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Knowledge and Perceptions of Visual Communications Curriculum in Arkansas Secondary Agricultural Classrooms: A Closer Look at Experiential Learning Integrations

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Keywords: visual communications, agricultural communications, curriculum development, secondary agricultural education, experiential learning

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Abstract

The University of Arkansas developed and integrated visual communications curriculum related to agricultural communications into secondary agricultural programs throughout the state. The curriculum was developed, pilot tested, revised, and implemented by selected secondary agriculture teachers. The primary purpose of this study was to evaluate students' knowledge prior to the program, after the curriculum was taught, and after participation in a day-long experiential learning activity utilizing skills and competencies taught in the curriculum. This study also assessed students' perceptions of the program and application of skills and competencies learned in the curriculum through a content analysis of short promotional videos created in the program. Eleven schools participated in the study with 106 students represented. Analysis of student test scores noted a significant effect between pre-, post-, and/or delayed-post scores for each curriculum unit (photography, writing, and videography). Overall, students had positive perceptions of the curriculum and the experiential (mobile classroom) learning activity. The content analysis noted that students were able to apply skills and competencies taught in the curriculum through short promotional videos about agriculture. This study found that the curriculum was successful in increasing student knowledge of visual communications as it relates

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to agricultural communications, and recommendations are made for curriculum revisions and improvements.

Key Words: visual communications, agricultural communications, secondary agricultural education, visual communications, curriculum development and assessment, experiential learning

In 1999, the National FFA Organization initiated the first career development event (CDE) for agricultural communications. Since that time the National FFA Organization has gathered resources for secondary agricultural educators to utilize when teaching students about agricultural communications as well as expanded and modified the original event. The national organization's website has links to numerous resources including *The Guidebook for Agricultural Communications in the Classroom*. The guidebook, which outlines basic materials for teaching a course or unit as well as training a team, begins with:

> Agricultural communicators play a vital role in the world of agriculture. Representing agriculturalists across the world, these individuals possess the skills to effectively communicate agricultural messages to publics involved and not involved in agriculture. Because a large percentage of the population lacks agricultural understanding, it's important for agricultural communicators to provide timely, accurate information on current issues and events. (Hartenstein, 2002, p. 1)

Since the 1990s, agricultural communications has evolved into a highly competitive industry requiring knowledge of business practices and editorial skills as well as agriculture (Burnett & Tucker, 2001). In 2001, based on a national Delphi study, Akers, Vaughn, and Lockaby (2001) concluded high school seniors should be competent in 76 specific agricultural communications skills and competencies. The major themes surrounding those competencies included (a) agricultural skills, (b) communication skills, (c) ethics, (d) professional development, (e) public relations, (f) research gathering, and (g) writing. The study also concluded these skills should be taught at various levels throughout the secondary education level (freshmen, sophomore, junior, and senior). It was suggested that an introductory, intermediate, and advanced courses be developed for teaching agricultural communications competencies and skills.

Even though more than a decade ago, Akers et al. (2001) made a plea for multiple agricultural communication course levels to be integrated in secondary schools, and even though new electronic technologies and their educational potential continue to emerge, the secondary education landscape has largely remained the same, especially in terms of agricultural communications curriculum and integration in the classroom. However, agricultural communications has had a longstanding tradition in postsecondary education with formal courses on campuses for more than a century (Boone, Meisenbach, & Tucker, 2000). With this rich history and with more and more people removed from agriculture, it is more important than ever that we find ways to incorporate agricultural communications into secondary programs.

High school agricultural educators today are required to teach a breadth of disciplines related to agriculture, and interests about agricultural communications curriculum continues to increase. Recently, Arkansas secondary agricultural educators identified a need to be trained in agricultural communication competencies and skills in an effort to teach these competencies in their classrooms (Calico, Edgar, Edgar, Jernigan, & Northfell, 2013b; Calico, Edgar, Edgar, Johnson, & Jernigan, 2014). Additionally, Calico et al. (2013b) noted that teachers reported 45.2% of secondary students had a high degree of interest in learning about communications-based technologies and 47.9% have a medium degree of interest.

The National Research Agenda [NRA]: Agricultural Education and Communication 2011-2015 (Doerfert, 2011) was developed, and outlined critical components of agricultural education and communications. Historically, post-secondary agricultural education and communications faculty have forged long-standing alliances and work closely to develop courses and research projects to understand and promote various aspects of the industry. With the growing availability

of technology and as the general public becomes increasingly removed from the farm, communication becomes ever critical to the promotion of agriculture (Bailey-Evans, 1994). It is important that post-secondary agricultural education and communications faculty work with secondary agricultural teachers to improve and expand classroom curriculum. Currently, little agricultural communications curriculum exists in secondary school programs (Erica Irlbeck, personal communication, October 14, 2012) with only two states formally offering secondary agricultural communication courses. By teaching high school students' communications and technology skills, they learn valuable skills while supporting and promoting the agricultural industry (Calico et al., 2013a; Calico et al., 2014; Hayward & Benson, 1993).

Theoretical and Conceptual Framework

Secondary agricultural education was built on the foundation of experiential learning (Cheek, Arrington, Carter, & Randell, 1994; Mabie & Baker, 1996; Parr & Edwards, 2004). The theoretical framework for this study was based on a combination of experiential learning, problem-based learning, and constructivism. Kolb (1984) proposed the theory of experiential learning that involves four principal stages: concrete experiences, reflective observation, abstract conceptualization, and active experimentation. Experiential learning utilizes works from Dewey, Lewin, and Piaget in an effort to emphasize the central role experience plays in the learning process (Kolb, 1984). Lewin described learning in a four stage cycle similar to Kolb's (1984) model. A study conducted by Baker, Robinson, and Kolb (2012) supported "the idea that experiential learning produces results that are better than traditional educational models" (p.8).

Lewin outlined two aspects of learning that were "noteworthy." The first was an emphasis on the here and now and second was that action research and laboratory training are based on feedback (Kolb, 1984). Lewin believed that feedback was the element that kept the learning process continuous. While similar to Lewin, John Dewey, known as the father of progressive education, was more specific about the feedback process by "describing how learning transforms the impulses, feelings, and desires of concrete experiences into higher-order purposeful action" (Kolb, 1984, p. 22). Dewey (1916) in *Democracy and Education* noted that experience was better than theory.

The Center for Excellence in Teaching (CET) at the University of Southern California (USC) describes Problem Based Learning (PBL) as "particularly effective in helping students develop the ability to apply concepts and ideas to practical experience and vice versa" (USC-CET, 2006, p. 1). In a paper by Savery (1994), *What is Problem Based Learning?*, problem based learning was defined as a process in which real world problems are used to help and motivate students to identify, apply, collaborate and communicate their knowledge effectively. Collaboration allows students to have ownership in their learning through participation. "Learners are expected to understand the applications they are learning" (Edgar, 2012, p. 13) and should be able to do more than simply act on memorization. These teaching methods allow students to reach the higher tiers in Bloom's Taxonomy (1956) application, analysis, synthesis, and evaluation. Roy, Richards, and Pisan (2002) acknowledged that implementing experiences and problem based learning takes time and effort but that the reward outweighs the cost in the end. Roy et al. (2002) concluded that the benefits to students are that they will be encouraged to solve problems for themselves, and they are able to gain a deeper understanding of real problems as well as solutions. All the above mentioned learning theories can be achieved through the constructivist approach.

Constructivism is a term used to represent a collection of theories, including generative learning (Wittrock, 1990), discovery learning (Bruner, 1961), and situated learning (Brown, Collins, & Duguid, 1989). Constructivism is the "learning by doing" theory in which agricultural science programs can base many of their lessons on. This theory suggests that individuals actively construct knowledge by working to solve realistic problems, usually in collaboration with other learners (Duffy, Lowyck, & Jonasses, 1993).

In many subject areas, students do not get the opportunity to apply what they learn, which adds value to the lesson. In order for students to stay interested they need to see value in each lesson taught. "Traditional instruction often leads students to believe they are not interested in particular subject areas" (Brooks & Brooks, 1999, p. 16). By getting out of their chairs, students engage in the learning experience and gain a deeper understanding of the task at hand. According to Brooks and Brooks (1999), "deep understanding is the goal" (p. 16).

Talbert, Vaughn, and Croom (2007) defined evaluation as "a process to analyze educational effectiveness (student achievement) by using measurement tools" (p. 354). Kirkpatrick (1994) defined four levels of evaluation: (1) reaction, (2) learning, (3) behavior, and (4) results. Reaction ultimately measures the students'/participants' reaction to and perception of the training or curriculum. Learning is an actual measurement of a change in knowledge or skill level. Behavior assesses whether or not a change in behavior occurred as a result of the training or curriculum. Lastly, results assess the overall impact of the program whether it is a new curriculum unit or a training program. Evaluating at all levels of Kirkpatrick's (1994) Learning Evaluation Model allows for instructors to continually make changes to curriculum and evaluation instruments.

Agricultural communications has a place in secondary agricultural education programs. Constructive curriculum that engages students in learning is useful in students' ability to retain the information. Secondary students tend to have an aptitude to use communication technology, including utilizing digital cameras, video cameras, writing in journals, and documenting their lives through social media outlets (Calico et al., 2013b). Agricultural communications skills and competencies can be taught in the classroom and refined in order to give students marketable competencies for careers. By incorporating visual communications into agricultural science courses, students will be better prepared for future careers in the agricultural industry or at least be better consumers of agriculturally related news.

Because of the need for agricultural communications curriculum to be integrated into secondary school programs, the Visual Communications on the Road in Arkansas: Creative Photo and Video Projects to Promote Agriculture program was initiated during the summer of 2010. The goal of the program was to expose secondary students to agricultural communications through a two week curriculum module and a hands-on, experiential learning activity where high school students created short promotional videos about agriculture using a mobile classroom equipped with the needed resources. Additionally, the curriculum used in this research was designed to incorporate a combination of experiential learning, problem-based learning, and constructivism, in an effort to provide depth of learning and application of content.

Purpose of the Study

The purpose of this study was to assess student knowledge and skills gained through participating in visual communications curriculum (including photography, writing, and videography) and an experiential learning experience (mobile classroom). In addition, student perceptions of enjoyment, value, and practicality of the curriculum and the experiential learning activity were assessed as was their integration of learned skills into the creation of short promotional videos about agriculture. The following research questions guided the study:

1. Does completion of the visual communications curriculum result in increased student knowledge of photography, journalistic writing and videography?
2. Do students perceive the visual communications curriculum as enjoyable, valuable, and or practical?
3. Are students able to apply selected skills taught in the visual communications curriculum in student-created video projects?

Methodology

This study employed a mixed methods design, combining quantitative and qualitative methodologies to develop a more fully nuanced understanding of the effects of the visual communications curriculum (Creswell, 2014). Quantitative methods were used to assess cognitive gains and perceptions of the curriculum (Objectives 1 and 2). Qualitative methods, specifically content analysis, were used to assess the extent to which students were able to incorporate visual communications principles in an applied video project (Objective 3).

Thirteen high school agricultural education programs agreed to evaluate the Visual Communications on the Road in Arkansas: Creative Video Projects to Promote Agriculture curriculum, each in one intact class. Two schools did not implement the curriculum, resulting in a responding sample of 11 schools and classes ($N = 136$) with a total of 106 students (78% response rate) who completed all components of the curriculum and were included in data analysis. Participating schools included: school A in an urban, north central area; school B in a rural, north area; school C in a rural, west area; school D in an urban, east area; school E in an urban, north central area; school F in a rural, northwest area; school G in an urban, central area; school H in an urban, northwest area; school I in an urban, northwest area; school J in a rural, south area; and school K in a rural, east area.

Currently, Arkansas' agricultural curriculum does not include an agricultural communications course. Therefore, teachers incorporated the curriculum into existing classes such as introduction to agricultural sciences, leadership and communications, and aquaculture. Because participation in the curriculum treatment was voluntary it was not possible to secure a random sample of schools, teachers or students; therefore, no generalizations beyond the participating schools, teachers and students are warranted.

Description of Curriculum

The Visual Communications on the Road in Arkansas: Creative Photo and Video Projects to Promote Agriculture curriculum contained three units of instruction: Photography, Writing, and Videography. Each unit consisted of a lesson plan, instructional PowerPoints, student handouts and worksheets, and additional supporting materials. Each teacher was responsible for teaching the photography, writing, and videography units as outlined in the curriculum. Teachers accessed the visual communications curriculum from the Department of Agricultural Education, Communications, and Technology's website (http://aect.uark.edu).

During each unit students had an opportunity to learn the content and skills necessary to plan and produce a short video promoting some selected aspect of agriculture. Prior to the mobile classroom visit, students developed storyboards that were evaluated by faculty and staff at the University of Arkansas to ensure that all video stories would be appropriate and could be produced in the time allotted.

Once a class had completed all three curriculum units and produced an approved video storyboard, the teacher contacted project staff and scheduled the mobile classroom for a day-long visit. The mobile classroom, housed in a 16 foot enclosed cargo trailer, was equipped with, computers, digital cameras, and video cameras for student use. During each visit, project staff briefly reviewed key points from the visual communications curriculum and taught a brief lesson about career opportunities in agricultural communications. Students then spent the remainder of the day taking photographs, capturing video, and completing the story, using video which they had previously outlined through storyboards. Students were responsible for interviewing experts and narrating their stories. After capturing images and videos, students worked on laptops, with Adobe Photoshop and Premier Pro housed in the mobile classroom, to edit their raw photos and video, combine visual formats and add titles, music, and text. Project staff members were available to serve as content resources as students created their video projects.

Data Collection

Each student completed three waves of cognitive tests as part of this study; a pretest, three immediate unit posttests, and a delayed posttest. Approximately two weeks elapsed between the pretest and the last unit posttest; the delayed posttest was administered approximately two weeks after the final unit posttest. In addition to cognitive tests, students also completed instruments measuring their attitude toward each curriculum unit and the mobile classroom experience. Finally, a content analysis of student video projects was conducted.

The cognitive pretest contained 25 items measuring knowledge of all three curriculum units. The photography and videography sections each contained five short-answer (completion) items and five true-false items; the writing section contained five short-answer (completion) items related to journalistic writing style. According to Gronlund and Linn (1990), true-false items are effective in measuring the "ability to identify the correctness of statements of fact, definitions of terms, statements of principles" and similar learning outcomes (p. 150). Short-answer completion items are commonly used to measure recall of memorized information and have the advantage that students must supply the answer, reducing the probability of correct responses by guessing (Gronlund & Linn, 1990). All pretest items were based on the curriculum objectives and content validity was established by a panel of two agricultural communications and two agricultural education experts. KR-21 reliability coefficients of .61, .52 and .29 were obtained for the photography, writing, and videography sections, respectively. Since students were not familiar with videography prior to instruction, the low reliability for this unit was likely due to reliance on guessing as a test-taking strategy (Gronlund & Linn, 1990).

Three module posttests were administered; each immediately after completion of a specific unit (photography, writing, or videography). The unit posttests each contained the same items as the respective component of the pretest. The reliability of the posttests was .64 for photography, .65 for writing, and .66 for videography.

The delayed posttest was administered upon completion of the mobile classroom visit. It contained the same 25 items as the pretest plus questions on gender, grade level, number of agricultural courses and residence. The reliability estimates were .51 for the photography section, .44 for the writing section, and .67 for the videography section.

The reliability estimates for the pretest, unit posttests and the delayed posttest were typical of teacher-made classroom tests (Frisbie, 1988). While lower than desired, Gronlund and Linn (1990) indicate reliabilities in this range are acceptable when the purpose of the test is to make group, rather than individual, decisions. According to Borg and Gall (1983), when fairly large treatment effects are anticipated, a researcher "may select a measure of low reliability and still be reasonably sure that the test will discriminate adequately" (pp. 281-282).

In addition to the cognitive tests, five modified versions of the *Attitude toward any School Subject* instrument (Purdue Research Foundation, 1986) were administered to assess student perceptions of the extent to which they believed the three curriculum units, the overall visual communications curriculum, and the mobile classroom experience to be enjoyable, valuable, and practical. Each instrument was administered immediately upon completion of the relevant curriculum unit or mobile classroom experience. The instruments all contained the same 20 items, with the subject changed as appropriate, measured on a seven point scale (1 = strongly agree and 7 = strongly disagree). Coefficient alpha reliability estimates ranged from .78 to .85 for the enjoyment subscale, from .75 to .85 for the interest subscale, and from .78 to .88 for the practicality subscale.

Finally, in order to evaluate students' ability to apply competencies and objectives of the curriculum a qualitative measure was employed using a researcher-developed coding form to assess content in each student-created video. For the photography unit, videos were assessed by counting the number of photos used and determining the element(s) of composition (framing,

centering/symmetry, leading lines, rule of thirds, simplicity, and/or subject background relationship) applied, if photos were or should have been manipulated (edited using software), and if captions for photos were written correctly. For the writing unit, videos were assessed based on the viewer (coder's) ability to identify the "who," "what," "where," "when," "why," and "how" elements of the story being told. For the final unit, videography, videos were assessed based on video capturing techniques, included the use of a tripod and lighting, as well as the interviewing techniques, and overall quality of the video in relation to the story being told.

The content analysis was completed by two agricultural communications graduate students in the Department of Agricultural Education, Communications, and Technology at the University of Arkansas. Before coding, the researchers compared their individual analyses of two videos (coded independently) and measured their inter-coder reliability in the form of percent agreement. Discrepancies were resolved by reviewing the video and agreeing on content before moving on. This process was repeated until the researchers consistently averaged above 70% of interpretations in agreement. A high percentage of agreement (70% or higher) among researchers during data collection proves the reliability of the coding process (McMillan & Schumacher, 2010). Once agreement among the researchers reached an acceptable percentage, each video was coded independently. Again, agreement was assessed. Researchers maintained an average of 78% agreement when coding student created videos. The use of multiple researchers during the data collection and analysis process enhanced the design validity of the study (McMillan & Schumacher, 2010). A panel of faculty researchers consisting of two agricultural communications professors and one agricultural educator oversaw the process to ensure study validity (McMillan & Schumacher, 2010).

Data Analysis

All data were analyzed using SAS (Version 9.3). Data for objective one were analyzed using descriptive statistics and one-way analysis of variance (ANOVA) with repeated measures (O'Rourke, Hatcher, & Stepanski, 2005). Data for objectives two and three were analyzed using descriptive statistics. For objectives one and two, intact classes (N = 11) were the unit of analysis; for objective three, content analysis was conducted on individual student-produced videos (N = 49).

Results and Findings

Of the 106 students completing all parts of the curriculum, 35.3% (n = 37) were female and 64.7% (n = 69) were male. Students' grade level in school ranged from 7th through 12th. Students in the 7th and 8th grade represented 6.52% (n = 7) of the participants in the program, 13.04% (n = 14) were freshmen, 22.46% (n = 24) were sophomores, 23.20% (n = 25) were juniors, and 34.78% (n = 36) were seniors.

For the photography unit, students averaged about 48.5% on the pretest (M = 4.85, SD = 1.34), 60.5% on the posttest (M = 6.65, SD = 2.07), and 74.5% on the delayed posttest (M = 7.45, SD = 1.12). Mean test scores for each participating school can be found in Table 1. Test scores from the photography unit were analyzed using a repeated measures analysis of variance. This analysis revealed a significant effect of curriculum on student test scores, $F(2, 20) = 11.82$; p = .0004. Contrasts indicated that the pretest scores were significantly lower than the posttest scores $F(1, 10) = 8.86$; p = .0139, $\eta 2$ = .47 (large effect); same with pretest to delayed posttest $F(1, 10)$ = 61.99; $p < .0001$, $\eta 2$ = .86 (large effect), power = .18; and posttest to delayed posttest $F(1, 10)$ = 1.51; p =.25, $\eta 2$ = .13 (medium effect). Descriptions of effect sizes are based on Cohen (1988).

Table 1

*Mean Test Scores for the Photography Curriculum Unit by School (*N = *11) and Overall*

		Pretest		Posttest		Delayed Posttest	
School	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	11	4.82	1.90	5.82	2.41	7.55	2.43
B	12	5.75	0.83	8.33	1.25	9.50	1.12
C	10	3.75	2.73	2.63	3.71	7.00	2.26
D	9	5.80	1.94	6.90	1.97	7.60	1.56
E	4	2.75	1.92	9.50	2.06	5.75	2.86
F	7	7.14	2.03	9.57	1.05	7.71	2.76
G	14	5.79	1.70	7.79	0.94	7.93	1.39
H	14	4.29	1.83	4.27	2.63	7.00	1.65
I	10	4.50	2.20	7.00	1.84	9.00	1.00
J	8	6.00	1.66	6.63	1.22	7.38	0.99
K	7	2.71	1.03	4.71	1.03	5.57	2.66
Overall	106	4.85	1.34	6.65	2.07	7.45	1.12

Note. Maximum possible score was 10 for each test.

The students averaged 12.8% on the writing pretest ($M = .64$, $SD = .52$), 43% on the writing posttest ($M = 2.15$, $SD = 1.05$), and 36.6% on the writing delayed posttest ($M = 1.83$, $SD = .61$). Mean test scores for each participating school can be found in Table 2. Analysis revealed a significant effect of curriculum on student test scores, $F(2, 20) = 14.52$; $p = .0001$. Contrasts showed that pretest scores were significantly lower than the posttest scores $F(1, 10) = 25.37$; $p = .0005$, and the delayed posttest scores $F(1, 10) = 27.70$; $p < .0004$. For the pretest to posttest $\eta^2 = .72$ (large), power = .22, and the pretest to delayed posttest $\eta^2 = .73$ (large), power = .22 (Cohen, 1988). Contrast showed that posttest scores were not significantly different compared to the delayed posttest scores $F(1, 10) = 0.87$; $p = .37$.

Table 2

*Participant Test Scores for the Writing Curriculum Unit by School (*N = *11) and Overall*

		Pretest		Posttest		Delayed Posttest	
School	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	11	0.45	0.78	0.91	1.16	2.45	1.97
B	12	0.83	0.55	2.17	1.07	2.17	0.99
C	10	0.50	1.00	2.38	2.12	2.22	1.69
D	9	0.80	0.75	2.00	0.77	2.40	1.43
E	4	0.00	0.00	4.00	0.00	2.00	1.22
F	7	2.00	1.51	4.29	0.45	1.71	1.28
G	14	0.57	0.62	1.64	1.04	1.36	0.72
H	14	0.29	0.45	0.92	0.92	1.21	1.21
I	10	0.70	0.90	2.30	1.10	2.63	1.22
J	8	0.88	0.60	1.50	0.87	1.38	0.86
K	7	0.00	0.00	1.57	1.05	0.57	0.73
Overall	106	0.64	0.52	2.15	1.05	1.83	0.61

Note. Maximum possible score was 5 for each test.

For the videography unit, the students averaged about 39.3% on the pretest (M = 3.93, SD = .86), 51.2% on the posttest (M = 5.12, SD = 1.06), and 53.1% on the delayed posttest (M = 5.31, SD = 1.35). Mean test scores for each participating school can be found in Table 3. Test scores from the videography unit of all three tests were analyzed using a repeated measures analysis of variance. This analysis revealed a significant effect of curriculum on test scores, $F(2, 20) = 8.39$; $p = .002$. Contrasts showed that the pretest scores were significantly lower than the posttest scores $F(1, 10) = 17.16$; $p = .002$, and the delayed posttest scores $F(1, 10) = 8.60$; $p = .0150$. For the pretest to posttest $\eta^2 = .63$ (large), power = .24 and the pretest to delayed posttest $\eta^2 = .46$ (large) power = .57 (Cohen, 1988). Contrast of the posttest to delayed posttest revealed no significant difference, $F(1, 10) = .36$; $p = .56$.

Table 3

*Participant Test Scores for the Videography Curriculum Unit by School (*N *= 11) and Overall*

		Pretest		Posttest		Delayed Posttest	
School	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	11	4.45	1.83	4.91	2.11	6.18	3.30
B	12	4.17	1.14	5.27	1.60	4.83	1.77
C	10	2.88	2.57	5.00	3.24	6.56	1.34
D	9	4.30	1.42	4.40	1.36	3.60	1.62
E	4	3.00	1.22	4.75	1.30	5.75	3.11
F	7	5.57	2.13	5.86	0.99	4.57	2.77
G	14	4.50	1.05	5.54	1.87	5.57	1.59
H	14	3.07	0.88	2.80	1.99	3.64	1.59
I	10	3.70	2.15	6.00	2.57	7.25	1.39
J	8	4.75	1.20	7.25	2.68	6.88	2.20
K	7	2.86	1.46	4.57	1.92	3.57	2.38
Overall	106	3.93	0.86	5.12	1.06	5.31	1.35

Note. Maximum possible score was 10 for each test.

For the photography curriculum unit, students agreed (slightly to moderately) that the curriculum was enjoyable (M = 5.15, SD = 5.38), practical (M = 5.38, SD = 1.12), and interesting (M = 5.27, SD = 1.12). Table 4 provides students' perceptions of the photography unit for each school.

Students either slightly disagreed or were neutral in their perceptions of the writing unit. Students slightly disagreed that they enjoyed (M = 3.85, SD = 1.26) the writing curriculum and were neutral about its practicality (M = 4.43, SD = 1.45) and their interest in it (M = 4.25, SD = 1.30). Table 5 presents students' perceptions for the writing unit for each school. Student perceptions of writing were the lowest of the three curriculum areas.

Overall, participating students agreed that the videography curriculum was interesting (M = 5.21, SD = 1.14), enjoyable (M = 5.02, SD = 1.16), and practical (M = 5.12, SD = 1.09). Table 6 illustrates students' perceptions of the videography unit for each school.

Table 4

*Participant Perceptions of the Photography Curriculum Unit by School (*N = *11) and Overall*

		Enjoyment		Practicality		Interest	
School	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	11	4.72	1.25	4.66	1.46	4.50	1.23
B	12	5.53	0.75	5.94	0.88	5.89	0.87
C	10	5.20	.89	5.50	.93	5.53	.85
D	9	6.22	0.54	6.48	.33	6.52	.36
E	4	4.58	2.03	4.17	2.06	4.64	2.04
F	7	5.36	.93	5.71	.59	5.37	.85
G	14	4.83	1.07	5.13	.84	5.09	.96
H	14	5.44	.99	5.50	1.20	5.37	1.35
I	10	4.67	1.37	5.01	1.15	5.03	1.30
J	8	6.13	.73	6.21	.44	6.09	.57
K	7	4.60	1.06	4.72	.97	4.24	1.23
Overall	106	5.15	1.13	5.38	1.12	5.27	1.12

Note. Based on a 1 to 7 Likert-type scale (1 = strongly disagree to 7 = strongly agree).

Table 5

*Participant Perceptions of the Writing Curriculum Unit by School (*N = *11) and Overall*

		Enjoyment		Practicality		Interest	
School	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	11	4.39	1.15	4.06	1.67	4.32	1.63
B	12	4.00	1.16	4.61	1.22	4.46	1.14
C	10	3.90	1.01	4.47	1.32	4.11	1.29
D	9	3.56	1.52	3.13	2.20	2.91	2.09
E	4	2.54	1.64	3.67	.90	4.00	1.40
F	7	4.00	1.22	4.74	1.94	4.57	1.57
G	14	3.12	1.20	4.11	1.47	3.90	1.00
H	14	4.08	1.15	4.38	1.13	4.30	1.29
I	10	4.04	.92	5.24	.79	4.60	.86
J	8	4.70	.75	5.46	0.96	4.98	1.01
K	7	3.72	2.07	4.18	1.59	4.17	1.39
Overall	106	3.85	1.26	4.43	1.45	4.25	1.30

Note. Based on a 1 to 7 Likert-type scale (1 = strongly disagree to 7 = strongly agree).

Table 6

*Participant Perceptions of the Videography Curriculum Unit by School (*N = *11) and Overall*

		Enjoyment		Practicality		Interest	
School	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	11	5.41	1.02	4.11	.79	4.43	1.23
B	12	4.62	.56	5.49	1.15	5.46	1.19
C	10	3.86	1.51	4.81	.65	4.80	.80
D	9	6.21	.92	5.36	.94	4.78	1.38
E	4	5.86	.75	5.36	1.11	5.61	1.15
F	7	5.00	1.26	5.73	.79	6.02	.61
G	14	4.92	1.20	5.02	1.09	5.28	1.11
H	14	4.39	1.10	5.15	1.60	5.10	1.54
I	10	5.81	.76	5.26	.92	5.46	.89
J	8	4.67	.71	5.84	.47	5.79	.59
K	7	5.02	1.16	4.17	1.24	4.55	1.37
Overall	106	4.24	1.28	5.12	1.09	5.21	1.14

Note. Based on a 1 to 7 Likert-type scale (1 = strongly disagree to 7 = strongly agree).

For the visual communications curriculum (combined photography, writing, and videography), students agreed that each unit of instruction was enjoyable (*M* = 5.53, *SD* = 0.91), practical (*M* = 5.56, *SD* = .98), and of interest (*M* = 5.61, *SD* = 0.92). Table 7 notes students' perceptions of the overall visual communications curriculum for each school.

Table 7

*Participant Perceptions of the Visual Communications Curriculum by School (*N = *11) and Overall*

		Enjoyment		Practicality		Interest	
School	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	11	4.90	.67	4.58	1.01	4.95	1.00
B	12	5.88	.42	6.12	.41	6.17	.44
C	10	5.42	.73	5.50	.69	5.76	.55
D	9	5.76	.85	5.46	1.31	5.41	1.31
E	4	4.88	1.61	4.79	1.75	5.04	1.10
F	7	6.21	0.72	6.45	.71	6.37	.26
G	14	5.11	1.13	5.21	.88	5.07	.98
H	14	5.49	.90	5.73	.94	5.75	.93
I	10	5.31	.84	5.41	.57	5.46	.59
J	8	6.10	.60	5.79	.50	5.96	.68
K	7	6.00	.91	6.14	.52	5.86	.83
Overall	106	5.53	.91	5.56	.98	5.61	.92

Note. Questions based on a 1 to 7 Likert-type scale (1 = strongly disagree to 7 = strongly agree).

During the mobile classroom experience students worked in teams to create a short (3 minute), promotional video about agriculture. Overall, students agreed that the visual

communications mobile classroom (experiential learning activity) was enjoyable (M = 5.85, SD = 0.85), practical (M = 5.91, SD = .98), and of interest (M = 5.77, SD = 1.01). Table 8 displays students' perceptions of the mobile classroom activity for each school.

Table 8

*Participant Perceptions of the Mobile Classroom Experience by School (*N *= 11) and Overall*

		Enjoyment		Practicality		Interest	
School	*n*	*M*	*SD*	*M*	*SD*	*M*	*SD*
A	11	5.15	.74	5.19	1.35	5.54	1.32
B	12	6.04	.54	6.02	.43	6.24	.45
C	10	5.53	.73	5.89	.69	5.99	.78
D	9	5.80	1.11	5.95	1.43	5.65	1.43
E	4	5.58	1.49	5.61	1.25	5.68	.88
F	7	6.17	.54	6.37	.79	6.63	.31
G	14	5.67	.84	5.41	.85	5.54	.97
H	14	5.81	1.07	5.62	1.33	6.01	1.02
I	10	6.15	.51	5.96	.64	5.75	.69
J	8	6.35	.59	6.14	.54	6.52	.49
K	7	5.86	1.21	5.32	1.32	5.31	1.55
Overall	106	5.85	.85	5.77	1.01	5.91	.98

Note. Questions based on a 1 to 7 Likert-type scale (1 = strongly disagree to 7 = strongly agree).

A content analysis was completed for each video (N videos = 49) produced by a student group during the project. Videos were assessed for skills and competencies used from each area (photography, writing, and videography) covered in the curriculum. For photography, analysis of videos showed students used the "centering/symmetry" composition element most often with a range of zero to 24 uses per video (M = 3.47, SD = 4.41). Use of "leading lines" was second (M = 3.33, SD = 2.33), "rule of thirds" third (M = 2.77, SD = 2.14), "simplicity" fourth (M = 2.73, SD = 2.32), and "subject/background relationship was the fifth (M = 1.86, SD = 1.86) most used photo composition. "Framing" was the least used photography composition with a range of zero to five uses per video (M = 1.60, SD = 1.24).

Photo/image manipulation correctness was also analyzed in the student-created videos. Of the 599 photos identified, 50.11% were manipulated correctly or did not need additional manipulation. Videos were also analyzed for photo caption correctness. Only 12 videos utilized photo captions in their video. Of the captions that were written (20 total), 19 were written correctly. Student created videos were analyzed based on writing techniques used that were taught in the curriculum unit. Video projects were assessed to determine if the audience was able to identify the "who," "what," "where," "when," "why," and "how" of the story being told. One hundred percent of the videos produced properly told a story through video that addressed the above outlined key components taught. Program facilitators noted that 100% of the students utilized a storyboard as well as a modified script for producing their videos.

Videography was assessed in the student-created videos through an assessment of proper camera techniques, recorded interviews, and video footage used directly related to the story thread. Forty of the 49 (81.63%) videos properly utilized a tripod to stabilize their video footage, while 9 out of 49 (18.36%) videos did not utilize a tripod to capture their footage. Forty seven of the 49 (95.91%) videos displayed consistent lighting throughout the video, while 2 of the 49 (4.08%) did not. Fifteen of the 49 videos created utilized an expert in the field via an interview for the produced

video. Of those 15 interviews, 100% were conducted correctly and were used to enhance the video and storyline. The final unit of analysis for the video content was the overall video footage and how it related to the story being told. Of the 49 videos produced, 48 had video/image footage directly related to the story being told through film.

Conclusions and Recommendations

For more than a century, agricultural communications has existed at the postsecondary level (Boone et al., 2000), and it has evolved into a highly competitive industry (Burnett & Tucker, 2001). However, agricultural communications curriculum in secondary programs is largely nonexistent, despite Akers et al.'s (2001) plea more than a decade ago and the National FFA Organization hosting the agricultural communications CDE since 1999. It has been difficult for secondary agriculture teachers to integrate agricultural communications curriculum into their courses, because they largely lack skills and competencies in these areas (Calico et al., 2013b; Calico et al., 2014). Therefore, the Visual Communications on the Road in Arkansas: Creative Photo and Video Projects to Promote Agriculture program was created to meet the needs of agricultural communications curriculum integration into secondary agriculture programs.

This program allowed secondary students to take an active role in the learning process after completing agricultural communications curriculum taught by their agricultural instructor. By following Kirkpatrick's (1994) Learning Evaluation Model, this study assessed student perceptions (level 1: attitudes) and student knowledge levels (level 2: learning) throughout the program. Attitudes were assessed using an instrument with 20 Likert-type scale statements. Overall, students generally agreed that they "enjoyed," were "interested" in, and saw "practicality" in studying the units of visual communications curriculum. Therefore, collaboration (which is a method used through the curriculum's design) may have led students to have more positive perceptions; resulting in further understanding which agrees with Edgar (2012) and constructivist approaches to learning (Duffy et al., 1993). It can be postulated that positive perceptions may have resulted in the basis for curriculum development where students could actively apply new concepts and ideas (USC-CET, 2006). Furthermore, it was found that students perceived the experiential learning activity (mobile classroom) to be positive regarding their enjoyment, interest, and its practicality. Combined with the curriculum presented, this experiential activity may have elevated student perceptions (Kolb, 1984).

A significant difference was seen in each unit from pretest to posttest and pretest to delayed posttest. This indicated that students were learning information taught throughout the curriculum and retaining it over time, albeit a short period of time. Although there was not a significant increase in scores from posttest to delayed posttest, raw mean scores did decrease. In this case, we believed that the experiential learning activity served as an educational enforcement. Due to the learning that occurred from pretest to posttest higher levels of Bloom's (1956) Taxonomy (synthesis and application) were reached during the experiential learning activity. On the delayed posttest, the synthesis and application of previously learned information may have allowed students to perform at or above (although not significantly) the level they had performed on the posttest supporting research conducted by Baker et al. (2012).

The Visual Communications on the Road in Arkansas: Creative Photo and Video Projects to Promote Agriculture program allowed students to make reflective observations and apply abstract conceptualizations (Kolb, 1984) taught via curriculum and applied during the mobile classroom experience. Students then applied concrete experiences along with active experimentation (Kolb, 1984) during the video production process, which positively impacted student perceptions. Each lesson plan was designed to allow students to collaborate and reflect on new information. This allowed for students to develop a stronger understanding of each concept by the time they applied it when creating their videos. While creating their videos, students were able to see how all the pieces of the curriculum fit together and were used to create a finished

product (short agricultural promotional video posted to YouTube). This study showed that students do prefer to engage in this type of learning and are successful when doing so. Therefore, this research supports previous research noting that experiential learning activities can positively impact students at the secondary level through creating meaning (Brooks & Brooks, 1999).

Additional research should seek to improve the curriculum and ensure that teachers are satisfied with the materials as outlined in this program. Also, the researchers believe the curriculum should be expanded into a full semester course. Additional areas of content focus could include graphic design, web design, social media, and more detailed information on the photography, writing, and videography. Expanding the visual communications curriculum and implementing more agricultural communications units into secondary agricultural education programs will help meet the rising demand for agricultural communications professionals.

Students who participated in the Visual Communications on the Road in Arkansas: Creative Photo and Video Projects to Promote Agriculture program should be surveyed to determine if the knowledge and skills gained throughout the program influenced them to create videos on their own or look further into careers related to agricultural communications. The assessment of student perceptions showed that students enjoyed the curriculum and noted that it was practical. Therefore, further research on the impact of this type of curriculum in agricultural education should be assessed. Evaluating these areas will further strengthen the research because it completes all four levels in Kirkpatrick's (1994) Education Evaluation Model.

Although this program was focused in Arkansas, these concepts and the developed curriculum can be implemented in other state agricultural science programs. Curriculum requirements vary from state to state, but can be found on most state department of education websites. Utilizing this information, each curriculum area could be adapted to meet the needs of agricultural teachers and students in each state. Another option would be for university faculty, state agricultural education staff, and the National FFA Organization to work together to develop a semester long course specific to agricultural communications. Once the course was developed individual states could modify it to meet specific state education requirements.

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