

# **Investigating the Impacts of a Preservice Agriculture Teacher Recruitment Program using Kirkpatrick's Program Evaluation Model**

## **Abstract**

*Although post-secondary school agricultural education degree programs strive to meet the need of supplying agriculture teachers, the gap between teacher demand and supply continues to exist. The Teach Ag Campaign is a joint effort of the agricultural education profession to recruit and retain agricultural educators and encourage students to pursue a career in teaching agriculture. Given the systematic program evaluation of the effects of Teach Ag Campaign efforts on agriculture teacher supply is lacking, this study investigated the outcomes and effectiveness of a preservice agriculture teacher recruitment program using Kirkpatrick's program evaluation framework. The results indicated that the design and implementation of the Agricultural Education Institute (AEI) effectively met the needs of program participants, and the program positively affected participants' knowledge, attitude, and aspiration regarding a career teaching agriculture. In addition, the findings demonstrated that the AEI contributes to producing agriculture teachers who support Florida's school-based agricultural education programs. Based on the results of this study, recommendations for practice in terms of participant recruitment, program design, implementation, and future research were proposed.*

**Keywords:** *preservice agriculture teacher recruitment program; program evaluation; school-based agricultural education students; Teach Ag Campaign*

## **Introduction**

Across the nation, agricultural education faces an ongoing shortage of teachers (Foster et al., 2020; Smith et al., 2019). Efforts to recruit and retain quality teachers are critical to solving the agriculture teacher shortage problem and ensuring the success of agriculture (Guffey & Young, 2020; Kantrovich, 2007). Regarding teacher recruitment, post-secondary agricultural education graduates have not met the demand for available agriculture teaching positions (Thieman et al., 2016). The gap between teacher demand and supply has caused multiple school-based agricultural education program closures (Gates et al., 2020; Thieman et al., 2016). Considering most preservice agricultural education students went through traditional school-based agricultural education (SBAE) programs (Ingram et al., 2018), SBAE program closures eventually affect the enrollment of post-secondary agricultural education majors and agriculture teacher supply. Thus, it is paramount to meet the need for agriculture teachers across the nation by recruiting more students into post-secondary agricultural education (Ingram et al., 2018).

Although post-secondary school agricultural education degree programs strive to meet the need of supplying agriculture teachers to mitigate these program losses, university agriculture teacher educators are faced with difficulties recruiting the necessary number of high school students to their preservice agricultural education programs (Gates et al., 2020). As a joint effort of the agricultural education profession to address this issue, the National Council for Agricultural Education (NCAE) launched the Teach Ag Campaign in cooperation with the National Association of Agricultural Educators (NAAE) and the National FFA Organization (National Association of Agricultural Educators [NAAE], n.d.). The Teach Ag Campaign strives to increase awareness of the need to recruit and retain agricultural educators and encourage students to pursue a career in teaching agriculture (NAAE, n.d.).

To the best of our knowledge, only a few studies (Guffey & Young, 2020) identify the relationship between Teach Ag campaign efforts and agriculture teacher supply. Furthermore, research related to the effects of pre-collegiate recruitment programs or events in agriculture colleges has focused on participants'

consideration of pursuing a career in teaching agriculture mechanics (Gorter & Swan, 2018), attitudes toward agriculture as a subject, a college major, and a career (Fraze et al., 2011), and perception of the visited university campus climate (Gates et al., 2020). While these studies provide valuable information about the positive impact of the university's recruitment efforts on students' attitudes, self-efficacy, and consideration of pursuing a teaching agriculture career, they did not identify participants' behavior change and/or long-term outcomes of such recruitment efforts.

Furthermore, given that systematic program evaluation of preservice teacher recruitment programs is lacking, this study utilized Kirkpatrick's program evaluation framework to provide a comprehensive understanding of the impact of a preservice agriculture teacher recruitment program. In addition, previous studies (Fraze et al., 2011; Gates et al., 2020; Gorter & Swan, 2018; Guffey & Young, 2020) primarily used quantitative approaches and did not explain how the recruitment programs/workshops affected participants' perceptions and behaviors. This study used a mixed methods approach to better understand the mechanism of a preservice agriculture teacher recruitment program and offer implications for effective ways to recruit highly qualified future agriculture teachers.

### **Evaluation Framework**

This study utilized Kirkpatrick's four levels of training evaluation (Kirkpatrick, 1994) as an evaluation framework to identify the outcomes of a preservice teacher recruitment program. The model includes four levels of program outcome: (a) reaction, (b) learning, (c) behavior, and (d) results (Kirkpatrick, 1994). While the first three levels focus on outcomes related to participants' level, the fourth level is relevant to the results of participants' learning and its effect on the organization (Saroyan & Trigwell, 2015).

Level 1 Reaction assesses participants (learners)' reactions to the program. It is assumed that if participants do not like the program, it is unlikely that they will learn from it (Johnson & Dick, 2002). For this study, we measured participants' overall satisfaction with the program, their willingness to recommend the program to their peers, and the rank of activities based on the level of influence to assess participants' reactions. Furthermore, Level 2 Learning includes participants' learning attributed to the program. The learning is related to the extent to which participants improve knowledge, change attitudes, and increase skills as a result of the program (Kirkpatrick & Kirkpatrick, 2006). In this study, we assessed participants' changes in knowledge, attitude, and aspiration regarding pursuing a career teaching agriculture.

Level 3 Behavior regards participants' behavior change as a result of the program. To identify participants' behavior change, the extent to which participants use knowledge and skills gained from the program might be measured (Kirkpatrick & Kirkpatrick, 2006). Level 3 evaluation is much more difficult to implement than lower-level evaluations such as levels 1 and 2 (Johnson & Dick, 2002). In this study, behavior change was conceptualized as the number of program participants who were/are admitted to university agriculture teacher preparation programs. Lastly, Level 4 Results involves participants' outcomes in a larger context, such as organizations (Kirkpatrick & Kirkpatrick, 2006). Level 4 involves outcomes that affect the performance of the organization, which are more distant outcomes that take time to appear (Johnson & Dick, 2002). For the purposes of this study, Results was operationalized as the number of program participants who work in SBAE programs as agriculture teachers. Overall, Kirkpatrick's program evaluation model provides a valuable framework for identifying short-term, intermediate-term, and long-term outcomes of a preservice agriculture teacher recruitment program.

### **Purpose and Objectives**

The purpose of this study was to evaluate the outcomes and effectiveness of a preservice agriculture teacher recruitment program. The following three objectives guided this study:

1. Investigate the outcomes of a preservice agriculture teacher recruitment program based on Kirkpatrick's program evaluation model.
2. Describe participants' experience with a preservice agriculture teacher recruitment program.
3. Identify participants' suggestions for improving a preservice agriculture teacher recruitment program.

## **Methodology**

### **Description of the Program**

The Agricultural Education Institute (AEI) is a preservice teacher recruitment program started in 2013 within the Department of Agricultural Education and Communication (AEC) at the University of Florida (UF). It is one of the state's efforts to address the issue of recruitment and retention of agriculture teachers as a part of the National Teach Ag Campaign. The target audience for program participation is Florida school-based agricultural education (SBAE) students. The AEI is designed to develop students' interests in becoming agriculture teaching professionals and to meet the demand for agriculture teachers in Florida. The AEI provides various opportunities for participants to learn about the UF AEC department's admission process and the pathway to becoming an agriculture teacher. In addition, the program facilitators discuss topics around the transfer process, as well as college and departmental scholarship opportunities. Participants also receive one-on-one mentoring from agricultural education faculty members in the AEC department and develop relationships with their faculty mentors. The program kicks off in the summer each year at the Florida FFA State Convention and includes subsequent Fall and Spring sessions. Faculty mentors are present for the summer event, sitting with their student mentee and their FFA advisor as they sign their letter of intent. In addition, faculty are invited to attend the Fall and Spring sessions of AEI and are encouraged to reach out to their mentee at the start of the school year, on National Teach Ag Day, and throughout the school year. Although the AEI has been in place for almost a decade, no formal evaluations of the program had been conducted; consequently, the program's outcomes and impacts on the participants were not comprehensively studied.

### **Research Approach**

We utilized an explanatory sequential mixed method approach, which involves conducting a quantitative phase first, followed by a qualitative phase to help explain the quantitative results (Creswell & Plano Clark, 2018). In detail, quantitative data were used to identify the outcomes of the AEI based on Kirkpatrick's (1994) four levels of program outcomes. Then, qualitative data helped elaborate those quantitative results by identifying how the AEI influenced participants' motivation to pursue a career in teaching agriculture. We also sought recommendations for program improvement from participants through focus group interviews. In sum, while the quantitative study focused on identifying whether AEI achieved the intended outcomes, the qualitative research investigated what made it effective or ineffective.

### **Target Population**

The target population of this study was students who participated in the AEI since the program began. The total number of AEI participants between 2013 and 2020 was 330 (the number of participants in 2014 was not included because the 2014 participant roster was unavailable). There was also a change in faculty program leaders, starting in 2018. Some of the participant contact information was not documented in an accessible format from the program's first five years. Of 330 participants, the number of participants with contact information on the list was 276. The remaining 54 participants' contact information was not available. After excluding participants whose emails bounced back ( $n = 29$ ), 247 participants were

considered the accessible population in this study. A purposive and nonprobability sampling approach was used to collect data.

## Quantitative Phase

### *Quantitative Study Participants*

After eliminating incomplete responses, a total of 42 participants completed the quantitative portion of this study, resulting in a 17% survey response rate. Such a low response rate was mainly due to participants' expired high school email addresses, which gave researchers challenges in reaching study participants. The nonresponse error was not addressed because of the small sample size and the lack of available information on the target population's characteristics (i.e., gender, age, ethnicity, etc.). Therefore, we could not know the extent to which nonrespondents might differ from the respondents in this study, and there was a possibility that the data could be biased. We recognize this limitation of this study, and the findings cannot be generalized beyond the sample in this study. Table 1 presents the selected characteristics of the survey respondents.

**Table 1**

*Selected Characteristics of the Survey Respondents (n = 42)*

Variables	Categories	n	%
Gender	Male	8	19.0
	Female	34	81.0
Race	White	25	59.5
	Black or African American	1	2.4
	Multiracial	1	2.4
	Not disclosed	15	35.7
Current Status	12th grade in high school (over 18 years old)	3	7.1
	College/university student	28	66.7
	Graduate student	3	7.1
	Agriculture teacher	3	7.1
	Not disclosed	5	11.9
Involvement of SBAE	Agricultural education classroom/laboratory instruction	41	97.6
	Supervised agricultural experience program	40	95.2
	Agricultural youth organization participation (i.e., FFA, 4H, etc.)	40	95.2

### *Quantitative Study Instrument*

The quantitative study instrument included items that assessed the outcomes of the AEI program based on Kirkpatrick's (1994) four levels of training outcomes, including (a) reactions, (b) learning, (c) behavior, and (d) results. Furthermore, demographic questions were asked of the survey respondents. A panel of experts, including three faculty members and three graduate students in agricultural education, determined the instrument's face and content validity. Additionally, two other agriculture teacher educators

with vast knowledge and experience reviewed the instrument and served as expert reviewers to improve the clarity and validity of the questionnaire.

**Reaction.** The first section concerned participants' reactions to the program. The items involved in this portion included (a) participants' satisfaction with the program, (b) the level of participants' willingness to recommend the program to their peers, and (c) the rank of activities based on the level of influence. To measure the level of participant satisfaction with the AEI, participants were asked to rate their perceived level of satisfaction with the program using five-point Likert-type scales ranging from 1 (*poor*) to 5 (*excellent*). Furthermore, participants were asked to indicate the extent to which they would recommend the AEI program to their peers, using five-point Likert-type scales ranging from 1 (*very unlikely*) to 5 (*very likely*). Since both items consisted of single-item measures, the reliability of the items could not be measured (Wanous et al., 1997). While single-item measures are criticized because they are vulnerable to random measurement errors (Hoepfner et al., 2011), the use of single-item measures can be reasonable if the construct of interest is clear to respondents (Ginns & Barrie, 2004; Wanous et al., 1997), which is the case with the items in this study.

In addition, participants were asked to rank the activities offered by the AEI based on their perceived level of influence. The activities on the list included the sessions about (a) preparing to be an agriculture teacher, (b) career options that can be pursued with an agricultural education teacher preparation degree, (c) insight from recent AEC graduates & current students, (d) one-on-one mentoring by an AEC Ag Ed faculty member, (e) scholarship opportunities in CALS/AEC, (f) transferring to UF/AEC, (g) agriculture industry guest speakers (e.g., Florida Strawberry Growers Association, Farm Babe), and (h) UF campus and AEC tours. Last, an open-ended question asked respondents if they had any comments regarding the AEI allowing them to express themselves in their own words.

**Learning.** We developed nine items that assessed participants' learning changes regarding their knowledge, attitude, and aspiration regarding a career teaching agriculture. Each construct consisted of three items, and all items were assessed using a five-point, Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The Cronbach alpha coefficients of knowledge, attitude, and aspiration constructs were .71, .77, and .82, respectively, which indicated that the internal consistency reliability was acceptable (Pallant, 2016).

**Behavior.** Behavior change was conceptualized as the number of AEI participants who were/are admitted to university agriculture teacher preparation programs. We identified the number of AEI participants studying in the agricultural education teacher preparation program at UF using AEC admission data.

**Results.** Results was operationalized as the number of AEI participants working in SBAE programs as agriculture teachers. The data of UF AEC graduates were used to examine the program's impact on the results level. In the last section of the instrument, survey respondents were asked about demographic information, including gender, race, current status, and activities of SBAE involvement.

### ***Quantitative Data Collection and Analysis***

Online surveys were sent out to program participants using Qualtrics. The surveys were used to measure levels one and two of Kirkpatrick's program evaluation model. Dillman's Tailored Design Method was utilized to encourage survey responses and ensure data quality (Dillman et al., 2014). The director of the AEI program sent the first survey invitation email with the Qualtrics survey link to the study sample in March 2021. The director sent participants reminder emails after two, four, and eight weeks, resulting in four total solicitations to help promote the response rate (Dillman et al., 2014). The final reminder email was sent in May 2021. To increase participation in the research study survey, participants were offered the

opportunity to receive one of four \$25 Amazon gift cards. These gift cards were awarded to the first four participants who completed the survey in its entirety. Furthermore, the administrative data of UF AEC admission and post-graduation employment obtained from an academic advisor of the UF AEC were used to identify the behavior and results levels of the Kirkpatrick's program evaluation model. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) to run descriptive statistics. Descriptive statistics include frequency, mean, percentage, and standard deviation.

### Qualitative Phase

The quantitative results guided the development of the qualitative phase (Creswell & Plano Clark, 2018). The quantitative results indicated that participants were highly satisfied with the program, and the AEI positively influenced their knowledge, attitude, and aspiration regarding studying in the agricultural education preparation program and a career teaching agriculture. The qualitative data helped elaborate on those quantitative results. Focus group interviews were used to identify participants' perceptions of the AEI and explore how the AEI influenced participants' motivation to pursue a career in teaching agriculture. We also sought recommendations for program improvement from focus group interview participants.

### Qualitative Study Participants

Respondents in the quantitative phase were asked if they would be willing to participate in follow-up focus groups. While a total of 27 survey respondents indicated a willingness to participate, only eight of them participated in the focus groups due to time conflicts and other unspecified reasons. Based on their status, three separate focus groups were implemented, including (a) a lower-level undergraduate student group, (b) an upper-level undergraduate student group, and (c) a professional group (post-undergraduate). All focus group participants had previous SBAE experience as secondary students. Focus group participants were assigned a code (i.e., P1, P2, P3, and so forth) to maintain confidentiality. Table 2 presents the selected characteristics of the focus group participants.

**Table 2**

*Selected Characteristics of the Focus Group Interview Participants (n = 8)*

ID	Gender	Race	Status	SBAE Experience
P1	Female	White	Lower-level undergrad	Yes
P2	Male	Non-White	Lower-level undergrad	Yes
P3	Female	White	Upper-level undergrad	Yes
P4	Female	White	Upper-level undergrad	Yes
P5	Male	White	Professional (Non-agricultural industry)	Yes
P6	Female	White	Professional (Ag Ed Graduate student)	Yes
P7	Male	White	Professional (Agriculture teacher)	Yes
P8	Female	White	Professional (Agriculture teacher)	Yes

### Qualitative Study Instrument

The focus group guide was developed to acquire more in-depth information about participants' motivation to participate in the AEI, their experience with the AEI, and recommendations for program improvement (Table 3). The instrument's face and content validity were established through review by a panel of experts, including three faculty members and three graduate students in agricultural education.

**Table 3**

*Focus Group Interview Questions Regarding Participants' Perceptions of the AEI*

Categories	Interview Questions
Motivation to participate in the AEI	<ul style="list-style-type: none"> <li>• Why did you want to participate in the AEI?</li> <li>• If your ag teacher recommended AEI to you, what did this support look like in your situation?</li> </ul>
Experience with the AEI	<ul style="list-style-type: none"> <li>• Overall, what were your key takeaways from the AEI?</li> <li>• What were some of the specific topics discussed that seemed to resonate with you more than others?</li> <li>• After attending the AEI at the State FFA Convention, did you sign a letter of intent to teach agricultural education? If yes, did you stay connected with your UF faculty mentor? If so, please describe this interaction.</li> <li>• Can you describe how much the AEI influenced your decision to teach agriculture?</li> </ul>
Recommendations for program improvement	<ul style="list-style-type: none"> <li>• Could you provide us with any suggestions for the improvement of the AEI to better serve program participants?</li> </ul>

***Qualitative Data Collection and Analysis***

We conducted three separate focus groups via Zoom, each of which was moderated by a researcher with agricultural teaching experience. In addition, another researcher took observational notes during each focus group session. Focus groups lasted between 45 minutes and one hour. The sessions were video-recorded and transcribed verbatim. The data were analyzed using the constant comparative method (Corbin & Strauss, 2008), which involved three levels of analysis: open coding, axial coding, and selective coding. During the open coding, we read each transcription line-by-line and then analyzed the data using a descriptive coding procedure (Corbin & Strauss, 2008). In the axial coding phase, these codes were collapsed into broad categories, and comparisons were made between categories to develop main categories and subcategories (Ary et al., 2014). Finally, selective coding was used to identify relationships between categories (Ary et al., 2014).

According to Lincoln and Guba (1985), credibility, dependability, confirmability, and transferability are criteria for trustworthiness. To ensure the credibility of the data, the lead researcher engaged in regular peer debriefing with another member of the research team, and other researchers (peer reviewers) assessed the reasonableness of the researchers' interpretations of interview transcriptions (Ary et al., 2014). Intrarater and interrater agreements were utilized to assess the dependability of the qualitative findings (Ary et al., 2014). In the case of any discrepancies in the coding during interrater agreement, the coders discussed and reconciled them through consensus (Syed & Nelson, 2015). To establish confirmability, an audit trail was maintained, which recorded decisions and the rationale for them. Last, the

transferability of the study’s findings was achieved through the provision of detailed and comprehensive descriptions of the context and participants (Ary et al., 2014).

**Results**

**Objective 1. Investigate the Outcomes of a Preservice Agriculture Teacher Recruitment Program Based on Kirkpatrick’s (1994) Program Evaluation Model**

**Level 1: Reaction**

Participants indicated a high level of satisfaction with the program overall ( $M = 4.05, SD = 0.93$ ). Most respondents indicated they would recommend the AEI to their peers ( $M = 4.51, SD = 0.84$ ). Furthermore, regarding the perceived level of importance of the activities offered by the AEI, the highest-ranked activity was (a) the session about preparing to be an agriculture teacher ( $n = 32$ ), followed by (b) career options that can be pursued with an agricultural education teacher preparation degree ( $n = 28$ ), (c) insight from recent AEC graduates & current students ( $n = 25$ ), (d) one-on-one mentoring by an AEC Ag Ed Faculty member ( $n = 22$ ), (e) scholarship opportunities in CALS/AEC ( $n = 20$ ), (f) transferring to UF/AEC ( $n = 19$ ), (g) agriculture industry guest speakers (e.g., Florida Strawberry Growers Association, Farm Babe) ( $n = 16$ ), (h) UF Campus and AEC tours ( $n = 15$ ).

When asked if they had any comments regarding the AEI, nine survey respondents shared both positive and negative reactions to the program. In terms of positive responses, participants mentioned that they were satisfied with the program activities and opportunities to connect with individuals in agricultural education, which helped them promote or strengthen their decision to become agriculture teachers. On the other hand, several participants mentioned that they were not satisfied with communicating with their faculty mentors. While participants expected to have more personal interactions with their faculty mentors, the quality of the interactions did not meet their expectations. Table 4 describes the categories, the frequency of each category, and the responses that support the categories.

**Table 4**

*Participants’ Reactions to the AEI*

Categories	Frequencies	Responses
Positive response to the AEI	5	<ul style="list-style-type: none"> <li>• <i>“It was really fun and eye-opening, and why I ended up choosing agriculture education as my major.”</i></li> <li>• <i>“The AEI helped me get a start on what classes to look for and how to get involved in the experience and make connections to aid my goal of being an Ag teacher!”</i></li> <li>• <i>“It helped me feel welcomed into the agriculture community and reinsured me that this was what I was supposed to do.”</i></li> <li>• <i>“They are all easy to talk to and willing to answer questions and are great at getting to know you personally.”</i></li> <li>• <i>“The program seemed like it was going in a good direction then.”</i></li> </ul>
Negative response to the AEI	4	<ul style="list-style-type: none"> <li>• <i>“Unfortunately, in the years I participated, there were limited communications from my mentor.”</i></li> <li>• <i>“I was never contacted by my mentor to see my progress.”</i></li> </ul>

Categories	Frequencies	Responses
		<ul style="list-style-type: none"> <li>• “Mentors never followed up; I ended up losing motivation for the (ag ed) major.”</li> <li>• “I was never kept in touch with after the convention.”</li> </ul>

**Level 2: Learning (Changes in knowledge, attitude, aspiration)**

The results indicated that the AEI positively influenced participants’ knowledge, attitude, and aspiration regarding studying in an agricultural education teacher preparation program and a career teaching agriculture (See Table 5).

**Table 5**

*The Impact of the AEI on Participants' Knowledge, Attitude, and Aspiration Regarding a Career Teaching Agriculture*

Categories	Items	M	SD
Knowledge	Expanded my understanding of a career as an agriculture teacher	4.61	0.72
	Helped me understand more about the career options with an agricultural education degree	4.45	0.65
	Helped me better understand the admission process for UF/AEC	4.05	0.93
Attitude	Increased my interest in teaching people about agriculture	4.66	0.63
	Increased my perception of a career teaching agriculture in a positive way	4.55	0.69
	Increased my interest in studying agricultural education	4.42	0.89
Aspiration	Promoted my desire to study agricultural education in a college or a university	4.53	0.69
	Increased my desire to become an agriculture teacher	4.37	0.85
	Reinforced my decision to be an agriculture teacher	4.16	1.10

*Note.* Strongly disagree = 1, Somewhat disagree = 2, Neither agree nor disagree = 3, Somewhat agree = 4, Strongly agree = 5.

**Level 3: Behavior**

Behavior change was conceptualized as the number of AEI participants who were/are admitted to university agriculture teacher preparation programs. The results indicated that over the course of eight years, 330 participants took part in the AEI, and of those numbers, 37 (11.2%) were admitted to the AEC at UF based on current records. Among these, 34 participants pursued or are currently pursuing the agricultural education specialization. One of the 34 admitted agricultural education students dropped out of the program for unspecified reasons. The remaining three AEC-admitted students (of the 37) studied or are currently studying the communication and leadership development specialization. The limitation of the data was that the status of those who were not in the AEC administration system was not identified. Table 6 presents the descriptions of the AEI alums’ academic majors and status.

**Table 6**

*Description of the AEI Participants' Academic Majors and Status (updated: July 2022)*

Department	Majors	Statuses	Frequencies	Percent
UF AEC Department	Agriculture Teacher Education	Graduates	15	40.5
		Currently registered undergraduates	18	48.6
		Dropout	1	2.7
	Communication and Leadership Development	Graduates	2	5.4
		Currently registered undergraduates	1	2.7
		Total	37	100.0

**Level 4: Results**

The Level 4 Results was conceptualized as the number of AEI participants working as agriculture teachers. Among program participants, as of July 2022, a total of 14 program participants (5.7%) are currently working as agriculture teachers after graduating from the agriculture teacher education program at the UF/AEC. Assuming the 18 AEI alums currently enrolled in the agricultural education program choose to pursue a career teaching agriculture, it could bring the total number of program participants who teach agriculture up to 32 people.

**Objective 2. Describe Participants’ Experience With a Preservice Agriculture Teacher Recruitment Program**

The results related to Objective 2 were presented based on focus group participants’ responses to the questions regarding resonated topics and key takeaways from the AEI. Using the constant comparative method, the responses were grouped into four categories: a) knowledge, b) attitude, c) aspirations, and d) connections. The results indicated that the AEI positively influenced participants’ decisions to pursue a career in teaching agriculture by promoting their knowledge, attitude, and aspiration toward teaching agriculture. It also helped develop connections and cultivate a relationship with agricultural education professionals (e.g., agricultural education faculty members, pre-service teachers, and agriculture teachers).

**Knowledge: Increasing Understanding of a Career as an Agriculture Teacher and the Program Admission Process**

The results from the focus groups showed that the AEI helped enhance participants’ understanding of a career pathway to become an agriculture teacher, the admission process for UF/AEC, scholarship opportunities, and resources for agriculture teachers. For example, P2 shared, “One thing I appreciated about the AEI was that it gave me pretty much those clear steps.” Similarly, participants (P3, P4) stated that a session about college options helped them understand different pathways to become an agriculture teacher. Furthermore, participants appreciated various activities, particularly a student panel discussion, small group discussion, and Q&A sessions. These sessions offered participants opportunities to enhance their understanding of the program admission process, program expectations, and scholarship opportunities. For instance, P3 shared:

[Faculty name] and some of our other professors within the program talked about like the best method to get into the Ag Ed program at UF, what would happen when you are here and how that all worked. I think that made me feel a lot easier about being involved in the program once I got in.

Participants (P1, P4) also mentioned that such sessions helped alleviate their stress around the program admission process and scholarships by acquiring relevant information and resources. For instance, P4 shared, “I remember the panel talking about scholarships. The number one thing about my concern of going to college was finances, so it definitely helped alleviate a lot of the stress that I was feeling about pursuing agricultural education.” The AEI also helped break down some of the barriers regarding program application preparation. For example, P1 shared: “If I wanted to go to [another institution] or something, for example, I have no information on that... I think the AEI is one of the driving forces in that because I have gotten so much information from it.” The information and resources provided through the AEI helped participants stay on track for the program admission process and consequently encouraged them to pursue studies at the UF AEC.

Furthermore, participants (P3, P4) mentioned that they learned about agriculture teachers’ perspectives through the AEI, such as how agriculture teachers prepare lessons and where they get resources. In addition, participants (P5, P6) recalled an interactive group activity in which they discussed the characteristics of agriculture teachers with professionals in agricultural education and drew the person on a sheet, which helped them expand their understanding of a career in teaching agriculture.

#### ***Attitude: Increasing Positive Attitude Toward a Career in Teaching Agriculture***

The qualitative results indicated that the AEI helped positively influence participants’ attitudes toward a career in teaching agriculture by emphasizing the value and impacts of agricultural education on students and society as well as by offering support and resources for them. For instance, P4 mentioned that the AEI emphasized that being an agriculture teacher provides an opportunity to positively impact society, which helped them perceive a career teaching agriculture positively.

Furthermore, P2 mentioned that participating in the AEI was a pivotal experience because they were able to observe how the AEI and other stakeholders of agricultural education were dedicated to supporting the success of students who are interested in a career in agriculture. In addition, participants (P2, P8) stated that they learned about the broad support system of the agricultural education profession where they can access resources and support, such as the National Association of Agricultural Educators (NAAE) and the Florida Association of Agricultural Educators (FAAE). Overall, participants’ positive experience with the program and perceived support helped them consider a career in teaching agriculture.

#### ***Aspiration: Strengthening Aspiration to Become an Agriculture Teacher***

While the magnitude of the AEI’s impact on participants’ career decisions varied, all focus group participants commonly mentioned that the AEI positively influenced their decision to become an agriculture teacher. For instance, P7 recalled memories when signing a letter of intent and shared: “I think definitely like a light bulb went off, and I was like. . . give me that paper, and I am going to sign. I will not change my mind.” Similarly, P1 mentioned that hearing about inspiring agriculture teachers’ life stories at the AEI motivated them to pursue an agriculture teaching career. In addition, another participant (P4) noted that meeting with peer participants who have the same interest in teaching agriculture through the AEI helped them stay involved in the program and motivated them to pursue a career teaching agriculture.

For others, the AEI helped strengthen their predetermined decision to become agriculture teachers by offering enlightening sessions and connecting with various individuals in the agricultural education profession. Several focus group participants (P1, P6, P8) stated that they had already decided to become agriculture teachers before participating in the AEI. Thus, the AEI did not necessarily get them interested in a career teaching agriculture. Instead, it helped solidify their decisions. Participants (P2, P6, P7) mentioned that participation in the AEI encouraged them to study specifically at UF for agricultural education over other institutions. For example, P2 shared: “We were being engaged like as future

agricultural educators. . . I want to be a UF Ag education major, not just like an ag education major, but a UF Ag education major.” Similarly, P7 noted, “Doing the AEI made me want to be a part of UF.”

### ***Connections: Connecting and Building a Relationship With People in Agricultural Education***

Along with participants’ changes in knowledge, attitude, and aspiration aspects, several participants (P1, P2, P4) said that the AEI helped them make connections and build relationships with people in the agricultural education field, such as UF AEC faculty members, preservice teachers, agriculture teachers, and peer participants who have interest in a career in teaching agriculture. For instance, participants (P1, P2, P4) mentioned that speaking with agricultural education faculty members and pre-service teachers was helpful for them in understanding the agriculture teacher preparation program at UF and envisioning their future when they were admitted to the AEC program.

Furthermore, the AEI offered a mentoring program in which participants were matched with one of the faculty members in the UF AEC program. The program provided participants with opportunities to develop deeper connections with the AEC department at UF. For example, participants (P2, P6) mentioned that they positively interacted with their faculty mentors and developed personal relationships, which eventually encouraged them to study at the UF AEC. For instance, P2 shared:

I was asking for resources on different types of learning styles and teaching methods. He was super quick to respond back and give me those resources, which was super shocking because these faculty members are so busy having so many different projects on their plates, but they took the time to actually help. I was super like, “Wow, this is exactly where I need to be.”

Another participant (P6) mentioned that they continued cultivating the relationship with their faculty mentor even after being admitted to the program. P6 shared: “Dr. [name] really did make an effort to keep up with me. There were a few times that we just walked across campus and caught up on life. He was just really intentional about checking in on how I was doing.”

### **Objective 3. Identify Participants’ Suggestions for Improving a Preservice Agriculture Teacher Recruitment Program**

Focus group participants provided valuable suggestions that could make the program more successful and help better serve its target audience (SBAE students). The recommendations from focus group participants were categorized into different aspects of the program enhancement, including (a) participant recruitment, (b) program design, and (c) mentoring program.

#### ***Participant Recruitment: Incorporating Student-Centered Recruitment Strategies***

In terms of participant recruitment strategies, participants addressed issues with the current recruitment approach. They suggested incorporating more student-centered recruitment approaches to enhance students’ autonomy in participating in the program. The qualitative results indicated that while all students participated in the AEI recommended by their agriculture teachers, most (P1, P2, P6, P7) joined the program due to their interest in a career teaching agriculture. Participants stated that their teachers recommended them because the teachers knew they were/might be interested in a career teaching agriculture and signed them up for the program. However, several participants stated they had little understanding of the program and its value before joining the AEI.

In terms of recommendations for the recruitment approach, participants (P4, P5, P6, P7) suggested directly contacting students rather than using an indirect recruitment approach. Participants mentioned that a more student-centered recruitment approach would help increase students’ autonomy in program

participation and promote understanding of the program's purpose and benefits before they participate in the program. P4 mentioned that direct contact with students would significantly benefit students who do not have a close relationship with their agriculture teachers. Participants also recommended diversifying the program's promotion strategies. The strategies included creating a promotional video about the program, using social media platforms, organizing online Q&A sessions before the program's start, and collaborating with various individuals in agricultural education, such as pre-service teachers and FFA state officers.

### ***Program Design: Offering the Program in a Hybrid Mode and Teaching-Focused Sessions***

Participants suggested various recommendations regarding program design. In terms of a program delivery mode, a hybrid mode that offers participants the option to attend program sessions either in-person or online was recommended. P4 mentioned that a hybrid mode would be especially beneficial for students who might have difficulty participating in the program due to geographic distance and time. In addition, three participants (P5, P6, P8) recommended offering more opportunities to interact with their peers through small group activities focusing on enhancing peer communication and networking. The activities would allow them to share resources, information, or concerns regarding program admission preparation and career pathways, which could help build a supportive community.

Furthermore, participants recommended providing an opportunity to develop students' teaching skills and to think more deeply about a career teaching agriculture. For example, two participants (P3, P4) suggested that the AEI offers prospective participants opportunities to reflect on why they want to teach agriculture and what it means to be an agriculture teacher by writing a teaching philosophy. Another topic proposed by one participant (P4) was an individualized college application review session to reduce students' concerns about the program admission process, in particular, for high school seniors and transfer students.

### ***Mentoring Program: Strengthening the Mentoring Program by Providing More Opportunities to Cultivate Relationships With Their Mentors***

The responses were mixed when asked about participants' relationships with their faculty mentors. While a few (P2, P6) stated that their interaction with their faculty mentors was positive, most mentioned that they had minimal communication with their mentors. For example, P6 shared, "I know that the advisors have a million things on their plate. . . I just sometimes felt like we got lost and put on the back burner." Some participants (P1, P5, P7) did not recall their faculty mentors. Participants suggested having more opportunities to develop a relationship with their mentors and wished to acquire more tailored information and guidance from them. Furthermore, one participant (P5) suggested that, along with faculty mentors, the involvement of pre-service teachers in the mentoring program would benefit participants because they could learn about the program from current students' perspectives and expand their support network.

## **Conclusions**

Agriculture teacher educators are challenged to recruit sufficient numbers of qualified and dedicated students to their preservice agriculture teacher programs. Despite the importance of preservice agriculture teacher recruitment programs to recruit future agriculture educators and sustain the agriculture education profession, little research has been conducted on the outcomes of preservice agricultural education teacher recruitment programs. To address the knowledge gap in the literature, this study aimed to explore the outcomes of the AEI, which is designed to meet the demand for agriculture teachers in Florida.

We utilized Kirkpatrick's four levels of evaluation model (Kirkpatrick, 1994) to assess the different outcome levels of the AEI, including reaction, learning, behavior, and results. Regarding Level 1 Reaction, the results indicated that participants were highly satisfied with the program, particularly with sessions

about preparing to be an agriculture teacher. In addition, the majority of respondents reported they would recommend the AEI to their peers. The results indicated that the AEI program activities were effective in meeting the needs of program participants. Furthermore, the qualitative results showed that several participants were not satisfied with their communication level with their faculty mentors. Most participants desired more opportunities to develop personal relationships with their mentors. The results indicated that the AEI program needs to look more into relationship building and maintenance in order to increase participants' satisfaction.

Regarding Level 2 Learning, the results showed that the AEI positively affected participants' knowledge, attitude, and aspiration regarding a career teaching agriculture. According to the focus group participants, the increased knowledge gained regarding the admissions process and scholarship opportunities helped relieve stress about becoming an agriculture teacher. Furthermore, the AEI program partners, such as agriculture teachers, agriculture teacher educators, and people from the agriculture industry, offered sessions emphasizing the value and impacts of agricultural education on people and society. Through those informative and inspiring sessions, participants learned that many agricultural education stakeholders were dedicated to supporting the success of students interested in a career teaching agriculture. Participants also realized the comprehensive support system of the agricultural education profession, which increased their positive attitude towards the teaching agriculture career. The results aligned with the findings of previous studies (Fraze et al., 2011; Gates et al., 2020; Gorter & Swan, 2018), which found participants' positive changes in their attitudes and perceptions toward agriculture careers after participating in recruitment programs/workshops.

All focus group interview participants reported that the AEI positively influenced their decision to teach and solidified their plans to pursue a career teaching agriculture. The findings were consistent with the previous studies that identified the effects of recruitment efforts on participants' consideration of pursuing a career in teaching agriculture mechanics (Gorter & Swan, 2018) and attitudes toward agriculture as a college major and as a career (Fraze et al., 2011). Another interesting finding of our study was that the AEI increased participants' sense of belonging to the AEC and promoted opportunities to connect with and build a relationship with individuals in agricultural education, such as agriculture teacher educators, agriculture teachers, and peer students who have an interest in a career in teaching agriculture.

Regarding Level 3 Behavior, 37 AEI participants were admitted to UF/AEC. While a few of them studied or are studying agricultural communication and leadership, the majority pursued or are pursuing agricultural education. Participants mentioned that they wanted to study specifically at the UF/AEC department due to the resources, support, and relationship established through the AEI. It demonstrated that participants' positive change in learning after the AEI encouraged them to study in an agricultural education teacher preparation program at UF. Furthermore, concerning Level 4 Results, the findings indicated that the AEI contributes to producing many agriculture teachers who support our school-based agricultural education programs in Florida. The finding was consistent with the study of Guffey and Young (2020), which found positive effects of the participation of the federal State Teach Ag Results (STAR) program on agriculture teacher recruitment.

Overall, this systematic evaluation of the AEI using the Kirkpatrick model of program evaluation indicated that the AEI is worthwhile in promoting SBAE students' knowledge, attitude, and aspiration for a career in teaching agriculture. In addition, the study showed evidence of the program's impact on participants' choice of an agricultural education major, their decision to pursue a career in teaching agriculture, and how it benefited the agricultural education profession. Furthermore, this study demonstrated accountability to its funders and stakeholders and offered several implications for improving the program's effectiveness.

### **Recommendations**

Several recommendations for practice and research were proposed based on the findings of this study. In particular, the recommendations regarding participant recruitment, program design, and implementation should be recognized by the AEI manager and agricultural education stakeholders to develop a more impactful program for future agricultural educators. Regarding recommendations for practice, given the impact of the AEI on participants, faculty members in agricultural education departments should actively develop and implement effective preservice teacher recruitment programs to recruit qualified preservice agriculture teachers. Collaborative recruitment efforts with various stakeholders in agricultural education are essential to promote the effectiveness of the programs and recruit qualified agriculture teacher candidates who can support the future agriculture workforce and sustain the agriculture industry.

In addition, in terms of participant recruitment, there should be a consideration for moving beyond agriculture teacher-nominated program participation and integrating student-centered recruitment approaches to expand the reach of potential program participants. Participants recommended creating promotional videos and sharing them on social media outlets. In addition, it is encouraged to offer an informational pre-program session online to enhance potential participants' and agriculture teachers' understanding of the program components and benefits.

When designing program components, it is recommended that the AEI provides participants with more opportunities to interact with their peer participants. The activities emphasizing peer networking would allow participants to share information and discuss concerns regarding program admission preparation and career pathways, which could provide a community for like-minded individuals. Activities that focus on enhancing participants' teaching skills and reflective exercises were also suggested to help them explore their beliefs and philosophies regarding a career as an agriculture teacher. Further, the findings indicated that several participants were not satisfied with the level of communication with their faculty mentors. The AEI coordinator needs to develop strategies to promote agriculture teacher educators' involvement and consider engaging preservice teachers in the mentoring program to complement its challenges and maximize the benefits of the program.

Furthermore, one of the study's challenges was measuring the program's outcomes at the Behavior and Results levels, as participants' expired school email addresses made it difficult to determine their academic majors and career status. In order to monitor and track participants' status after graduation from high school, we recommend program directors of preservice teacher recruitment programs collect the valid personal contact information (e.g., personal email addresses, cell phone numbers) of program participants in addition to their school email addresses. With the efforts, program directors will be able to follow up with their program participants, allowing them to track those who pursue an agricultural education degree at other universities as well. They will also be able to demonstrate the program's value and benefits to its funders and stakeholders by identifying the program's long-term effects (entering into the teaching agriculture profession).

Regarding recommendations for research, the generalizability of findings is limited because this study used a one-group posttest-only design. It is recommended to use a matched comparison group, if possible, to identify the net effect of the program and allow more robust inferences about the causal relationship between a program and its outcomes. Furthermore, the results demonstrated that the AEI provided participants with opportunities to develop their relationships with various individuals in the agricultural education profession. Future researchers should consider measuring participants' change in social capital as an outcome of a preservice agriculture teacher recruitment program and identify the effects of social capital on program participants' career-decision making processes.

Lastly, although preservice teacher recruitment programs are beneficial for the sustainable agricultural education profession to a certain extent, it is essential to note that they are one of many factors that influence students' choice of major. Given that multiple factors influence prospective students' choice of academic major (Chapman, 1981; Wildman & Torres, 2001), future researchers should investigate how various factors that influence students' choice of academic major interact with each other in preservice teacher recruitment. All of these recommendations can help strengthen the outcomes of the AEI and other similar preservice teacher recruitment programs.

## References

- Ary, D., Jacobs, L. C., & Sorensen, C. (2014). *Introduction to research in education* (9th ed.). Wadsworth Cengage Learning.
- Chapman, D. W. (1981). A model of student college choice. *The Journal of Higher Education*, 52(5), 490-505. <https://doi.org/10.2307/1981837>
- Corbin, J., & Strauss, A. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). SAGE Publications.
- Creswell, J., & Plano Clark, V. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, phone, mail, and mixed-mode surveys: The tailored design method* (4th ed.). John Wiley & Sons.
- Foster, D. D., Lawver, R. G., & Smith, A. R. (2020). *National agricultural education supply & demand study, 2019 executive summary*. [https://aaaeonline.org/resources/Documents/NSD2019%20Summary\\_7.15.20.pdf](https://aaaeonline.org/resources/Documents/NSD2019%20Summary_7.15.20.pdf)
- Fraze, L., Wingenbach, G., Rutherford, T., & Wolfskill, L. (2011). Effects of a recruitment workshop on selected urban high school students' self-efficacy and attitudes toward agriculture as a subject, college major, and career. *Journal of Agricultural Education*, 52(4), 123-135. <https://doi.org/10.5032/jae.2011.04123>
- Gates, H. R., Borges, B. D., & Shoulders, C. W. (2020). Tagged to Teach Ag Day: Evaluating the influence of a recruitment event on students' perceptions of campus climate. *Journal of Agricultural Education*, 61(2), 222-237. <https://doi.org/10.5032/jae.2020.02222>
- Ginns, P., & Barrie, S. (2004). Reliability of single-item ratings of quality in higher education: A replication. *Psychological Reports*, 95(3), 1023-1030. <https://doi.org/10.2466/pr0.95.3.1023-1030>
- Gorter, E. K., & Swan, B. G. (2018). Impact of agricultural mechanics camp on intentions to teach. *Journal of Agricultural Education*, 59(4), 301-314. <https://doi.org/10.5032/jae.2018.04301>
- Guffey, K. B., & Young, J. S. (2020). Recruitment and retention of agriculture teachers in the southeast: An empirical analysis of the STAR program. *Journal of Agricultural Education*, 61(4), 203-213. <https://doi.org/10.5032/jae.2020.04203>
- Harding, J. (2019). *Qualitative data analysis: From start to finish*. SAGE Publications.
- Hoepfner, B. B., Kelly, J. F., Urbanoski, K. A., & Slaymaker, V. (2011). Comparative utility of a single-

- item versus multiple-item measure of self-efficacy in predicting relapse among young adults. *Journal of Substance Abuse Treatment*, 41(3), 305–312. <https://doi.org/10.1016/j.jsat.2011.04.005>
- Ingram, M. L., Sorensen, T. J., Warnick, B. K., & Lawver, R. G. (2018). The influence of school-based agricultural education on preservice agriculture teachers' choice to teach. *Journal of Agricultural Education*, 59(2), 64–78. <https://doi.org/10.5032/jae.2018.02064>
- Johnson, R. B., & Dick, W. (2002). Evaluation in instructional design: A comparison of evaluation models. In Reiser, R. A., & Dempsey, J. V. (Eds.), *Trends and issues in instructional design and technology* (pp. 96-104). Pearson.
- Kantrovich, A. J. (2007). *A national study of the supply and demand for teachers of agricultural education from 2004-2006*. [https://aaaeonline.org/Resources/Documents/2004\\_2006%20Supply%20and%20Demand%20Study.pdf](https://aaaeonline.org/Resources/Documents/2004_2006%20Supply%20and%20Demand%20Study.pdf).
- Kirkpatrick, D. (1994). *Evaluating training programs: The four levels*. Berrett-Koehler Publishers.
- Kirkpatrick, D., & Kirkpatrick, J. (2006). *Evaluating training programs: The four levels* (3rd ed.). Berrett-Koehler Publishers.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications.
- National Association of Agricultural Educators [NAAE]. (n.d.). *Teach Ag recruitment and retention resources*. Retrieved from <https://www.naae.org/teachag/recruitmentandretention.cfm>
- Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS*. McGraw-Hill Education.
- Saroyan, A., & Trigwell, K. (2015). Higher education teachers' professional learning: Process and outcome. *Studies in Educational Evaluation*, 46, 92–101. <https://doi.org/10.1016/j.stueduc.2015.03.008>
- Smith, A. R., Lawver, R. G., & Foster, D. D. (2019). *National agricultural education supply & demand study, 2018 executive summary*. [http://aaaeonline.org/resources/Documents/NSD2018%20Summary%20\(1\).pdf](http://aaaeonline.org/resources/Documents/NSD2018%20Summary%20(1).pdf)
- Syed, M., & Nelson, S. C. (2015). Guidelines for establishing reliability when coding narrative data. *Emerging Adulthood*, 3(6), 375–387. <https://doi.org/10.1177/2167696815587648>
- Thieman, E., Rosch, D., & Suarez, C. (2016). Consideration of agricultural education as a career: A statewide examination by high school class year of predicting factors. *Journal of Agricultural Education*, 57(4), 29–43. <https://doi.org/10.5032/jae.2016.04029>
- Wanous, J., Reichers, A., & Hudy, M. (1997). Overall job satisfaction: How good are single-item measures. *Journal of Applied Psychology*, 82(2), 247–252. <https://doi.org/10.1037/0021-9010.82.2.247>
- Wildman, M., & Torres, R. M. (2001). Factors identified when selecting a major in agriculture. *Journal of Agricultural Education*, 42(2), 46–55. <https://doi.org/10.5032/jae.2001.02046>