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Impact of Agricultural Mechanics Camp on Intentions To Teach

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Abstract

Targeted teacher recruitment is suggested as a way to alleviate the teacher shortage in specific content areas such as agricultural mechanics. Learning experiences are linked to increased self-efficacy and increased interest in specific career pursuits. The Agricultural Mechanics Power & Design (AMP'D) Experience was developed as a learning experience to enhance high school student skills in agricultural mechanics and expose them to the career of teaching agricultural mechanics at the high school level. This study sought to describe participants in the first three years of the AMP'D Experience, explore their skills level, learn about their likelihood of considering a career teaching agricultural mechanics before and after participating in the event. We used correlational analysis and simple linear regression to scrutinize pre and post survey data collected from participants (N = 37) at the 2016, 2017, and 2018 AMP'D Experiences. Results indicated significant increases in perceived self-efficacy across agricultural mechanics skills areas, and in likelihood to consider teaching agricultural mechanics. Additionally, perceived summated skills self-efficacy predicted 15% of the variance in the likelihood of a participant considering to teach agricultural mechanics. Recommendations involve looking at other experiences acquired through the AMP'D Experience as additional indicators of enhanced career interest as well as following up with participants to examine what career they eventually pursued.

Keywords: Agricultural education; agricultural mechanics; career interest; learning experiences; self-efficacy; teacher shortage

Introduction

To meet the demand for teachers in California in the next decade, 100,000 additional teachers will need to be credentialed (California Teachers Association, 2016). In 2008, agriculture was classified as a specific teacher shortage area in California and in 2010, industrial technology was also identified as a shortage area (United States Department of Education (USDE), 2015). The California Department of Education (CDE, 2017) reported 23% of California's secondary agricultural educator positions opened during the 2015-2016 school year; 64% of those were replacements while the remaining 36% were newly created positions. Cultivating and maintaining a pool of highly qualified agricultural education teachers, specifically in agricultural mechanics, plagues California's agricultural education profession. Interventions targeted toward teacher recruitment and strategies promoting the development of new teachers within local candidate pools in specific subject areas have been suggested as ways to help resolve the teacher attrition dilemma (Darling-Hammond, Furger, Shields, & Sutcher, 2016; Sherratt, 2016).

To aid in precise and localized recruitment efforts, the South Coast Region Agricultural Education Consortium created the Agricultural Mechanics Power & Design (AMP'D) Experience.

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The four-day university-hosted camp allows high school agricultural education students the opportunity to engage with agricultural mechanics teachers and university preservice teachers, while enhancing their agricultural mechanics proficiencies through skills-based workshops in carpentry, plumbing, cold metal, welding, tool sharpening, and construction. The AMP'D Experience is the only event of its kind in California, which promotes teaching agricultural mechanics as a career by refining skills, allows students to experience life on a college campus, and gives high school students the opportunity to interact with preservice agriculture teacher candidates and high school agricultural educators. However, those who help facilitate the AMP'D Experience are interested in whether or not students gain skills and if that gain makes participants more likely to pursue careers as agricultural mechanics teachers.

Learning Experiences

There are two main types of learning experiences: Directed and modeled (Bandura, 1977). Directed learning experiences enable individuals to acquire new behavior patterns by virtue of their own actions; whereas, modeled learning facilitates individuals to learn via observing others actions (Bandura, 1977). Both types of learning experiences rely on reinforcement (positive or negative) as motivation. Krumboltz, Mitchell, and Jones (1976) refer to these directed and modeled learning experiences as Instrumental Learning Experiences (ILEs) and Associative Learning Experiences (ALEs). ILEs are informed by direct consequences for one's own actions whether it be intrinsic or extrinsic reinforcement (Krumboltz, 2009). ALEs occur from "observing the environment or the behavior of others with its consequences" (Krumboltz, 2009, p. 138).

Different learning experiences can influence individuals' behaviors, which may lead to career-entry based on specific skills gained during these experiences (Krumboltz & Worthington, 1999). Schaub and Tokar (2004) found learning experiences relevant to occupations were influenced by self-efficacy gained during those same learning experiences. Smith and Fouad (1999) called for examination of self-efficacy in relation to learning experiences within specific occupational areas.

Self-Efficacy

Self-efficacy requires cognitive, social, and behavioral skills (Bandura, 1982). Perceived self-efficacy requires those three competencies to employ simultaneously for one to properly "organize and execute the courses of action required to produce given attainments" (Bandura, 1982; Bandura, 1997, p. 3). This implementation involves "continuous improvisation of multiple subskills" in perpetually changing circumstances, such as career preparation (Bandura, 1982, p. 122). Lent, Brown, and Hackett (1994) posited persons who have greater self-efficacy are more likely to pursue specific occupations. This holds true for occupational exploratory behavior in relation to self-efficacy and likelihood to pursue an occupation (Diegelman & Subich, 2001). Further, there are "significant positive relations between self-efficacy, outcome expectations, interest, and pursuit intentions" (Diegelman & Subich, 2001, p. 403). Self-efficacy determines motivation levels in individuals exemplified by "how much effort they will exert in an endeavor and how long they will persevere in the face of obstacles" (Bandura, 1989, p. 1176).

There are four components laying the foundation for self-efficacy (Bandura, 1986): (a) mastery, (b) vicarious experiences, (c) social persuasion, and (d) physiological and emotional states. Bandura (1997) called mastery, or the ability to accomplish a behavior, the most influential self-efficacy source. The literature revealed there is minimal research in regard to mastery experiences and self-efficacy in high school agricultural education students. McKim and Velez (2016) found limited research relating to vicarious experiences and agricultural education. Social persuasion has been seen in the literature in regard to teacher preparation where "encouragement could come by way of formal and informal observations, affirmation of departmental tasks completed, or restating positive comments from students about the early career teacher" (McKim, Velez, & Clement, 2017, p. 294). Physiological and emotional states can impact self-efficacy as people may become dysfunctional or vulnerable during difficult situations (Bandura, 1997). While self-efficacy has been linked to career decisions, there is little research relating self-efficacy to career decisions among high school agricultural education students.

Career Choice

The research behind career choice is highly complex and impacted by several factors. Kerka (2003) identified personality, interests, self-concept, cultural identity, socialization, globalization, role models, social support, and available resources as items of influence. A study of Ugandan Young Farmers Club members found intrinsic factors such as ability to succeed in the career, personal goals, and desire for the career, as the most influential factors on career aspirations (Mukembo, Edwards, Ramsey, & Henneberry, 2014). Bandura, Barbaranelli, Caprara, and Pastorelli (2001) noted additional intrinsic factors, in the form of perceived self-efficacy, contributed to child (aged 11-15 years) occupational self-efficacy.

Measuring career intention is challenging, as it is a projection. Researchers tend to focus on students' self-efficacy in their ability to make a career decision within agricultural education. The Career Decision-Making Self-Efficacy (CDSE) instrument has been used to describe student self-efficacy in the ability to make a career decision, finding students to be confident in their ability to make a career choice (Choi, Park, Yang, Lee, Lee, & Lee, 2012; Rajabi, Papzan, & Zahedi, 2012; Marx, Simonsen, & Kitchel, 2014). However, these studies do not explore an individual's interest in following a specific career path.

Relationship between Learning Experiences, Self-Efficacy, and Career Decision

The concepts of learning experiences and perceived self-efficacy are linked to ability to make career decisions. Yet, there is a lack of information linking directed and modeled learning experiences, self-efficacy increases, and advancements in the likelihood of one attempting to pursue a targeted career interest. Investigating the relationship of the three constructs at the AMP'D Experience could aid in creating talented, confident teachers to alleviate the teacher shortage within agricultural mechanics.

Theoretical Framework

Social Cognitive Career Theory (SCCT) (Lent, Brown, & Hackett, 1994, 2000, 2002) provided the theoretical background for this study. Learning experiences affect self-efficacy, which in turn influences career interest. Derived from Bandura's Social Cognitive Theory (SCT) (1986), SCCT emphasizes career development in relation to three aspects: "(a) the format and elaboration of career-relevant interests, (b) selection of academic and career choice options, and (c) performance and persistence in educational and occupational pursuits" (Lent et al., 1994, p. 79). The theory represents a way to understand the process by which individuals become interested, make choices, and achieve success in job-related pursuits (Lent et al., 2002).

The AMP'D Experience is directed learning by which, as Bandura (1977) noted, "new patterns of behavior can be acquired through direct experience" (p. 3). Elements of modeled learning are present as participants have the opportunity to observe both preservice agriculture teachers and current agriculture teachers in action. As contextual factors, such as learning experiences, interweave with self-efficacy to influence career interest, SCCT was used to describe the AMP'D Experience (see Figure 1).

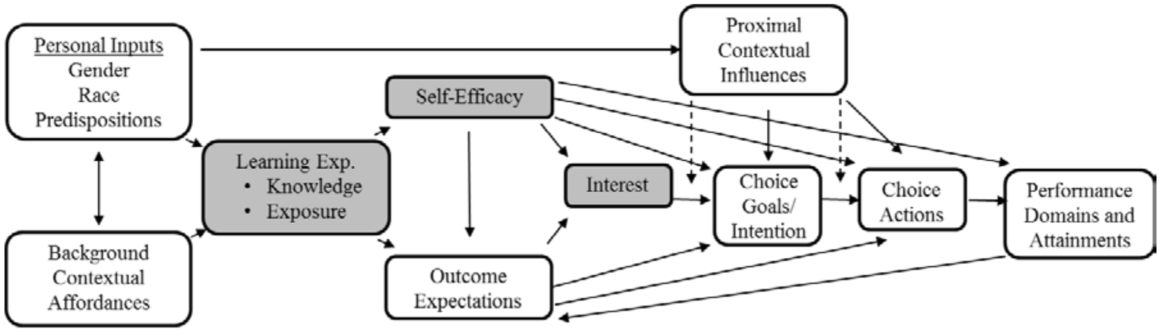

Figure 1. Social cognitive model of choice behavior adapted from "Toward a Unifying Social Cognitive Theory of Career and Academic Interest, Choice, and Performance," by Lent, Brown, and Hackett, 1994, Journal of Vocational Behavior, 45, p. 93.

Purpose and Research Objectives

The purpose of this study was to explore the impact of the AMP'D Experience, as a learning experience, on student perceived self-efficacy across agricultural mechanics skills and consideration level of pursuing a career teaching agricultural mechanics. The following objectives guided the study:

1. Describe demographics of the participants of the AMP'D Experience,
2. Describe relationship of perceived summated skills self-efficacy and consideration of teaching agricultural mechanics prior to attending the AMP'D Experience,
3. Describe relationship of perceived summated skills self-efficacy and consideration of teaching agricultural mechanics after attending the AMP'D Experience,
4. Determine if participants experienced a change in perceived summated skills self-efficacy in agricultural mechanics as a result of the experience,
5. Determine if participants experienced a change in their level of consideration of a career teaching agricultural mechanics as a result of the experience, and
6. Determine if post perceived summated skills self-efficacy accounted for variance in post consideration to teach agricultural mechanics,

Methods

This non-experimental research sought to describe and understand the relationship between perceived self-efficacy and consideration of a career teaching agricultural mechanics within the population of students (N = 37) who participated in the 2016, 2017, or 2018 AMP'D Experience. Correlational design was used to make a natural observation without interference (Field, 2013). Fraenkel, Wallen, and Hyun (2012) acknowledged correlational research should be conducted with a minimum sample size of 30.

Institutional Review Board (IRB) approval was obtained from the [University] Human Subjects Research Program. Informed consent was collected from all participants during check-in at the AMP'D Experience. Parental/guardian permission forms were collected during conference check-in for participants under the age of 18. In the initial population to be studied (N = 38), one attendee failed to bring the proper required parental consent form resulting in a frame of N = 37.

There were 8 (22%) participants during 2016, 14 (38%) participated in 2017, and 15 (40%) participated in 2018.

Students were selected for participation through an application process. Criteria for acceptance to the event included: (a) entering the 11th or 12th grade, or had just graduated from high school, (b) completed at least two years of secondary or postsecondary coursework in agricultural mechanics earning a letter grade of "B" or better, (c) not attended the event before, and (d) able to stay for the duration of the event. Students were required to obtain a written letter of recommendation from their agricultural mechanics teacher. Further, students were asked to share what they wished to gain from the experience. The initial application was open only to students at schools within the South Coast Region. After a two-week window, the application was opened statewide. During the first three years of the event, which were the focus of this study, all applicants were accepted.

Instrumentation

Pre responses were collected during on-sight registration the first day of the four-day event and post responses at the conclusion of the event, using paper and pencil instruments. To curtail response bias, participants recorded their responses privately and kept all answers confidential throughout the process. The instrument was titled a nondescript name (Pre and Post Survey Card), and participants were told the information collected would help guide the development of the AMP'D Experience in future years, as per Bandura's (2006) recommendations in regard to informing participants. Surveys were collected immediately after completion and stored in a secure file cabinet in a locked university office. Written data were transferred to the Statistical Package for Social Science (SPSS). Throughout the process only the researchers had access to the responses and the computer generated data.

As "there is no all-purpose measure of perceived self-efficacy" (Bandura, 2006, p. 306), an instrument was created "tailored to the particular domain of functioning that is the object of interest" (Bandura, 2006, p. 307); which is, in this case, perceived self-efficacy in relation to the individual skills sessions at the AMP'D Experience. The researchers considered Bandura's (2006) recommendation for domain specific items concerned with perceived capability when creating the instrument using response scales. A team comprised of three faculty members in agricultural education and one high school agricultural mechanics teacher reviewed the instrument for content validity. Results indicated good (pre = .84, post = .87) internal consistency with standardized Cronbach's alpha coefficients (Cronbach, 1951).

Participants used a five-point, Likert-type scale to answer the question "On a scale of 1-5 (1 being not competent and 5 being very competent), how competent do you feel in each of the following agriculture mechanics skills?" Skills items included welding, carpentry, cold metal, electrical, plumbing, tool sharpening, and construction for 2016 and 2017. During 2018, a small engines unit was used in place of electrical. Pre and post responses for each skill area were averaged to create a summated skills self-efficacy score. The final question determined participants teaching intention and asked "On a scale of 1-5 (1 being not likely and 5 being very likely), how likely are you to consider a career teaching agricultural mechanics?"

Data Analysis

Following collection, data were entered into the SPSS. For the first objective to describe the AMP'D Experience participants, the researchers used frequencies, percentages, modes, means, and standard deviations as appropriate.

Objective two sought to describe the relationship between students perceived summated skills self-efficacy in agricultural mechanics skills in comparison to their intention to teach agricultural mechanics prior to the event. Pearson product coefficients were calculated and Davis (1971) was used to interpret the measurement of association where >.70 = very strong, .50 - .69 = substantial, .30 - .49 = moderate, .10 - .29 = low, and .01 - .09 = negligible. The same analysis was used for objective three to describe the relationship of perceived summated skills self-efficacy and consideration of teaching agricultural mechanics after attending the AMP'D Experience.

Objectives four and five were aimed at determining change in perceived self-efficacy in agricultural mechanics and change in level of consideration of a career teaching agricultural mechanics. Paired samples *t*-tests were utilized to measure statistical differences in the means between pre and post perceived summated skills self-efficacy, and pre and post consideration to teach agricultural mechanics. Statistical significance was established at a *p*-value of .05 *a priori*. Effect sizes were calculated using Cohen's *d* (1988) where .20 = small, .50 = medium, and .80 = large.

The final objective allowed the researchers to investigate how much variance in post consideration to teach agricultural mechanics could be predicted by post perceived summated skills self-efficacy in agricultural mechanics skills. To do this, simple linear regression was employed to analyze the data accounting for the classical assumptions as per Field (2013). The model was found to be linear, constant, and normally distributed. All predictor and outcome variables were the appropriate type for the model. To test assumption of multicollinearity, we used a correlation matrix, finding no correlations above .80 (very high), thus multicollinearity was assumed (Field, 2013). Additionally, variance inflation factors (VIF) and tolerance levels of collinearity statistics were calculated finding no VIF greater than 10, and no tolerance levels below .2 thus, multicollinearity was robust (Field, 2013). An alpha level .05 *a priori* was used for correlations. The assumption for independent errors was tested using the Durbin-Watson test finding a value of 1.86, falling within the range of 1 and 3. Thus the assumption for independent errors was robust and residuals were not highly correlated (Field, 2013). Cohen's f^2 (1988) was used for the interpretation of effect sizes where .02 = small, .25 = medium, and .40 = large.

The researchers recognized limitations within the study. First, as this study focused solely on participants who self-selected to attend the event, results may not be generalizable to those who did not seek to attend the AMP'D Experience. The researchers did not account for extraneous variables that may also have affected student perceived self-efficacy beliefs in agricultural mechanics skills areas as well as their consideration of a career teaching agricultural mechanics. Such confounding variables may include academic achievement level of student or student relationship with agriculture teacher, as both are explicit items on the application to attend the event.

Results

The first objective sought to describe the participants in attendance at the 2016, 2017, and 2018 AMP'D Experience. Demographic information (see Table 1) revealed the majority of participants were male (f = 28, 75.7%) and ranged between 16 and 18 years of age with most being 17 (f = 19, 51.4%).

Table 1

Description of Participants of AMP'D Experience (N = 37)

	F	%	*Mode*
Gender			Male
Male	28	75.7	
Female	9	24.3	
Age			17
16	14	37.8	
17	19	51.4	
18	4	10.8	

The second part of the first objective involved describing the participants perceived self-efficacy scores by skill area as well as their likelihood to consider a career teaching agricultural mechanics pre and post the AMP'D Experience (see Table 2). Initially, small engines had the lowest perceived self-efficacy (*M* = 1.80, *SD* = .77) while welding had the highest (*M* = 3.78, *SD* = .78). Post scores indicated small engines to still have the lowest perceived self-efficacy ratings (*M* = 3.47, *SD* =) while carpentry was rated the highest (*M* = 4.32, *SD* = .63). There was an increase in in likeliness to consider a career teaching agriculture mechanics from pre (*M* = 3.59, *SD* = 1.12) to post (*M* = 4.23, *SD* = .75).

Table 2

Perceived Self-Efficacy of Agricultural Mechanics Skills Areas and Likeliness to Consider a Career Teaching Agricultural Mechanics Pre and Post The AMP'D Experience (N = 37)

	Pre AMP'D		Post AMP'D	
	M	*SD*	*M*	*SD*
Skills Areas[a]				
Carpentry (*n* = 37)	3.32	.94	4.32	.63
Cold Metal (*n* = 37)	2.54	1.14	4.11	.97
Construction (*n* = 37)	3.30	1.18	4.22	.75
Electrical (*n* = 22)	2.77	1.11	3.82	.96
Plumbing (*n* = 37)	2.78	1.00	4.23	.82
Small Engines (*n* = 15)	1.80	.77	3.47	1.13
Tool Sharpening (*n* = 37)	2.68	1.20	4.03	.83
Welding (*n* = 37)	3.78	1.03	4.30	.78
Summated Skills Self-Efficacy[b]	2.96	.71	4.12	.61
Likeliness to Consider a Career Teaching Agricultural Mechanics[c]	3.59	1.12	4.23	.75

Note. [a]Scaled agricultural mechanics skills areas were rated from 1 "not competent" to 5 "very competent" [b]Summated score calculated as average ratings for all perceived skills areas [c]Likeliness to consider a career teaching agricultural mechanics were rated from 1 "not very likely" to 5 "very likely."

Objective two sought relationships that may have existed between pre summated skills self-efficacy and pre consideration to teach agricultural mechanics (see Table 3). A moderate positive, moderate relationship (Davis, 1971) of statistical significance (r = .41, p = .012) was found.

Table 3

Relationship Between Pre Summated Skills Self-Efficacy and Pre Consideration to Teach Agricultural Mechanics (N = 37)

Item	1	2
Pre Summated Skills Self-Efficacy[a, b]	-	.41*
Pre Consideration to Teach Agricultural Mechanics[c]		-

Note. *p < .05, [a]Scaled agricultural mechanics skills areas were rated from 1 "not competent" to 5 "very competent" [b]Summated score calculated as average ratings for all perceived skills areas [c]Likeliness to consider a career teaching agricultural mechanics were rated from 1 "not very likely" to 5 "very likely."

Objective three compared post self-efficacy scores and post consideration to teach agricultural mechanics scores (see Table 4). A statistically significant difference (r = .39, p = .019) was found with a positive, moderate relationship (Davis, 1971).

Table 4

Relationship Between Post Summated Skills Self-Efficacy and Post Consideration to Teach Agricultural Mechanics (N = 37)

Item	1	2
Post Summated Skills Self-Efficacy[a, b]	-	.39*
Post Consideration to Teach Agricultural Mechanics[c]		-

Note. *p < .05, [a]Scaled agricultural mechanics skills areas were rated from 1 "not competent" to 5 "very competent" [b]Summated score calculated as average ratings for all perceived skills areas [c]Likeliness to consider a career teaching agricultural mechanics were rated from 1 "not very likely" to 5 "very likely."

To address objectives four and five, paired-samples t-tests were conducted to compare pre and post perceived self-efficacy and pre and post likelihood a student would consider a career teaching agricultural mechanics (see Table 5). There was a large (Cohen, 1988) significant (p = .001) difference in perceived summated skills self-efficacy scores before and after the experience. The difference in consideration to teach agricultural mechanics as a career pre and post the AMP'D Experience was also significant (p = .001) with a medium effect size (Cohen, 1988).

Table 5

Comparison of Participants Perceived Self-Efficacy and Likeliness to Consider Teaching Agricultural Mechanics as a Career Pre and Post the AMP'D Experience (N = 37)

	Pre AMP'D		Post AMP'D				
	M	*SD*	*M*	*SD*	t-test	Sig.	*d*
Perceived Summated Skills Self-Efficacy[a, b]	2.96	.71	4.12	.61	-11.09	.001*	1.76
Consideration of a Career Teaching Agricultural Mechanics[c]	3.59	1.12	4.22	.75	-4.39	.001*	.65

Note. *$p < .05$, [a]Scaled agricultural mechanics skills areas were rated from 1 "not competent" to 5 "very competent" [b]Summated score calculated as average ratings for all perceived skills areas [c]Likeliness to consider a career teaching agricultural mechanics were rated from 1 "not very likely" to 5 "very likely."

Objective six was to determine if perceived summated skills self-efficacy, predicted a portion of the variance of consideration to teach agricultural mechanics. Summated skills self-efficacy significantly predicted 15% of the variance in likelihood of considering a career teaching agricultural mechanics with a small effect size (Cohen, 1988) for *R* squared ($R^2 = .15$, $F(1, 36) = 6.07$, $p = .019$, $f^2 = .17$).

Table 6

Regression of Perceived Summated Skills Self-Efficacy in Agricultural Mechanics on Likelihood of Considering a Career Teaching Agricultural Mechanics (N = 37)

Variables	R^2	$F_{(1,20)}$	*p*	*B*	*t*	*p*
Perceived Summated Skills Self-Efficacy[a, b]	.15	6.07	.019	.48	2.46	.019

Note. Alpha level for significant *p*-value established at .05 *a priori,* [a]Scaled agricultural mechanics skills areas were rated from 1 "not competent" to 5 "very competent" [b]Summated score calculated as average ratings for all perceived skills areas

Conclusions and Recommendations

The researchers believed if students experienced an increase in self-efficacy among agricultural mechanics skills they would also experience an increase in likelihood of considering a career teaching agricultural mechanics. Also, the researchers wanted to determine if there was a relationship between perceived self-efficacy in agricultural mechanics skills and likelihood of considering a career in agricultural mechanics. The literature indicated perceived self-efficacy was tied to occupational interest and pursuit. Throughout the course of this study, the researchers recognized other factors (e.g., parents, financial gain, social status) might impact career interest and may interplay with the skills being taught at the AMP'D Experience.

The first objective sought to describe the demographics of those participating in the 2016 and 2017 AMP'D Experiences. Participants were mostly male and heterogeneous in age. Smith, Lawver, and Foster (2017) reported 69% of newly credentialed program completers in agricultural education were female. The typical student attending the AMP’D Experience is male, indicating the demographic of student participating in the experience is not typical of the type of student earning their teaching credential in agriculture and potentially entering the profession.

Additional information collected for this objective pertained to the initial perceived self-efficacy, and career consideration ratings before and after the event. Welding appears to be the skills area where there is the least perceived growth during the course of the camp, but the highest initial self-efficacy perceptions. Other skills areas, particularly plumbing, might be considered areas of perceived weakness within California agricultural mechanics programs.

Objectives two and three were used to identify if there was a significant relationship between student self-efficacy levels and the likelihood of them considering teaching a career in agriculture mechanics prior to attending the AMP’D Experience and afterward. The responses indicate there was a significant positive relationship of a moderate effect between self-efficacy and consideration of a career teaching agricultural mechanics before and after participating in the AMP’D Experience. Thus, specialty youth programs, which hone in on specific careers, do not deter students from pursuing the intended career.

Bandura (1977) said new patterns of behavior can be acquired through direct and modeled experiences and rely on reinforcement as a form of motivation. In this case, the AMP’D Experience did serve as a positive reinforcement, yet it is unclear if it was reinforced by the students’ direct actions, the actions modeled by others, or a combination of both. Upon completing the AMP’D Experience, students’ self-efficacy in agricultural mechanics did have a significant relationship with their consideration to teach agricultural mechanics as a career. This is consistent with Bandura (1977) in that greater self-efficacy results in more action, in this case thinking about the career as an option.

The fourth and fifth objectives sought to see if there was a change in perceived self-efficacy in agricultural mechanics and level of consideration to pursue a career teaching agricultural mechanics after participating in the AMP’D Experience. Both self-efficacy and career consideration showed significant change. This is consistent with Bandura’s (1977) ideas about new patterns of behavior being derived through experience as student self-efficacy behavior was self-perceived as positively changed. SCCT states persons who have greater self-efficacy are more likely to pursue specific occupations and occupational exploratory behavior is influenced by self-efficacy, hence the level of pursuit towards a career teaching agricultural mechanics has been increased along with student self-efficacy (Diegelman & Subich, 2001; Lent et al., 2004). While directed and modeled learning experiences were not measured separately, learning experiences as a whole did impact newly acquired perceptions of ability and opinions regarding specific career options.

In the final objective, the researchers examined if perceived summated skills self-efficacy predicted career consideration. Perceived skills self-efficacy significantly accounted for 15% of the variance in consideration to teach agricultural mechanics. This supports SCCT and other previous studies regarding career choice being influenced by perceived ability to be successful (Lent et al., 1994; Krumboltz & Worthington, 1999; Mukembo et al., 2014; Schaub & Tokar, 2004).

Recommendations for practice include the evaluation of sessions annually to aid in conference programming and assess which will have the greatest impact on student skill development. Further, other states should assess their capacity to hold a similar event to help hone skills and create interest in teaching agricultural mechanics as a career. This could help address the national shortfall in the number of agricultural mechanics teachers.

The final recommendation for practice deals with tracking these participants through their post-secondary tenures. These students exhibit a predisposition towards becoming an agricultural mechanics teacher and that inclination must continue to be nurtured after they leave the high school classroom as a student. Gorter, Swan, and Ray (2016) identified deterrents perceived to detract post-secondary students from pursuing teaching as a career after they had started out on that specific career path. Maintaining contact with AMP'D Experience participants after they graduate from high school may help reduce the effect of these deterrents and help guide participants successfully through the career preparation process involved with becoming an agriculture teacher.

Recommendations for research lie specifically in collecting additional data on past AMP'D Experience participants. These students show an interest in pursuing a career in teaching agricultural mechanics. This interest must be capitalized via continued involvement from either local agriculture teachers, AMP'D presenters and chaperones, or other state teach ag recruitment officials. This involvement will aid in continuing to engage students in the career as they graduate from high school and pursue post-secondary options. The researchers should follow up with those students who have attended the AMP'D Experience to see if they have entered the profession.

Additionally, there should be a comprehensive evaluation of confounding variables. It should be recognized the AMP'D Experience contained other facets (i.e., college goal setting, bowling, softball, campus scavenger hunt, guest speakers) besides skills sessions which may also be predictors of change in career consideration. Future research opportunities lie in specifically evaluating the social aspects and recreation activities of the camp, which may or may not be indicators of variation in consideration of teaching high school agricultural mechanics.

Learning experiences, similar to the AMP'D Experience, impact student self-efficacy and student consideration to pursue a specific career. However, using self-efficacy as a sole indicator of likelihood of pursuing a career is not plausible; there are additional factors to consider, which ultimately influence career choice. SCCT specifically identifies outcome expectations as a second component guiding individuals from learning experiences to career interest. Exploring how students perceive the outcome expectations of a career teaching agricultural mechanics may help explain more about why students may or may not consider the occupation.

This recruitment effort specifically targeted the creation of teachers in agricultural mechanics. It helped address the teacher shortage at the state and national level in a very specialized area of need. While it only addressed one pathway, it could be replicated to address teacher recruitment in other pathway specific content areas.

References

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*, 122-147.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*(9), 1175-1184. doi:10.1037/0003-066X.44.9.1175

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W. H. Freeman.

Bandura, A. (2006). Guide for constructing self-efficacy scales. In Pajares, F., & Urdan, T. C. (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307-337). Greenwich: Information Age Pub., Inc.

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (2001). Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Development*, *22*(1), 187-206. doi:10.1111/1467-8624.00273

California Department of Education. (2017). *Summary of California agricultural teaching opportunities & placement from 2003-present*, [Data set]. Sacramento, CA: Lloyd McCabe

California Teachers Association. (2016). *Issues & action*. Retrieved from http://www.cta.org /Issues-and-Action/Retirement/Teacher-Shortage.aspx

Choi, B. Y., Park, H., Yang, E., Lee, S. K., Lee, Y., Lee, S. M. (2012). Understanding career decision self-efficacy: a meta-analytic approach. *Journal of Career Development*, *39*(5), 443-460. doi:10.1177/089484531

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297-334.

Darling-Hammond, L., Furger, R., Shields, P. M., & Sutcher, L. (2016). *Addressing California emerging teacher shortage: An analysis of sources and solutions* (Learning Policy Institute brief). Retrieved from https://learningpolicyinstitute.org/sites/default/files /product-files/LPI-Report-AddressingCalifornia_TeacherShortage.pdf

Davis, J. A. (1971). *Elementary survey analysis*. Englewood, NJ: Prentice-Hall

Diegelman, N. M., & Subich, L. M. (2001). Academic and vocational interests as a function of outcome expectancies in social cognitive career theory. *Journal of Vocational Behavior, 5*9, 394-405. doi:10.1006.jvbe.2001.1802

Field, A. P. (2013). *Discovering statistics using IBM SPSS statistics.* 4th Ed. Thousand Oaks, CA: Sage Publications, Inc.

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to design and evaluate research in education* (8th ed.). New York: McGram-Hill Companies.

Gorter, E. K., Swan, B. G., & Ray, F. N. (2016). *A view from the top: A California agricultural education leadership Delphi perspective.* Poster presented at the Western Research Conference of the American Association for Agricultural Education, Tuscon, AZ. Abstract retrieved from http://www.agedweb.org/AAAE/Proceedings.asp?EventID=42

Kerka, S. (2003). Career development of diverse populations. *ERIC Digest.* (ED482536).

Krumboltz, J. D. (2009). The happenstance learning theory. *Journal of Career Assessment*, *17*(2), 135-154. doi:10.1177.1069072708328861

Krumboltz, J. D., Mitchell, A. M., & Jones, B. (1976). A social learning theory of career selection. *The Counseling Psychologist*, *6*(1), 71-81. doi:https://doi.org.ezproxy.library.tamu.edu/10.1177/001100007600600117

Krumboltz, J. D., & Worthington, R. L. (1999). The school-to-work transition from a learning theory perspective. *The Career Development Quarterly, 47*(4), 312-325. doi:10.1002/j.2161-0045.1999.tb00740.x

Lent, R.W., Brown, S.D., & Hackett, G. (2002). Social cognitive career theory (p. 255-311). In D. Brown, L. Brooks, and Associates, *Career choice and development* (4th Ed.). San Francisco, CA: Jossey-Bass.

Lent, R.W., Brown, S.D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology*, *47*, 36-49.

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior* [Monograph], *45*(1), 79-122. doi:10.1006/jvbe.1994.1027

Marx, A. A., Simonsen, J. C., & Kitchel, T. (2014). Secondary agricultural education program and human influences on career decision self-efficacy. *Journal of Agricultural Education, 55*(2), 214-229. doi:10.5032/jae.2014.02214

McKim, A. J., & Velez, J. J. (2016). An evaluation of the self-efficacy theory in agricultural education. *Journal of Agricultural Education, 57*(1), 73-90. doi:10.5032/jae.2016.01073

McKim, A. J., Velez, J. J., & Clement, H. Q. (2017). Exploring relationships between personal variables, programmatic variables, and self-efficacy in school-based agricultural education. *Journal of Agricultural Education, 58*(2), 284-298. doi:https://doi.org/10.5032/jae.2017.02284

Mukembo, S. C., Edwards, M. C., Ramsey, J. W., & Henneberry, S. R. (2014). Attracting youth to agriculture: The career interests of Young Farmers Club members in Uganda. *Journal of Agricultural Education, 55*(5), 155-172. doi:10.503/jae.2014.05155

Rajabi, S., Papzan, A., & Zahedi, G. (2012). Application of social cognitive career theory to investigate the effective factors of the career decision-making intention in Iranian agriculture students by using ANN. *SAGE Open, 2*(4), 1-13. doi:10.1177/2158244012467024

Schaub, M., & Tokar, D. M. (2004). The role of personality and learning experiences in social cognitive career theory. *Journal of Vocational Behavior, 66*, 304-325. doi:10.1016/j.jvb.2004.09.005

Sherratt, E. (2016). *Creating coherence in the teacher shortage debate: What policy makers should know and do* (Education Policy Center at American Institutes for Research brief). Retrieved from http://www.air.org/resource/creating-coherence-teacher-shortage-debate-what-policymakers-should-know-and-do

Smith, P. L., & Fouad, N. A. (1999). Subject-matter specificity of self-efficacy, outcome expectancies, interests, and goals: Implications for the social—cognitive model. *Journal of Counseling Psychology, 46*(4), 461-471. doi:10.1037/0022-0167.46.4.461

Smith, A. R., Lawver, R. G., & Foster, D. D. (2017). *National agricultural education supply and demand study, 2016 executive summary*. Retrieved from: http://aaaeonline.org /Resources/Documents/NSD2016Summary.pdf

United States Department of Education. (2015). *Teacher shortage areas nationwide listing 1990-1991 through 2015-2016*.