to learn of online dual enrollment students

Construct	*M*	*SD*
Control of Learning Beliefs	5.17	1.07
Extrinsic Goal Orientation	5.15	1.32
Test Anxiety	4.98	1.14
Self-Efficacy for Learning & Performance	4.88	1.31
Intrinsic Goal Orientation	4.85	1.29
Task Value	4.65	1.40
Scale total:	4.92	1.06

Conclusions

Students in this course were more likely to create an adequate learning environment for themselves to focus on completing their work than they were to manage their time. It can be concluded students know how to create the environment in which to be successful, yet still struggle managing their responsibilities to meet educational demands. Interestingly, students, in this study, were more extrinsically motivated than intrinsically motivated. This raises a question regarding motivation. Have educators created an environment where students are more concerned about applying themselves simply for a grade rather than learning a new concept to use in the future? Student motivation to learn is strongly correlated with self-regulated learning. This is consistent with Schraw, Crippen, and Hartley (2006) who noted motivation is a necessary component in self-regulated learning.

Recommendations

Since motivation to learn is strongly correlated to online self-regulated learning, it is recommended that faculty continue to provide support for students and aid them in developing their approach to learning to be better equipped to successfully navigate online courses. Specifically, assistance with developing time management strategies and self-analysis will aid students in creating a more manageable learning experience while using an introspective approach to evaluating their own learning. Furthermore, creating authentic learning experiences within online courses will provide students more opportunity to view the course as more valuable to their future and thus, increase intrinsic motivation to succeed.

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The Social Media Presence of International Rural Development Nonprofit Organizations

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The Social Media Presence of International Rural Development Nonprofit Organizations

Introduction/Need for Research

The past half-century has seen marked growth in food production, allowing for a dramatic decrease in the proportion of the world's people that are hungry, despite a doubling of the total population (World Bank, 2009; FAO, 2015). Nonetheless, more than 795 million people worldwide live in states of hunger and poverty (FAO, 2015).

Social media are some of the most utilized applications on the Internet (Qualman, 2011; Ramanadhan, Mendez, Rao, & Viswanath, 2013), and they are used by millions of people each day (Meredith, 2012). Social media can serve as a powerful relationship builder when used by organizations to connect with their stakeholders in two-way communications (Meredith, 2012; Ramandhan et al., 2013). Researchers postulate that the reduced transaction costs of social media enable organizations to improve efficiencies and effectiveness in achieving goals and missions (Curtis et al., 2010; Frye, 2014; Shirky, 2008; Waters, Burnett, Lamm, & Lucas, 2009).

With the population expected to exceed nine billion by 2050, it is important for nonprofit rural development agencies to understand effective communication strategies in order to engage stakeholders, increase funds, and accomplish their mission (Pardey, Beddow, Hurley, Beatty, & Eidman, 2014). Because the effectiveness of nonprofit organizations is often a result of the relationships they have with the community and their stakeholders, more comprehensive research is needed to better understand effective communication models for international rural development nonprofit organizations (IRDNPOs) (Ramanadhan et al., 2013). The purpose of this study was to explore the social media presence of IRDNOPs. The following research questions were used to address the purpose of the study:

RQ1. Which social media platforms are IRDNPOs using?

RQ2. Are IRDNPOs listing their social media presence on their websites?

Theoretical Framework

The theoretical framework for this research is based on relationship management, which was developed from Grunig and Hunt's (1984) definition of public relations (Ledingham, Bruning, Ki, & Kim, 2000), and has become a dominant focus of public relations practitioners (Waters, Friedman, Mills, & Zeng, 2011). The theory posits relationships, not communication, are the correct focal point of public relations (Ferguson, 1984) and encourages the use of two-way symmetrical communications to cultivate and maintain relationships with key publics rather than manipulating the publics (Ledingham et al., 2000). The theory of relationship management works to define the quality of relationships that an organization has with its publics as a measure of the public relations' function's success (Ferguson, 1984).

Methodology

To identify IRDNPOs, the researchers consulted a list of the most followed 501(c)(3) registered nonprofits on social media (Top Nonprofits, 2014), asked key informants for suggestions, and conducted an online search using keywords. Only organizations with an existing social media presence of at least an organizational Twitter handle and Facebook page were included in the study. This resulted in a total study population of 25 organizations. Each organization's website, Twitter handle, and Facebook page was then evaluated to determine if any social media links

were present. If social media sites were not provided, a search for the organization was conducted on Pinterest, Google+, YouTube, LinkedIn, Instagram, and Flickr.

Results/Findings

Of the 25 organizations, 24 (96%) had at least one social media outlet in addition to Facebook and Twitter. Table 1 provides the frequency for various social media outlets. Of those that had additional social media, all (100%) listed their social media presence on their website. The number of social media outlets used, in addition to Facebook and Twitter, varied from zero to seven with a mode of 4.0 and a mean of 3.60 (SD = 1.64).

Table 1
Frequency of social media outlets used by international rural development nonprofit organizations

Social Media Platform	*n*	%
YouTube	21	84.0
Blog	19	76.0
Instagram	17	68.0
Pinterest	12	48.0
LinkedIn	7	28.0
Google+	6	24.0
Flickr	3	12.0
Vimeo	2	8.0

Note: Percentages do not equal 100% because organizations could use more than one social media outlet.

Conclusions/Implications/Recommendations

Of the organizations studied, all except one are currently using social media in additional to Facebook and Twitter. The majority of the organizations used YouTube, blogs, and Instagram, while other platforms were present, but to a lesser extent. All of the organizations cross-promoted their social media accounts on their websites, Facebook pages, and Twitter handles. This improves the visibility of these communication outlets. On average, organizations were using multiple social media platforms, but one did not have a social media presence outside of Facebook and Twitter. This might limit the ability to engage audiences in social marketing efforts. These organizations should select social media outlets that best reach their audience segments and help accomplish recognized objectives. Having a more comprehensive social media presence will provide more opportunities for organizations to build relationships with their stakeholders (Meredith, 2012; Ramandhan et al., 2013).

Additional research is needed to more closely examine the content provided on these social media outlets. Future research could explore what relationship may exist between the types of content provided and impacts on social media engagement from audience members in the form of likes, shares, and comments and how that relates to offline success in the form of donations and volunteer time.

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To the Fair! Exploring the Influence of the FFA Agriscience Fair on Career Aspirations

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To the Fair! Exploring the Influence of the FFA Agriscience Fair on Career Aspirations

Introduction/Need for Research

Priority area three of the 2016-2020 National Research Agenda (Stripling & Ricketts, 2016) places emphasis on attracting the next generation of agricultural scientists. Today's agriculture and STEM employers report shortages of skilled workers (Goeker, Smith, Fernandez, Ali, & Theller, 2015; U.S. Congress Joint Economic Committee, 2012). Furthermore, concerns remain regarding the number of females pursuing degrees and careers in STEM fields (National Science Foundation, 2008, 2011). One reason cited for the lack of skilled workers is students' lack of knowledge and confidence in science and science careers (Schmidt, 2014). School-based agricultural education (SBAE) and the FFA Agriscience Fair can help address these issues. According to Phipps and Osborne (1988), the most important function of SBAE is to prepare youth and adults for careers in agriculture. The agriscience fair can help students develop skills and confidence in agriculture and expose them to STEM careers. However, little research exists exploring how the agriscience fair influences students' career choice and the motivations of students to participate in the agriscience fair. This study sought to address those issues.

Theoretical Framework

The theoretical framework for this study was based on the Social Learning Theory of Career Decision Making (Krumboltz, Mitchell, & Jones, 1976; Mitchell, 1990). This theory is based on three key interactive factors that influence career choice: personal factors, environmental conditions, and learning experiences. Based on this theory, the conceptual framework for this study consists of three key interactive factors influencing career choice, which include students' demographic characteristics (personal factors), social influences (environmental conditions), and FFA Agriscience Fair (past experiences).

Methodology

This quantitative study used survey research methodology. The objectives of this study were: 1) determine the motivating factors for students' participation in the agriscience fair by gender, and 2) explore the influence of the agriscience fair on career choice by gender. The target population consisted of all FFA members participating in the 2016 Utah FFA Agriscience Fair (n = 132). The surveys were hand delivered by the researchers to all the participants as they set up their displays and students were asked to complete the surveys before the end of the event. A usable response rate of 59% (n = 78) was obtained. The survey instrument contained questions that were demographic in nature and questions aligned to the objectives of the study. Individual items were measured using a four-point scale (4 = *strongly agree,* 1 = *strongly disagree*). A panel of experts reviewed the instrument for face and content validity before administration. To assess internal consistency, a post-hoc analysis yielded a Cronbach's alpha value of .84. Of the participants, 59% (n = 46) were female while 41% (n = 32) were male. Of their career pathway aspirations, only 30% reported agriculture, food, & natural resources, while 18% reported they didn't know what career pathway they wanted to pursue.

Results/Findings

Overall, the top motivating factors for participation in the agriscience fair were 1) enjoyment of competitive events, 2) teacher's encouragement, and 3) interest in learning about

agriscience (see Table 1). Males agreed more than females that the agriscience fair would prepare them for college ($t(76) = -2.23$, $p < .028$, $d = .53$) and that their teacher required their participation ($t(76) = -2.09$, $p < .04$, $d = .48$). The effect sizes were medium (Cohen, 1988). The second objective was to determine how the agriscience fair effected student's career choice. Participants were asked their level of agreement for the statement, "The FFA Agriscience Fair has influenced my career choice." Males ($M = 3.22$, $SD = .61$) reported the agriscience fair affecting their career choice more than females ($M = 2.83$, $SD = .64$; $t(76) = -2.71$, $p = .008$, $d = .62$). The effect size was medium between males and females (Cohen, 1988). In total, 78.21% ($n = 61$) of the participants agreed or strongly agreed that the agriscience fair influenced their career choice. Over 90% ($n = 29$) of the male participants compared to only 69.57% ($n = 32$) of females agreed or strongly agreed that the FFA agriscience fair influenced their career choice.

Table 1

Reasons for Participation in the FFA Agriscience Fair

	Total ($n = 78$)		Female ($n = 46$)		Male ($n = 32$)				
Items	*M*	*SD*	*M*	*SD*	*M*	*SD*	*t*	*p*-value	*d*
I enjoy competitive events	3.61	0.52	3.57	0.54	3.69	0.47	-1.06	.294	.24
My teacher encouraged it	3.52	0.59	3.50	0.55	3.53	0.62	-0.24	.815	.05
I like learning about science	3.40	0.64	3.37	0.68	3.44	0.56	-0.47	.643	.11
It will prepare me for a career	3.29	0.74	3.24	0.80	3.28	0.68	-0.24	.808	.05
It will prepare me for college	3.27	0.61	3.13	0.65	3.44	0.50	-2.23	.028*	.53
I enjoy doing research	3.27	0.61	3.17	0.61	3.38	0.61	-1.44	.155	.35
My parents encouraged me	3.23	0.80	3.13	0.86	3.28	0.73	-0.81	.420	.19
I am good at it	3.17	0.58	3.09	0.59	3.25	0.57	-1.22	.227	.28
Friends encouraged me	2.89	0.87	2.85	0.92	2.84	0.77	0.02	.984	.01
Required by teacher	2.48	1.08	2.22	0.99	2.72	1.11	-2.09	.040*	.48

Note. All items scaled from 1 "Strongly Disagree" to 4 "Strongly Agree."

* *p*-value < .05 was established *a priori*.

Conclusions/ Implications/Recommendations

The findings of this study support the key concepts of the social learning theory of career decision making as we found the top reasons for participation in the agriscience fair to be the enjoyment of competition (personal factor), encouragement from teacher (social factor), and interest in science (personal factor). These factors influence students' decision to participate in the science fair, which in turn, at least for male students, seems to influence their career choice. More research should explore these relationships, especially as it relates to gender. Gender did not seem to be a major factor in terms of the motivations for participation in the agriscience fair since the top three motivations did not differ. However, males felt more pressure by their teacher to participate than females. At the same time, males agreed the agriscience fair would prepare them for college more than for females. Additionally, males more strongly agreed than females that the agriscience fair influenced their career choice. Perhaps this is a result of more males than females pursuing careers in science fields. We recommend more research exploring why males perceive the agriscience fair to be more influential on career choice than females.

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View From The Top: A California Agricultural Education Leadership Delphi Perspective

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View From The Top: A California Agricultural Education Leadership Delphi Perspective

Introduction/need for research

Maintaining a pool of high quality teacher candidates is a challenge exacerbated with the expansion and creation of programs statewide. Nationally, 739 teachers reported leaving the agriculture classroom with teacher preparation programs only providing 717 new teachers (Foster, Lawver & Smith, 2014), leaving a gap to fill. As of May 2, 2016 there were 65 agriculture teaching positions open in California (D. Dunnigan, personal communication, May 2, 2016). Teacher preparation institutions in California estimated producing 62 new teachers during the 2015-16 academic year, leaving a gap to fill during the early stages of the hiring season (California Department of Education [CDE], 2015).

The shortage of agriculture teachers requires our profession to urge students to join the profession. This research aligns with the Priority 5 - Efficient and Effective Agricultural Education Programs of the AAAE National Research Agenda (Doerfert, 2011) by providing insight to the current situation of our agriculture programs and teachers. California agricultural education leadership has designated this as an area of critical concern to the profession (L. McCabe, personal communication, October 15, 2015), thus their opinions were sought.

Conceptual or theoretical framework

This study is based on Social Cognitive Career Theory (Lent, Brown & Hackett, 1994, 2000, 2002) which indicated "performance and persistence in educational and occupational pursuits" (1994, p. 79) as conditions which affect the development of an individual's career choice. Lent et al. (1994) described academic development and career choice as "dovetailing" (p. 81) with information acquired during school, ultimately affecting career decisions.

Methodology

A Delphi Study, or "group process which utilizes written responses as opposed to bringing individuals together," (Delbecq, Van de Ven, & Gustafson, 1975, p. 83) was conducted to form a consensus of 18 leaders in California agricultural education including: Six Department of Education Consultants, the California FFA Advisor, the Executive Director of the California Agricultural Teachers Association [CATA], the five state officers for the CATA, and the five program coordinators from institutions whom credential agriculture teachers in California (CATA, 2016 & CDE, 2016). Reliability is high at .75 with 11 participants (Dalkey, 1969).

The round one question was: To your knowledge, list of all of the reasons why agriculture teacher candidates/college students who express an interest in becoming an agriculture teacher have not continued on the path towards becoming an agriculture teacher? The 94% response rate generated answers coded into 24 different categories forming the second round. During round 2, the 24 items were rated by participants on an interval scale of 1 to 10 identifying how greatly participants thought the reasons deterred persons from continuing towards becoming an agriculture teacher (1=little deterrence and 10=extreme deterrence). The second round had 100% response rate finding 13 items rated an average of 5 (moderate deterrence) or more. Round 3 asked the respondents to rank the 13 items from round 2,

providing a list of 5 ranked deterrents with a 94% response rate. Round 4 had 78% participation offering any additional insight into the top 5 deterrents.

Results/Findings

The following are the top five reasons and comments, in order of greatest deterrent, why agriculture students who previously expressed an interest in becoming an agriculture teacher did not continue pursuing a credential according to California agricultural education leadership:

Deterrent 1-Job offers from industry. "From personal experience with our students I know that #1 and #2 have caused some of our best students not to start the credential program."

Deterrent 2-Time needed to complete credential requirements. “Because Agricultural Education in California has the same basic requirements as all credential programs in the state (History, Math, English, etc.) including BTSA (should we spell this out?), extra year to earn credentials, student teaching, etc.”

Deterrent 3-Financial hardship. “I think this is about where it should be as it is REALLY hard to student teach, for zero money, live in a strange place and get finished.”

Deterrent 4-Credentialing process perceived as "burdensome.” “If the process was not so burdensome I believe that job offers from the industry would be less of a factor.”

Deterrent 5-Unable to meet credential program requirements. “Most of the candidates know well in advance that they are not eligible based on an obstacle [i.e.: grade point average requirement, difficulty of required coursework]. They often self-select out well before student teaching.”

Conclusions

Most stakeholders agreed with the top five deterrents, although not particularly in order. Several commented on overlap of deterrents 2, 4, and 5. It is difficult to pinpoint why students accept job offers from industry. Financial considerations of student teaching and burdensome requirements of the credential program may play a role in a students’ decision not to pursue a credential. Most agreed scholarships or financial incentives need to be maintained and/or increased, especially during the student teaching process. The credentialing process needs to be streamlined with special consideration to maintain quality. Finally, Social Cognitive Career Theory suggests (Lent et al, 1994), students need regular, continued exposure to the idea of pursuing agricultural education as a career starting in high school and continuing during their college career. Talents and passions developed during school will affect career choice.

Implications/Recommendations/Impact on profession

Further studies are recommended to determine how agriculture credential requirements can be reduced and to examine the relationship between students who choose to enter the industry as opposed to completing a credential program. Additionally, further research should be conducted to determine effective methods to identify and nurture high school students with an interest or propensity to teach agriculture, as well as how teacher preparation programs can work with them to move them through the credential process.

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Introduction

Since the early 1990s, communicators have rapidly evolved their methods in order to keep up with the newest technology trends of the time. In turn, the education of the next generation of communicators, as well as the faculty members who train them, have had to constantly change as well. Specifically for agricultural communications (ag comm), it is important to keep industry and academia working together to ensure students receive an education that is on track with the expectations and current trends of the industry; industry suggests ag comm curriculum be evaluated every two to five years to ensure this (Doerfert & Miller, 2006; Terry Vaughn, Vernon, Lockaby, Bailey-Evans, & Reherman, 1994). Although many universities conduct research with their stakeholder groups to develop new and improve the quality of existing curriculum, ag comm faculty were collectively voicing a need for a wide-scale, national needs assessment to determine core ag comm competencies involving higher education and industry.

During the 2014 Ag Media Summit, a group of ag comm faculty members agreed to organize a meeting involving both faculty and industry members to begin the process of this needs assessment. Using the model left by an Agricultural Communications Summit in 2004, plans began to assemble agricultural communicators from both industry and academia to discuss curriculum, research, and the future of ag comm. The faculty agreed that meeting in conjunction with the Southern Association of Agriculture Scientists (SAAS) in San Antonio would be conducive to most travel and work schedules.

How it works/program phases/methodology/steps

During the early planning of the 2016 Agriculture Communications Vision Consortium, two faculty members from separate universities volunteered to serve as chairs. They applied for and received a USDA Higher Education Challenge Grant to fund the event. Three objectives were established for the consortium: 1) Discuss the essential knowledge base for the industry, 2) Identify emerging trends that can be addressed through curriculum, and 3) Explore the possibility of a national research agenda. An external facilitator was hired to help create the agenda and lead the discussion. The meeting planners selected four panelists to kick off the discussion. They also identified leading industry professionals that work for national organizations and invited them to participate in the consortium. Invitations to all ag comm faculty nationwide were sent via email.

Participants registered through Eventbrite.com, an online event registration tool. External sponsorships for food and beverages were secured. Nearly 70 faculty, industry professionals, and doctoral students attended. The consortium kicked off with a panel discussion that included very esteemed and respected leaders in the ag comm industry: Lyle Orwig, Charleston|Orwig; Janet Adkison, RFD TV; Cindy Cunningham, National Pork Board; and Mace Thornton, American Farm Bureau Federation. The panel discussion was followed by breakout groups to identify ag comm stakeholders. Day two began with a speed dating style question and answer session where each attendee answered a series of six questions that contributed to the overall objectives of the consortium. Next, everyone was divided into six groups to further discuss the over-arching questions, and present summary findings to the entire group. The attendees were then broken into two groups: one group discussed goals for ag comm curriculum, and the

other group discussed research goals. Both groups were given the opportunity to present their findings. All attendees were able to weigh in on the findings.

Discussion on curriculum and research took more time than expected, so the discussion did not address the emerging trends objective.

Results to Date/Implications

The vision statements—the essential knowledge base and research agenda—are being distributed to a panel of faculty members to review and refine. Preliminarily, the group found that writing skills are the biggest element of the essential knowledge base, and should be emphasized and included in every ag comm academic program. The groups stated that developing theory should be an area of focus in ag comm research. A final report is being compiled to distribute to all who attended. Researchers are currently collecting data on the post event evaluation.

Future plans/Advice to others

Once the panel of ag comm faculty members reviews the vision statements, the event organizers will collect comments about the statements through a panel of faculty members that will be distributed via email. Based on feedback, statements may be revised, and will be reviewed again by the panel of faculty members. An article presenting the vision statements will be written and submitted to the Journal of Applied Communications.

This process can be replicated in any discipline looking to bridge the gap between industry and academia. The event can be easily modified to fit the needs of any group. Advice to other disciplines looking to host such an event would be to identify and invite industry representatives at least six months in advance, look for external donors for sponsorships, and partner with a pre-existing conference to take advantage of discounted meeting room rates. Partnering with SAAS also helped reduce many faculty members' travel costs as many were attending SAAS anyway and did not require additional travel funds. The meeting organizers recommend allowing additional time for the next meeting, which, based on participant feedback, will occur in five years. The two day format was not enough time.

Costs/Resources Needed

The facilitator was a necessary expense as it allowed the meeting organizers to participate in the discussion. It was also prudent to have someone that did not necessarily consider herself an ag communicator to keep the meeting on track and ensure the objectives were met ($1,500 + travel). Each panelist received a $500 honorarium to help offset travel ($2,000 total). A snack break on Monday and a coffee break on Tuesday were the only food expenses. Food was not a required budget item; however, it was nice to re-energize the participants ($1,200). The conference room was complementary from SAAS. Audio-visual equipment ($400), printing ($50), and facilitator's supplies ($100) were other small expenses. Total expenses for the consortium were $5,250.

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Poster Type: Innovative

All for One and One for All: Improving Student Learning with Group Tests

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All for One and One for All: Improving Student Learning with Group Tests

Introduction/Need for Innovation

Enhancing students' ability to work on teams is an important part of the college experience. Teamwork is one of the 7 Soft Skill Clusters identified by Crawford, Lang, Fink, Dalton & Fielitz (2011). The "teamwork" cluster includes such behaviors as positive and encouraging attitude, maintains accountability to the team, and productivity.

Assessment is defined as the activities undertaken by teachers and students that provide information to be used as feedback to modify learning activities (Black, Harrison, & Lee, 2004). In a traditional teaching setting, learners are assessed individually. Feedback is not immediately given, and this sometimes results in a long waiting period for students to receive their results (Giuliodori & DiCarlo, 2008). Group testing enables students to take tests with peers and allows students to discuss questions and their reasoning for an answer, resulting in immediate feedback and filling in knowledge gaps (Cortright, Collins, Rodenbaugh, & DiCarlo, 2008).

Hanshaw (2012) concluded there are more positive than negative outcomes to be gained from cooperative testing. Evidence includes: an increase in memory and learning, decrease in test anxiety, enhanced listening skills, and enrichment of social interactions. Furthermore, students express their levels of test anxiety and sense of competition for a grade reduce significantly (Hancock, 2007). The use of group tests enables students to work collaboratively to assess their own learning by dedicating more time to discussing course content.

How it Works/Methods/Steps

While there are several different ways in which this methodology could be implemented, in this particular class, the students were told they would complete two tests as a group, but didn't know who was in their group until the test day. Class attendance record and points earned were used to group the students. The groups were homogenous in regards to high-achieving, good attendance students together and lower-achieving, poor attendance students grouped together. This was done in an effort to discourage social loafing in the groups and encourage all students to contribute to answer choices.

The day of each test, students learned what group they were in by looking at the list displayed on the projector. Students located their name and the group number associated with it then found the same number at a table in the room. Only one copy of the test per group was provided to discourage students "dividing up" the questions. Students were allowed to converse and discuss each question on the test. They had to come to a consensus as to the correct response. If a student didn't agree with the others, he or she was allowed to dissent and indicate his or her rationale on the test. This particular class period lasted for 75 minutes which allowed adequate time to complete the test.

After the test, students were asked to complete a satisfaction instrument and a group assessment. The group assessment instrument allowed each group member to assess the others. The assessment was not used to change the individual's grade, but rather as a tool for reflection. Tests were graded and handed back at the next class meeting. Students were able to review their

responses and seek clarification for any missed questions. They were also given the opportunity to reflect on whether the grade the group received is what they deserved.

Results to Date/Implications

Group tests were implemented in Introduction to Ag Information Science in the Fall 2015 semester. This course had 40 students from three different majors and ranged from freshmen to seniors. Each test had 11 groups with 3 or 4 students in each group. The class average for test one was 76% and 90% for test two. This was an increase from the previous fall when the class average for test one was 70% and 81% for test two.

After each test, students completed a satisfaction instrument. On Likert-type questions ranging from *1 = strongly disagree* to *5 = strongly agree*, students indicated the group test enhanced their learning, helped them understand difficult concepts, were enjoyable, and were a nice change of pace from individual assessments (Table 1). They also did not find them distracting or confusing (Table 1).

Table 1
Satisfaction with the group test process

	Test 1 (N = 40)		Test 2 (n = 37*)	
Item	*Mean*	*SD*	*Mean*	*SD*
Enhanced Learning	4.20	.75	4.20	.65
Understand difficult concepts	4.15	.88	4.16	.79
Enjoyable	4.30	.72	4.38	.63
Nice change of pace	4.60	.73	4.65	.58
Distracting	1.75	.70	1.59	.63
Confusing	1.95	.74	1.70,	.73

Note: *1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree*
*three students did not take the second test

Future Plans/Advice to Others

There are several pieces of advice for future implementation of group tests in the college classroom. First of all, instructors should consider the objectives of the course and if group tests are appropriate. The structure of the group test can be done in a variety of ways. Students could have the same groups for each test, test could be completed outside of class, grading could reflect input. If there is a strong need to evaluate each student individually, the group test may not be the best tool. Finally, each group of students is different and there may be those who do not want to complete the test together. In the event this occurs, the instructor needs to decide if they can complete the test individually or require them to complete with a group. In regards to the test, it should be written in a manner to encourage discussion (both in question difficulty and length).

Costs/Resources Needed

There is no cost to administer group tests. The groups do need to be determined prior to the test date, which requires forethought. Appropriate classroom space to allow each group to discuss without the other groups hearing is beneficial.

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Building an Agricultural Teacher Pipeline through Community College and University Collaboration

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Building an Agricultural Teacher Pipeline through Community College and University Collaboration

Introduction

The National Council for Agricultural Education (2000) developed a vision for agricultural education for the year 2020 that calls for an agriculturally literate society. To reach this vision, our nation needs an abundant supply of highly motivated, well-educated agricultural teachers. This project was proposed through the United States Department of Agriculture Hispanic Serving Institution's (USDA HSI) Educational Grant program to increase the number of underrepresented students pursuing and completing the Agricultural Education Teacher Preparation program at California State University, Fresno (Fresno State). This project sought to strengthen the academic programs at Fresno State and Modesto Junior College by filling a void in the academic programs at these institutions by providing students with information, field experience, training, and career awareness related to agricultural education. Additionally, without this project, an early field experience course would not be available to students at Modesto J.C. due to problems acquiring adequate enrollment in the course when offered independently. This project has created a pathway for students to make a smooth transition into the University's program. With a clear pathway, greater attention can be placed on attracting students toward a career in agricultural education. As an increased number of Hispanic teachers would provide the profession with much needed role models to help inspire the thousands of Hispanic students who might otherwise view higher education and a career in agriculture as an unlikely option.

How It Works

Through the three year project the following steps have been taken to accomplish the four objectives set forth by the project staff.

Objective 1: Provide an Agricultural Education Orientation (AEO) course at Modesto J.C. and Fresno State that incorporates lecture, discussion, field experience, experiential learning, and online learning activities. To accomplish this objective the project staff reviewed and modified the existing University course curriculum for delivery at Modesto J.C. The new course curriculum, now taught at both institutions, includes lecture, discussion, field experience, experiential learning, and online learning activities.

Objective 2: Assist and facilitate community college students' transition from Modesto J.C. to Fresno State by utilizing adult mentors and related field experience. The first week of the AEO course students select an agriculture teacher mentor at a high school in their local area. Students travel to that school site weekly to complete a minimum of 45 hours observing their teacher mentor. Mentor teachers work with students throughout their time in the course and are asked to follow up with students and provide continued encouragement.

Objective 3: Recruit and enroll at least 20 students each year in the AEO course, with at least 10 being enrolled in the course at Modesto J.C. In order to achieve this objective the project staff set the following goals: 1) University faculty and/or outreach staff will meet with at least 20 agriculture students each year at Modesto J.C. to answer any questions and provide transfer advising; 2) the University's Ag Ambassador team will provide a recruitment presentation in at

least five agricultural classes at Modesto J.C. annually; and 3) once students complete the AEO course and transfer to the Fresno State they will continue to be advised and mentored towards their degree by the Project Director at least twice per year.

Objective 4: Ensure the retention of Agricultural Education Orientation course completers and assist with the completion of their Bachelor's degree through continual academic planning and advising each semester and provide at least two transfer students with financial assistance each year. This financial support provides students the necessary funding to engage in program activities while still focusing on their educational goals.

Results to Date

The AEO course was successfully offered and delivered at both institutions each of the past three years. During this time 66 students enrolled in the AEO course at Modesto J.C. and 110 students at Fresno State. Of those at Modesto J.C., 33% were Hispanic/Latino students. All 176 students enrolled in the AEO course were assigned a secondary agriculture teacher mentor to assist them and provide career guidance and encouragement. At Modesto J.C., 53 of the 66 students enrolled in the course completed 45 hours of observation at their mentor teacher's school, while 92 of the 110 Fresno State students completed their observation hours. The University's Ag Ambassadors made presentations to 27 different Modesto J.C. agriculture classes, a total of 644 students attended these presentations.

An evaluation of the project found that 89% (59 out of 66) of Modesto J.C. students enrolled in the AEO course indicated they had a favorable impression of a career in agricultural education and were interested in pursuing a career in this field. To date, 12 of the community college students completing the AEO course have enrolled at Fresno State majoring in Agricultural Education. Additionally, 83 Modesto J.C. agriculture students met with a Fresno State representative to establish their academic and transfer plans. Three students have been selected and received a $1000 scholarship from Modesto J.C. and an additional two students, who are transferring in the fall, have been selected and will receive a scholarship once they have enrolled at Fresno State.

Conclusions/Future Plans

This project has provided Fresno State and Modesto J.C. with the tools necessary to build a collaborative relationship to provide effective outreach and recruitment of Agricultural Education students attending Modesto J.C. and a smooth transition to Fresno State. The project has proven to be successful in assisting community college students to learn more about a career in agricultural education. Project participants have clearly stated the positive impact of their experience and communicated their favorable opinion of a career teaching secondary agriculture. Given the success of this project, planning has already begun to replicate this project at another community college in the state to lend even more support to the effort to increase the number of underrepresented students entering the agricultural education profession.

Cost

This project was funded by a grant from the United Department of Agriculture's Hispanic Serving Institutions Educational Grants program. The grant provided at total budget of $240,000.

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[Innovative Idea]

Connecting High School Students with Career Opportunities: The South Coast Region Agricultural Education Consortium Senior Industry Tour

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Connecting High School Students with Career Opportunities: The South Coast Region Agricultural Education Consortium Senior Industry Tour

Introduction/Need for Innovation

Career readiness for high school students has been attempted via Career Development Events (CDEs) and the establishment of institutes at universities, among other means. Lundry, Ransey, Edwards, and Robinson (2015) noted that CDEs have the potential to improve a student's knowledge about careers in agriculture and Institutes such as the Food and Agricultural Science Institute (FASI), established at The Pennsylvania State University's College of Agricultural Science, have been setup to encourage high school students to not only learn about agriculture but also associated careers (Faulkner, Baggett, Bowen, & Bowen, 2009). However, not all students participate in CDEs or have access to these types of institutes. In 2016, only 4.6% of California's FFA membership participated in a state finals CDE contest (D. Dunnigan, personal communication & Fresno State University, 2016). Further, college readiness is an issue that directly impacts career readiness. In fact, of the schools in attendance for this event, only 39% of 2014 graduates met entrance requirements for California 4-year universities (Ed-Data, 2016). Additionally, community college student success scorecards for 2014 showed that at least 37% of first year community college students in the region are required to take remedial math and English courses (California Community Colleges Chancellor's Office, 2015). A need exists to educate students regarding available careers and the necessary education, skills, and abilities for those careers. These careers may or may not require a college education.

In 2014, the California legislature signed into law *Education Code* sections 53010 through 53016 creating the California Career Pathways Trust in the amount of $250 million in competitive grant funding to enhance Career Technical Education [CTE] pathways. The South Coast Region Agricultural Education Consortium [SCRAEC] was funded by this initiative to enhance the Agriscience and Agricultural Mechanics pathways at 29 high schools within the South Coast Region of California. Hoppock said, "One may stumble into an appropriate occupation by sheer luck, but the wise choice of an occupation requires accurate information about what occupations are available, what they require, and what they offer" (1967, p 4). In order to connect local high school students with potential career opportunities in the local area, and educate students on the routes into those careers, a Senior Industry Tour was created. While industry tours are not new, designing these tours to meet the needs of students and industry requires continuous innovative approaches.

How It Works

The SCRAEC Senior Industry Tour's purpose was to provide students with a glimpse into multiple agricultural careers as well as provide information about the requirements to enter these careers. This specific tour included visits to a vertically integrated produce company, a forestry operation and a machining shop. Effective coordination of the industry tour involved pre-planning, tour management, and follow-up. Industry tour stops were solicited six months prior to the event and these ideas were vetted based on potential impact, relevance, fit, and logistics. Effort was made to select stops that would meet the diverse needs of the students. In

order to ensure efficiency, a check sheet for each of the three phases was developed and followed. The checklists will be provided in the poster. The tour included four unique agricultural entities at which the students received not only a tour of the facility but also information focused on industry practices, career opportunities and career entry details for each respective company. Transportation was accommodated using a group bus. The tour lasted a total of 2 days and covered 354 miles with 4 industries visited.

Results to date

A total of 25 high school seniors, 2 high school teachers, and 1 program director attended the 2016 Senior Industry Tour. Evaluation results revealed that the students enjoyed the tour but would also be interested in attending tours focused on Animal Science, Agricultural Education, Viticulture, Internet Technology in Agriculture, and Agricultural Engineering. A follow-up study is planned to determine tour impact on career choice following high school graduation.

Future plans

The focus of this industry tour was on developing awareness of various careers in agriculture as well as providing students with background information on the educational route needed to enter these careers. The exit survey completed by the attendees indicated interest in the viticulture industry as one of the primary interests. The California Community Colleges Economic and Workforce Development occupational outlook for the wine and viticulture (2015) industry shows 330 new jobs being created in the next 12 months on the south central coast of California. Given the career availability and student interest in viticulture, future plans involve early surveying of students based on career interest and cross-referencing this with workforce development needs. This information will be used to identify the most appropriate industries within the region to visit. Industries/companies will be contacted for information related to employment opportunities for high school graduates and college graduates with specific agricultural degrees. Industry tour locations will be based upon this information.

Given the feedback from students and fellow teachers, the following strategies will be used to plan future tours: 1) Utilize evaluation forms to provide career exploration opportunities in pathways within the industry sector of Agriculture and Natural Resources for the 2017 tour; 2) Disseminate comprehensive tour schedules prior to the event to engage students and allow proper preparation (e.g., one tour stop included a hike for which participants were not prepared); and 3) Arrange for meals that meet the interests of teenagers.

Costs

The cost to conduct an industry tour varies. Costs include: 1) transportation, 2) lodging, 3) meals, 4) thank you gifts for presenters and chaperones, and 5) safety glasses and flashlights depending on the industry location. In addition, costs are relative to the number of persons in attendance. For this event, including 25 students, 3 chaperones and 1 bus driver, the total cost for the event was $4,573.05 or $157.69 per person. The majority of expenses were paid for with grant funding and a donation covered the meals and thank you gifts.

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Innovative Idea

Encouraging Students to Question: Inquiry-based Learning in the Agriculture Classroom

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Encouraging Students to Question: Inquiry-based Learning in the Agriculture Classroom

Introduction

Inquiry-based learning is not new; in fact, reference to current use of inquiry as a teaching strategy can be traced to Comenius (1592-1670), Dewey (1859-1952), among others. Inquiry is an approach to instruction that has been reported as valuable but accompanied with challenges (Edelson, Gordin & Pea, 1999). The way in which inquiry-based learning is disseminated and implemented will impact learning (Maaß & Artigue, 2013). Scientific inquiry according to the National Science Standards (1996):

> Refers to the diverse ways in which scientists study the natural world and propose explanations based on the evidence derived from their work. Inquiry also refers to the activities of students in which they develop knowledge and understanding of scientific ideas, as well as an understanding of how scientists study the natural world. (p. 23)

Minner, Levy, and Century (2009) synthesized 138 different studies using inquiry-based learning and found that inquiry-based learning had a positive effect on the learning of content, retention of content, and the conceptual understanding of students. An additional study found that teachers who received training in inquiry-based instruction reported that although the teachers and students struggled in the beginning of implementing such instruction into the agriculture classroom, once the students got used to the method they reported learning more than with other teaching strategies (Blythe, DiBendetto, & Myers, 2015). Thus, this innovative idea poster documents one example of inquiry-based learning in an effort to encourage use of this instructional approach.

How it Works

Inquiry in the agriculture classroom, as implemented in this example, follows the guidelines developed by the National Research Council (2000) for scientific classrooms which outlines specific activities in order for classroom inquiry to occur. The first step in an inquiry-based learning activity is engaging the learners in a scientifically-oriented question. The teacher can either develop these questions in a more structured lesson, or the learner can develop the question in a more student-driven lesson. Often these questions are “how” or “why” questions. For example, a horticulture inquiry lab might ask students if a garden can be grown from the ingredients used to make salsa. Next, depending on the amount of structure within the lesson, the students will either analyze data provided by the teacher or the student will determine what evidence is needed and conduct an experiment to collect the proper data for analysis. With the salsa example, students are provided the ingredients for salsa and then asked to create an experiment to determine if a garden can be grown. Students then complete their experiment and collect data. Once data has been analyzed, the students will utilize the data to construct explanations for the data collected. In the salsa lab none of the students’ jalapeños grew. Therefore, the students then had to conduct further research to come up with reasons for this failure. Students then evaluate whether their explanations adequately answer the question or determine if there were flaws with what had been discovered. During this step, students compare their findings with findings of classmates, as well as with other sources of information. The final step in the inquiry-based lesson is for the student to communicate and justify their findings.

Results to Date/Implications

A total of 10 inquiry-based lessons have been implemented in the high school agriculture classroom of the lead author which has resulted in a total of 50 students being engaged in the process. The first few inquiry-based lessons implemented were chaotic with the majority of students complaining about the tasks. Students wanted the answers to be given to them, rather than taking the time to complete the necessary work to determine the answers. Initially, the inquiry-based lessons were designed with a teacher-created "question to be answered." However, following several implementations of inquiry-based lessons in which students had multiple opportunities to participate, students were engaged in the development of the questions. Throughout the inquiry-based process, students were allowed to fail, and through these failures students learned critical information about the problem being studied. Students had the opportunity to portray their data in any manner they chose and present the data to the class. Peer critiques were an important component. Upon being questioned by the class, the students often began to see whether or not their data was truly representing their findings. This process allowed students to comprehend the importance of data presentation. Students not only learned content but also practiced critical thinking.

An amazing discovery was how students began to truly question processes and commonly agreed upon facts following the completion of the inquiry-based learning activities. With the completion of each inquiry-based lesson, students' questions became increasingly in-depth and inquisitive. The inquiry-based approach allowed students to improve their ability to defend their findings and take ownership in the learning process.

Advice to Others

Explanation of the reasoning behind inquiry-based learning is critical; students must understand and be aware of why inquiry-based learning is being utilized. It is also necessary to continually monitor students' lab books which should resemble scientific journals used in research laboratories. Students conducting the salsa lab recorded all processes so the information could be used in justifying their results. Implementation of inquiry-based learning activities in the agriculture classroom requires that teachers be prepared for students to arrive at different answers and use different methods to find answers. For example, students approached the salsa activity differently -- some students planted the whole tomato, while others planted slices. An important aspect of inquiry-based learning is freedom to learn.

Costs/Resources Needed

Direct costs associated with the implementation of the inquiry-based learning activities were the supplies related to completion of the lessons. For example, ingredients for salsa, along with planting containers, soil, and water, were needed for the lesson focused on germination. The most critical resource was the time invested in the learning process in both preparation and implementation.

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FFA Members' Perceived Benefits and Barriers to a Secondary Agricultural Education Teaching Career

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FFA Members' Perceived Benefits and Barriers to a Secondary Agricultural Education Teaching Career

Introduction

The need for agricultural education teachers is a well-documented issue across the United States (Foster, Lawver, & Smith, 2015; Kantrovich, 2010; Myers, Dyer, & Washburn, 2010). School districts continue to struggle to fill positions, and university agricultural education teacher preparation programs deal with a perceived lack of interest in the teaching profession. To that point, one area of concern is the recruitment of high school students into agricultural education teacher preparation programs (Kantrovich, 2010). While emerging research examining post-secondary agriculture students' intent to pursue teaching exists (Lawver & Torres, 2012; Park & Rudd, 2005; Reis & Kahler, 1997), little is evident when examining high school students' perceived barriers and benefits to pursuing a secondary agricultural education career. Therefore, there is an apparent need for the examination of those perceived barriers and benefits to address the issue of student recruitment into agricultural education teacher preparation programs.

How it Works/Steps

In 2015 fall, the Montana FFA Association held eight District Leadership Conferences (DLCs). Facilitated by Montana FFA State Officers, DLCs provided opportunities for Montana FFA members to develop leadership and relationship skills. Historically, the Montana State University (MSU) Division of Agricultural Education faculty have not visited secondary programs for recruitment purposes. However, a recent recruitment push from MSU resulted in its faculty requesting time during DLCs to facilitate a workshop for high school juniors and seniors with three distinct goals: 1) Introduce themselves and the MSU Agricultural Education program to students; 2) Collect contact cards from students interested in becoming high school agriculture teachers; and 3) Record student-perceived barriers and benefits to becoming high school agriculture teachers.

After brief introductions of themselves and the MSU Agricultural Education program, faculty members utilized the remaining 45 allotted minutes to conduct a recruitment workshop modified from National Teach Ag campaign material (National Association of Agricultural Educators [NAAE], 2015). Participants were divided such that one-half were encouraged to record barriers to becoming an agricultural education teacher on a large section of craft paper affixed to a wall. The remaining participants individually discussed and recorded benefits on index cards. Upon completion of these tasks, participants were instructed to regroup as one entity. The group tasked with recording benefits on index cards was then prompted to roll up their index cards and tape them over the barriers written on the craft paper. The end result was a large sheet of craft paper covered in index cards describing high school juniors' and seniors' perceived benefits and barriers to becoming secondary agriculture teachers in Montana.

Results to Date/Implications

This process was repeated six times at different DLC locations, reaching approximately 350 students. Faculty members collected 330 perceived benefits to becoming an agriculture teacher and 107 perceived barriers. The responses were then coded, using methods outlined in

Leedy and Ormrod (2015) and Bogdan and Biklen (2011). Results indicated the most frequently reported perceived benefits were teaching others (*n*=110; 33.3%) and being involved in the agriculture industry (*n*=62; 18.8%). Perceived barriers were mostly economic issues (*n*=32; 30.0%) and the image of teaching as a profession (*n*=32; 30.0%). Based on these responses, recommendations and decisions can be made to increase recruitment efforts and address issues affecting a high school student's decision to pursue agricultural education teaching as a career.

Table 1
Coded Perceived Benefits and Barriers

Responses	*n*	%
Benefits*	330	-
Teaching	110	33.3
Agriculture Connection	62	18.8
Travel	51	15.5
Barriers*	107	-
Economic	32	30.0
Image	32	30.0
Time	20	18.7

*due to space constraints, only most commonly coded items were included

Future Plans/Advice

Future program plans include maintaining contact with workshop participants, particularly those who indicated their interest in declaring a major in agricultural education upon admission to MSU. To date, this effort, combined with other intentional recruitment efforts, has produced a 200% increase in newly-enrolled agricultural education freshmen. Faculty will continue to utilize the participant contact cards to track students through registrar data. Additionally, students who projected their interest in agricultural education should be referred to their own secondary agriculture education teacher for continuous follow-up once the workshop has concluded. Advice for use or adaptation of this workshop is for faculty members to split up to cover more territory within the region or state. Follow-up with incoming students is essential to measure the impact of the program.

Costs/Resources

The cost for the innovative idea workshop was minimal, although it could increase depending on a variety of factors. Mileage, materials, and promotional items were the primary costs. Faculty drove a combined 1,800 miles to complete the workshops. Using the Montana mileage rate of $0.575 cents per mile, the mileage cost was $1,035. Material costs were negligible, as they consisted only of markers, craft paper, tape, and index cards. Promotional items, which were not a necessity for the workshop, were a major contributing cost factor. Approximately $500 was spent to obtain various promotional items, such as pens, Frisbees, flash drives, bookmarks, and other university marketing material. The total cost for the workshops was over $1,500. Further, human capital was invested into ensuring a successful process. However, that cost is difficult to quantify.

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Innovative Idea

Going Viral: The Creation of Irresistible Social Media Content

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Going Viral: The Creation of Irresistible Social Media Content

Introduction/Need for Idea

The introduction of social media has changed the way communicators distribute information from a one-way communications format to a two-way communication model. This model explains the need for communicators to use materials to engage in conversations by informing, listening, and answering (Duncan & Moriarty, 1998). Agriculturalists have used social media to inform audiences (White, Meyers, Doerfert, & Irlbeck, 2015); however, information needs to be structured in a way in which it is viral or spreadable to meet the masses (Jenkins, Ford, & Green, 2013).

Jenkins et al. (2013) explained, "If it doesn't spread, it's dead" (p. 1). The premise of this statement is based on the sheer amount of online content: more than 100 hours of video is uploaded to YouTube every 60 seconds, 4.75 billion pieces of content is distributed via Facebook, and 500 million tweets are sent per day, in addition to countless other outlets for social media communication (Ankeny, 2014). As agriculturalists, we must find ways to structure information so it becomes engaging content that is irresistible to audiences and that will encourage audience engagement to promote brands and organizations (Ankeny, 2014).

Ankeny (2014) discussed the role of emotions in viral content as a driving motivational factor for audience engagement. Whether content produces the positive emotions of warmth, happiness, hilarity, surprise or the negative emotions of confusion, contempt, disgust, or anger, these emotions provide a key role in the social motivation to engage in social media such as viewing, liking, commenting, or sharing (Harvard Business Review, 2015). By understanding the basics of human behavior and the underlying emotions that predict social motivation to share content, communicators can craft viral content (Ankeny, 2014). In addition to appealing emotionally to an audience, communicators must use this information to meet the needs of their target audience and organization (Cosper, 2014). The purpose of this innovative idea was to provide an opportunity for students to create and promote online content with the goal of making it "go viral."

Steps

In this innovative idea, students enrolled in [course] at [university] were tasked with creating an engaging video (i.e., a viral video) that would drive audience engagement to promote the [department]. To do so, agricultural communications faculty members first collaborated on a script to highlight common sarcastic response to the question, "What is agricultural communications?" In order to emotionally appeal to the audience, the idea of sarcastic humor was used. With all the faculty members on board for the production of the video, the next step was having students review the script and provide additional suggestions. Faculty members in the agricultural communications program agreed to perform as actors in the video. The students were responsible for coordinating all the video production including shooting footage for the entire video and editing via Adobe Premiere Pro. This step was completed over a series of several weeks as student schedules allowed. The video was presented during a class section to discuss necessary revisions and also strategize how it would be promoted online. To do so, students developed a social media plan to promote the video on the department's social media pages. Finally, the video was uploaded to department's YouTube channel and promoted via the

department Facebook page and emails to students and faculty within the college. Several students also led efforts to distribute the video through their own personal social media accounts.

Results to Date/Implications

The video was posted on April 1 to coincide with April Fools Day due to the sarcastic response of "What is Agricultural Communications?" All data were collected on May 4, one month after the original posting. In the month after the initial posting, the original promotional post on Facebook had accrued 1,229 reactions, comments, and shares. Additionally, there were 3,060 post clicks and 1,127 link clicks. According to the Facebook analytics, more than 74,000 people had been reached.

The video has been viewed 2,700 times on YouTube in 29 different countries. The majority of views 1,733 (70%) were through a mobile device, followed by desktop (n = 607, 25%), and tablet (n = 342, 5%). Additionally, the majority of the audience (65%) was female, while 35% was male. In addition to providing large engagement rates for the specific post, the number of likes on the [department's] Facebook page increased from 276 to 633 in the week following the video's launch date.

Because this is the first effort to create viral content through the [department], it is difficult to declare that the video went "viral." However, the promotion of this video did generate the most engagement up to that point on the [department's] Facebook and more than doubled the number of page likes. These factors can be considered areas of success for this viral marketing campaign.

Future Plans/Advice to Others

The footage collected during filming of this video did provide outtakes that can be used to create a follow-up video. Similar videos can be created for other areas of study in the department. When planning this type of content, it is important to keep the audience in mind. The final product is more likely to be shared and encourage engagement if it is emotionally appealing, such as humorous, to the audience (Harvard Business Review, 2015) and elicits a powerful response. If the goal of putting content online is to increase its views, that content must be shareable and the audience members must be motivated to help spread the message. Future courses in online, digital, or emerging media should consider producing a similar video. Students were able to understand how and why content should be created to meet the audience members' social and emotional motivations to share media. Additionally, this experience allowed students a real-world look at the development and promotion of a viral video and the subsequent social media analytics.

Costs/Resources Needed

The creation of this video required technology already available in the department – cameras, tripods, and microphones. The students did design or locate several props for the video and scouted locations. Access to editing software is also necessary as the students used Adobe Premiere Pro. The video was posted to the department's YouTube channel and shared via its Facebook page, which are free to create. The cost of video production may vary due to resources. For example, individuals can record quality videos on smartphones and edit via free-software for a cost-effective approach. Perhaps the most important resource is having students and faculty willing and able to be involved in this process.

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Poster Type: Idea

Google Maps for Everybody

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Google Maps for Everybody

Introduction

Geographic information systems (GIS) have long been a valuable tool to share data with a spatial component in a graphical way. GIS has proven to be a valuable tool to promote spatial understanding of data (National Research Council, 2005). Patterson notes that lack of time is a common barrier to using GIS in schools (2007). Limited access to appropriate technology (hardware and software) may also inhibit GIS use (Baker, 2004; Lloyd, 2001). GIS has been recognized as a tool to increase spatial awareness and literacy in higher education (Sinton D., 2009; Tsou, 2010; Sinton D. L., 2007). What has changed is the accessibility to GIS for people with limited GIS skills and software allowing innovative uses of GIS for teaching.

Google Maps (http://maps.google.com) as a product has matured into a simple GIS that allows sharing of spatial data with others online. Google Maps allows creation of simple layers that can be classified (grouped by attributes). Google Maps is a simple way to increase student spatial awareness both by supplying data in this format and by incorporating Google Maps into assignments. Google Maps can be used to share institutional data with faculty and administrators. In the classroom Google Maps can provide an introduction to GIS. Simple field maps can be created using the polygon tool over the imagery provided by Google Maps and acreage will be calculated. Discrete locations (points) can also be created. Data collected in the field with simple GPS units or cell phones can be imported along with data collected. Sharing is as easy as sending a link or printing a map.

Geo-coding is the process of converting data into coordinates that can be plotted on a map. This process can be cumbersome for users not trained in GIS. Google Maps makes this almost automatic. For program data there are many sources with a spatial component. These data are easy to share with colleagues. Some examples are locations of student teachers, secondary agriculture programs, and where students come from. All of these data have addresses which Google Maps will geo-code.

How It Works

Data is prepared in Excel. Spatial data may be as detailed as street address/city/state/zip code or simply zip code. Spatial data may also be latitude and longitude if data is collected in the field. Data is arranged in columns with a heading. Additional data may be added to provide information in the map or to classify the data. For example, adding chapter name will allow the map to display this. Adding a major code would allow classification by major. Generally you would not include student names (a privacy issue).

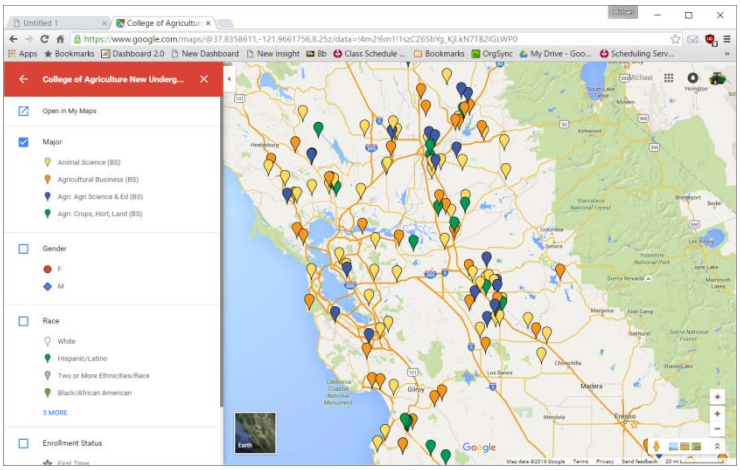
Once data is saved to Excel creating the map is simple. Open Google Maps, login (free), create a new map, and import your data. You will be prompted for what field (columns) contain the location data and what field to use as a label. Google does the rest and creates the map with "pins" at each location. You can customize the background, pins, and classify the data. Maps can be shared to specific people (via Google Drive permissions). Other sharing options include "only users with the link" or "public" which will show up in internet searches. Sensitive data should not be published. Maps can also be imbedded in other web sites (the code is provided).

Google Maps has been successfully integrated into a number of courses ranging from agricultural mechanics to agricultural education. Some examples include mapping GPS data in a land measurement lab, mapping field measurements in a range science class, plotting GPS livestock collar data, and showing secondary agriculture programs by type. In addition Google Maps have been used to share changes of student demographics with faculty. The ease of use is a key feature and ability to publish online makes sharing simple. Any tabular data that has the potential to be geo-coded can be used.

Google Maps may be saved as a PDF (useful for assignments or reports) or exported as KML (keyhole format) files for use in other mapping software. Maps created in Google Maps can be displayed in Google Earth (free application) which has more features.

Results to Date

Google Maps have been implemented in several different distinct applications:



- Mapping data for consumption of faculty peers. For example student origins classified by major, or status (FTF or Transfer) or schools participating in CDEs.
- Using maps to increase student awareness. For example maps of secondary programs classified by region (district) or pathways taught. Map links are embedded in the course learning management system.
- Student assignments such as mapping the distribution of tomato processing plants, mapping field data, creating simple farm maps (adding polygons for fields), and determining area of a landscape for irrigation audits.

Google Maps is not a substitute for a real GIS program (such as ESRI's ArcGIS) as it is limited. However it is easy to learn and use. The simplicity and ability to publish online makes it accessible to users with no GIS experience. Sample maps can be viewed at: http://www.agedweb.org/googlemaps.

Future Plans

A quick guide is in development for university faculty and secondary agricultural teachers. It will include sample types of data and discuss how to prepare data. Sample lessons are also being created for secondary agriculture programs.

Costs

Google Maps is a free product. Minimal investment in time is required to learn this product. Most data sets are existing or are developed by students as part of a class.

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Learning by Doing: Flipped Lessons in the High School Agriculture Classroom

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Learning by Doing: Flipped Lessons in the High School Agriculture Classroom

Introduction

In a traditional high school classroom setting, teachers often lecture to students and have them practice what they have learned at home in the form of homework. Before the following class, the students and teacher may review the previous night's homework, but then continue on to the next lesson. "Flipping" a classroom involves reversing that process by having students first learn about a topic outside of class and then use class time to further explore the topic (Brame, 2013). Considering Bloom's revised taxonomy (2001), and the teaching/learning process, "flipping" allows students to undertake lower levels of cognitive work (i.e., knowledge and comprehension) outside the classroom, and focus on the higher forms of cognitive work (i.e., application, analysis, synthesis, and/or evaluation) in class (Brame, 2013).

The Flipped Learning Model involves appropriate content-based lessons to be delivered outside of the traditional classroom using video, PowerPoint, or other modes of delivery. Class time, then, is available for students to engage in hands-on learning, collaborate with their peers, and participate in individualized learning and for teachers to provide one-on-one assistance and facilitate learning (Hamden, McKnight, McKnight, & Arfstrom, 2013). "This process allows students to move from being the product of teaching to the center of learning, where they are actively involved in knowledge formation through opportunities to participate in and evaluate their learning in a manner that is personally meaningful" (Hamden, et al., 2013, p. 5). Flipped lessons allow students to progress at their own rate, quickly moving through content they already understand or stopping to review content they missed the first time the material was presented. Online lectures can also easily incorporate visual representations, such as interactive graphs, videos, or photos to assist in a deeper understanding and provide differentiation in learning. (Goodwin & Miller, 2013). "As technology continues to develop there is a need to continue to explore and validate the flipped classroom model and the impacts that it has on student learning" (Conner, Stripling, Blythe, Roberts, & Stedman, 2014, p. 67).

How It Works

Flipped lessons result is redefined classroom time that can look different across different grade levels and subject matter. One example is a high school animal science class. When planning an anatomy and physiology unit, creating flipped lessons using video content, PowerPoint, and note taking for homework, allows time for a brief discussion and clarification of material in class, and ultimately provides the greatest amount of time for dissection or other activities, where students can demonstrate their learning, ask questions, engage in discussion, and maximize their learning. This also allows students to take ownership of their learning situation and apply it using what they learned at home (Conner, et al., 2014).

A specific example of a lesson that benefited from flipped learning was the study of the reproductive system of cattle in an animal science course. The factual concepts (i.e., vocabulary) could be taught online through the use of video resources. This allows for increased time in class to evaluate, analyze, and dissect cow reproductive tracts, using the terminology and knowledge gained from the online lesson(s), thus allowing the learning to be student centered and utilizing the teacher as the facilitator.

At Lake Norman High School in North Carolina, 86 agriculture students engaged in a "flipped lesson" related to cow reproductive tracts. Following the lesson, the students expressed support for the way in which the lesson was presented. Students noted in a brief survey that they felt prepared for their hands-on activity through watching a video on cow reproductive tracts as well as defining specific terms at home, and then applying their knowledge to the actual dissection in class. They also felt that if the lesson had not been flipped, they would have had significantly less time to explore the cow tract during class. The students enjoyed a new way of learning, and for the purposes of this activity, the flipped lesson was successful.

Implications

"Flipped lessons allow learning to move away from teacher-centered activities where communication occurs from teacher to student, typically in one direction, toward student-centered learning in which inquiry and individualized application have a strong base in individualized experiences of the learners and activities are controlled by the student while the teacher acts as a facilitator or supporter of the learning process" (Conner et al., p. 68). "The student's traditional role is that of a passive note-taker and regurgitator of factual information. What is urgently needed is an educational program in which students become interested in actively knowing, rather than passively believing" (Michael, 2006, p. 159). Given the limited quantitative research on the study of flipped learning, specifically within high school agricultural courses, flipped learning is still an innovative concept with room for improvement and study.

Future Plans

Future plans include choosing lessons within agricultural courses where students could benefit from flipped learning, and collecting quantitative and qualitative data related to student perceptions of the flipped lessons, and gathering comparative data using flipped lessons vs. traditional instruction. Ultimately, more data is needed to confirm or refute the use of flipped lessons in the agricultural classroom.

Resources Needed

Computer and Internet access are critical resources related to the utilization of the Flipped Learning Model given that students must be provided learning materials outside of class beyond mere textbook readings. Additional resources include a means to create and post instructional materials associated with the in-class interactive learning components of the instruction.

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Simplifying the Process: Agricultural Literacy Publication Search Framework

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Simplifying the Process: Agricultural Literacy Publication Search Framework

Introduction/Need for Innovation

Agricultural literacy research is important as a higher percentage of the United States population becomes further removed from the farm. This has caused many to become less aware of agricultural practices and information regarding food production (Wright, Stewart, & Birkenholz, 1994). Priority 1 of the *National Research Agenda of the American Association for Agricultural Education* encourages exploring the "impact of agricultural literacy efforts on a variety of stakeholder behaviors" (Doerfert, 2011, p. 8). The term agricultural literacy "can be defined as possessing knowledge and understanding of our food and fiber system" (Frick, Kahler, & Miller, 1991, p. 52). While this term has been in existence for several years, other terms have also been used to conduct similar lines of inquiry.

Although resources for educators are virtually limitless, the information overload is sometimes daunting and at times frustrating. Teachers often feel they do not have the time to research given topics effectively because they simply do not know how to begin to or where to search for information. In an effort to assist investigators (educators and scholars) in conducting agricultural literacy-related research and programming, a group of researchers created a list of relevant agricultural literacy publications.

How it Works/Methods/Steps

The research team brainstormed relevant agricultural literacy terms. The keywords included: agricultural literacy, food literacy, agrifood literacy, school gardens, natural resources literacy, STEM literacy, agricultural careers, animals and plants in the classroom, critical pedagogy in the classroom, food justice, EcoJustice or EcoPedagogy.

Given a list of agricultural literacy keywords, a graduate student conducted a literature search and created a table displaying 3-5 key publications under each keyword. After creating the table, the research team reviewed the list of publications and made suggested changes and additions. The framework provides a quick resources for educators and researchers to identify agricultural literacy relevant publications for future use. The goal of this work was to encourage more researchers and educators to implement agricultural literacy related research and educational efforts.

Results to Date/Implications

After conducting the initial publication search, using a total of eleven keywords, 42 publications were included in the table. This table gives the title, authors, and URL or publication information for each source. The table was placed on the Agricultural Literacy Wiki Page to assist educators and researchers in implementing agricultural literacy related projects. A modified version of the table is also on the Agricultural Literacy Wikipedia page. An example of publications included is provided in Table 1. The research team will utilize the articles found to continue their lines of inquiry.

Table 1

Example of Agricultural Literacy Terminology and Relevant Publications

Key Word	Article Title	Article Author(s)	URL/Publication Information
Agricultural Literacy	A definition and the concepts of agricultural literacy: a national study.	Martin Frick	http://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=10365&context=rtd
Food Literacy	Defining food literacy and its components.	Helen Vigden, Danielle Gallegos	http://www.sciencedirect.com/science/article/pii/S019566631400018X
Agrifood Literacy	Elementary and middle school teacher ideas about the agrifood system…	Cary Trexler, Thomas Johnson, Kirk Heinze	http://bern.library.nenu.edu.cn/upload/soft/0-a/41-01-30.pdf
Natural Resources Literacy	Environmental and agricultural literacy education	D. Hubert, A. Frank, C. Igo	http://link.springer.com/article/10.1023/A:1005260816483
STEM Literacy	Learning for STEM literacy: STEM literacy for learning	Alan Zollman	http://onlinelibrary.wiley.com/doi/10.1111/j.1949-8594.2012.00101.x/full
Agricultural Careers	What a degree in agricultural leadership really means…..	Lori Moore, Summer Odom, Kari Moore	http://www.jae-online.org/attachments/article/1793/jae54.4.pdf
Food Justice	Food system literacy	Widener, P., & Karides, M.	Food Culture & Society, 17(4), 665-687. doi: 10.2752/175174444X4400067-4610916

Future Plans/Advice to Others

Teachers and educators will be able to use this framework within their classrooms to help facilitate academic growth for not only themselves, but also their students. Researchers will be able to use the framework to get started in agricultural literacy research initiatives. The framework will also be useful in expanding how people conceptualize agricultural literacy. The table will continue to be updated as more articles are located and relevant research is published.

Costs/Resources Needed

There were no costs associated with this innovative idea. The graduate student gained valuable skills in conducting a literature search. The Wiki Page and the Wikipedia page are both free to use and update.

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Students Cultivating Ideas: Utilizing Focus Groups in Curriculum

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Students Cultivating Ideas: Utilizing Focus Groups in Curriculum

Introduction

Primary research is a vital aspect of a graduate student's career and that of the agricultural communications industry. Instructors are becoming more adaptive to the changing roles of graduate students throughout the educational process and are finding innovative ways to help teach primary research in curriculum. According to Murphy and Terry (1998), technology was predicted to increase access to information and helped provide "teaching aids to … meet the needs of the diverse learning styles of students" (p. 31).

Agricultural communications students have been found to be innovative with their thinking but lack critical thinking skills to better class work and research design, (Bisdorf-Rhoades, Ricketts, Irani, Lundy and Telg, 2005). Through incorporating primary research within classrooms, educators would be working toward fulfilling the need to encourage and facilitate critical thinking in order to better prepare students for the workplace (Murphey, Rutherford, Doerfert, Edgar, L., Edgar, D., 2013).

Many agricultural communications research designs rely on the use of qualitative research methods such as focus groups and in person interviews. The use of focus groups can be implemented in a controlled setting in which graduate students can work together to coordinate the study for class with the help of the instructor and educator. Using the cognitive load theory, students will be able to building upon learning without overwhelming the cognitive resources (Cook, 2016).

How it Works

The students in a graduate level, advanced video production course were tasked with putting together a focus group. The point of this focus group was to determine which graphics package (full screen, opening graphic, and name key templates) to be used in each student's video so the branding message would remain consistent in each video produced for the class. For the Spring 2016 semester, all students produced videos for an area agritourism business. The students designed a focus group to select the graphics package that would be used by all students.

A time was scheduled during class to collaborate and design a focus group a month in advance. Each graduate student was assigned a specific position regarding to the focus group plan. The roles included one note taker, who was also the liaison between the professor and the students; one technology assistant who coordinated the collection of necessary recording materials and set up the room; one person to gatherer incentives to give to participants; a moderator; three observers; one student designed a one page handout to assist the participants in scoring the designs; and several recruiters for participants. The day of the focus group, all students gathered and assisted in the setup of the focus group and the tear down.

Each student was required to create their own graphics package for the class using an Adobe Creative design program. Once all of the graphics were completed and uploaded to a shared drive, a student volunteered to compile the images into a format that was easy for the focus group participants to observe. A total of 25 individual graphic packages were used for the study. The graphics packages were shown to the focus group one at a time. As each set of graphics

were displayed, participants first rated each on the handout, which included a Likert-type scale to express their level of agreement with each design's overall look. When that process was complete, the graduate students tabulated the results and the top three graphics packages were shown to the focus group participants a second time. The focus group participants vocalized their likes and dislikes about each of the top three graphics. Thorough notes were taken to review the packages as a class at a later time. All five of the focus group participants agreed upon their favorite design and made a few recommendations for improvement. The student that designed the favorite graphics package made edits, then placed the final version on a shared drive so that all students in the class could utilize it for their final video projects.

Results to Date/Implications

In general, students have responded very well to the implementation of focus group within the course thus far. Students especially liked going back and reflecting upon the statements expressed in the focus group and felt this brought a new understanding to their original designs.

One student noted, "I thoroughly enjoyed planning and implementing a focus group in a controlled setting. Not only did I acquire research experience, but also, I was given feedback regarding my design and so I could improve upon my original design." Some students viewed the focus group and evaluated actions and methods for improvement upon other focus groups within curriculum. Some students noted that questioning methods within the focus group were vague and repetitive, but overall, the distance and resident students found value in the experience.

Future Plans/Advice to Others

The process of learning how to create, plan, prepare, and implement a focus group is important as many of these students will be tasked with conducting research in their future careers. For many students, this was their first exposure to conducting a research study, as such, the students in the course asked for additional information such as resources needed, roles, and processes. From there, the students could add resources, assign jobs, and alter processes as necessary. The additional information could come in the form of a book or an instructor-created guide to ensure the students include all essential components of a focus group study. It is also important for future students to understand how important it is to have five to ten participants. This is important because there needs to be enough participants to have a good variety of opinions, but a low enough number for the moderator to keep the participants on track. Five to ten participants allowed for this crucial balance to exist in a focus group.

Costs/Resources Needed

There are minimal costs required when implementing the focus group within a class. The cost of the focus group would include refreshments and incentives for the participants. Other resources needed would be a video camera to capture the focus group, mics for the participants, a computer to display and visual items and to take notes, and a projector to assist in the visual display.

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The Online Communications Plan: Communicating Agricultural Sciences to a Lay Audience

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The Online Communications Plan: Communicating Agricultural Sciences to a Lay Audience

Introduction/Need for Innovation

Today, the average consumer is at least three generations removed from agriculture (Ishmael, 2013). This generational gap has caused consumers to want to learn more about their food, how it is produced, and where it is grown (Smith, 2014). To satisfy this need for knowledge, consumers have turned to social media to help them make decisions on products they purchase and the agricultural ideals they support.

Social media can be defined as a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow for the creation and exchange of User Generated Content (Moore, Meyers, Irlbeck, & Burris, 2015). Unlike traditional media sources, web-based media allow consumers to engage in the discussion at a higher perceived level of interactivity (Moore et al., 2015). This higher level of consumer interaction with the agricultural industry makes it important now, more than ever, to create an effective level of communication between agriculturalists and consumers (Telg & Irani, 2012).

To foster this more effective communication, it is important to create curriculum to prepare students to utilize online mediums to reach the modern day consumer. Academic programs must be structured to prepare students to communicate in a variety of ways, including online communication (Corder & Irlbeck, 2016). To be effective in disseminating information to the consumer, this undergraduate scientific writing course implemented a communication plan that included how to properly reach consumers through social media outlets, infographics, and guest blogs based off of their side of a controversial issue. These mediums are important to teach future agriculturalists because collaborative projects utilizing social media have given people the power to spread knowledge and messages, and advocate for a cause in a rapid manner that one person could not achieve alone (Moore et al,. 2015). Utilizing a proper online communication plan in college courses will aid in effective information dissemination to today's consumers.

How it Works/Methods/Steps

The online communications plan has successfully been used in [course] at [university] for two semesters. This course is designed for students enrolled in the [college] who are not agricultural communications majors. At the completion of a non-biased research paper covering a controversial topic related to agriculture and natural resources, students enrolled in an undergraduate scientific writing course were assigned to develop an online communications plan to deliver their chosen side of the controversial issue to a lay audience. The online communications plan included three components: a guest blog post, a social media post, and an infographic.

Students identified an existing blog that currently delivers information about their chosen controversial topic. Students were then assigned to write a guest blog post for this outlet that included links for the reader to gain more information about the topic as well as pictures that complimented the writing within the blog post. Students also selected from a variety of social media platforms to develop a social media post promoting their blog post. These social media posts included a 140-character minimum synopsis of their topic to motivate the reader to click the provided link to view the blog post. Additionally, students were allowed to include videos or

pictures to promote their blog post as they saw fit. Some of the platforms that students had to choose from, such as Instagram and Vine, require a photo or video. The final component of the online communications plan included designing an infographic using a free, online design program to visually communicate their chosen controversial topic to the public. While no component of the online communications plan was required to be shared online, students were challenged to take the scientific information from their research paper and transform it into sharable online formats that a lay audience could understand.

Results to Date/Implications

At the conclusion of the assignment, all students (n = 78) completed a questionnaire as a class assignment. Participants were asked to respond on a 5-point Likert-type scale (5 = Strongly Agree to 1 = Strongly Disagree). Students agreed that blogging allowed them to tell a story about agriculture to a public audience (M = 3.97, SD = .99), the students had the necessary tools to create a conversational piece about agriculture or natural resources (M = 3.93, SD = .99), and they felt confident that they could develop a blog in the future after completing the class (M = 3.85, SD = 1.00). Students also agreed that visual imagery is necessary to communicate about agriculture (M = 4.33, SD = .96), social media allow agriculturists to communicate about agriculture and natural resources (M = 4.42, SD = .91), and they were provided with the necessary tools to communicate through social media in ACOM 2302 (M = 4.01, SD = 1.08). However, students reported they did not understand how to use the infographic design program (M = 2.43, SD = 1.04). The majority of students spent either 30 minutes to an hour (n = 33) or over an hour (n = 33) creating their infographic. More than half (57.1%) of the students reported using Easel.ly to create their infographic. Students also reported that they did not have an adequate understanding of or skills to complete the communication plan (M = 2.30, SD = .93). Students reported that they did not feel prepared to advocate for their controversial topic (M = 2.17, SD = .91). Additionally, students reported not feeling like they were any better prepared to share agriculture's story regarding their selected topic through social media (M = 2.66, SD = .83). Students saw the value in using online media to communicate about agriculture; however, they felt unprepared to do so in and outside of the classroom.

Future Plans/Advice to Others

Currently, instructors of the course plan to continue using this assignment to better develop the communications skills of students who are not agricultural communications majors. These students may need further guidance in planning and implementing their blog posts including better understanding how to use lay terminology. Further, the instructors plan to include more in-class instruction for designing the infographics. Students seemed to struggle with getting their ideas into the design.

Costs/Resources Needed

There are currently no costs associated with this assignment. Students enrolled in this course utilized their own computer throughout the course as it is writing intensive. The guest blog posts and social media posts are completed in a word processing program such as Microsoft Word®. The infographics are designed using any free, online design program including Easel.ly, Piktochart, and Canva that allow the students to download their design for submission or sharing online.

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The Quad Squad: Drones in Agriculture

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The Quad Squad: Drones in Agriculture

Introduction: Need/Goals for Innovation

The Agriculture and Food Research Initiative's priority area of Agriculture Systems and Technology emphasizes the interrelationships between agricultural system components to develop the next generation of engineered systems, products, processes, and technologies. One of the "hottest" topics in technology today—also in the area of agricultural technology—is the use of unmanned aerial vehicles (UAVs), also known as drones. These drones are either controlled by pilots from the ground or, more recently, are controlled autonomously by a pre-programmed mission (Cole & Wright, 2010). The United States Department of Agriculture (USDA) recognizes the potential of using UAVs in agriculture and, in 2014, the department's National Institute of Food and Agriculture (NIFA) announced $3 million in grant money to advance the use of robots in American agricultural production. "We are on the cusp of seeing incredible advancement in the use of robotics and sensors supporting agriculture in this country," said Sonny Ramaswamy, NIFA director. "These technologies, which are components of the 'internet of agricultural things,' have the ability to make agriculture production more efficient, saving time and money—benefits that can be passed from producers to consumers" (United States Department of Agriculture, 2014, para. 2).

According to the U.S. Department of Education, "only 16 percent of American high school seniors are proficient in mathematics and interested in a STEM [Science, Technology, Engineering, and Mathematics] career" (2010, para. 1). The White House has recognized the need to prioritize STEM education, and consequently, the Committee on STEM Education (CoSTEM) was established in 2011 to coordinate federal programs and activities in support of STEM education. (The Department of Agriculture is an organizational member.)

As far back as 1988, educators were conducting formal research on the importance of agricultural education/literacy in schools, including the National Research Council's establishment of the Agricultural Education in Secondary Schools Committee and, more recently, the American Association for Agricultural Education National Research Agenda 2016-2020. This agriculture-specific research has continued with the creation of national standards including the National Agricultural Literacy Outcomes (NALOs) and the Standards for Technological Literacy (STL). The NALOs identify benchmarks related to agricultural literacy and academic achievement. For example, secondary students will "identify current and emerging scientific discoveries and technologies and their possible use in agriculture, and predict the types of careers and skills agricultural scientists will need in the future to support agricultural production and meet the needs of a growing population" (Spielmaker, 2013, p. 10).

The goals of the Drones in Agriculture program included: introducing secondary teachers to the STEM applications of using drones to teach agricultural concepts that tie to state core and national curriculum standards, generating students' interest and increasing their participation in STEM-related coursework, and collecting feedback using a Qualtrics-based teacher-response survey to assess the future needs of teachers integrating the Drones in Agriculture program into their curricula.

Methodology

Procedures/Methods: Three statewide workshops were conducted to train secondary teachers in the building, programming, flying, trouble shooting, and repair of quadcopters. Curriculum resources including lesson plans and companion resources were incorporated into

each workshop. A ROAV (Remotely Operated Aerial Vehicle) Challenge was also developed to offer future state, regional, and national challenges in skills competition.

Target audience: The primary target audiences included secondary teachers in the content areas of agricultural education, technology and engineering education, and science education. Additional subject area teachers, including mathematics and physics, were also welcomed. Priority, through an application process, was given to teachers from the same school willing to partner and deliver an integrated STEM curriculum.

Results

The resources and materials provided in the workshops were designed to increase agricultural literacy and facilitate STEM integration into secondary curriculum. The anticipated outcomes for students, educators, and others were identified in a Logic Model for Drones in Agriculture Program (based on the National Agricultural Literacy Logic Model). For example, students will: develop an appreciation and understanding of STEM and how it is integrated with agriculture, identify connections between agriculture and STEM careers, and understand relationships between agriculture, engineering, automation, and data acquisition. The teacher-response survey determined the extent to which the project's objectives and outcomes were met. Thirty-two teachers from 16 different schools participated in the workshops. They honed their flying skills using small Hubsan quadcopters and then constructed larger quadcopters based on 330 mm X-frames. Approximately 3200 students will be introduced to drones in agriculture based on the teachers' participation and adoption of the workshop resources.

Recommendations/Future Plans

The primary strategy to achieve sustainability is to align curriculum resources with state core standards and integrate the curriculum into Career and Technical Education (CTE) program pathways. Consequently, CTE funds will be available to teach the curriculum. To grow the program, additional funding will be sought through industry sponsorship; research grants to assess student outcomes; the state's STEM Action Center; the National Defense Education Program through Hill Air Force Base; and the Secondary Education, Two-Year Postsecondary Education, and Agriculture in the K-12 Classroom Challenge (SPECA) Grants of USDA's National Institute of Food and Agriculture. The workshop resources are available at Utah Agriculture in the Classroom (https://utah.agclassroom.org/htm/workshops/drones-in-agriculture/), and the program creators are willing to share additional planning resources (e.g. the workshop application) in order to facilitate anyone wishing to replicate this program.

Costs/Resources

The total cost of this initial program was approximately $15,000. The majority of the funding was used to purchase equipment and supplies that were distributed to teachers for direct use in their classrooms. A small portion (approximately $1000) was needed to purchase one quadcopter and supplies for workshop development. Qualifying teachers were awarded grants that included a quadcopter kit and curriculum resources. Teachers not supported by the grant were invited to the workshops, but they were required to purchase the appropriate quadcopter kit. Utah State University Extension contributed money for curriculum resources, staff preparation and delivery time, staff travel, and workshop food and supplies.

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The Struggle is Real: Learning Responsive Web Design with the Bootstrap Framework

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The Struggle is Real: Learning Responsive Web Design with the Bootstrap Framework

Introduction/Need for Innovation

Sixty-eight percent of Americans have smartphones, 45% have tablet computers, and the market continues to grow (Anderson, 2015). From 2010 to 2015, the use of smartphones was up 394% and tablet usage increased 1,721% (Dreyer, 2015). As the use of these mobile devices continues to increase, traditional computer ownership is starting to decline. In 2015, 78% of adults under 30 years old own a laptop or desktop, compared with 88% in 2010 (Anderson, 2015). This shift in how consumers access the Web has significant implications for website design. Traditional fixed-width websites are problematic because they give users a limited experience and require a site redesign every few years to accommodate change (Gardner, 2011).

Responsive web design is an approach to building websites to provide users with an optimal viewing and interaction experience across a wide range of devices. This approach to web design allows a single website to respond to the screen size of the device on which it is being viewed. Organizations can benefit from responsive web design because it is more cost effective and provides a better user experience (Gardner, 2011). Although there are many ways to create a responsive website, using the Bootstrap framework is the most popular and is accessible for people of all skill levels, projects, and devices (Bootstrap, n.d.). Bootstrap allows "frontend web development to be catapulted forward by building on a stable foundation of forward-looking design and development" (Spurlock, 2013, p. 1) leading the way for responsive web design. Bootstrap comes with many useful elements and is easy to use for those who have a basic understanding of CSS, HTML, and JavaScript.

Google emphasizes websites should be built for mobile-friendly viewing using responsive web design (Google Developers, 2016) and this approach to designing websites is now an industry best practice. Because of this, it is imperative agricultural communications students understand these design principles and what it means for online communication efforts. Using Bootstrap as a responsive web design framework is an ideal way to introduce students to current web design standards. The purpose of this innovative idea was to integrate Bootstrap in a web design course and determine students' opinions of this approach to responsive web design.

How it Works

In the Convergence in Agricultural Media course at Texas Tech University, students build upon their knowledge of web design gained in a pre-requisite course to create a responsive professional online portfolio using Bootstrap in Adobe Dreamweaver. During the first four weeks of class, the students were taught what responsive web design is, why it is important, and the coding language necessary to make it work. In the fifth week, the students were introduced to Bootstrap (getbootstrap.com) and how to use it in Dreamweaver. The instructor also provided some resources students could use if they needed additional help using Bootstrap.

During the next few weeks, the students worked independently on their websites and in class as time allowed (other projects were due during this time). With two weeks remaining in the course, the students had to have a draft of their responsive website ready and showed these to their peers in class to gather feedback. On the last day of class, students continued to work on their sites along with assistance from the instructor and teaching assistants. The sites were then due within

a week of this last class session with additional help sessions scheduled as needed. Although students were provided with help as requested, the creation of their responsive websites was largely an individual undertaking.

Results to Date/Implications

Fourteen students completed the course in the Spring of 2016. Based on student reflection papers, the majority of students agreed that using Bootstrap to create a responsive website was difficult at the beginning, but they eventually grasped the concept. One student said: “I really like Bootstrap. I think once you understood the basic concepts, Bootstrap is very user friendly and you can personalize easier with it.” Another student said: “It was hard and slightly confusing, but once you sat down and worked on it, it wasn’t that bad.” Students were allowed to use templates they could find online, which benefitted some but not others. One student said: “It was very confusing in the beginning. I ended up using a template, which made it easier, but I still did not have a complete understanding for the program.” Another student said: “Using and having access to a template was helpful.”

When asked what they would do differently, almost every student said they wished they had more time to work on their website, and that they would have started working with Bootstrap earlier in the semester. One student stated: “I would plan out my website ahead of time and familiarized myself with more concepts.” Another student said: “I would start to focus more on the website earlier on.”

Students said the most difficult aspect of using Bootstrap was also the best part of their experience – having to teach themselves how to use the framework. One student stated: “The most challenging aspect was the time it takes to do the trial and error process, but the best part was the feeling you get when you finally figure out how to do something on your own.” Another student said: “Learning how to use Bootstrap as a whole and re-learning some of the web basics was the most challenging, but I love how we have to figure it out for ourselves and think critically.”

Future Plans/Advice to Others

Using the Bootstrap framework in Dreamweaver to make a responsive website will continue to be used in future semesters. More class time should be dedicated to teaching the students about Bootstrap and responsive web design, perhaps by creating an entire site together then having students create their own. Students did note that more time to complete the website would have been beneficial. Although they did have to submit a proposal for their site, this was due before they learned the capabilities in Bootstrap, which certainly influenced their design outcomes. Overall, students need to understand how changing consumer behaviors (i.e. using mobile devices) impacts why websites are created using responsive website design.

Costs/Resources Needed

Students needed access to Adobe Dreamweaver, which was required in this class. Dreamweaver Creative Cloud comes with Bootstrap integrated; however, the Bootstrap framework can be downloaded for free from www.getbootstrap.com. A subscription to the Adobe Creative Cloud (with more than 20 apps) can be purchased for $20/month. The instructor invested time learning Bootstrap and provided links to responsive website examples and resources.

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"There is no guru:" Mentoring maps for intentional agriculture teacher growth

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Introduction/need for innovation or idea

Mentoring has traditionally been used to support beginning teachers in a one-on-one way (Greiman, 2010). Greiman and Covington (2007), building on the work of Kram (1985), posited mentoring was conceptualized as providing both professional and psychosocial support. In fact, Podsen and Denmark (2007) said a mentor was a role model and expert.

As we worked to find mentor agriculture teachers in Oregon, we found mentoring requests to be an intimidating proposition. Our state has a 100% volunteer mentoring program. Everyone we have asked to serve as a mentor has been willing to serve, but almost always offered some version of the caveat "but I am not an expert". Veteran teachers are willing to help, but do not feel they have all the answers. In thinking about the outcomes we hoped for from a mentoring program, we wanted to nurture the idea that agriculture teachers are a community of problem solvers. While thinking about these challenges, we ran across the work of Rockquemore (2010; 2011; 2016) who was speaking to the same problems in the mentoring of higher education faculty. Specifically, Rockquemore identified some concrete issues with traditional mentoring including varying definitions of mentoring (2010), large time commitments for what is largely "time intensive, invisible, and unrewarded labor" (Rockquemore, 2016, para. 7) and the fact no one is an expert in all areas which may require mentoring (2010).

Rockquemore (2011) offered the concrete solution of using a modified approach to mentoring. By shifting from a person-based approach to a needs-based approach, mentees are responsible for figuring out what they need and asking someone who already knows how to get it or knows the answer. Under this model, "there is no guru", but rather a network of people who can help get those needs met. She suggested this shift in approach leads to shortened time commitments for the information holders and creates a model where the young teacher would be in-charge of their own success in getting their needs met (Rockquemore, 2016).

How it works/methodology/program phases/steps:

Prior to this year, the mentoring program timeline was:

Late summer: Pair all first year agriculture teachers with a mentor

Every 4-6 weeks during the school year: Send an email to mentors and/or mentees prompting communication between the pairs

Summer Conference: Assess mentoring experience and receive feedback about the year

Within our existing mentoring structure, we implemented two resources to attempt to shift the system to a more needs-based approach and eliminate the pressure for a mentor to be the "guru". First, we wanted to solve the problem of how do I (as a new teacher) know who has the knowledge to meet my needs. Through a Qualtrics survey, we created the Oregon Teachers Experts List. We use the term "experts" loosely and have defined this as a teacher who has useful information to share in a specific content AND would be willing to share. Areas span a wide range of agriculture teacher responsibilities. For example, a teacher might be listed as an "expert" in "sheep curriculum", "showing and fitting animals" and "managing student shop projects". Being an "expert" is entirely voluntary and this list is not vetted. If a teacher offers himself or herself as an expert, they are added to the list. Combined with our state teachers' directory, a teacher would be able

to reach any other "expert".

The second resource we have compiled is the mentoring map. This map idea was borrowed and adapted from National Center for Faculty Development and Diversity, run by Rockquemore and colleagues. The young teacher is listed in the middle. Around the outside are areas in which an early career teacher might need assistance. There are fifteen categories including FFA, community partnerships, SAE, curriculum, social support, FFA Alumni, and advisory committees. Early career teachers now sit down with their assigned mentor to assess their needs and identify people who can help meet that need.

As of 2015, the mentoring program is structured:

Late summer: Pair all first year teachers with a mentor (second year teachers can opt-in)

Early October: Complete mentoring maps (mentors work with mentees). The mentor's role is only to help mentees discuss needs and complete their map of experts.

Every 4-6 weeks during the school year: Send an email to mentors and/or mentees prompting communication between the pairs and encouraging them to consult their map and/or the experts list to meet their current needs.

Summer Conference: Assess mentoring experience for previous group and collect data to update experts list for the next year

Results to date/implications

This system was first implemented in Fall 2015 and all early career teachers were paired with a mentor and created a map. We have comments from the early career teachers who feel like the conversation is positive and they are being empowered to solve problems. Mentors are indicating less pressure to "know everything". We have been surprised at the number of experienced teachers who are using the "experts" list to contact other teachers and gain access to new information or resources. The map, experts list and specific quotes will be shared during the poster presentation.

Future plans/advice to others

The expert list has been a critical component to implementing the mentoring map. Without the list, mentees do not know who can meet their needs and they will resort to asking their known network, which may not be able to help at the same level. The mentor's role is now that of a gatekeeper to help the young teachers make connections to others in the profession. We have dedicated a session at fall agriculture teachers' conference to allow for time to construct their map with their mentor. This structured time was essential to rolling out the program year 1. We think the map idea holds promise for all experience levels.

Costs/resources needed

We are running the program in Oregon at no direct cost. The only indirect costs are the time of one past president of the teachers' association working with one teacher educator from Oregon State University to manage the program and send emails to the pairs. The highest work demands are in late summer, after teachers are hired, arranging mentor pairs. We use Qualtrics to update the "experts list" and are thinking of transition this list to a GoogleDoc so that teachers can update themselves anytime.

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Using Horses As Teaching Tools: An Equine Guided Education Clinic

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Using Horses As Teaching Tools: An Equine Guided Education Clinic

Introduction/Need for Innovation or Idea

Equine assisted activities are gaining popularity as a modern, alternative form of human therapy, teaching and learning, and personal development. Research has shown that equine assisted learning can improve academic performance, life and social skills, and strengthen teams and relationships (Aduddell, 2003; Cole, 2005; EAGALA, 2014; Hutchinson, 2009; Klontz, et al., 2007; Luckner & Nadler, 1997; Shultz, 2005). With regard to innovative approaches in experiential learning, using horses as teaching tools has gained popularity in non-formal and academic educational settings in recent years. It has been documented that "working with horses can create positive changes in adolescents and possibly even improve basic life skills of young adults" (Antilley et al., 2010, p. 7). Horses have been used to promote life skill development not only in 4-H, but also in equine-assisted therapies for mentally and physically disabled individuals and educational programming (Evans, Jogan, Jack, Scott, & Cavinder, 2009; Gibbs, Potter, & Vogelsang, 2003; Saunders-Ferguson, Barnett, Culen, & TenBroeck, 2008; Smith, Swinker, Comerford, Radhakrishna, & Hoover, 2006). Mandrell (2006) identified the advantages of using horses in teaching as follows: "Horse activities provide a visible metaphor for life experiences and relationships. These metaphors are used to teach people valuable tools for success in life. Participants learn about themselves and others through horse activities… related to feelings, behaviors, and patterns. (p. 23). Those who work with horses not only gain the benefits of learning horsemanship and care of a large animal, but also develop important life skills that can be used in their day-to-day lives. As Antilley et al. (2010) reported, "Those participating in horse-related activities can experience beneficial improvement in self-motivation, responsibility, confidence, and self-esteem" (p. 7) that transcends to all life situations. Cavinder et al. (2010) evaluated the educational value of a summer horsemanship clinic over a period of three years and found that a high percentage of individuals expressed improved knowledge of horse awareness and training as well as greater thinking skills. Smith et al. (2006) concluded that "…horse programs should continue to develop and support programs that focus on the development of horsemanship and life skills" (p. 92). Equine Assisted Growth and Learning Association (EAGALA, 2014) offers a standard model and structure for using horses as a framework for creative and adaptive teaching and learning. This model includes instruction using a team-based approach focused on experiential and solutions-based learning that is applicable to many environments and audiences.

How It Works

An agricultural education professor partnered with a local equine instructor to develop a half-day on-the-ground equine guided education (EGE) clinic for youth. With our combined backgrounds and foundational knowledge learned from the EAGALA model, non-formal and outreach education, equine therapy research, psychology, and positive youth development, we developed our own learning sessions. The clinic used a co-facilitation team approach to teach life skill development and personal growth as an intricate component of the horsemanship program. Youth gained first- hand experience with innovative teaching and learning using horses as a venue for building leadership, teamwork, communication, and goal setting skills. Clinic design encouraged youth to explore the emerging world of equine assisted activities and their application to personal situations. The fundamentals, model, and structure of EAGALA and non-formal education were used to guide curriculum development. The equine instructor

provided the facility, horses, professional horsemanship and psychology knowledge, while the agricultural education professor provided guidance in overall program development, positive youth development, non-formal education, and experiential teaching and learning strategies. The overall goal of the clinics was that participants would increase knowledge, awareness and understanding of EGE in the areas of personal growth and development. An example clinic agenda can be seen below.

Introduction to Equine Guided Education

- Trends in Horse and Human Connections; Using Horses in Experiential Learning Settings
  - Brainstorming and Self-Awareness Exercises
- Introduction to Equine Terminology, EAGALA Model, and EGE Programs
- The Connection of Horses to Personal Development
  - Role Play and Reflection

Hands-On Activities and Reflection: Applying Leadership, Team building, Communication, and Behavior Principles

- Leadership 101: Natural horse interaction, behavior assessment, and leadership principles
  - Think-Pair-Share, Arena Observation, Drawing
- Communication: Verbal and Non-verbal
  - Horse-Horse, Horse-Human, Human-Human Discussion
- Well-Being: Emotional, Social and Physical Safety
  - Creative Writing and Safety Scenarios
- Setting Individual and Group Goals
  - Obstacle Course Development
- Colorful Communication
  - Scenarios and Painting Activity
- Group Discussion and Individual Reflection on Application of Concepts into Personal Situations

Results to Date/Implications

Based on observations and feedback, the team found it most effective to teach about responsibility, relationships, communication, leadership, and teamwork through horse safety and care; haltering, tying and leading a horse; horse behavior observation; horse anatomy; and on-the-ground horsemanship activities. The team has further developed modified clinics for a variety of community groups based on their specific goals. All workshops focus on the utilization of horses for building teambuilding, communication, and leadership skills.

Future Plans/Advice to others

The inclusion of a qualified, knowledgeable team of educators was essential to the success of the clinic. At this time, requests are growing from student organizations, 4-H clubs, girl scouts, FFA chapters, and health care professionals. The equine instructor has contacted EAGALA to host a national certification training at the facility within the next year. A conversation has been started to develop an interdisciplinary course for agricultural education, equine science, and nursing students. Finally, a grant was submitted to AQHA to gain funding for clinic development and expansion.

Costs/Resources needed

In addition to knowledgeable instructors, suitable, safe horses and facilities are necessary to deliver these clinics. Equine guided education books, training programs, and continuing education workshops offer valuable content and ideas. Fees may include facility and horse use, educational supplies, arena props, journals, and horse equipment.

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