

Assessing School-based Agricultural Education Teacher Familiarity, Knowledge, and Perceptions of Supervised Agricultural Experience Categories

William Doss¹ and John Rayfield²

Abstract

Changes in Supervised Agricultural Experiences (SAEs) and a lack of SAE category knowledge have been identified as causes to declining SAE participation (Dyer & Osborne, 1995; Steel, 1997; Wilson & Moore, 2007). Recently, the National Council for Agricultural Education and the National FFA Organization have redefined SAE and created new categories for SAEs in an attempt to be more inclusive of agricultural projects and to increase participation. This descriptive study assessed (n=116) school-based agricultural education (SBAE) teachers' knowledge in categorizing SAE scenarios into previous and new SAE categories. Teacher familiarity with old and new categories was determined as well as teacher practices and opinions on new categories. Results indicated teachers were more familiar with old SAE categories than new categories. SBAE teachers consistently scored lower on their ability to classify SAE scenarios with new SAE categories compared to old categories. Teachers thought new categories were more difficult to teach students and most teachers had not taught their students information on new categories. This led to the recommendation for streamlined communication between decision-making groups in the agricultural education community and SBAE teachers in the field. Various forms of professional development are needed for teachers in the area of SAE categorization.

Keywords: Supervised Agricultural Experience (SAE); categorization

Introduction

Since the beginning of formally recognized agricultural education in the early 1900s, project-based learning or what we now call supervised agricultural experiences (SAEs) have been a crucial component of the agricultural education program (Smith & Rayfield, 2016). The lack of student participation in SAEs has been well documented for years (Dyer & Osborne, 1995; Lewis, Rayfield, & Moore, 2012; Rank & Retallick, 2016). Dyer and Osborne (1995) noted changes in SAE had created uncertainties, resulting in declining participation. Furthermore, a lack of knowledge of SAE categories was identified as an attribute of declining SAE participation on two separate occasions (Steel, 1997; Wilson & Moore, 2007). According to Roberts and Harlin (2007), project classification adds confusion and may impede the creative development of some projects. More recently, Lewis, Rayfield, and Moore (2012) found that student knowledge of SAE categories was low, indicating that teachers may not be teaching students about SAE categorization leading to confusion regarding SAE.

¹ William Doss is doctoral graduate assistant in the Department of Agricultural Education and Communications at Texas Tech University, Box 42131, Lubbock, TX 79409-2131, william.doss@ttu.edu.

² John Rayfield is an Associate Professor of Agricultural Education in the Department of Agricultural Education and Communications at Texas Tech University, Box 42131, Lubbock, TX 79409-2131, john.rayfield@ttu.edu.

The purpose of project-based learning has changed since its inception with agricultural education in the early 1900s. Early projects were used for the application of knowledge and are now used to teach new knowledge and skills (Smith & Rayfield, 2016). Dyer and Osborne (1995) pointed out the need for SAE consistency in program focus and direction. Over a decade later, Retallick (2010) reported that there was no consistency among the requirements, expectations, or programs related to SAE.

Many have attempted to define and categorize SAEs over the years. Most recently, the National Council for Agricultural Education (2015) redefined SAE and created more categories for potential projects. The new definition of SAE as published in the *Supervised Agricultural Experience SAE Guide for All Teacher Guide* states “SAE is a student-led, instructor supervised, work-based learning experience that results in measurable outcomes within a predefined, agreed-upon set of Agriculture, Food and Natural Resources (AFNR) Technical Standards and Career Ready Practices aligned to a career plan of study” (National Council for Agricultural Education, 2017, p. 2). The new SAE categories recommended by the National Council for Agricultural Education (2017) are Foundational and Immersion SAEs. Within Immersion SAEs, subcategories of Placement, Internship, Ownership, Entrepreneurship, Experimental Research, Analytical Research, Invention Research, School-Based Enterprise, and Service Learning are included.

The National FFA Organization recently recognized the new categories recommended by the National Council for Agricultural Education in the 2018-2019 *Official FFA Manual*. However, SAE is defined as “programs that allow you to apply knowledge and skills through experiential, service and work-based learning opportunities” (National FFA Organization, 2018, p. 2). While this is similar to the definition provided by the National Council for Agricultural Education, it is not the same.

Conceptual Framework

The conceptual framework of this study is rooted in a review of literature concerning supervised agricultural experience participation and definition. Under Research Priority 4: Meaningful, Engaged Learning in All Environments, is the question of “how do we make project-based learning more relevant and contemporary in youth programs in agriculture and natural resources” (Roberts, Harder, & Brashears, 2016, p. 39)? One of the main forms of project-based learning used in agricultural education is supervised agricultural experiences. However, it is widely noted student participation in SAEs is low or in decline (Dyer & Osborne, 1995; Steel, 1997; Wilson & Moore, 2007; Lewis, Rayfield, & Moore, 2012; Rank & Retallick, 2016).

Supervised agricultural experiences have been defined multiple times since their inception. With just a brief review of literature, varying definitions of SAE can be found. Talbert, Vaughn, Croom, and Lee (2007) define SAE as “the application of the concepts and principles learned in the agricultural education classroom in planned, real-life settings under the supervision of the agriculture teacher” (p. 418). More recently, SAE has been defined as “personalized experiential learning programs made up of projects by students and supervised by agriculture teachers” (Rayfield, Smith, Park, & Croom, 2017, p. 100). As mentioned earlier, the National FFA Organization and the National Council for Agricultural Education have published definitions of SAE, along with several others. All of these definitions have the same basic components in that the projects are conducted by the student and supervised by the agriculture teacher.

An area where we begin to see a divergence in SAEs is in the components, characteristics, and types of SAEs. For example, most sources indicate that SAE should occur outside of class time (Talbert et al., 2007; Newcomb, McCracken, Warmbrod, & Whittington, 2004). According to the National Council for Agricultural Education (2017) “SAEs may occur on the school campus or during the school

day” (p. 3). While most sources indicate that SAEs can occur at school, earlier works on SAE say they cannot occur during school. On the other hand, many sources simply do not indicate when the SAE should take place.

Another area of SAE discrepancy is in the categories or types of SAEs. Talbert et al. (2007) list Exploratory, Paid Placement, Unpaid Placement, Entrepreneurship/Ownership, Directed Laboratory, Research and Experimentation, and Improvement Projects as different types of SAEs. More recently, Exploratory, Research, Placement, and Entrepreneurship are listed as the types of SAEs by Rayfield et al. (2017). The National Council for Agricultural Education (2017) has indicated that Foundational and the following Immersion type SAEs are the new standard: Placement, Internship, Ownership, Entrepreneurship, Experimental Research, Analytical Research, Invention Research, School-Based Enterprise, and Service Learning. Most recently, the National FFA Organization (2018) has closely aligned their SAE categories with those of the National Council for Agricultural Education by providing the following: Foundational, Ownership/Entrepreneurship, Placement/Internship, Research-Based, School-Based Enterprise and Service-Learning, with each type having the possible subcategory of Improvement and Supplemental. While these are closely aligned with the National Council for Agricultural Education, the National FFA Organization does not completely separate categories such as Ownership and Entrepreneurship and adds Improvement and Supplemental subcategories. It can be concluded that definitions and characteristics of SAEs are continually evolving and that there is a lack of continuity from one source to the next concerning the subject.

Over two decades ago, it was recommended that new SAE concept models be developed to aid in the understanding of SAE and encourage broader participation in response to changing populations and curricula (Dyer & Osborne, 1996). Wilson and Moore (2007) recommended new recognition areas be created to promote non-traditional SAEs. Even with the implementation of these recommendations, a lack of SAE understanding continues, resulting in continued low SAE participation.

Rubenstein and Thoron (2015) concluded that the agriculture teacher is the most important influencer in engaging students in their SAE program. An area of concern lies in the notion that beginning teachers are least efficacious in the SAE domain (Wolf, 2011). Wolf went on to recommend professional development for SAE management and an increased concentration on the SAE domain for pre-service teachers. Rank and Retallick (2017) found that participants indicated teacher education programs train their students on how to categorize SAEs, but teachers were still not implementing them. Determining if changes in current SAE definitions and categories are providing clarity on the subject may help determine if current attempts to improve the implementation of project-based learning are effective.

Recent publications on SAE definition and categories lead to the question, are differing definitions of SAE across sectors of the agricultural education community causing confusion in the SAE component of school-based agricultural education? Do the new categories provide clarity for teachers and students or create more confusion? Furthermore, are current SBAE teachers aware of these changes? Answering these questions may be helpful in determining if the agricultural education community is effectively communicating ideas about SAE and if changes to SAE are leading to meaningful and engaged learning. This study could help to identify areas for improvement in the distribution of information concerning SAEs.

Purpose and Objectives

The purpose of this study was to determine Texas school-based agricultural education (SBAE) teacher familiarity with current SAE categories and assess their ability to classify SAE examples into SAE categories. The research objectives for this study were:

1. Compare school-based agricultural education teacher familiarity of the latest SAE categories published by the National Council for Agricultural Education to the familiarity of previous SAE definitions and categories.
2. Compare knowledge of school-based agricultural education teachers in classifying SAE examples into new and old SAE categories.
3. Determine school-based agricultural education teacher opinions on SAE category changes.

Methods

To determine school-based agricultural education teacher familiarity with current SAE categories and determine their ability to classify SAE examples into SAE categories, a study of SBAE teachers who attended the Texas FFA state degree check was conducted. This study was descriptive in nature in that it “describes a given state of affairs as fully and carefully as possible” (Fraenkel, Wallen, & Hyun, 2012, p. 15).

Purposive sampling was used to identify participants. According to Fraenkel, Wallen, and Hyun (2012, p. 100) purposive sampling is sometimes necessary because the sample “based on prior information, will provide the data they need.” SBAE teachers who participated in the Texas FFA degree check were purposively selected because of their expertise with SAEs. The degree check requires teachers to review, approve, and rank FFA proficiency, star, state degree and American degree applications based on student SAEs, giving each participant first-hand experience with SAE terminology and categories that other teachers across the state may not have. SBAE teachers from each FFA area in the state volunteer to participate on the state degree check committee or are appointed by their area FFA coordinator based on experience. Teachers serving on the degree check committee will have varying degrees of knowledge and experience related to SAEs. All teachers participating in the state degree check ($N = 260$) were selected to participate in the study.

The instrument used in this study was a researcher-designed questionnaire. The instrument had demographics, questions matching SAE scenarios with appropriate categories, and Likert scale items rating familiarity with SAE categories and level of agreement with statements concerning SAE categorization. Common SAE scenarios were written, providing information necessary to determine the best possible corresponding SAE category. Scenarios were written so they could be classified using both the old and new SAE categories. Correct categories corresponding to the scenarios were determined from definitions provided by the National Council for Agricultural Education and the National FFA Organization. A complete list of SAE scenarios used for the matching portion of this instrument can be found in Table 1.

Table 1

Scenarios Used to Compare Teachers' Abilities to Classify SAEs in Old and New Categories

Scenario	Old SAE Category	New SAE Category
1. A student shadows a worker at the local grain elevator to identify a possible career in the agriculture field.	Exploratory	Foundational
2. A student surveys FFA members and nonmembers on agricultural literacy to compare knowledge levels of agricultural products.	Research	Immersion: Analysis Research

Table 1

Scenarios Used to Compare Teachers' Abilities to Classify SAEs in Old and New Categories Continued...

3. A student builds a gooseneck trailer after school in the school shop. The project is financed by the school but will be exhibited by the student at the end of the year. The student is unpaid.	Placement	Immersion: School-Based Enterprise
4. A student purchases a steer that will be raised at his/her parent's facilities. The steer will be exhibited throughout the year and sold at market.	Entrepreneurship	Immersion: Ownership

Content and face validity were established by a panel of five experts in the field of agricultural education. These experts were well versed in the past and current structure and language used in the SAE component of agricultural education. After careful editing, the instrument was sent out for a pilot test to ($n = 31$) participants not included in the main study. According to Friedenber (1995), a Cronbach's alpha or a KR-20 is appropriate for calculating internal consistency reliability coefficients of an instrument for scale items and knowledge items when scored dichotomously or correct versus incorrect. When used correctly, "split-half, KR-20, and Cronbach's alpha will produce essentially the same result" (Cronbach, 1990, p. 203). In a publication from Testing and Evaluation Services at the University of Wisconsin, it was recommended high-stakes, multiple-choice tests have a Cronbach's alpha of at least .90 (Wells & Wollack, 2003). A Cronbach's alpha of ($\alpha = .91$) was calculated from the pilot test data on all summated scale variables and knowledge questions for the questionnaire used in this study.

Data were collected using a Qualtrics online questionnaire. Responses were solicited through email using Dillman's tailored design method (Dillman, Smyth, & Christian, 2014). A total of five contacts through email were sent out, each a week apart, beginning with the first invitation to participate in the questionnaire, followed by four reminder emails. At the conclusion of data collection, ($n = 116$) teachers responded to the questionnaire for a response rate of 44.62%. Since the response rate was below 85%, a comparison of early to late respondents was conducted to address nonresponse error as a threat to external validity, as recommended by Lindner, Murphy, and Briers (2001). To obtain a group size greater than 30, late respondents were operationally defined as the later 50% of the responses received. No statistically significant differences were found for each instrument item from early respondents to late respondents.

Descriptive statistics were calculated such as means and standard deviations on scale items and frequencies and percentages for identifying SAE categories correctly and for reporting simple demographics. All data were analyzed in Excel and IBM SPSS version 24.0.

Findings

Demographics collected indicate a majority of the respondents were male ($n = 82, 70.7\%$) while only ($n = 34, 29.3\%$) reported to be female. Most participants were certified to teach agricultural science traditionally, through a university ($n = 107, 92.2\%$), while only ($n = 9, 7.8\%$) were certified alternatively. Years of teaching experience ranged from one year to over 30 years. Teachers responding were grouped

into categories of teaching experience, with ($n = 48$, 41.3%) having 10 years or less experience. Demographics for this study are summarized in Table 2.

Table 2

Teacher Demographics (n = 116)

	<i>f</i>	%
Gender		
Male	82	70.7
Female	34	29.3
Certification Type		
Traditional	107	92.2
Alternative	9	7.8
Years of Teaching Experience		
1-5	28	24.1
6-10	20	17.2
11-15	9	7.8
16-20	22	18.0
21-25	17	14.7
26-30	9	7.8
30+	11	9.5

To compare teacher familiarity with the latest SAE categories to familiarity with previous SAE categories as required by the first research objective of this study, SBAE teachers were asked to select all SAE categories from a list that are currently recognized by the National FFA Organization. Teachers consistently reported that the old SAE categories are currently recognized. The most recognized category reported was the old Entrepreneurship category ($n = 112$, 96.6%), while the least recognized were the new Immersion: Analysis Research ($n = 5$, 4.3%) and Immersion: Invention Research ($n = 5$, 4.3%) categories. Additional information concerning teacher identification of currently recognized SAE categories is summarized in Table 3.

Table 3

Teacher Recognition of SAE Categories (n = 116)

Category	<i>F</i>	% Recognized
Old		
Entrepreneurship	112	96.6
Placement	110	94.8
Agriscience Research and Experimentation	91	78.4
Exploratory	91	78.4
New		
Foundational	61	52.6
Immersion: School-Based Enterprise	22	19.0
Immersion: Service Learning	17	14.7
Immersion: Placement	16	13.8
Immersion: Entrepreneurship	15	12.9
Immersion: Ownership	14	12.1
Immersion: Internship	12	10.3
Immersion: Experimental Research	12	10.3

Table 3

Teacher Recognition of SAE Categories (n = 116) Continued...

Immersion: Analysis Research	5	4.3
Immersion: Invention Research	5	4.3

Note. Teachers were asked to check all categories currently recognized.

Teachers were also asked to rate their familiarity with both old and new SAE categories on a Likert-type scale from (1 = Very Unfamiliar to 4 = Very Familiar). The category teachers were most familiar with was the old Entrepreneurship category ($M = 3.64$, $SD = 0.68$). The least familiar category reported was the new Immersion: Invention Research ($M = 1.73$, $SD = 0.77$) category. Overall, teachers were less familiar with the new SAE categories compared to the old categories. A complete list of SAE categories and teacher familiarity with those categories can be found in Table 4. Teachers were also asked if they were aware of the change in SAE category names for this school year. The majority of respondents ($N = 81$, 69.83%) reported they were not aware of the change, while ($N = 35$, 30.17%) reported they were aware of the change in SAE categories.

Table 4

Teacher Familiarity with SAE Categories (n = 116)

Category	<i>M</i>	<i>SD</i>
Old		
Entrepreneurship	3.64	0.68
Placement	3.57	0.71
Exploratory	3.03	0.75
Agriscience Research and Experimentation	2.84	0.83
New		
Foundational	2.40	0.97
Immersion: Placement	1.91	0.94
Immersion: Internship	1.84	0.81
Immersion: Ownership	1.81	0.86
Immersion: Entrepreneurship	1.89	0.93
Immersion: Experimental Research	1.78	0.78
Immersion: Analysis Research	1.74	0.79
Immersion: Invention Research	1.73	0.77
Immersion: School-Based Enterprise	1.84	0.87
Immersion: Service Learning	1.82	0.87

Note. Teachers were asked to rate their level of familiarity of SAE categories on a scale of 1 - 4. 1 = Very Unfamiliar; 2 = Somewhat Unfamiliar; 3 = Somewhat Familiar; 4 = Very Familiar.

The second research objective sought to compare the ability of SBAE teachers to classify SAE scenarios into old and new SAE categories. Participants were given four different SAE scenarios and were asked to match those scenarios with the appropriate old SAE category. Teachers were then asked to match the same four SAE scenarios with the appropriate new SAE category. Participants were able to correctly match Scenario 4 into the old Entrepreneurship category most accurately with ($n = 114$, 98.3%) matching it correctly. The old Placement SAE category received the lowest frequency for correct matching to the scenario ($n = 83$, 71.6%). Under the new SAE categories, Immersion: Analysis

Research was matched correctly the most frequently ($n = 69, 59.5\%$), while the Foundational category was matched correctly the least ($n = 38, 32.8\%$). All new categories were matched to their corresponding scenario with lower success compared to old categories. A summary of these results is presented in Table 5.

Table 5

SAE Category Examples Identified Correctly (n = 116)

Old Categories	<i>f</i>	%	New Categories	<i>f</i>	%
Entrepreneurship	114	98.3	Immersion: Analysis Research	69	59.5
Research	107	92.2	Immersion: School-Based	59	50.9
Exploratory	87	75.0	Immersion: Ownership	46	39.7
Placement	83	71.6	Foundational	38	32.8

Table 6 outlines the scores received by participants for classifying the four SAE scenarios into the old SAE categories and then reclassifying the same scenarios into the new SAE categories. The majority of participants ($n = 80, 68.97\%$) scored a 100% on their ability to classify the four scenarios into the old SAE categories. Only ($n = 1, 0.86\%$) failed to identify any correctly under the old categories. For the new categories, a score of 50% was the most frequent ($n = 39, 33.62\%$) score, with a score of 100% matched correctly occurring the least ($n = 5, 4.31\%$). Since there were only four scenarios, scores of 0%, 25%, 50%, 75%, and 100% were the only possible scores. Frequencies and percentages for all of these scores, in both old and new categories, are shown in Table 6.

Table 6

Percentage of SAE Categories Identified Correctly (n=116)

Percent Correct	Old Categories		New Categories	
	<i>f</i>	%	<i>f</i>	%
0%	1	0.86	12	10.34
25%	7	6.03	34	29.31
50%	25	21.55	39	33.62
75%	3	2.59	26	22.41
100%	80	68.97	5	4.31

The average score of all participants for their ability in classifying scenarios into old SAE categories ($M = 83.19\%$, $SD = 26.53$) was higher than the average score for classifying scenarios into new SAE categories ($M = 45.26\%$, $SD = 25.94$) by nearly twofold. Table 7 displays these results.

Table 7

Average Percent Identified Correctly for SAE Categories (n=116)

	<i>M</i>	<i>SD</i>
Old Categories	83.19	26.53
New Categories	45.26	25.94

The third research objective was to determine SBAE teacher opinions on SAE category changes. To accomplish this objective, teachers were asked to use a sliding, Likert-type scale to rate

their agreement from (1 = Disagree to 10 = Agree) with five different statements. Participants were near the middle of the scale ($M = 5.22$, $SD = 2.80$) with their level of agreement with the statement that the new SAE categories help increase student SAE involvement. Teachers had the highest level of agreement ($M = 7.84$, $SD = 2.47$) with the statement that it is important for SAEs to be categorized correctly. The lowest level of agreement ($M = 1.90$, $SD = 1.67$) was found with the statement I have taught my students the new SAE categories. The complete list of means and standard deviations for agreement on each statement concerning SAE categorization is presented in Table 8.

Table 8

Teacher Opinions and Practices Related to SAE Categorization (n=116)

	<i>M</i>	<i>SD</i>
It is important for SAEs to be categorized correctly	7.84	2.47
The new SAE categories help increase student SAE involvement	5.22	2.80
The new SAE categories are necessary for student understanding of SAE	4.17	2.44
The new SAE categories are easier to teach students	3.85	2.04
I have taught my students the new SAE categories	1.90	1.67

Note. Teachers were asked to rate their level of agreement on a sliding scale of 1 - 10. 1 = Disagree; 10 = Agree.

Conclusions and Implications

The purpose of this study was to determine Texas school-based agricultural education teacher familiarity with current SAE categories and assess their ability to classify SAE examples into SAE categories. When comparing teacher familiarity with previous and new SAE categories, teachers consistently reported being more familiar with the old categories. Few teachers recognized that the new categories are currently recognized by the National FFA Organization, with over three-fourths reporting that the old categories are still recognized. If the SBAE teacher is the most important influencer in engaging students in their SAE program as concluded by Rubenstein and Thoron (2015), it will be difficult for students to gain correct information concerning SAE categories if their teacher is not familiar with the categories. This could lead to a continued lack of student knowledge of SAE categories as identified by Lewis, Rayfield, and Moore (2012).

Another point of interest was that over half of the participants indicated the new Foundational SAE category was currently recognized by the National FFA Organization. At the same time, over 78% of participants indicated the old Exploratory category is currently recognized. The old Exploratory category and the new Foundational category are very similar in definition, indicating the teachers surveyed may not know the difference between the two.

When teachers were asked to classify SAE scenarios into old and new SAE categories, scores were consistently higher in their ability to classify the scenarios into old categories compared to their ability to classify them into the new categories as indicated by the mean scores for percent identified correctly. The scenarios matching the old categories of Entrepreneurship and Research were identified correctly the most, but it did not translate to being matched correctly to the new categories. Entrepreneurship was identified correctly by over 98%, but when asked to classify the SAE scenario into the new Immersion: Ownership category, only 39.7% were correct. The Foundational SAE category scored the lowest, with only 32.8% matching the Foundational scenario correctly. If the SBAE teacher is not able to classify SAEs correctly, how can the student be expected to do so? Teachers must be up to date on SAE information and communicate this information with their students or student lack of SAE understanding will continue.

Poor scores for teachers' ability to classify SAEs are to be expected if only about 30% of those surveyed were aware of the SAE change. However, the new category names have descriptive words that should, in theory, help teachers and students categorize SAEs more easily. From the data gathered in this study, this is not the case, particularly with the Foundational category. This confirms findings from Roberts and Harlin (2007) that project classification adds confusion to SAEs. The National Council for Agricultural Education has had this information published for over a year, while the National FFA Organization only published the new categories in the *2018-2019 Official FFA Manual*. This indicates there has been a failure to communicate this new SAE information with the SBAE teachers in Texas, resulting in low ability to classify SAEs into the new categories.

The final objective of the study sought to gain teacher opinions on SAE changes. Teachers strongly agreed that classifying SAEs into the proper category is important, however, teachers slightly disagreed that the new categories were necessary for student understanding of SAE, indicating that they did not equate using new categories with an increased understanding of SAE. Survey participants were neutral on their opinion that the new categories help increase student SAE involvement. Teachers indicated the new categories were more difficult to teach the students and most had not taught their students about the new categories.

From teacher opinions collected in this study, there seems to be a lack of teacher buy-in with the new SAE changes. Most of those surveyed were not aware of the change, even though they were purposively selected because they should have the most knowledge in this area. They also did not agree it helped increase SAE involvement or understanding. Have the new SAE changes helped address the question under Research Priority 4: "how do we make project-based learning more relevant and contemporary in youth programs in agriculture and natural resources" (Roberts, Harder, & Brashears, 2016, p. 39)? Without further communication and clarification with SBAE teachers, it may have the opposite effect. Continuing to change SAE definitions and categories may continue to result in a lack of SAE understanding and therefore a lack of SAE participation.

Recommendations

Based on the findings and conclusions of this study, several recommendations for practice and further research can be made. Streamlined communication between decision-making organizations in the agricultural education community and practicing SBAE teachers should be established. Information from meetings of these entities is probably best distributed through state agricultural education teacher associations due to the lack of a centralized listserv of all SBAE teachers in the nation. Efforts should be made to create a national listserv of all SBAE teachers to establish direct communication between the agricultural education community and SBAE teachers.

Improving the structure and clarity of SAEs requires buy-in from all parties in the agricultural education community. Agricultural education teachers, state agricultural education and FFA staff, teacher educators and other relevant stakeholders should be present during decision-making functions that impact the SAE component of agricultural education. Consistency within the agricultural education community on defining and categorizing SAEs should be a top priority. These efforts should stand the test time and be transparent and readily available for instructional use at all educational levels. Changes in SAE definition and categories continue to add confusion and cast doubt over an integral piece of the three-circle model. This confusion resulting in a lack of SAE category knowledge has already been identified as a factor contributing to low SAE participation (Steel, 1997; Wilson & Moore, 2007).

Professional development should be offered to SBAE teachers clearly defining SAEs and how they are categorized. This could be accomplished by having workshops at state agriculture education

teacher conferences and workshops on the national level such as at the National Association of Agricultural Educators (NAAE) conference. Weekly bulletins through email to all SBAE teachers in the country may be a useful way of decimating this information. An increased emphasis on this area of SAE is also necessary on the collegiate level for pre-service and new teachers entering the profession. Increased awareness of how the different organizations of the agricultural education community work together should be made available to both pre-service teachers studying at the universities and current practicing teachers across the country.

This study should be replicated on a national scale to determine if SBAE teachers are having the same difficulties with SAE categorization as teachers in Texas. This could help narrow down where there are gaps in communication. Qualitative research could be helpful in explaining why SBAE teachers are having trouble categorizing SAEs and in determining what barriers exist in their ability to gain information on the subject.

Future research in the area of SAE categorization should be conducted to assess changes in SBAE teacher ability to classify SAEs into appropriate categories over time. After continued education on the subject, teacher awareness of SAE changes should increase. A study into student understanding of the SAE categories should be conducted to see if teacher SAE knowledge is being passed down to the students. These studies should be conducted at a national level to gain a better understanding of teacher SAE knowledge across the country.

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