

2021 AGRICULTURAL EDUCATION ENGAGEMENT & IMPACT VALUES

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FIVE KEY RESULTS FROM 2021 REPORT

1



STUDY POPULATION

4,910 programs use AET to track student engagement, 541,804 Students from 48 states. The average program represents two teachers and 121 students with 62% tracking time in SAE, FFA, and Classroom. National estimates are based on 8,461 programs (FFA).

2



SAE ENGAGEMENT

49% of student recorded SAE involvement. Average program has 91 SAE projects and 67% of programs have Foundational SAEs. Immersion SAEs are 36% entrepreneurship, 54% placement, and 10% research. National SAEs are estimated at 767,749 experiences.

3



ACADEMIC SKILLS FROM SAES

Average program has students tracking 981 AFNR skills, and nationally estimated at 8.3 million skills from SAE engagement. Large growth areas are bio-tech (45%), foundational skills (38%), and career readiness (33%). Animal systems are the largest single skill area (45%).

4



INVESTMENT OF TIME

Average program has students investing 4,869 hours in experiential learning, which is SAE (83%), FFA (13%), and Community Service (4%). In 2021, hours in FFA increased by 89% from 2020. Nationally, 2021 students invested 41 million hours in learning experiences.

5



FINANCIAL & ECONOMIC VALUES

In 2021, students reported SAE earnings of \$54,724 per program and nationally estimated at \$463 million. Student SAE investments average \$90,103 per program, with a local economic impact value of \$171,196. Nationally, SAE investments are \$762k and contribute an economic impact value of \$1.45 billion.





2021 Agricultural Education Engagement Executive Summary Report

The goal of this study is to define experiential learning values in agricultural education by describing a typical program as well as projecting national values. This sample is drawn from a widely utilized program management system (www.theaet.com), which focuses on primary student engagement data validated by teacher use. In 2021, 8,067 secondary agricultural education/FFA programs comprising 52 states used the AET to track students' experiences in agricultural education and or assist students in managing FFA award applications. This program/FFA listing represents 91% of national programs (8,067 / 8,817), but also includes a focus of all students in agricultural education and not just FFA members, which results in 1,110,754 students in AET.

The primary goal of AET is to track actual educational experiences and not solely to focus on FFA or related award applications. In looking at actual program use, 4,910 programs used AET to track student experiences and not just work on FFA awards, which represents 61% (4,910/8,067) of programs having student use in tracking experiences in FFA and SAE and teacher logins, which validate data. This approach focuses on programs correctly using AET and student tracking their experiences. This sample not only represents 4,910 programs but represents 541,804 students from 48 states. This large sample size helps to reduce the impact of outliers and offers the potential to gain insight into national values. In terms of states that represent the largest portion of this sample, this covers both small and large state memberships. The top 20 program sample states with program percentage reporting are listed in Table 1.

Table 1 Sample Program Ranking by State (Top 20)

Rank #1- #10	% Programs	Rank #11- #20	% Programs
1. Oklahoma	99%	11. Arkansas	84%
2. Idaho	97%	12. Arizona	84%
3. Oregon	95%	13. Michigan	81%
4. Colorado	94%	14. Pennsylvania	79%
5. Nebraska	93%	15. Illinois	79%
6. Montana	93%	16. Nevada	79%
7. Wyoming	91%	17. West Virginia	78%
8. Utah	88%	18. California	73%
9. Ohio	87%	19. Texas	73%
10. Connecticut	86%	20. Kentucky	72%



States not included in this sample are New Hampshire, Rhode Island, Puerto Rico, and the Virgin Islands due to their lack of student and teacher AET use. Descriptive values help define the scope of a typical agricultural program. Table 2 provides a demographic summary of students and programs in this sample.

Table 2 Sample Program Demographics (n=4,910)

Program Demographic	2021 Average (Per Program)
Number of Teachers	1.90
Active Students (all grades)	121
% of students with SAEs (Active)	48.8%
% of students with Journals (Active)	61.9%

As illustrated in Table 2, the number of teachers per program averages 1.9, which is similar to the 1.83 in the 2020 report. Enrollment per program averages 121 students, which is the exact value from the 2020 report, illustrating programs appear to be similar in student numbers as well as teachers. A primary and core value for agricultural education is a Supervised Agricultural Experience (SAE). Student SAE involvement (those with any SAE records) in 2021 is 48.8% of students tracking an SAE, which is a decline from the 58% reported in the 2020 report. A higher value of students (62%) tracked their time using journals, which relates to FFA activities, community service or classroom, and this value exceeds the 2020 report value of 58% and shows a growth of engagement.

2021 Agricultural Education Program Engagement

In agricultural education, a main objective of AET is tracking SAE experiences is their connection to Work-based Learning Experiences (WBL), which relates to an important aspect of learning. The SAE is first a planned learning experience that includes connections to academic content standards, then includes records (time and money) to illustrate action items, and then finally aspects of record keeping allow students to reflect on project outcomes and measurable results. SAE is a core component of agricultural education and is aligned to Perkins Funding requirements and important metrics teachers can use to illustrate their program's value. Other forms of experiential learning include FFA and community service activities, which offer additional metrics for learning outcomes.



Table 3 provides a summary of engagement by SAE type per program and total SAE involvement, which is estimated at 91 SAE projects per program and is an increase from the 83 reported in 2020. Considering a decline in the percent of students with an SAE from the 2020 report (49% 2021 / 58% 2020), but an increase in total program SAEs, the likely result is students having more SAE projects per student. A complete 2021 summary of SAEs is listed in Table 3, which include School-Based and Service Learning as an aspect of placement, entrepreneurship or potentially research projects.

Table 3. Student SAE Involvement Per-Program by Primary SAE Type (n=4,910)

SAE Descriptive Area	2021 SAE #	%	National Estimate (N=8,461 Programs)
Entrepreneurship (Owner/Business)	24	35.7%	199,998
Placement SAE (Work Exp.)	36	53.7%	301,284
Research SAE (Investigation, ect...)	7	10.6%	59,479
Total Immersion SAEs	66		560,761
Foundational SAE	24		206,988
Total SAEs Per Program	91		767,749

As illustrated in Table 3, the highest immersion category is placement (53.7%) with foundational SAEs representing about 24 projects per program. In comparing to the 2020 report, 2021 illustrates very similar SAE percent values of engagement. In reviewing all programs, 67% of programs have students tracking Foundational SAEs, which is a decline from the 70% reported in 2020. Nationally, this estimates 767,749 SAE (560,761 immersion and 206,988 foundational) experiences. Student SAE interest (AFNR area) is listed in Table 4.

Table 4. Student SAE Involvement by Interest Area – AFNR Pathway (n=4,910)

SAE Interest Area (AFNR)	Average (Per Program)	% Value per Program
Animal Systems	32.5	47.2%
Agribusiness Systems	4.3	6.2%
Leadership Education & Comm.	1.8	2.6%
Environmental Systems	1.8	2.6%
Food Products and Processing	4.3	6.3%
Power, Structural and Technical	7.1	10.2%
Natural Resources	1.6	2.4%
Plant Science	15.3	22.2%
Biotechnology	0.2	0.3%



As illustrated in Table 4, Animal Systems (47%) continually is the most common SAE area with other areas listing lower percent values. An additional record of SAEs is the connecting of academic skills (AFNR) as students' journal learning experiences. Table 5 illustrates the numbers of document skills from SAE projects by content area as well as a national estimate of exhibited skills from involvement in SAE experiences.

Table 5. Student SAE Skills by Academic Area (n=4,910)

SAE Descriptive Area	Mean Program Value (2021)	% Value per Program	Change from 2020	National Value *
AFNR Aligned Agribusiness	30.02	3.1%	12%	254K
AFNR Aligned Animal Science	436.33	44.5%	8%	3.691M
AFNR Aligned Biotechnology	4.01	0.4%	45%	33K
AFNR Aligned Career Ready Practices	174.56	17.8%	33%	1.476M
AFNR Aligned Cluster Skills	7.42	0.8%	19%	62K
AFNR Aligned Environmental Service Syst.	13.26	1.4%	22%	112K
Council Aligned Foundational Skills	78.02	8.0%	38%	660K
AFNR Aligned Food Products and Processing	46.32	4.7%	22%	391K
AFNR Aligned Natural Resources	13.36	1.4%	20%	113K
AFNR Aligned Plant Science	123.18	12.6%	30%	1.042M
AFNR Aligned Power, Structural, & Tech.	54.76	5.6%	22%	463K
Total Academic Skills Recorded	981.24	100.0%	19%	8.302M

*National value based on N=8,461 programs

As illustrated in Table 5, overall skills connected to SAE involvement has increased from a total of 8.3 million AFNR skills from 6.74 million in 2020, which is a 19% increase. The top three skills areas with the highest percent change from 2020 include Biotechnology (45%), Foundational (38%), Career Ready Practices (33%), and Plan Science (30%) with other change values listed in Table 5. The largest skill-related area is animal systems, which is likely connected to Animal Systems as the most frequent SAE area (Table 4). A very common academic skill area that reaches into soft-skill development and is Career Ready Practices (CRP), which is the second most reported area (17.8%). Nationally students are estimated to be recording over 8.3 million academic skills that directly connect to SAE engagement, which offers a positive connection to building experiences as they plan, record their actions, and reflect on SAE projects aligned to academic skills. A complete listing of AFNR skills aligned to SAE engagement is listed in Table 5.

Another way to summarize experiential learning is to view the recorded hours of SAE, FFA, and community service engagement, which is illustrated in Table 6. This is the action part of the SAE, which engages students in learning opportunities as they invest hours (time), which is recorded in AET.



Table 6. Students Time Invested (Journal Hours) in Experiential Learning (n=4,910)

Descriptive Area	Average (Per Program)	%	National Estimate (N=8,461 Programs)
SAE Journal Hrs.	4,029.6	82.8%	34,094,570
FFA Journal Hrs. (Offices, CDE, Committees)	636.6	13.1%	5,385,983
Community Service Journal Hrs.	203.1	4.2%	1,718,779
Total Hours	4,869.3	100%	41,199,332

As illustrated in Table 6, the total experiential learning time per program averages 4,869 hours, and nationally at over 41 million hours of learning experiences. This illustrates a 22% growth of engagement from the 2020 values of 4,130 hours per program and 33 million hours nationally. The highest area of engagement is SAE journaling (82.8% / 4,029 hrs), which connects to recording academic skills and hours and is a 14.7% increase from 2020 values. Additional engagement in FFA and community service also offer experiential learning activities. The areas of FFA activities average just over 636 hours per program, nationally estimated at 5.3 million hours, and is a large increase of 89% from the 2020 report. This increase is very likely related to the cancellation or scaling back of FFA events in 2020 from Covid issues but illustrates a recovery in 2021.

2021 Economic Values from SAE Engagement in Agricultural Education

Not only does SAE engagement involve time and learning but also financial investments and potential earnings. Table 7 provides a summary of student SAE earnings for a typical agricultural education program.

Table 7. Income Values from SAE Engagement in Agricultural Education Programs (n=4,910)

Area of SAE Income (SAE returns)	Average (Per Program)	%	National Estimate (N=8,461 Programs)
Paid Work Income	\$30,407	55.6%	\$257,271,721
SAE Labor Exchange	\$5,829	10.7%	\$49,323,073
Cash/Market Sale	\$1,347	2.5%	\$11,395,764
Stock Show Sale	\$6,686	12.2%	\$56,569,928
Award/Scholarship/Premium	\$6,631	12.1%	\$56,104,209
Research Funding	\$740	1.4%	\$6,261,390
Used at Home	\$1,939	3.5%	\$16,409,249
Rental Income	\$1,145	2.1%	\$9,686,779
Total Value	\$54,724	100%	\$463,022,113



As illustrated in Table 7, an average program has students earning \$54,724 in financial income. The highest area of SAE earnings is paid work (\$30,407, 55.6%), which is an increase from the 2020 value of \$21,178 per program. This highest value also aligns to the largest SAE area (Placement SAE, 53%, Table 3). Nationally, it is estimated that SAE income for students reaches over \$463 million in student earnings, which provides earned financial support as students continue in their career path.

As students can earn income, these projects likely require financial investments such as required job supplies, research expenses and various agricultural common expense areas. These investment values are part of the students records in AET and entered with aligned dates for each transaction. These investments are not only valuable to the student’s SAE as a record, but also create local, state and national impact values that drive economic growth and job creation and are listed in Table 8. This illustrates a \$62,521 average SAE spending per program, which is similar to the 2020 value of \$65,221 per program. Details of SAE spending are listed in Table 8.

Table 8 SAE Investments in Operating Expenses (n=4,910)

Area of Economic Investing	Average (Per Program)	%	National Estimate (N=8,461 Programs)
Inventory for Resale	\$20,752	33.2%	175,580,458
Feed	\$11,414	18.3%	96,577,628
Other Expenses	\$7,083	11.3%	59,932,189
Fertilizer/Chemicals	\$3,435	5.5%	29,060,006
Rent	\$4,079	6.5%	34,510,026
Contract/Custom Hire	\$4,218	6.7%	35,684,277
Paid Work Expense	\$1,616	2.6%	13,674,336
Supplies	\$2,624	4.2%	22,198,327
Seed	\$1,717	2.7%	14,527,576
Fuel	\$1,061	1.7%	8,980,605
Entry Fees/Commissions	\$1,270	2.0%	10,742,100
Repairs/Maintenance	\$1,997	3.2%	16,893,213
Veterinary Medicine	\$1,257	2.0%	10,632,237
Total Value	\$62,521	100.0%	\$528,992,979

Nationally, SAE spending is estimated to be \$528 million, which supports local, state, and national economies. These investments are allocated across common SAE-related expenses, which are outlined in Table 8.



Investment values also include non-current assets (long-term assets), such as breeding animals, machinery, buildings, and land, which are additional drivers to local, state and national economies. Considering 2021, SAE non-current item investment was \$27,582 per program, which is an increase from the 2020 value of \$22,420. Many of these investments are connected to entrepreneurship SAEs as student acquire non-current items to operate their enterprises. Once investments are measured, additional impacts can be derived using economic multiplier factors (\$1.90 per \$1 in spending IMPLAN Type II Multiplier). Table 9 provides a summary of both direct agricultural education program investment values and related local economic impact values (direct spending and economic value).

Table 9 Direct Investments and Economic Impact Values from SAE Engagement (n=4,910)

Area of Economic Activities (SAE Investments)	Avg. Program Value Direct Spending (Per Program)	Avg. Program Economic Value ¹ (IMPLAN 1.90, Type II)
Total Operating SAE Expenses	\$62,521	\$118,791
Non-Current Asset Purchases	\$27,582	\$52,405
Total Value	\$90,103	\$171,196

1 - IMPLAN Model values represent direct, induced, and indirect economic values derived from spending

As illustrated in Table 9, an average agricultural education program encourages SAE investment of \$90,103, which is a slight increase from the 2020 value of \$87,640. In terms of economic impact, these programs are likely developing \$171,196 in total economic impact that supports all business sectors of the region and are increases from the 2020 value of \$166,517.

Economic values from agricultural education programs (FFA chapters) with SAE activities also defines national values. Table 10 defines the national SAE spending at \$762 million, which then creates \$1.448 billion in economic impact values, which is an increase from the 2020 value of \$1.361 billion.

Table 10 National Direct Investments and Economic Impact Values from SAE Engagement (N=8,461)

Area of Economic Activities (SAE Investments)	National SAE Direct Spending	National Economic Value ¹ (IMPLAN 1.90, Type II)
Total Operating SAE Expenses	\$528,992,979	\$1,005,086,661
Non-Current Asset Purchases	\$233,369,770	\$443,402,563
Total Value	\$762,362,749	\$1,448,489,224

1 - IMPLAN Model values represent direct, induced and indirect economic values derived from spending.

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The national economic value of SAE engagement in agricultural education is an illustration of financial values derived from educational activities, which support businesses and jobs and helps drive the national economy, which financially connects to needed national investments in agricultural education.

Application of Information

This report provides a summary of agricultural education at the local and national level. This year's report utilizes a conservative approach to measure program values in hope of capturing metrics that describe a typical U.S. agricultural education program. The objective of this report is to share values of agricultural education and learning outcomes that illustrate both programmatic, academic and economic values. Appropriate use of these values can drive support in agricultural education or FFA programs, potentially prioritizing educational initiatives. Values listed here also may serve as comparisons to local program reports listed in AET.

As in the case of all research reports, standard error always exists when summarizing and extrapolating data; however, several key areas (% SAE involvement, SAE spending, and FFA involvement) were compared to a random selection of programs and no significant differences were found, which does offer support that these values do represent typical programs in agricultural education with students tracking their educational experiences.

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