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Examining Camper Learning Outcomes and Knowledge Retention at Oklahoma FFA Leadership Camp

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Abstract

The National FFA Organization is committed to providing non-formal learning activities focusing on leadership education. Summer camps are a major component of FFA activities and concentrate on personal growth, leadership development, and recreational activities for youth. This repeated measures study determined the level of cognitive gain and the amount of information retained by campers who participated in the 2011 Oklahoma FFA Alumni Leadership Camp and was informed by Vygotsky's sociocultural theory, a lens for viewing camper learning in the context of social interactions. In addition, the study described the relationship between learning outcomes and selected characteristics (sex, race, age, grade level, socioeconomic status, years of camp attendance, chapter FFA officer status, and grade point average) of participants. On average, campers doubled their score from the pretest to the posttest but the amount of information retained after six-months was negligible. Three personal characteristics were related to camper performance: GPA, socioeconomic status, and chapter officer status.

Keywords: FFA camp, non-formal learning, learning outcomes, repeated measures

The National FFA Organization (FFA) is committed to providing non-formal learning activities that focus on leadership education (Hoover, Scholl, Dunigan, & Mamontova, 2007) with a mission to make "a positive difference in the lives of students by developing their potential for premier leadership, personal growth, and career success through agricultural education" (National FFA Organization, 2008, p. 5). Summer camps are a major component of FFA activities and focus on personal development, leadership skill building, and recreational activities for youth (Connors, Falk, & Epps, 2010). One such camp has been hosted by the Oklahoma FFA Alumni Association for more than 30 years and serves 1,500 FFA members annually (McCrea, 2011). Campers must have completed at least one year of agricultural education coursework at the eighth grade level or higher, be pre-enrolled in an agricultural education course for the following semester, and paid the camp fee.

Oklahoma FFA Alumni Leadership Camp planners consulted with an outside personal/leadership development specialist to evaluate the camp structure and curriculum in 2005. That evaluation yielded the recommendation that camp learning outcomes could be improved if measurable learning objectives were developed and used to write non-formal curriculum to be

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taught to participants during the camp. In response to the recommendation, camp planners designated small group breakout sessions as the appropriate time to deliver leadership curriculum to campers similar to what is taught in formal classroom settings (K. Boggs, personal communication, May 16, 2011).

While several researchers have reported on the purposes and activities of FFA camps (Comings, 1977; Connors, Falk, & Epps, 2010; Javornik, 1962; Keels, 2002; McCrea, 2011), there is a dearth of literature examining the educational significance and learning outcomes of non-formal camp programs. Non-formal learning activities provided through FFA camps, conferences, and conventions require significant financial and human resources to plan and execute. In their study of small group leaders who participated in the Oklahoma FFA leadership camp environment, Brown and Terry (2013) recommended additional research to more fully understand "factors that contribute to cognitive gain in an FFA camp setting" (p. 54). Therefore, the research reported here determined the level of cognitive gain and the amount of information retained by campers who participated in the 2011 Oklahoma FFA Alumni Leadership Camp.

Review of Literature

Non-Formal Learning and the FFA

Educational learning environments are categorized as formal, informal or non-formal, and are designed to empower learners with knowledge and skills for personal development (Kasworm, Rose, & Ross-Gordon, 2010). While the boundaries of each environment are not clearly defined, Malcolm, Hodkinson, and Colley (2003) support the position that authentic learning occurs in all three environments and that none is inherently superior to the other in terms of learning outcomes.

Non-formal learning environments exhibit a loosely organized structure offered outside of institutional constraints (Kasworm et al., 2010). Brennan (2006) identified three sub-types of non-formal education positioned as a complement, alternative, and/or supplement to formal education. Malcolm et al. (2003) suggest that the terms informal and non-formal could be used interchangeably to signify characteristics contrary to the formal environment.

Non-formal learning activities that inform the FFA infrastructure focus largely on leadership education (Hoover et al., 2007). As outlined in the FFA mission statement, "students have the opportunity to develop their own leadership potential, grow personally, and prepare for career success through their involvement in FFA" (National FFA Organization, 2008, p. 5). FFA developed a variety of leadership conferences and experiences such as Washington Leadership Conference (WLC), National FFA Convention, the 212 Degrees Conference, and summer camps to support their mission. The goal of these programs is to teach students principles of leadership and personal development beyond what is taught in the formal classroom environment (National FFA Organization, n.d.).

FFA summer camps focus especially on personal and leadership development. Conners et al. (2010), reported "leadership development (at camps) played an important role in preparing FFA officers and members for future FFA chapter activities" (p. 39). Smith, Garton, and Kitchel (2010) identified three themes inherent in youth organizations, including the FFA: (a) equipping youth to contribute to society, (b) supporting the family, and (c) assisting in personal growth and development.

The Impact of Personal Characteristics on Learning Outcomes

Not only do people experience different learning outcomes given a specific learning environment (formal, non-formal, informal) (Kasworm et al., 2010), they are also influenced by personal characteristics. Personal characteristics and involvement in agricultural education were found to have significant impacts on learning outcomes (Caldas & Bankston, 1997; Moore & Braun, 2005; Nye, Konstantopoulos, & Hedges, 2004; Thoron & Myers, 2011).

When examined through the lens of their post-school lives, attitudes students acquire in school are more important than cognitive achievements (Popham, 2009). A student's tendency to attribute success to internal or external factors is correlated to self-efficacy and performance (Bandura, 1982; Cochran, McCallum, & Bell, 2010; Haugen & Lund, 1998). A positive correlation between attitude and academic success has been established in several studies (Cochran et al., 2010; Horwitz, Horwitz, & Cope, 1986; Onwuegbuzie, Bailey, & Daley, 2000).

Socioeconomic status (SES) is also positively correlated with academic achievement (Caldas & Bankston, 1997; Nye et al., 2004; Thoron & Myers, 2011). Caldas and Bankston (1997), however, found that "going to school with classmates from relatively high family social status backgrounds does make a strong and significant contribution to academic achievement, independent of one's family SES or race" (p. 275). Teacher selection, teacher effectiveness, and interventions to increase teacher effectiveness through replacement or in-service training have a higher impact on students' academic achievement in low-SES schools compared to high-SES schools (Nye et al., 2004). However, Brown (1991) reported "there are few, if any, differences among social classes in students' ability to process school resources to make gains in achievement" (p. 355).

High school grade point average and ACT scores predicted first-year college performance for 1997 incoming freshmen (Garton, Ball, & Dyer, 2002). In addition, high school core GPA alone was the best predictor of academic achievement in college (Garton et al., 2002).

Although research has been conducted investigating the relationship between the level of student involvement in school-based agricultural education and student academic success in college, there is a lack of literature associating agricultural education involvement and high school academic achievement. Smith et al. (2010) examined the relationship between students who were actively involved in school-based agricultural education and their academic performance as college freshmen. The study compared 1998 and 2003 Missouri State FFA Degree recipients to 1998 and 2003 college freshmen who were never enrolled in high school agricultural education. The results were inconclusive. The findings from both 1998 and 2003 incoming freshmen conflict with results reported by Moore and Braun (2005), which asserted that students with school-based agricultural education experience earned a significantly lower GPA than those with no agricultural education experience. Garton, Kitchel, and Ball (2005) found FFA membership alone yielded a positive influence on academic achievement and college degree completion. Overall, the literature reports mixed findings in regard to academic performance and enrollment in school-based agricultural education and membership in the National FFA Organization.

Theoretical Framework

The research reported here was informed by Vygotsky's (1962) sociocultural theory, a lens for viewing camper learning in the context of social interactions. Sociocultural theory is predicated on constructivism, which contends that individuals build new knowledge from previous experiences and new information (Bruning, Schraw, Norby, & Ronning, 2004). Sociocultural theory also emphasizes the role of social interactions to facilitate learning and personal growth (Tudge & Scrimsher, 2003). Social interactions are mediated through cultural objects such as technology, language, and social institutions (Shunk, 2012). Cognitive growth

occurs when individuals use cultural tools within social interactions to create meaning (Bruning et al., 2004). Vygotsky's (1962) theory focused on the interaction between people and their environment, contending that all advanced cognitive functions begin in a social context.

Another key component of Vygotsky's theory is the Zone of Proximal Development (ZPD), defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). A person's ZPD is determined by the amount of information an individual can learn when provided instruction in an appropriate educational environment (Puntambeker & Hübscher, 2005). The ZPD is an indicator a student's level of intellectual development in a given learning domain and demonstrates how student development and cognitive gain are associated (Bredo, 1997). Vygotsky also believed that formal education was important because it afforded students the opportunity to become aware of themselves, their contribution in the world, and their language (Shunk, 2012).

Purpose and Objectives

The purpose of this study was to examine learning outcomes and knowledge retention of Oklahoma FFA Alumni Leadership Camp participants in a non-formal learning environment and determine how personal and academic characteristics affected the amount of information learned and retained. Five objectives guided the study:

1. Describe selected characteristics (sex, race, age, grade level, socioeconomic status, years of camp attendance, chapter FFA officer status, and grade point average) of participants.
2. Determine the participants' knowledge gain associated with curriculum taught during small group sessions of the camp.
3. Determine the participants' knowledge retained associated with curriculum taught during small group sessions of the camp after a 6-month period.
4. Describe the relationship between posttest scores and selected characteristics of participants.
5. Measure the relationship between delayed posttest scores and selected characteristics of participants.

Methodology

The objectives of this study were met by utilizing a repeated measures design. According to Field (2009), study participants are required to complete all levels of the study. This criterion was met as participants' cognitive gain and retention were measured using a pretest, posttest, and delayed posttest to determine their level of cognitive gain and retention of material taught during small group breakout sessions. Small groups convened seven times during the four-day camp, which resulted in 12 hours of instruction. Each small group was led by a post high school, former FFA member known as a Small Group Leader (SGL). The university Institutional Review Board approved the study.

Population and Sampling

The population consisted of all FFA members who attended the Oklahoma FFA Alumni Leadership Camp during the summer of 2011 (N = 1,543). Because the target population exceeded 1,500, a random sample was drawn. Assigning individual campers a unique number during camp registration and matching them with a randomly generated number accomplished randomization. G*Power version 3.1, a computer statistical power analysis software tool, was

used to determine that a sample size of 60 was needed to reach maximum statistical power with an expected effect size of ($\eta_p^2 = .25$) (Faul, Erdfelder, Lang, & Buchner, 2007).

To ensure that the final sample size was large enough to generalize study results, we randomly sampled 435 campers (Krejcie & Morgan, 1970). Forty of the 435 selected campers did not obtain parental consent and were removed from the sample. After accounting for missing and unusable data, 344 campers participated in the study by completing the pretest and posttest while at camp, resulting in an 87% response rate. An 87% response rate was large enough that no procedures to control for non-response error were necessitated (Lindner, Murphy, & Briers, 2001).

Data Collection

Two original instruments were developed to collect the data, the Camp Communications Content Examination (CCCE) and a questionnaire to collect personal characteristics of the campers. In cooperation with state FFA staff and camp planners, we created the Camp Communications Content Examination (CCCE), a criterion-referenced exam designed to assess camper's cognitive gain of concepts associated with the curriculum taught during camp small group breakout sessions. The CCCE was composed of 17 multiple-choice items focused on personal communication, team communication, and family communication.

A panel of experts comprised of two leadership curriculum specialists, three agricultural education teacher educators from Oklahoma State University, and three students from high schools in Oklahoma reviewed the CCCE for face and content validity (Creswell, 2008). After two rounds of reviews and feedback from the panel, minor changes were made to the instrument. As a result, the CCCE was deemed a valid instrument.

The CCCE was screened for reliability by including homogeneous items, discriminating items, enough items, high quality copying and format, clear directions for the students, a controlled setting, motivating introduction, and clear directions for the scorer (Wiersma & Jurs, 1990). In addition, the Kuder-Richardson (*KR20*) formula (Cronbach, 1970) was utilized to test the CCCE for reliability after administration, producing a reliability coefficient of .52 (*KR20*), which is acceptable for criterion-referenced exams (Kane, 1986). Based on this finding, the CCCE was determined to be a valid and reliable instrument.

Personal characteristics were obtained using a nine-item questionnaire that included six multiple-choice questions, two fill-in-the-blank questions, and one open-ended question. The same panel of experts that reviewed the CCCE also reviewed the personal characteristics questionnaire for face and content validity.

During the camp registration period, participants were asked to complete the CCCE and the personal characteristics questionnaire. Before leaving camp, campers again completed the CCCE as a posttest. Six months later (January 2012) participants were asked to complete the CCCE again as a delayed posttest. The decision to administer the CCCE six months after the camp experience was supported by Berti and Andriolo (2001). As is prevalent in literature, the results of the delayed posttest were used as a measure of cognitive retention (Fleming & Alexander, 2001; Hall & Edmondson, 1992; Ramraje & Sable, 2011).

Dillman's Tailored Design (2000) was used to achieve a high response rate for the delayed posttest. Two hundred and forty-three campers completed and returned the instrument, resulting in a 70.63% response rate. The best method to control for nonresponse error is to compare those who responded to those who did not (Lindner et al., 2001). We contacted, by telephone, campers who did not respond and requested that they complete and return their delayed posttest. Twenty completed instruments were received, the minimum standard for the number of respondents needed to represent non-respondents (Lindner et al., 2001). A *t*-test analysis showed no significant differences between the respondents and non-respondents [t (261)

= -.56, p = .58], thus respondents were representative of the population and the results can be generalized to the population.

Data Analysis

All data were analyzed using Statistical Package for Social Sciences (SPSS) version 20 for Macintosh computers. The repeated measures analysis was used to meet objectives two and three and was the primary analysis procedure for this study. Objectives four and five were achieved using three analysis procedures. First, a one-way ANOVA was employed to test if relationships existed between camper test scores and nominal variables with more than two categories (Kirk, 1995). Second, Student's *t*-test scores were used to test if relationships exist between camper test scores and nominal variables with two categories (Kirk, 1995). Third, Pearson's correlation coefficient *r* was used to test if relationships exist between camper test scores and continuous variables (Field, 2009). Appropriate statistical tests were used to determine that all assumptions were met during secondary data analysis procedures.

Findings

Findings Associated with Objective One

The first objective was to describe selected characteristics (sex, race, age, grade level, socioeconomic status, years of camp attendance, chapter FFA officer status, and grade point average) of participants. Table 1 presents campers' personal characteristics (sex, race, age, and socioeconomic status). Socioeconomic status was determined by campers' response to a question about whether they receive free or reduced lunch at school. This method of determining socioeconomic status is prevalent in academic literature (Caldas & Bankston, 1997; Molnar et al., 1999; Nye et al., 2004). Campers' academic characteristics (grade level, years of camp attendance, chapter FFA officer status, and grade point average) are presented in Table 2.

Table 1

Frequency of Campers' Personal Characteristics (*n* = 344)

Personal Characteristic	*f*	%
Sex		
Female	198	57.56
Male	146	42.44
Race		
White	287	83.10
Native American or Alaskan Native	42	12.20
Asian or Pacific Islander	6	1.70
Hispanic	6	1.70
African American	1	0.30
Other	2	0.60
Age		
16 years of age	110	32.00
15 years of age	89	25.90
17 years of age	78	22.70
14 years of age	36	10.50
18 years of age	15	4.40
13 years of age	5	1.50
19 years of age	1	0.30
No age specified	10	2.90
Socioeconomic Status		
Does not receive free or reduced school lunches	284	83.00
Receives free or reduced school lunches	60	17.00

Table 2

Frequency of Campers' Academic Characteristics (*n* = 344)

Academic Characteristic	*f*	%
Grade Level		
11th grade	111	32.40
10th grade	98	28.60
12th grade	90	26.20
9th grade	42	12.00
8th grade	3	0.90
Years of Camp Attendance		
1st year of attendance	159	46.22
2nd year of attendance	107	31.10
3rd year of attendance	52	15.12
4th year of attendance	23	6.69
5th year of attendance	3	0.87
FFA Chapter Officer Status		
Holds FFA chapter office	211	61.34
Does not hold FFA chapter office	129	37.50
FFA chapter officer status not specified	4	1.16
Camper Grade Point Average (GPA)[a]		
GPA range (2.00 – 2.99)	15	4.36
GPA range (3.00 – 3.99)	194	56.40
GPA range (4.00 – 5.00)	100	29.07
No GPA specified	35	10.17

[a]GPA Range = 0.00 – 5.00 due to weighted AP courses.

Findings Associated with Objectives Two and Three

The second objective of the study was to determine participants' knowledge gain associated with curriculum taught during small group sessions of the camp. The overall mean raw pretest score was 5.21 (30.65% correct) and the overall average posttest score was 9.78 (57.53% correct). On average, respondents increased their score by 4.57 raw points or 26.88%. A repeated measures analysis was performed to determine that a statistically significant difference existed between campers' mean pretests and posttest scores, [$F(1, 343) = 976.63$, $p = .00$]. Levene's test of equality of error variances was non-significant, and thus equal variances were assumed. The observed power for the statistical analysis was 1.00. Partial eta squared was calculated and showed a large effect size ($\eta_p^2 = .74$).

The third objective was to determine the participants' knowledge retained associated with curriculum taught during small group sessions of the camp after a 6-month period. The total mean raw pretest score of the campers who completed all three repeated measures was 5.23 (30.76% correct), the mean raw posttest scores was 9.78 (57.53% correct), and the total average delayed posttest score was 7.16 (42.12% correct). On average, campers increased their score by 1.95 points or 11.47% when comparing pretest scores to delayed posttest scores. A repeated measures analysis was performed to determine that a statistically significant difference existed between campers' mean pretests, posttest, and delayed posttest scores [$F(2, 242) = 322.81$, $p = .00$]. Levene's test of equality of error variances was non-significant, and thus equal variances were assumed. Mauchly's test of sphericity was non-significant. Therefore, sphericity was

assumed. The observed power for the statistical analysis was 1.00. Partial eta squared was calculated and showed a large effect size ($\eta_p^2 = .57$).

Findings Associated with Objective Four

The fourth objective was to describe the relationship between posttest scores and selected characteristics of participants. As shown in Table 3, an independent samples *t*-test indicated that the difference between male and female scores was significant [$t(342) = -3.65$, $p = .00$]. Levene's test was non-significant, and thus, equal variances were assumed. Cohen's *d* was calculated and showed a negligible effect size ($d = -.14$).

Table 3

Camper Posttest Scores: Contrast of Males versus Females ($n = 344$)

Contrast	*n*	*M*	Mean Difference	*t*	*SE*	*df*	*p*
Male	146	9.20	-1.01	-3.65*	.28	342	.00
Female	198	10.21					

*$p < .05$.

A one-way ANOVA was used to determine if posttest scores varied based on the race of campers. No statistically significant differences existed between groups [$F(5, 338) = .51$, $p = .77$]. Levene's test indicated that equal variances were assumed.

No statistically significant relationship existed [$r(332) = .03$, $p = .56$] between camper age and posttest score (see Table 4). Camper posttest scores were significantly correlated to camper GPA [$r(308) = .22$, $p = .00$]. According to Chen and Popovich (2002) an $r = .22$ is a small to medium effect size.

Table 4

Correlation Between Camper's Personal Characteristics (Age and GPA) and Posttest Scores

	Age	GPA
Camper Posttest Score	.03	.22*

*$p < .001$.

A one-way ANOVA was used to determine if campers' grade level affected their posttest score. No statistically significant differences existed between grade level [$F(4, 339) = 1.14$, $p = .34$]. Levene's test indicated that equal variances were assumed.

An independent samples *t*-test indicated that the difference between the two scores of those campers who received free or reduced lunch and those who did not was statistically significant [$t(78.13) = -2.08$, $p = .04$]. Levene's test was significant; therefore, equal variances were not assumed, and the Welch-Satterthwaite method was used to adjust the degrees of freedom to account for the violation of the equal variances assumption (Kirk, 1995). Cohen's *d* was calculated and showed a small effect size ($d = -.31$) (see Table 5).

Table 5

Camper Posttest Scores: Contrast of Campers Who Receive Free or Reduced Lunches at School versus Campers Who Do Not Receive Free or Reduced Lunches at School (*n* = 344)

Contrast[a]	*n*	*M*	Mean Difference	*t*	*SE*	*df*	*p*
Yes	60	9.08	-.85	-2.08*.	40	78.13	.041
No	284	9.93					

[a]Equal variances not assumed.
*$p < .05$.

A one-way ANOVA was used to determine if the number of times a camper had attended camp affected their posttest score. No statistically significant posttest score differences existed [$F(4, 14.57) = 2.89$, $p = .06$]. Levene's test was statistically significant, revealing that the ANOVA assumption that group variances are roughly equal (Kirk, 1995) was violated. Therefore, the Welch statistic was utilized to adjust the degrees of freedom to account for unequal group variances.

An independent samples *t*-test indicated that the difference between the post-test scores campers who were FFA chapter officers and those campers were not FFA chapter officers was significant [$t(338) = 3.47$, $p = .00$]. Levene's test was non-significant, and thus, equal variances were assumed. Cohen's *d* was calculated and showed a small to medium effect size ($d = .39$) (see Table 6).

Table 6

Camper Posttest Scores: Contrast of Campers Who Are FFA Chapter Officers versus Campers Who Are Not FFA Chapter Officers (*n* = 340)

Contrast	*n*	*M*	Mean Difference	*t*	*SE*	*df*	*p*
Officer	211	10.14	.98	3.47*	.28	338	.00
Not Officer	129	9.16					

*$p < .05$.

Findings Associated with Objective Five

The fifth objective was designed to measure the relationship between delayed posttest scores and selected characteristics of participants. Male campers achieved a raw delayed posttest score of 7.01 (41.24% correct), and females scored 7.27 (42.76% correct). An independent samples *t*-test indicated that the difference between the two scores was non-significant [$t(241) = -.85$, $p = .40$]. Levene's test was non-significant, and thus, equal variances were assumed.

A one-way ANOVA was used to determine if campers of divergent races produced significantly different delayed posttest scores. No statistically significant differences existed between groups [$F(5, 237) = .30$, $p = .91$]. Levene's test indicated that equal variances were assumed. No statistically significant relationship existed [$r(241) = -.04$, $p = .55$] between camper age and delayed posttest scores (see Table 7). The data do; however, reveal that camper delayed

posttest scores were significantly correlated to camper GPA [$r(241) = .14$, $p = .03$]. According to Chen and Popovich (2002), an $r = .14$ is a negligible effect size.

Table 7

Correlation Between Camper Personal Characteristics (Age and GPA) and Delayed Posttest Scores ($n = 243$)

	Age	GPA
Camper Delayed Posttest Score	-.04	.14*

*$p < .05$.

A one-way ANOVA was used to determine if campers' grade level affected their delayed posttest score. No statistically significant differences existed between grade level [$F(4, 238) = .72$, $p = .58$]. Levene's test indicated that equal variances were assumed.

Campers who received free or reduced lunch at school achieved a raw delayed posttest score of 6.80 (40.00% correct), and those campers who did not receive free or reduced lunches scored 7.23 (42.53% correct). An independent samples *t*-test indicated that the difference between the two scores was non-significant [$t(241) = -1.04$, $p = .30$]. Levene's test was non-significant, and thus, equal variances were assumed.

A one-way ANOVA was used to determine if the number of times a camper had attended camp affected their delayed posttest score. No statistically significant delayed posttest score differences existed [$F(4, 238) = 1.29$, $p = .28$]. Levene's test was non-significant and equal variances were assumed.

An independent samples *t*-test indicated that the difference between the two scores of campers who were FFA chapter officers and those who were not FFA chapter officers was statistically significant [$t(237) = 2.12$, $p = .04$]. Levene's test was non-significant, thus, equal variances were assumed. Cohen's *d* was calculated and showed a small effect size ($d = .28$) (see Table 8).

Table 8

Camper Delayed Posttest Scores: Contrast of Campers Who Are FFA Chapter Officers versus Campers Who Are Not FFA Chapter Officers ($n = 239$)

Contrast	*n*	*M*	Mean Difference	*t*	*SE*	*df*	*p*
Officer	151	7.40	.67	2.12*	.31	237	.04
Not Officer	88	6.74					

*$p < .05$.

Conclusions, Implications, and Recommendations

In conclusion, the typical Oklahoma FFA Alumni Camp attendee is a white, middle or upper class female who maintained a good GPA. She completed her sophomore year of high school, held a local FFA chapter office, and was attending camp for the first time. As most campers were first- or second-time attendees, many Oklahoma FFA members may view the camp as a one-time experience. We recommended that Oklahoma FFA staff and camp planners clarify

the purpose of camp to determine if it should be a one-time experience, allowing more students to attend. Limiting attendance to once/lifetime could alleviate the reported strain on facilities and accommodate more FFA members who wish to attend as well as address concerns about repetitive programs.

On average, campers doubled their score on the CCCE from the pretest to the posttest. The large effect size indicated that campers experienced cognitive gains related to the communications curriculum taught during small group breakout sessions in the short term. Nevertheless, the average posttest score was an unimpressive 58%. In addition, the amount of information retained after six-months was negligible. The average delayed posttest score was 42%, only 11% higher than the average pretest score. According to sociocultural theory, the camp environment should be conducive to learning because campers are exposed to an environment that includes adult guidance (SGLs) and capable peers represented by other campers (Vygotsky, 1978). Why did campers fail to master the material? We suggest that the college-age SGLs were incapable of effectively delivering instruction toward acceptable outcomes. Newcomb, McCracken, and Warmbrod (1993) contend that a working knowledge of effective instructional methods and an understanding of pedagogy are necessary to effectively teach learning objectives. It is recommended that camp planners examine SGL effectiveness in delivering instruction during small group, breakout times. According to sociocultural theory (Vygotsky, 1978), effective adult guidance is a vital component of the learning environment and must be present for student success; however, more than adult guidance is needed if measurable learning outcomes are desired.

We also postulate that camp, a non-formal environment, may not be the best environment for delivering formal lessons. Delansky (1991) reported that camps are an appropriate avenue for increasing campers' self-concept and social skills. Conners et al. (2010) stated "the FFA camp experience can take average students and catapult them into over-achieving leaders in their home chapters and create bonds between campers that last a lifetime" (p. 32). We recommend that small group sessions focus on meeting personal development and leadership objectives rather than teaching communications curriculum.

If academic curriculum is to continue to be emphasized in future camp sessions, a program should be designed and incorporated to provide opportunities to reinforce camp learning objectives. This follow-up program could include components for both agricultural education instructors and camp attendees. Camp curriculum developers could provide resources for school-based agricultural education instructors that would review and reinforce the curriculum taught during small group sessions at the previous summer's camp. Similarly, the camp curriculum developers could develop online follow-up components to complement the small group session curriculum and be utilized by camp attendees throughout the school year following the camp experience.

Posttest scores were not affected by campers' race, grade level, or previous camp attendance. Although a statistically significant difference was found between posttest scores of males and females, the statistical analysis showed a negligible effect size. Three personal characteristics, however, were significant and produced a small to medium effect size: GPA, socioeconomic status, and chapter officer status. Campers who held a chapter FFA office outperformed those campers who did not hold an office. Vygotsky (1978) theorized that the experiences a person brings to the learning environment could potentially affect the outcome. Perhaps this finding is an indicator that chapter officers bring more experiences to the camp than non-chapter officers.

Delayed posttest scores were not affected by camper sex, race, age, grade level, socioeconomic status, or previous camp attendance. A statistically significant correlation was found between delayed posttest score and camper GPA. This correlational analysis did, however, produce a negligible effect size indicating that the actual effect had little meaning. Campers who held a FFA chapter office continued to outperform campers who did not hold an office. This

finding suggests that chapter officers had the opportunity to apply what they learned at camp when they returned home. This conclusion further compounds the divergent field of literature exploring the relationship between level of involvement in agricultural education and student performance (Garton et al., 2005; Moore & Braun, 2005; Smith et al., 2010).

In the future, phenomenological qualitative research should be employed to understand the essence of campers' decision to attend camp. The inquiry should focus on expectations for the camp experience in terms of learning, social development, and leadership outcomes. Gaining a better understanding of campers' decision to attend camp and expectations while at camp will assist FFA advisors in selecting future campers as well as camp planners to design more meaningful experiences that have lasting impact.

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