

**Assessing the Impact of a Statewide Training on Iowa Agricultural Educators’
Implementation and Perceptions of SAE for All**

Joe Ramstad, Iowa State University
Scott Smalley, Iowa State University
Jonathan Turk, Iowa State University

Introduction and Literature Review

SAE is an integral component of a school-based agricultural education (SBAE) program, in tandem with a student’s classroom and leadership development experiences (Croom, 2008). The premise of experiential learning in agriculture dates back to nearly 120 years ago, when Rufus Stimson developed the project-based learning method at the Smith Agricultural College (Smith & Rayfield, 2016). Over the years, the project-based learning experience title has since evolved into becoming known more commonly as the SAE, yet, the overarching goal of this experience has remained consistent with the initial ideals of Stimson’s project-based learning experiences—providing students with opportunities to learn by doing. However, as families and students become more distantly removed from the farm, accountability for (Smith & Rayfield, 2016; Wilson & Moore, 2007) and the classification of what experiences should and should not be qualified as an SAE (Marzolino & McKim, 2024) have been two key factors SBAE teachers have been wrestling with—these conversations have led to the introduction of SAE for All.

Among the barriers to an educator’s ability to adopt SAE for All, a general lack of understanding of what SAE for All consists of, coupled with a lack of training, are leading factors which limit a teacher’s ability to implement SAE for All. Since the conception of SAE for All, language and terminology surrounding SAE has changed (National Council for Agricultural Education, 2015), contributing to a lack of understanding among educators (Doss & Rayfield, 2019; Figland et al., 2019; Lewis et al., 2012; Marzolino & McKim, 2024; Rubenstein & Thoron, 2015). Doss and Rayfield (2019) revealed a group of 116 SBAE teachers reported lower levels of familiarity and awareness surrounding the different terminologies used to describe SAE under the new SAE for All framework, with 69.8% ($n = 81$) of teachers indicating they did not even know the SAE for All initiative was being introduced, and only 32.8% ($n = 38$) of teachers being able to correctly identify examples of foundational SAEs, a key component of the SAE for All initiative (National Council for Agricultural Education, 2015). Educators also indicate that in addition to their lack of understanding of SAE for All, students’ lack of awareness and knowledge is another limiting factor that inhibits their ability to provide these experiences for their students (Marzolino & McKim, 2024). Despite this, Hainline and Smalley (2023) identified professional development within SAE to be a significant need for SBAE teachers, with teaching record-keeping (MWDS = 4.50), developing research-based SAE opportunities (MWDS = 4.30), developing school-based enterprise SAE opportunities (MWDS = 4.22), and developing service-learning SAE opportunities (MWDS = 3.83) to be among the top SAE for All-centric professional development needs for over 140 Iowa SBAE teachers. While SAE for All has only been an initiative originating within the last decade, there are opportunities for training and resources to address the SAE barriers and concerns of SBAE teachers. Additional training can increase teacher confidence and willingness to implement SAE in their programs (Eck & Davis, 2024; Guskey, 2002; Hainline & Smalley, 2023), and ultimately, help their students gain access to rigorous work-based learning experiences that can address the shortages faced within the agriculture industry (Hill et al., 2021; USDA Economic Research Service, 2024).

Conceptual Framework

Ajzen's (1991) Theory of Planned Behavior guided the development of this study. According to Ajzen (1991), an individual's attitudes, subjective norms, and perceived behavioral control contribute to their intentions to complete a specific task, and ultimately, their behavior. His theory was developed in an effort to explain and predict how individuals will behave in specific situations or contexts (Ajzen, 1991). Within this study, the specific context being examined is teachers' decision to implement the SAE for All framework within their SBAE programs. When considering the specific elements of the Theory of Planned Behavior, attitude consists of an individual's level of belief or agreement toward a specific behavior or idea (Ajzen, 1991). These attitudes connect with the individual's subjective norms, which is their evaluation of the demands or expectations other stakeholders place on them to comply with a specific behavior or idea (Ajzen, 1991). In this study, we sought to examine SBAE teachers' subjective norms related to students, administrators, state staff, community members, and more. An individual's perceived behavioral control examines their belief in their ability to complete a behavior (Ajzen, 1991).

Purpose and Objectives

The purpose of this study was to examine the implementation of SAE for All among Iowa SBAE teachers before and after attending a training. This purpose was guided by two objectives:

1. To measure agricultural educators' decision to implement SAE for All after attending a statewide training.
2. To compare agricultural educators' perceived barriers of SAE for All implementation before and after attending a statewide training.

Methods

Our study employed a quantitative descriptive method. Data were collected via an IRB-approved survey instrument, distributed to SBAE teachers attending the Iowa Association of Agricultural Educators conference. SBAE teachers attending the conference were invited to participate prior to a workshop session focusing on SAE for All, and again five months after the workshop. Reminders were distributed following Dillman et al.'s (2014) recommendations. All educators consented to their participation using an informed consent form.

The instrument was aligned with the study's theoretical framework (Ajzen, 1991) and objectives. Six experts not directly involved with the study who have several years' worth of experiences in SBAE, quantitative research, and SAE for All received an overview of the study, including the theoretical framework and objectives, and asked to review the instrument to evaluate it for both content and face validity (Thyer, 2010). The perceived SAE for All student and teacher barriers on the instrument were gathered from findings of recent studies, but experts were also specifically asked to evaluate the barriers to ensure they were consistent with the difficulties faced in SAE for All implementation in their area. Their recommended adjustments were made to strengthen the validity of the instrument. Further, the instrument was piloted to assure reliability of the instrument (Creswell & Creswell, 2018). The final instrument used in the study consisted of 47 items, including demographic, multiple-choice, and Likert-type scale items. This study focuses on data connected to the demographic and multiple-choice items.

The sample of 173 SBAE teachers who participated in the study and attended the 2025 Iowa Conference are a subset of the 319 Iowa SBAE teachers. Respondents offered anywhere from 1

to over 30 years of teaching experience ($\bar{x} = 8.1$; $\sigma = 7.2$) and reported a range of comfort levels and experiences related to SAE and their own level of SAE for All implementation. Of the 173 respondents, 128 were females (74.0%) and 45 were males (26.0%). A chi-squared goodness of fit test revealed the sample was representative of the population of all SBAE teachers in Iowa in terms of gender, $\chi^2(1, N = 172) = 4.85, p < .05$ (Frankfort-Nachmias & Leon-Guerrero, 2021). Having a sample that matches the entire population of interest is an important aspect of having a well-designed study (Creswell & Creswell, 2018; Johnson & Shoulders, 2019).

Results

173 Iowa SBAE teachers participated, despite some not completing the entirety of the instrument and some attrition between the pre- and post-instruments. We achieved a balance in terms of years of experience and gender, and the majority of educators ($n = 97$; 67.8%) reported participating in other SAE for All training prior to their engagement in the training (Table 1).

Table 1
Demographics of SAE for All study respondents

	\bar{x}	σ	n	%
Years of Teaching Experience	8.58	7.47	143	
Early career (1-5 years)			66	46.2%
Mid-career (6-15 years)			55	38.5%
Late career (>15 years)			22	15.3%
Teaching Recordkeeping				
Yes			124	87.3%
No			18	12.6%
Past SAE for All Training				
Yes			97	67.8%
No			46	32.2%

Objective 1 measured educators’ decision to implement SAE for All before and after attending a statewide training (Table 2). Prior to the training, 71.8% ($n = 61$) of SBAE teachers reported implementing SAE, with 47.6% of educators also grading them ($n = 40$). After the training, 97.9% ($n = 94$) reported implementing SAE for All, with 72.3% grading SAEs ($n = 68$). A paired samples t -test specifically examining the implementation of SAE for All revealed a statistically significant difference between the pre- and post-instrument ($df = 84$; $t = 5.607$; $p < 0.001$).

Table 2
Variables of interest before and after attending SAE for All training

Variable	Pre		Post	
	f	%	f	%
Implementation of SAE for All				
Yes	61	71.8%	94	97.9%
No	24	28.2%	2	2.1%
Grading Students’ SAE Projects				
Yes	40	47.6%	68	72.3%
No	44	52.3%	26	27.7%

Recordkeeping

Mainly during class	36	49.3%	62	64.6%
Mainly out of class	24	32.9%	28	29.2%
Not required	13	17.8%	6	6.2%

Recordkeeping Platform

AET	61	83.6%	88	93.6%
Other platform	4	5.5%	4	4.3%
Not required	8	10.9%	2	2.1%

Objective 2 compared educators’ perceived barriers of SAE for All implementation before and after the training. Overall, educators reported fewer barriers after attending the training than they did prior to the training. However, when considering perceived student barriers, they felt limited time investment from their teacher and the use of AET to be two barriers which were more pronounced after attending the training (Table 3).

Table 3

Perceived barriers to SAE for All implementation before and after attending training

Barrier	Pre (n = 141)		Post (n = 91)		% Change
	f	%	f	%	
Perceived Teacher Barriers					
Student effort	120	85.1%	77	84.6%	-0.5%
Time investment by students	113	80.1%	62	68.1%	-12.0%
Lack of teacher understanding	44	31.3%	21	23.1%	-8.2%
Lack of resources to implement	26	18.4%	11	12.1%	-6.3%
Lack of interest	73	51.8%	43	47.3%	-4.5%
Using AET	47	33.3%	28	30.8%	-2.5%
Lack of funding to facilitate SAE year-round	40	28.3%	20	22.0%	-6.3%
Assessment and grading	44	31.3%	21	23.1%	-8.2%
Perceived Student Barriers					
Student effort	97	68.8%	52	57.1%	-11.7%
Time investment by the teacher	27	19.1%	18	19.8%	+0.7%
Lack of student understanding	80	56.7%	45	49.5%	-7.2%
Lack of student supports and resources	28	19.9%	14	15.4%	-4.5%
Lack of interest	90	63.8%	48	52.7%	-11.1%
Using AET	53	37.6%	40	44.0%	+6.4%

Conclusions and Recommendations

Objective 1 measured educators’ decision to implement SAE for All before and after attending a statewide training. The data revealed that only 71.8% of SBAE teachers agreed they were implementing SAE for All within their programs (n = 61) prior to the training, despite nearly two-thirds of respondents indicating participation in SAE for All training in the past (n = 97; 67.8%). As supported by prior research, perhaps this lack of full implementation is due to SBAE teachers’ general lack of SAE for All knowledge, even after attending training (Doss & Rayfield, 2019; Marzolino & McKim, 2024). This may especially be true of older or more experienced

teachers who may not wish to adopt SAE for All since they lack formalized SAE for All practices being introduced to them in their teacher preparation program (Doss & Rayfield, 2019; Figland et al., 2019; Hainline & Smalley, 2023). SBAE teachers' lack of knowledge or confidence with SAE for All may influence some educators' attitudes or perceived behavioral control regarding SAE for All, and cause apprehension in their intentions or behaviors in adopting the initiative within their SBAE programs (Ajzen, 1991; Marzolino & McKim, 2024). Despite this, the training appeared to assist teachers in their implementation of SAE for All; there was a statistically significant difference found in implementation when comparing responses before and after the training ($df = 84$; $t = 5.607$; $p < 0.001$).

Objective 2 compared educators' perceived barriers of SAE for All implementation before and after the training. Overall, teachers' perceptions of SAE for All barriers were put at ease by their engagement in this SAE for All training. On a percentage basis, of the 8 identified perceived teacher barriers, all decreased after the training ($n = 8$; 100.0%). Similarly, of the 6 perceived student barriers, the majority of those decreased ($n = 4$; 66.7%). Initial SAE for All barriers may be attributed to teachers' perceived lack of knowledge or lack of exposure to SAE for All within their teacher preparation programs (Lewis et al., 2012; Marzolino & McKim, 2024; Rubenstein & Thoron, 2015), or perhaps the attitudes, hesitation, or reluctance that more experienced teachers may offer toward SAE for All (Ajzen, 1991). However, with reduced barriers, teachers demonstrate greater perceived behavioral control (Ajzen, 1991) to implement SAE for All.

Limitations and Recommendations

We acknowledge that future research is warranted within the area of SAE for All to overcome the limitations of this study. Some limitations which will be important to consider include having a larger sample size and more equal representation from each of the three career stages, and examining prior FFA or SAE experience as a potential variable of interest. Additionally, qualitative research exploring teachers' implementation of SAE for All may assist in explaining findings (Creswell & Creswell, 2018). For example, conducting interviews with SBAE teachers to share their experiences and challenges with SAE for All implementation may assist in helping teacher educators or stakeholders to secure or develop resources to assist educators in adopting SAE for All within their programs. Additionally, a content analysis of SAE for All artifacts, such as SAE project instructions or grading rubrics, SAE expectation sheets, and SAE visit forms, may reveal additional best practices to inform future training and resources for SBAE teachers.

For professional practice, it is recommended that the National Council for Agricultural Education continues to develop SAE for All training for teachers, especially regarding AET. Training can continue to influence and increase teachers' confidence, so more are willing or able to implement SAE for All within their SBAE programs in the future (Doss & Rayfield, 2019; Eck & Davis, 2024; Guskey, 2002; Marzolino & McKim, 2024). Educators with greater levels of perceived behavioral control related to SAE for All implementation are more likely to implement SAE for All within their programs because they have a stronger perceived behavioral control in their ability to do so and feel comfortable navigating the perceived barriers (Ajzen, 1991). These trainings could be delivered in-person at statewide trainings similar to what was modeled at the Iowa conference. Alternatively, asynchronous, virtual trainings may be easier and cost-effective to facilitate, more adequately account for teachers' busy schedules, and be more readily provide updated training since the layout and functions of AET changes regularly.

References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211.
- Creswell, J. D., & Creswell, J. W. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications.
- Croom, D. B. (2008). The development of the integrated three-component model of agricultural education. *Journal of Agricultural Education*, 49(1), 110–120.
<https://doi.org/10.5032/jae.2008.01110>
- Dillman, D. A., Smyth, J. D., & Christian, L. M. (2014). *Internet, mail, and mixed-mode surveys: The tailored design method* (4th ed.). John Wiley & Sons, Inc.
- Doss, W., & Rayfield, J. (2019). Assessing school-based agricultural education teacher familiarity, knowledge, and perceptions of supervised agricultural experience categories. *Journal of Agricultural Education*, 60(3), 206–218.
<https://doi.org/10.5032/jae.2019.03206>
- Eck, C., & Davis, R. (2024). Identifying the perceptions, barriers, and implementation of middle school supervised agricultural experiences. *Journal of Agricultural Education*, 65(1), 126–139. <https://doi.org/10.5032/jae.v65i1.158>
- Figland, W., Blackburn, D. J., Stair, D. K., & Smith, D. E. (2019). What do they need? Determining differences in the professional development needs of Louisiana agriculture teachers by years of teaching experience. *Journal of Agricultural Education*, 60(2), 173–189. <https://doi.org/10.5032/jae.2019.02173>
- Frankfort-Nachmias, C., Leon-Guerrero, A., & Davis, G. (2021). *Social statistics for a diverse society* (9th ed.). SAGE Publications.
- Guskey, T. (2002). Professional development and teacher change. *Teachers and Teaching Theory and Practice*, 8(3), 381–391. <https://doi.org/10.1080/135406002100000512>
- Hainline, M., & Smalley, S. (2023). Determining the professional development needs of Iowa school-based agricultural education teachers related to program design, leadership, and SAE development. *Journal of Agricultural Education*, 64(1), 1–10.
<https://doi.org/10.5032/jae.v64i1.26>
- Hill, A. E., Ornelas, I., & Taylor, J. E. (2021). Agricultural labor supply. *Annual Review of Resource Economics*, 13(1), 39–64.
<https://doi.org/10.1146/annurev-resource-101620-080426>

- Johnson, D. M., & Shoulders, C. W. (2019). Beyond magic words and symbols: Rethinking common practices in quantitative research. *Journal of Agricultural Education*, 60(3), 291–303. <https://doi.org/10.5032/jae.2019.03291>
- Lewis, L. J., Rayfield, J., & Moore, L. L. (2012). Supervised agricultural experience: An examination of student knowledge and participation. *Journal of Agricultural Education*, 53(4), 70–84. <https://doi.org/10.5032/jae.2012.04070>
- Marzolino, T., & McKim, A. (2024). Teacher perceptions of student growth and successful supervised agricultural experiences. *Journal of Agricultural Education*, 65(2), 71–85. <https://doi.org/10.5032/jae.v65i2.120>
- National Council for Agricultural Education. (2015). *Philosophy and guiding principles for execution of the supervised agricultural experience component of the total school based agricultural education program*. <https://ffa.app.box.com/s/i8ntesw8zsajaxdnj5cle6zaf0a6za3>
- Rubenstein, E. D., & Thoron, A. C. (2015). Supervised agricultural experience programs: An examination of committed teachers and student-centered programs. *Journal of Agricultural Education*, 56(4), 75–89. <https://doi.org/10.5032/jae.2015.04075>
- Smith, K. L., & Rayfield, J. (2016). An early historical examination of the educational intent of supervised agricultural experiences (SAEs) and project-based learning in agricultural education. *Journal of Agricultural Education*, 57(2), 146–160. <https://doi.org/10.5032/jae.2016.02146>
- Thyer, B. A. (2010). *The handbook of social work research methods* (2nd ed.). SAGE Publications.
- USDA Economic Research Service. (2024, February 14). *Chart detail*. USDA ERS. <https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=58282>
- Wilson, E. B., & Moore, G. E. (2007). Exploring the paradox of supervised agricultural experience programs in agricultural education. *Journal of Agricultural Education*, 48(4), 82–92. <https://doi.org/10.5032/jae.2007.04082>