Michigan AFNR Educator Attribution of Student Growth to SAEs, SAE Utilization, and Factors Influencing Student Growth Attribution to SAEs

Abstract

I surveyed Michigan agriculture, food, and natural resources (AFNR) educators to better understand their use of, and value attributed to, Supervised Agricultural Experiences (SAEs). The three-circle model, which includes SAEs, is something I talk about with my students on the first day of all my high school classes. Classroom/Laboratory Instruction, FFA, and SAEs are all thought to be important by AFNR educators, but as a young teacher, I wondered just how important these circles really were from a student-growth perspective. Additionally, I was curious about Michigan AFNR teachers were utilizing SAEs in their programs, and how different factors influenced the value they attributed to student engagement in SAEs. A survey was sent out to Michigan AFNR teachers to gauge how they attributed growth to each circle of the three-circle model, how they utilized SAEs in their program, and what factors influence their SAE value attribution.

Introduction

Supervised Agricultural Experiences (SAEs) are a major component of Agricultural Education's framework. They are one-third of the three-circle model that school based agricultural education (SBAE) is founded upon. In the new SAE for All framework, an SAE is defined as "a student-led, instructor supervised, work-based learning experience that results in measurable outcomes" (The National Council for Agricultural Education, 2017). One of the recommendations from SAE for All is to "make SAEs a graded component of every class" to encourage participation and growth of an SAE program, as well as getting all students started with a Foundational SAE in their first semester. With this encouragement to get teachers and, more importantly, their students, engaged with SAEs, one begins to wonder where SAEs already stood, and where they currently stand with teachers.

Literature Review

From a historical perspective, teachers have seen SAEs to be a way for students to develop a variety of skills (both hard and soft), build character, and develop good habits. Generally speaking, parents and employers also saw value in SAEs. Students followed this trend, contending that the skills they learned through SAEs were worthwhile; additionally, the character development that came along with SAEs was perceived to be beneficial (Dyer & Williams, 1997). It has been recommended for years that all students have a quality SAE, though the numbers haven't been as large as we might hope for them to be. Participation in SAE programs has historically been attributed to teaching experience and teacher attitude toward SAEs; on the student side, a lack of resources, time, and motivation were thought to be "deterrents" to SAE participation (Dyer & Osborne, 1995). When it comes to student growth, progress is typically linked to achievement in some way. When it comes to students SBAE, the variable most closely linked to student achievement was FFA involvement, with SAE participation following afterward (Cheek et. al, 1994).

While students benefit from SBAE as a whole, there is little research that exists looking at whole student growth. Given that is an enormous topic, there have been studies have been completed regarding SAE impact on skill attainment. There was no direct link between students having an SAE and being confident in "career decision self-efficacy" and "soft-skill attainment", though there was some variance between student success with soft-skills between types of SAEs (Haddad & Marx, 2018). There has been exploratory research done regarding agriscience research SAEs and how they impact students. There has been an influence of agriscience research SAEs on "perceived self-efficacy of 21st century skills attainment", and students with agriscience research SAEs also differed in their ranking of different skills compared to students with other types of SAEs or no SAE at all (Thiel & Marx, 2019).

Teachers are individuals and as such, many are utilizing SAEs differently in their programs. Historically, there was a 10% decline in the usage of SAEs in the late 90's (Steele, 1997). Teachers have been divided when it comes to grading SAEs. Spending class time on SAEs and giving students examples was shown to increase SAE quality. It can be easier to have quality SAEs with a smaller class size, and it is less time intensive. Teachers are a determining factor of how good SAE programming is and can be. Teachers aren't always comfortable or confident in their SAE administering skills, though they recognize them as being important. Professional Development and higher education helped teachers implement better SAE programming. Many barriers to quality SAEs have been identified, including lack of student motivation or opportunities, lack of resources to support programming, lack of teacher time, backgrounds of students, and more. While there hasn't been much research done on it, it has been suggested that more on-site facilities could help teachers to facilitate strong SAE programming (Dyer & Osbourne, 1996).

With these things in mind, when it comes to participation in SAEs, 46.1% of students indicated they had an SAE in Lewis, Rayfield, and Moore's study (2012); additionally, "half of students in three of the states did not receive a grade for their SAE program or record book" and time spent on SAEs in the classroom ranged from 9 to 34 days.

There have been actions taken to better assist teachers in implementing SAE programming, including SAE category name changes and the implementation of SAE for All. There have been a lot of changes headed toward SAEs and how they are structured, including changing the names of SAE categories to make them more inclusive; this change has caused some confusion and teachers are more familiar with old SAE categories than the new ones. The new categories were supposed to make things simpler, though most teachers thought that "the new categories were more difficult to teach the students" (Doss & Rayfield, 2019).

The underlying idea of SAE for All is that all students have access to an SAE. Agriscience research SAEs could be a great way to attain that goal. Integrating SAEs, especially agriscience

research SAEs, into the classroom can help with student understanding and getting more students involved in SAEs. Barriers to skills needed for implementing SAEs can be overcome by professional development or taking additional coursework, which could help teachers feel more comfortable implementing more school-based SAEs (Thiel & Marx, 2021).

Purpose and Objectives

The purpose of this research was to get a general idea of how Michigan teachers were feeling about and utilizing SAEs. This purpose was achieved through three research objectives:

1. Identify how teachers attribute student growth to the three-circles in the three-circle model and gauge how important SAEs are.
2. Describe how teachers are utilizing SAEs in their programs.
3. Determine what aspects of teacher background and program demographics may have an affect on how teachers are attributing student growth to SAEs.

Methods

Population, Sample, and Data Collection

The population targeted for this research were Agriculture, Food, and Natural Resources Educators throughout Michigan. 139 educators were invited to participate via email, and the survey was sent out through the listserv. Data collection began in May and lasted for approximately five weeks, with four reminder emails sent during this collection period. 60 responses were recorded for a 43.17% response rate.

Instrumentation

A survey was constructed with a variety of question types to accurately capture teachers' perceptions of SAEs. The questions were as follows:

- For ranking the three-circles and attributing student growth, teachers indicated a percentage for each circle; their responses needed to equal 100 to continue.
- Multiple choice questions relating to subject like certification were utilized when there were distinct categories that teachers were presumed to fit into.
- Other multiple choice questions asked teachers to rank agreement or disagreement with statements provided; these began with the low end on the left and the high end on the right, or, if they were vertical, the low end was on the top and the high end on the bottom. These values ranged from 1 to 5.
- Some questions required teachers to input a response, like their number of years teaching.
- Sliders were used, beginning at 0 and ending at 100. 0 was the lowest the scale could go, and 100 the highest. Sliders were utilized alongside keywords based on the questions asked to help teachers in understanding where they may fall on the slider. Most sliders defaulted to 0 with the exception of one asking about perceived SES of students, which defaulted at 50%.

Data Analysis

Data was retrieved from Qualtrics and analyzed using SPSS. For research objective one, the mean percentage of how teachers attributed student growth to each of the three circles was calculated. Additionally, teachers were asked to rank the importance of SAEs to them and a frequency and percentage were calculated. For research objective two, frequencies were gathered from a variety of categories to address how teachers are utilizing SAEs in their programs. Means were calculated based on grouping of teachers by demographic to address research objective four; for the slider questions, correlation coefficients were calculated between certain aspects of programs and how the teachers ranked SAEs.

Results

To address the first objective, teachers ranked the three circles based on where they perceived students had the most growth. Classroom/Laboratory Instruction was ranked first (M = 48.15, SD = 15.64) and attributed most to student growth, with FFA coming next (M = 29.99, SD = 10.37) and SAE following (M = 21.86, SD = 10.90).

Ranking of Student Growth Attributed to the Three-Circles

Circle	*M*	*SD*
Classroom/Laboratory Instruction	48.15	15.64
FFA	29.99	10.37
SAE	21.86	10.90

Additionally, teachers ranked how important SAEs were to them. Most teachers (41.5%) said that SAEs were moderately important to them. No respondents indicated that SAEs were not at all important.

Importance of SAEs to Teachers

Importance	Frequency	Percent
Not at All Important	0	--
Slightly Important	4	7.5
Moderately Important	22	41.5
Very Important	18	34
Extremely Important	9	17

For the second objective, 26 teachers (49.1%) indicated they grade SAEs, where 27 (50.9%) indicated they do not. 35 teachers (70%) indicated students logged their hours during class time, whereas 15 teachers (30%) indicated students logged hours at home. 4 teachers (8%) said students logged hours through the AET app on their phone, and 46 (92%) had students logging hours through a computer/laptop. Most teachers (45%) agreed that they actively encouraged all students to have an SAE. 19 teachers (35.8%) indicated they begin teaching students about SAEs in 9th grade, and 16 teachers (30.2%) indicated they start in 11th grade. The majority of Michigan teachers visit the majority of their students once per year ($f = 16$, $\% = 30.8$), whereas 9 don't visit at all (15%).

Characteristics of How Teachers use SAEs in their Programs

Characteristic	*f*	%
SAEs Are Graded		
Yes	26	49.1
No	27	50.9
When Students Log Hours		
Majority log outside of class time	35	70
Majority log during class time	15	30
How Students Log Hours		
Through the app on their phone	4	8
Through a computer/laptop	46	92
Teacher Actively Encourages all to have an SAE		
Strongly Disagree	0	--
Disagree	3	5.7
Neither Agree nor Disagree	5	9.4
Agree	27	50.9
Strongly Agree	18	34
Grade Level Teachers Introduce SAEs		
7	9	17
8	5	9.4

9	19	35.8
10	3	5.7
11	16	30.2
12	0	--
Other	1	1.9
SAE Visit Frequency		
I don't visit students at their SAE locations	9	17.3
I visit students less than once a year	12	23.1
I visit the minority of students once per year	14	26.9
I visit the majority of students once per year	16	30.8
I visit the majority of students more than once per year	1	1.9

Other aspects encompassed by objective two include amount of autonomy students have in selecting their SAEs (M = 77.76, SD = 27.49), percentage of students who complete proficiency applications (M = 16.72, SD = 19.19), percentage of class time spent on SAEs (M = 20.74, SD = 13.18), and percentage of students enrolled who have SAEs (M = 67.66, SD = 32.30). See Table #.

Other Programmatic Factors Regarding SAEs

Characteristic	*M*	*SD*
Autonomy Students Have in Selecting SAE	77.76	27.49
Students Who Complete Proficiency Awards	16.72	19.19
Class Time Spent Talking About SAEs	20.74	13.18
Students in Program with SAEs	67.66	32.20

For the third objective, a combination of frequencies and correlation between how teachers ranked their perceived impact of SAEs and teacher/community demographics.

This is how the different demographics attributed student growth to SAEs. Suburban schools attributed more growth to SAEs than the other schools. Career or technical centers attributed more growth than comprehensive high schools or other schools did. The Michigan FFA Region

with the most growth attributed to student growth was Region 6, whereas the one attributing the least was Region 4. Chapters with an associated Alumni & Friends Chapter ranked SAEs higher than those without.

Different Demographics Attributed Student Growth to SAEs

Demographic	*f*	*M*	*SD*
Teacher Certification			
Traditionally certified	42	21.82	11.36
Alternatively certified - transitioned from another subject	5	21.00	11.94
Alternatively certified - transitioned from industry	9	22.56	9.08
School Location			
Rural	37	21.32	10.79
Suburban	14	23.66	12.35
Urban	5	20.80	8.56
School Type			
Comprehensive High School	35	20.78	9.61
Career or Technical Center	20	24.35	12.74
Other	1	10.00	1.00
Michigan FFA Region			
1	8	24.25	11.03
2	10	18.30	10.22
3	12	22.33	6.93
4	8	16.63	9.08
5	13	25.10	14.16
6	4	26.25	13.77
Alumni and Friends Chapter			
Yes	28	22.87	8.91

No	28	20.86	12.66

The highest correlation between SAE ranking was having an active alumni and friends chapter (r = .283, p = .14). While none were statistically significant, there were positive correlations between everything except the teacher's agricultural background (r = -.089, p = .52).

Correlation Between Program Characteristics and How Teachers Ranked SAE

Characteristics	Pearson Correlation (r)	p-value
Years of Teaching Experience	.142	.30
SAE for All Training	.022	.88
Active Alumni & Friends Chapter	.283	.14
Access to Ag Enterprises	.038	.78
Teacher's Ag Background	-.089	.52
General Resource Access	.216	.12
General SES of Students	.090	.59

Discussion and Limitations

Results from this survey demonstrate that SAEs are the smallest circle of the three-circle model for in regard to perceived student growth. This could come from a variety of factors, including how teachers are conceptualizing growth, the numbers of students enrolled in FFA, and how teachers are implementing FFA and SAEs in their programming. It is possible that SAE is just not as high of a priority, or student growth attributed to SAEs is not as visible from a teacher's perspective, especially when Classroom/Laboratory Instruction is the most common usage of a teacher's classroom time. Additionally, not all students who go through the agricultural classroom are FFA members, but all students are receiving Classroom/Laboratory Instruction, which could play a role in how respondents rated SAEs.

While the SAE circle was the least attributed to student growth, the majority of respondents regard SAEs as being at least moderately important. While the choice with the most answers was moderately important, there are more teachers in the very important and extremely important categories, which seems to bode well for SAEs. For research objective one, it seems that teachers believe SAEs are important, but don't believe them to be the most impactful for their students in terms of growth.

In regard to research objective two, Michigan AFNR Educators were nearly split 50/50 when it came to grading SAEs. The majority do not grade SAEs, but many do. Regardless of grading, it seems the majority of hours logged into the AET are outside of class time. Students are most commonly using their laptop or computer for logging their hours, and all but 8 respondents at least agree that they are actively encouraging students to have an SAE. Class time spent on SAEs worked out to be 20.74%, which lines up with the idea that teachers are spending one day a week talking about SAEs in their programs. The idea of 'FFA Fridays' has been tossed around a lot at professional development events, and this seems to be an alignment with that idea. Most teachers are allowing students autonomy over selecting their SAEs (77.76 %), and there are only 16.72% of students who are completing proficiency award applications. Overall, around 67.66% of Michigan students are reported to have SAEs.

While the importance of SAE visits may be stressed, it seems that most teachers are only visiting students once per year, and the number of students visited varies. Only one teacher visits the majority of students once per year. It is important to note that some teachers may not be visiting SAE sites themselves, especially if students are a part of a Co-Op program through their school.

While it was hypothesized that the type of certification that teachers had may have an effect on how respondents ranked SAEs, there seemed to be little difference between how SAE was ranked based on this factor. Teachers transitioning from the industry may have stronger connections with the community and industry surrounding their school, though it is also a possibility that these teachers are spending a lot more time trying to get a handle on the Classroom/Laboratory and FFA circles and are thus devoting less time to SAEs. Additionally, the type of school the program is in doesn't seem to matter much, either. Suburban schools had the highest ranked SAE category, and urban had the lowest, with rural in the middle. There was only a difference of ~3 percentage points between these demographics. Career or Technical Center (CTC) teachers rate SAE higher than comprehensive high school teachers, ~4 percentage points. Students in CTC programs are typically older and tend to have more access to transportation and materials, so that could explain this shift. In Michigan, 16 year olds are able to work with permits as well, and many 11th grade students are age 16, which opens up more possibility for placement SAEs.

Surprisingly, Michigan FFA Regions had differences in how SAEs were rated. Region 6 is a larger region comprising Northern Michigan and the Upper Peninsula, and 26.25% of student growth there was attributed to SAEs. On the low end was Region 4 with 16.63% of student growth attributed to SAEs. While this could be seen as teacher differences, it is a possibility that the general areas are also different in terms of access to FFA events. Region 6 is considerably larger than Region 4, with 38 counties as opposed to 7, making it more challenging for students to get together and interact. Region 4 is closer in terms of space and they are also closer to

Michigan State's campus, where many FFA events are held for students. This could play a role in how teachers ranked the three circles.

The same number of teachers reported having an FFA Alumni and Friends Chapter as those that reported not having one. Those that reported having a chapter did have a slight increase in their ranking of SAEs impact on student growth. Having an active Alumni and Friends Chapter had the most positive correlation with a higher ranking of SAEs. An Alumni and Friends Chapter is thought to provide extra people to help students integrate within their community, and access to these valuable resources can also help teachers identify places where students may be able to complete a placement SAE, do some job shadowing, and a plethora of other things. The other factor that sticks out from the data set is that the amount of agricultural background a teacher has, the lower they ranked SAEs as being important. This is counter-intuitive, as one might think that the greater the agricultural background, the larger the sphere of influence one might have to get kids connected to their communities. On the other hand, it could also suggest a greater emphasis on the other circles. Regardless, there were no significant correlations in the data set.

One limitation to this study is that teachers were never asked to define what 'student growth' looked like to them. Providing them with a definition for growth, or asking them about their definition, could improve findings. It is possible that teachers thinking of personal growth may have answered differently than teachers who conceptualized growth as being more confident in choosing a path of study or a career.

Due to the timing of this survey and COVID-19, some SAE programming could have been recently (within the last 18 months) been shut down or altered to fit the needs of the educator, their program, or their district.

Conclusion and Recommendations

Ultimately, teachers will indicate they care a lot about SAEs, but is that actually the case? With the majority of students in the state reported to have an SAE, teachers are definitely trying to get on board with the idea of SAE for All. Being an Agricultural Educator is difficult, as there is rarely enough time in a day to accomplish all that one would like to accomplish. Balancing the three circles and having a fully integrated three-circle model is no easy feat. In the future, looking into how other states utilize SAE programming could help to give a national picture of how SAE programming is being utilized. Looking further into how teachers responded could also be insightful, as it could provide insight into where professional development could supplement gaps in teachers and their implementation of SAEs. Additionally, it would be interesting to get a better idea of how teachers ought to be spending their time. How much student growth is truly attributed to each of the circles? Should teachers be spending more time on SAE when more growth is had through FFA or Classroom/Laboratory Instruction? While all three of the circles are important, just how important should they be?

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