2000 SAE Best Practices Guide

A resource for FFA advisors to discover unique SAE ideas.

This resource is an outgrowth of Local Program Success. It was produced through the cooperation of the National FFA Organization and the National Association of Agricultural Educators.

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This resource is an outgrowth of Local Program Success and serves as a supplement in building strong Supervised Agricultural Experience (SAE) programs.

The FFA Mission
FFA makes a positive difference in the lives of students by developing their potential for **premier leadership, personal growth and career success** through agricultural education.

The Agricultural Education Mission
The mission of Agricultural Education is to prepare and support individuals for careers, build awareness and develop leadership for the food, fiber and natural resources systems.

Prepared and published by the National FFA Organization in cooperation with the National Association of Agricultural Educators as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

Chapter 1

Cooperative SAE Best Practices

This section contains model examples of cooperative Supervised Agricultural Experience programs (SAEs) that have been used for classes, FFA chapters and groups of students in a variety of settings across the country. These examples can be incorporated as model student cooperatives into the classroom. Please feel free to submit additional ideas, which may be included in the next edition of the *SAE Best Practices Guide*. You may submit your entries at the number or e-mail address mentioned below.

An additional document entitled, *A Guide to Cooperative SAE*, is available from the National FFA Organization.

For More Information or Publications

Contact Kevin Keith to receive a copy of this publication.

317-802-4254

kkeith@ffa.org

SAE Description	Students raise Tilapia, Koi and Oscars to learn about aquaculture. In addition, they have access to a wetlands area to study this type of ecosystem. Students perform all the functions necessary for the well-being of the fish, turtles and other animals. They also provide the Colorado Division of Wildlife with daily and weekly data for its River Watch Program. The FFA chapter and local grants cover expenses.
Cooperative SAE Title	Aquaculture Lab and Wetlands Area
Other Comments	**Tips:** The cooperative requires coordination and overall management from the FFA advisor. Loss of materials, damaged goods and turnover can be kept to a minimum with proper planning and instruction.

SAE Description	Students purchase products to retail to other students, community residents and school district personnel. Wholesale companies in the area donate products periodically and the school uses discounts to purchase tools and supplies. Students raise bedding plants from seed or plugs during the school year and seasonal crops such as poinsettias for the holidays. They sell plants throughout the school year to area consumers and on two weekends at the end of the year. The cooperative sells shrubs, trees and related nursery plants used during the Colorado Garden and Home Show to recoup the costs of participating in local events. Students learn how to market the items produced to minimize losses. Expenses are covered by the FFA chapter and under curriculum costs associated with training students to work in the shop.
Cooperative SAE Title	Spring Bedding Plant Sale
Other Comments	**Tips:** The cooperative requires coordination and overall management from the FFA advisor. Loss of materials, damaged goods and turnover can be kept to a minimum with proper planning and instruction.

SAE Description	Students process fresh products and store them in a small walk-in cooler used primarily for flowers. Plants are raised from seed or plugs with seasonal crops produced by career cluster students. Expenses are covered by the FFA chapter and under curriculum costs associated with training students to work in the shop. Students learn how to market the items produced to minimize losses.
Cooperative SAE Title	Student Enterprise Retail Floral Shop and Garden Center
Other Comments	**Tips:** The cooperative requires coordination and overall management from the FFA advisor. Loss of materials, damaged goods and turnover can be kept to a minimum with proper planning and instruction.

SAE Description This cooperative custom processes all types of poultry under inspection by the California Department of Food and Agriculture. Students work one day for the cooperative, after which they each receive an equal share of the income after 25 percent of plant costs are regained. A total of 25 students are trained and involved with the plant. Only five of them can be involved with any given processing job.

Cooperative SAE Title Poultry Processing Plant

Other Comments **Tips:** Students need to understand the rules and safety considerations and the instructor must possess a valid inspection license. This cooperative is cost prohibitive if a processing facility is not built prior to its formation.

SAE Description Students apply for loans through the Farmers Home Administration/Farm Service Agency. They also establish feed accounts at Southern States Co-op and secure calf insurance policies from Farm Bureau Insurance. After raising the cattle, students have them slaughtered by a meat processor who wraps and packages the meat before selling it by the pound. Student use the funds to pay all their accounts and loans by the end of the school year.

Students realized a profit of $150-$275 per calf. In 1996, the Virginia Department of Education voted this project as that state's outstanding new vocational project.

Cooperative SAE Title Operation Barbwire

SAE Description Students collect, identify, advertise and sell a variety of insects to local schools.

Cooperative SAE Title The Bug Man-Entomology Company

SAE Description The Frontier FFA Cooperative of Athens, Ohio, diverts 10 percent of its earnings to the livestock and equipment fund. Funds are used to buy fair stock for members as well as breeding stock to start livestock chains. Poultry and other small animals are raised and then distributed free to the community. Members reimburse the cooperative in kind or in fee with no interest charged. Purchased equipment is loaned to students for the duration of their projects. They then have the option to purchase, replace or return the loaned equipment.

Cooperative SAE Title Livestock Cooperative

Other Comments **Special Considerations:** The cooperative is only for chapter members who can remain a part of it as long as they are official FFA members. The cooperative needs to be part of the chapter program of activities and a committee should be established to review its activities.

SAE Description	Beginning in September, students are assigned individual greenhouse benches where recently potted poinsettias cuttings are growing (an early August potting makes it impossible for students to participate in the initial stages). Besides being responsible for the plants on their assigned benches, students can sell all plants grown by the class, providing an incentive for all students to assist each other in completing their cultural practices. Poinsettia sales commence on the Monday after Thanksgiving. Students are required to greet customers, assist them in selecting their poinsettias, wrap and sleeve selected plants, prepare a bill of sale, collect payment and assist customers to their vehicles with their purchases. Bedding plants are managed in the same manner; however, students are involved in the entire operation from seed sowing or rooting a cutting to plant sales, which start on April 15.
Cooperative SAE Title	Greenhouse Production and Sale of Poinsettias and Bedding Plants
Other Comments	**Tips:** Increased instruction in horticulture usually takes place during sales periods because students are expected to answer customer questions in order to close a sale. In these instances, student motivation to learn is higher.

SAE Description	The Southwest Star Concept School located in Okabena, Minn., requested that the FFA agrimarketing team develop a comprehensive plan to organize the chapter home and garden store into three specific areas. Those areas include a home and garden floral shop, a plant propagation division as well as a home and garden lawn care and landscape department. The agrimarketing team will work with students, faculty and a community advisory committee to coordinate curriculum, integrate “hands-on” learning activities and develop budgets relating to each of the store's business components. To develop and promote these products and services, the agrimarketing team will work with faculty and specific groups of students to design, manufacture, display and price merchandise. Students will use attractive pamphlets, radio and newspaper advertisements as well as an annual home and garden open house to promote the store.
Cooperative SAE Title	Lawn and Garden Service Center

SAE Description	The students and agricultural advisory council of the Southwest Star agriculture program of Okabena, Minn., will design, plan and develop a showcase school farm that will include horses, beef, sheep, swine, poultry, gardening, orchards and much more. Once built, the school farm will be used as a learning laboratory for all students interested in obtaining real life experiences in these enterprise areas.
Cooperative SAE Title	School Farm

SAE Description Gretna, Va., Middle School FFA members can purchase strawberry plants at cost, which is 75 percent lower than retail because of a larger combined order. Plants normally cost $12 for 25 plants. Students usually order only one variety of plants from a reputable dealer, such as Brittinghams of Salisbury, Md. Members separate the individual orders and deliver them to other students.

Cooperative SAE Title Cooperative Strawberry Plant Orders

Other Comments **Tips:** Plants should be ordered from a reputable dealer.

SAE Description Students from a Concordia, Kan., cooperative contact all FFA chapters in the state and offer 23 items from 8 area producers and a variety of fruit items on a wholesale basis. Items include popcorn, gift boxes of meat and cheese and bacon and honey, cookies, hams and turkeys. About 30 schools participate annually with gross sales averaging more than $100,000. Net proceeds are used to repair and maintain equipment as well as provide senior FFA scholarships as an incentive for labor. Dividends are paid to FFA chapters based on volume for early payment. Students also supervise and manage the retail operation of the local chapter sales, which involves 70 members. Cooperative staff members receive advice and suggestions on product handling and pricing from a successful local business person. They work with administrators on school regulations the school transportation director on delivery laws. (For more details, see the "LPS Idea of the Month" article in the April 1999 issue of *FFA Advisors Making a Difference*.)

Cooperative SAE Title Kansas Produce Cooperative (KPC)

SAE Description A carbonated beverage cooperative was formed when members purchased shares for 50 cents a piece. Each member is able to purchase a maximum of five shares. FFA members elected a board of directors from its membership. They also drafted a constitution and devised a dividend profit sharing plan.

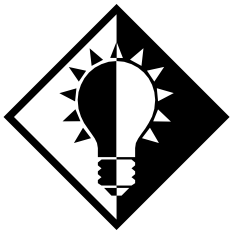
The cooperative provides all types (brands) of carbonated beverages (soda pop) desired by students at market price. Dividends are paid based on the profits received by the organization. A small amount of the profits is retained for restocking and the FFA treasury.

Cooperative SAE Title Carbonated Beverage (Soda Pop) Cooperative

Other Comments **Tips:** Funds need to be handled carefully. Monitoring of supplies is often needed. A constitution with rules on how to distribute the profits needs to be devised and followed.

Chapter 2

Individual SAE Best Practices



This section contains Supervised Agricultural Experience (SAE) ideas submitted from the field and gleaned from applications received at the National FFA Organization from 1997–1999. These SAEs were approved by officials in their respective states and may not be endorsed in all areas. Please check with your state agricultural education staff to verify the standards for SAE programs. The possibilities for SAEs are endless. The purposes of these submissions are to provide ideas in developing student SAEs and to broaden the opportunities for serving students through agricultural education.

SAE Type Agribusiness—Computer Records

SAE Description The student combined an interest in swine production and computers to develop a swine record keeping program. The program records data on the number of live pigs born, pre-weaned death percentages, non-productive sow days, average daily gain and feed efficiency. The student designed a database program and a spreadsheet program to record this information. Currently, the student is promoting this program to area swine producers.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Agricultural Communications

SAE Description This student's SAE began in promoting FFA activities as a chapter officer. These experiences nurtured her love for meeting and communicating with people. The SAE expanded when the student worked in the media and public relations department at the county fair. The student posed as a fair mascot, painted structures and costumes and maintained the media room.

Responsibilities grew to include promoting agriculturally related activities through displays, answering media and fair attendee questions, arranging county promotional brochures and media publications, photographing and maintaining a history of activities, announcing daily activities over the public address system, preparing scripts for stage shows and coordinating scripts for a nationally syndicated talk show.

SAE Career Cluster Communication and Education Specialists

Other Comments This SAE is an excellent opportunity for students who come from a non-traditional agricultural background. Few resources are needed for this project, except an imagination, interest in working with people and a desire to communicate the importance of agriculture to them.

SAE Type Agricultural Communications

SAE Description This student gained experiences in video production, agricultural marketing, advertising sales, radio and television broadcasting, newsletter and magazine publication and mass media networking.

The student completed multiple projects that included conducting media interviews, preparing and editing news releases and programs, selling advertisements, using a camera and producing an FFA recruitment video. Developing interesting leads, writing and proofing articles, developing mailing lists and designing page layouts were also a part of the job. The student found creating, editing and producing a safety video for elementary school teachers a rewarding challenge.

The student also served as an FFA ambassador.

SAE Career Cluster Communication and Education Specialists

SAE Type Agricultural Communications

SAE Description Since he was nine years old, this student had a dream of becoming a newscaster. SAE activities encompassed his career aspirations and began when he gave a radio interview during National FFA Week. SAE activities included video production, magazine editing, agricultural reporting, newsletter publishing and public relations. He learned to use a video toaster to add and edit special effects and colors, employ an audio digitizer to add audio to videos, edit digital voice-overs from over-the-phone interviews, record material using a directional microphone, network sources of information via phone and personal letters as well as scan materials using Microsoft® Publisher Software.

SAE Career Cluster Communication and Education Specialists

SAE Type Agricultural Communications

SAE Description This student wrote articles for farming magazines and other media such as *Progressive Farmer*, *Successful Farming* and *Ag-Online*. At the local level, the student developed an FFA newsletter and wrote newspaper articles promoting agricultural literacy.

SAE Career Cluster Communication and Education Specialists

Other Comments This type of SAE doesn't require special equipment. Computers and Internet access are readily available in most areas; however, some schools do not possess these resources at present. Students who don't have access to these resources can still use a pencil, paper and typewriter to process their information. In most rural areas, newspapers do exist. In more populated areas, advisors may want to develop media contacts for students.

SAE Type Agricultural Mechanical Systems Technology

SAE Description This student turned an interest in taking things apart into an SAE by repairing a trailer his employer had borrowed and broke. After completing the repairs, the owner offered him a position sweeping the shop, washing parts and driving a tractor. As time passed, the student learned how to remove and replace parts. He has overhauled six diesel engines and four transmissions. He has also rebuilt clutches, repaired tracks as well as set the backlash/heel and toe for a Caterpillar tractor ring and pinion gears.

	The student has acquired more than $15,000 worth of tools and has purchased a service truck and cellular telephone. He plans to attend a community college and work in an implement dealership. The student's employer conducted an apprenticeship for and advised him on which tools to purchase.
SAE Career Cluster	Scientists, Engineers and Related Specialists

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SAE Type	Agricultural Mechanics
SAE Description	As a freshman, the student built a pole barn and a fence; wired and installed plumbing in a barn; built, stained and laid a roof on a deck and demolished a second barn. The student also built a feed floor, constructed a farrowing house, assembled a grain bin, poured cement, built an addition to a barn and laid a roof on a house. The student also worked at a small engine shop, on a farm and in a machine shop as well as ran a backhoe.
SAE Career Cluster	Scientists, Engineers and Related Specialists

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SAE Type	Agricultural Processing
SAE Description	This student learned a lot about handling honeybees and managing colonies through her SAE. She now understands the important role honeybees play in agriculture. She collected, harvested and processed honey, pollen and the comb. She also sold beeswax novelties items such as candles and Christmas tree ornaments.
SAE Career Cluster	Marketing, Merchandising and Sales Representatives

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SAE Type	Agricultural Processing—Leather Kits
SAE Description	This student's hobby became an SAE that generated income. The student obtained kits from leather companies and devised creative ways to alter or add special touches to the finished products. He bought scrap leather from community residents and used his father's tools. The student used his record book to organize and focus on the business aspects of his SAE.
SAE Career Cluster	Marketing, Merchandising and Sales Representatives
Other Comments	Students only need a few resources this SAE, which could be adapted for a physically- or mentally-challenged student. The idea could be incorporated into service projects involving senior citizens or PALS mentees.

SAE Type Agricultural Processing—Meat Cutter

SAE Description After studying about retail and wholesale meats in agriculture class, this student researched the career opportunities in this industry. The student became a meat cutter's apprentice at a local grocery store where he or she cut retail portions of beef, pork and poultry. The student learned how to identify wholesale and retail cuts of meat, operate and maintain meat department equipment, conduct inventories as well as order and stock prepackaged meats.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Agricultural Sales and/or Service—Crop Scouting

SAE Description The student is involved in the family's crop scouting business. Learning to conduct germination tests enabled the student to make recommendations to farmers on replanting. Each client received a graph of every tested field. The student logged weekly field information on a micro-cassette recorder while on-site and then entered the data onto customers' personal databases. A major part of the student's job was taking soil profile samples. The student also learned to identify diseases, insects and molds as well as monitor pod maturity and stages.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

Other Comments Many of the practices used in this enterprise could be adapted for use in career development events (CDEs). Students with these types of SAEs can help coach other students or peers in related CDEs.

SAE Type Agricultural Sales and/or Service—Greenhouse Business

SAE Description The student began a greenhouse business after obtaining a loan from the Farmers Home Administration. The loan allowed the student to purchase the structure, heating and cooling systems, thermostats, electrical wiring and water lines. The student's father, mother and sister assisted with the grading of the land and constructing the facility. After consulting with the local agriculture teacher and extension agent, the student decided to raise Christmas poinsettias and specialty bedding plants. The student expanded the facilities by constructing a shade house for bedding plants and hanging baskets.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

Other Comments Students can grow many crops in greenhouses built from just wooden frames and PVC plastic. Greenhouse operation varies with location and the length of the winter season.

SAE Type	Agricultural Sales and/or Service—Implement Dealership
SAE Description	Managers at an implement dealership assigned this student to the sales department. There the student erected product displays as well as selected and ordered products based on past sales records. The student also answered customers' questions, highlighting product features and benefits. The student then transferred to the service and parts departments where he or she used computers and CD-ROM to locate parts. The student serviced outdoor equipment, diagnosed small engine problems and operated an oxyacetylene unit and arc welder.
SAE Career Cluster	Marketing, Merchandising and Sales Representatives

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SAE Type	Agricultural Sales and/or Service—Veterinary Clinic
SAE Description	Working for a veterinarian allowed this student to care for small animals in a clinic. The student fed boarded animal with food and water and groomed them. Upon the departure of each animal, the student cleaned and disinfected the kennels. The student assisted the veterinarian in examining animals, x-raying and preparing the surgery room. As a lab technician, the student tested animals for heartworms and stocked the shelves daily.
SAE Career Cluster	Marketing, Merchandising and Sales Representatives

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SAE Type	Agricultural Sales and/or Service or Forage Production—Custom Baling Business
SAE Description	The student began his SAE by borrowing money from his father to purchase a round hay bale. His interest in this business was peaked by an experience where he helped a neighbor store hay bales. After learning about the student's plan to purchase a hay baler, an owner of a baler reduced its sale price by $1,000. Another neighbor approached the student and offered to have him bale all of the hay on his farm. He increased his custom baling clientele from seven to 20 customers. The student learned how to work with people (including an unreliable customer), manage a business and implement safety procedures.
SAE Career Cluster	Marketing, Merchandising and Sales Representatives

SAE Type Aquaculture—Fish Farming

SAE Description This student visited several fish farms and gathered information from owners on construction and species. The initial financial investment was the most costly for this enterprise. The student constructed ponds as well as purchased fish and several pieces of equipment.

The student learned how to develop a budget, fulfill responsibilities, build self-reliance, construct spawning equipment, harvest fish, recognize fish diseases and inventory stock through this enterprise.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Goldfish or other fish could be raised on a smaller scale by using ponds or aquariums. The fish could be sold for many different purposes such as stocking garden ponds or for 4-H exhibits.

SAE Type Beef Cattle—Ranch Worker

SAE Description As a child, this student spent weekends on his grandfather's ranch. In eighth grade, he moved closer to his grandparents' ranch and was able to work there after school as well as on weekends. The student traded labor on the ranch for beef heifers, feed and use of the pasture. He purchased additional cattle with savings and a loan from the Farmers Home Administration.

The student completed these tasks in 3,615 hours (of which 1,950 were unpaid): fed cattle, kept records, weighed calves at birth, vaccinated cows and calves and evaluated replacement heifers and bulls.

The student also participated in livestock judging events, an agricultural issues forum, chapter rodeo committee work and a beef proficiency competition.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Beef Production/Placement

SAE Description The student combined an entrepreneurship with placement experiences to learn all he could about the beef cattle industry. Initially, this student raised eight heifers, one bull, one calf and two steers. Using his production background, the student began working for area ranchers and accumulated over 8,700 hours of placement experience. He became a certified artificial insemination technician; practiced embryo transfers, sire selection and EPD evaluation and marketed cattle through purebred production, private treaty as well as state and national consignment cattle sales. The student culminated his SAE experience by working at a university beef teaching unit.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Biotechnology Internship

SAE Description The student began her SAE by visiting the school's vocational coordinator about a biotechnology science apprenticeship program. She completed a job application and scheduled an interview. Program officials selected and placed her with the U.S. Dairy Forage Research Center located in Madison, Wis.

She worked with lab equipment, completed complex experiments dealing with DNA and genes and worked with a team of researchers and lab technicians. The student learned about laboratory safety and how to record results in scientific notebooks. She also participated in team building activities. All of these experiences served as valuable assets in preparing her for a career in biotechnology.

The student was academically eligible for the program and the agriculture instructor recommended her for the apprenticeship program.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Computers/Lab Equipment

SAE Description Preparing for a landscape exhibit at a farmers fair encouraged this student to use a computer to design the display. Beginning with that project, the student drew other landscapes using a computer-assisted design (CAD) program. The student learned to use word processing systems, spreadsheets, file management techniques, hypertext linking and graphics for the Web, e-mail and the Internet. The student has also worked with fiber optics.

As a junior, the student worked as an intern at the USDA Salinity Laboratory where he performed mineral tests on different crops. The student learned to use laboratory equipment such as an inductivity coupled plasma atomic photometer, a chloride titrator and an atomic emission spectrophotometer.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Detassling Seed Corn

SAE Description The student started an SAE program by detassling corn during the summer breaks. Besides holding the job of de-rouger, the student eventually raised seed corn for a prominent seed company. Crop scouting experience taught the student to identify common agronomic weeds, insects and diseases; determine possible infestation percentage counts; identify corn growth stages; supervise corn detassling crews; flag male seed corn rows and complete crop scouting reports.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Dogs—Kennel Worker

SAE Description The student obtained a position at a nearby kennel with a focus on training work dogs. The student formulated feed rations to meet each dog's nutritional needs, disinfected the kennels and other livestock equipment daily, groomed each animal's hair or coat daily, trained the animals to obey their masters, performed basic training lessons with young dogs, administered medications and performed minor canine veterinary procedures.

The student trained cattle dogs and assisted the owner while at national dog shows. The student joined the Australian Shepherd Club of America.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Emerging Agricultural Technology

SAE Description This student began an SAE program raising corn and soybeans. From this experience, the student secured a position at a crop research field station, which combined an interest in science and agriculture. The student conducted a herbicide tolerance trial using popcorn germ plasm. During the winter months, the student entered data into the facility computer. After one year of working at the field station, officials hired the student as a full-time summer intern.

To complement the placement experience, the student attended a weed identification seminar and a USDA Product Development and Utilization Laboratory tour as well as obtained a state pesticide applicator's license.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Emerging Technology—GPS

SAE Description This student began researching different career options at ten years of age and wanted to find a challenging field. His interest in computers and technology propelled him into jobs of increasing complexity until he finally landed a position on a farm working with global positioning technology.

On the farm, the student managed a hydroponic tomato production facility, applied pesticides to selected agronomic crops and processed data to develop individual field yield maps for use with a global positioning satellite system (GPS).

SAE Career Cluster Scientists, Engineers and Related Specialists

SAE Type Environmental Science

SAE Description This SAE consisted of collecting and surveying Karner Blue Butterfly populations, tracking Wood Turtles with radio transmitters, propagating plants and restoring prairie habitat. This student received a grant for her research. She collected data and submitted a research report, which was featured on a web site she developed.

SAE Career Cluster Agricultural and Forestry Production

Other Comments This particular SAE cannot be reproduced, but its format offers endless possibilities. Students must know the scientific method and be able to use it in every facet of their SAE. They can present the findings of their studies to numerous groups to teach residents about the importance of preserving, admiring and respecting the environment.

SAE Type Environmental Science or Agricultural Sales and/or Service—Composting

SAE Description An innovative businessman approached this student's father about composting his manure stockpile. Two years after that initial conversation, the owner abandoned his business and moved to another part of the state. At that time, the student devised a business plan to use money from savings and other SAE projects to rent 25 acres of land as well as purchase a used compost turner and thermometer.

The student learned to perform regularly scheduled preventative maintenance on equipment, keep updated and accurate billing records, provide prompt and courteous service, control weeds and monitor compost row temperatures.

The student extended this horticulture SAE by tapping into the increasing fertilizer needs of local golf courses.

SAE Career Cluster Scientists, Engineers and Related Specialists

Other Comments Composting on any scale, large or small, has many environmental and consumer benefits. Compost provides excellent nutrients for enriching the soil. Students need to monitor their compost piles regularly because of the tremendous heat generated.

SAE Type Environmental Science—Dairy and Crop Farm

SAE Description As a part of a dairy and diversified crop SAE, the student incorporated soil conservation practices, implemented energy saving facility upgrades, tested the soil annually and constructed a manure handling structure on the family farm. The student cooperated with the Soil Conservation Service (now the Natural Resources Conservation Service) to establish terraces, plant rotation crops, use

conservation tillage practices on all fields, implement a double cropping system and contour all highly erodible land.

The student helped construct a dairy facility and manure lagoon. The new dairy facility reduced energy costs due to increased insulation and an energy efficient curtain ventilation system. These improvements eliminated the need for circulating fans. The student also installed low density and energy efficient light bulbs to reduce costs.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Environmental Science—Leafy Spurge Research

SAE Description This student cooperated with university lab officials to test the resistance of leafy spurge to a variety of control measures.

SAE Career Cluster Scientists, Engineers and Related Specialists

Other Comments Leafy spurge is not troublesome is all parts of the United States. Students can research the resistance of many other troublesome pests using organic and inorganic control methods. University or extension service officials can help students design and implement a research plan of action.

SAE Type Environmental Science—Natural Resource Management

SAE Description This student learned a lot about environmental management from attending various workshops. She applied her newfound knowledge to areas and situations needing attention in her local area.

She worked to secure a grant, which would provide funding to clean a contaminated stream near a town park. Her previous experience in determining water quality through chemical, physical and biological methods helped her assess the health of the stream. Because water pollution is a problem that is not quickly reversed, her work on this project continues today.

She also spoke about the importance of preserving the environment to school and community groups.

SAE Career Cluster Scientists, Engineers and Related Specialists

Other Comments This SAE allows students to promote awareness about the conservation of natural resources. Department of Natural Resources, extension service and Soil and Water Conservation officials can provide students with information that they can use in developing an SAE in their fields of interest. Officials from these agencies welcome student volunteers.

Income potential with this SAE is slim, but students can gain beneficial experiences toward future career goals.

With help from agriculture instructors, extension specialists, natural resources personnel and Soil and Water Conservation District officials, students who don't have a traditional agricultural background can implement an SAE similar to this one.

SAE Type Environmental Science—Recycling

SAE Description The student works at a recycling company, which recovers both raw and recycled plastics for use in agricultural and construction drainage tile. The student began the experience by sorting bales of plastic bottles.

The student now operates a machine that shreds plastic into chunks and then grinds them into smaller pieces. The student also operates a Rotogran, the largest machine in the factory, which can grind a 55-gallon plastic drum into smaller pieces. Besides operating these machines on a daily basis, the student assists in maintaining the plant's equipment.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Environmental Science—Wildlife Management Studies

SAE Description This student joined an eighth grade science club to study the environment. Upon entering high school, the student enrolled in agriscience and completed numerous environmental research projects. As a part of an SAE, the student attended environmental workshops and conferences and volunteered to work at an outdoor field station and school forestry plot.

The student conducted butterfly, wood turtle, timber wolf, frog and toad studies. The student also conducted a timber wolf road survey, managed the forest at a field station, volunteered to survey amphibian and marsh dwelling birds, performed land and water surveys as well as assisted with a prairie restoration and plant propagation project.

SAE Career Cluster Scientists, Engineers and Related Specialists

Other Comments An outdoor classroom would be an excellent resource for this type of SAE project. Permission from school administrators may be needed if this SAE is used to educate younger students about the environment and agriculture.

SAE Type Equine Science—Placement at a Stable

SAE Description At a young age, the student began his project, which led to an SAE, by visiting a local stable and cleaning stalls. He then enrolled in riding lessons and soon after owned his first horse. He also cleaned additional stalls in exchange for boarding fees. The student fed horses, monitored their vital signs, watched for signs of distressed horses and disease, developed conditioning schedules, taught riding lessons at day camp as well as designed and maintained jumping and cross country courses.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Equine Science—Teaching Community about Horses

SAE Description The student purchased her first horse with her own money. She now owns a herd of six horses. Her experiences range from ownership to equine science promotion. The student taught middle schools students about horses, gave presentations to community groups, sponsored equine camps and clinics, offered private lessons and sponsored equestrian rides for paralysis victims.

She learned how to dress, clean and monitor the progress of horse wounds. She also observed and applied horse safety procedures, evaluated body conformation and purchased acceptable horses, developed a herd nutrition plan and acquired frugality in purchasing tack and equipment.

SAE Career Cluster Agricultural and Forestry Production

Other Comments There are organizations that search for volunteers to conduct therapeutic riding lessons for physically challenged individuals. Internet web sites may list organizations near where students live. They may want to start their Internet search by looking under headings such as “therapeutic horseback riding” or “Special Equestrian Riding Therapy, Inc.”

SAE Type Equine Science—Trail Rides

SAE Description Because of an interest in horses and the outdoors, this student obtained a job at a park riding stable. He began work at the park as a “pony boy,” assisting children who wanted to ride the ponies. He became a wrangler who supervised groups on trail rides, assisted riders in grooming and saddling their horses and taught horse safety to participants. The student fed horses, collected tickets and waivers and completed simple maintenance projects.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

SAE Type	Farm Hand—Placement on Dairy Farm
SAE Description	Experience and knowledge gained on an uncle's farm prepared this student to work with a registered dairy cattle herd. The student learned how to evaluate dairy heifers and cows, select sires as well as use proper milking and milk sanitation procedures (pre- and post-dipping). This student became familiar with a prescribed calf starter and other feeding programs, Dairy Herd Improvement Association testing, herd vaccination, pest control and a record keeping system.
SAE Career Cluster	Agricultural and Forestry Production

SAE Type	Fiber Crop production—Pulpwood
SAE Description	After completing both a natural resources management and forestry course, the student obtained a position working in an uncle's pulpwood business. He learned to operate a chain saw, bulldozer, feller buncher and skidder. He also learned to repair handheld and heavy equipment. The student has learned to cut trees into eight-foot lengths, peel popple, bunch (piling pulp) and limb. The student plans to attend a technical school to improve his timber cruising and mapping skills as well as to learn how to estimate wood volumes.
SAE Career Cluster	Scientists, Engineers and Related Specialists

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SAE Type	Floriculture—Caladium Bulb Production
SAE Description	At an early age, this student became familiar with the business of growing, processing and shipping caladium bulbs. The student learned how to plant, manage water resources, fertilize and harvest caladium—all processes vital to the production of this crop.
SAE Career Cluster	Agricultural and Forestry Production
Other Comments	No books exist, explaining how to farm and market the specialty crop Caladium. Students can gain a working knowledge about the plant through mentoring and hands-on experiences. Information about wholesale sources and resources is available on the Internet. These same aspects of caladium production can be applied to daylilies, irises, chrysanthemums and other perennials.

SAE Type Floriculture—Dried Floral Arrangements

SAE Description The student raised seedling flowers in the basement under grow lights, transplanted them into a backyard garden, harvested the flowers in the fall, dried them in a garage, constructed fall and Christmas arrangements and sold the arrangements at local craft shows.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

Other Comments The harvested plants could be sold or planted to increase yield.

SAE Type Floriculture—Fresh Arrangements

SAE Description The student started a floriculture business, which specialized in fresh arrangements. She began an additional business producing dry arrangements to satisfy customer demand and hired two students to assist in the businesses. Upon the founding of the businesses, she circulated flyers and made community appearances to promote her products. She quickly found that residents preferred to purchase flowers from established businesses. With the assistance of friends, she selected a company name and developed a logo. Together, they designed business cards and letterhead on the computer.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Floriculture—Greenhouse Management

SAE Description The student worked for two years in the school's greenhouse. His teacher encouraged him to work in the greenhouse and to participate in the district and state floriculture career development events. While in high school, the student expanded his interest in floriculture by securing jobs at a discount and grocery stores.

After working at these multi-use businesses, he obtained a job at a florist shop that specialized in foliage plants and cut flowers. The student learned how to arrange a product display, identify over 100 different species of foliage plants and cut flowers, collect accurate information on phone orders, prepare plant stock for over-the-counter sales and make corsages.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Floriculture—Orchid Production

SAE Description This student and his family used the kitchen as a tissue culture propagation area and built a small greenhouse next to the house to grow orchids. To increase their success, this student learned to propagate, transplant and care for orchids. He

also learned about the nutrient levels needed for orchids to bloom and insect and disease control methods. He also found automatic grow lights essential to control the photoperiod in the propagation process.

The student attended several orchid tours and professional meetings, participated in the state nursery operations competition, exhibited orchids at the county and state fairs and joined orchid production-related organizations.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Food (Meat) Science—Quality Assurance Program

SAE Description After reviewing several agricultural magazines and visiting a local meat packing plant, the student participated in a National Cattlemen's Association data collection project. In the process, the student learned to tag cattle ears; read plant tags; record USDA carcass grades; measure kidney, pelvic and heart fat; trace rib eye area; measure rib eye muscles and enter the data into a computer for further analysis. These experiences prepared the student to collect data for the Certified Angus Beef Association.

The student participated in livestock career development events and joined the state and National Cattlemen's Association and the Certified Angus Beef Association.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Forestry—Firewood Sales and Tree Planting

SAE Description Helping a grandfather deliver firewood encouraged this student to investigate the forestry industry for possible career opportunities. The student started an SAE by logging and selling 60 cords of firewood to local customers. The business has now grown to more than 100 cords a year. The student set a goal of planting two trees for every one harvested. To date, the student has planted 16,000 trees and reforested 1 1/2 acres. In 1996, the student started a Christmas tree business by planting 600 trees.

The student attended a Trees for Tomorrow environmental workshop, participated in a land judging event, enrolled in an outdoors survival skills course and joined the Society of American Foresters.

SAE Career Cluster Scientists, Engineers and Related Specialists

SAE Type Forestry Management—Christmas Tree Production

SAE Description The student turned an idle piece of land into a Christmas tree plot. The student borrowed a three-point hitch tree planter to establish the plot. In one weekend, the student planted 3,000 white pine trees. Over a six-year period of time, the student planted an additional 2,000 Blue spruce, 2,000 Frazier firs and 1,000 hardwood trees to replace those removed through logging.

The student also left rows of trees near fence lines intact and planted red cedar trees in a wetland to encourage wildlife to inhabit the area.

The student planted seedling trees using proper techniques, operated a prune shears to shape and prune trees to ensure quality-shaped retail Christmas trees, used mechanical and chemical weed control methods, and identified diseases and insects harmful to both hardwoods and pines.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Students can extend this SAE by making wreaths and garland from the trimmings of trees cut for customers.

SAE Type Fruit Production—Orchard

SAE Description The student leased a portion of the family's orchard to produce tart cherries, peaches, pears and apples and later expanded the SAE to include sweet corn. Produce was sold at roadside stands, at farmers markets and to local marketing companies.

The student learned how to prune trees, spray for disease and insects, properly irrigate crops as well as operate a cherry picker, wind machine and commercial sprayer.

The student received a fruit growers association scholarship and joined the horticulture association.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Students can extend this type of SAE by making fresh fruit pies, jams, jellies and other tasty treats. Sales to local eating establishments may boost income; fresh fruit could be processed and pies made from it during the months when it is not in season, adding length and diversity to this SAE. Instructors should check and help students implement local catering regulations. Proper customer follow-up is crucial to the credibility of this type of SAE program.

SAE Type Fruit and/or Vegetable Production

SAE Description This student generated income in the summer by producing corn and tomatoes. He continued his SAE during the fall months by producing pumpkins.

Marketing was a key to his success. He participated in the local farmers market and displayed his products attractively to engage customers. He also subscribed to magazines to learn how to produce, harvest and market his produce better.

During the winter months, he planted tomato plants in his basement and used cultural practices to increase his sweet corn yields. He hired employees to help with the workload. Through this process, he learned how to manage labor, money and time more effectively.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Success in this type of SAE demands wise use of space. Students can still grow fruits and vegetables if they don't own acreage. They can grow crops, such as strawberries, pumpkins, cucumbers and tomatoes, on a small scale in a limited area. Balconies, terraces, upright planters, window boxes, container gardens, trellises, rooftops, window stands and grow lights can help projects progress. Students can make window stands from wood or PVC piping to accommodate trays and flats for seedlings or propagation.

Some keys to success with this type of SAE include reading about and implementing new ideas as well as using creativity and imagination in designing the project.

SAE Type Fruit and/or Vegetable Production—Pumpkins

SAE Description This student started a pumpkin enterprise in his freshman year because of an interest in the fruit. He started seeds in the school's greenhouse and then transplanted seedlings into a garden plot. The student also tested the soil for potassium, phosphorus and pH levels. With the assistance of his agriculture instructor, he also conducted tissue tests using the sap of the plants and monitored nutrient levels. He also used insecticide to control squash bugs and cucumber beetles. He marketed his pumpkins through a local grocery store.

The student also participated in soil and crop judging events to supplement his activities.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Game Bird Production

SAE Description With the help of a friend and poultry equipment borrowed from the school, this student hatched, raised and released game birds such as quail into the wild through a monitored restocking program. The student learned how to identify many different breeds of quail, pheasant and other wildlife species; incubate eggs; control heat for various brooding stages and acclimate growing birds to the feed that they would find in the wild.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Department of Natural Resources officials can assist students in developing similar SAEs, such as releasing otters, where available, monitoring wildlife species or releasing previously injured animals. Through these activities, students can share what they learn with others and gain positive experiences toward an environmental career path. This type of SAE builds patience, perseverance and other qualities that employers look for in future employees.

SAE Type Gladiolus Raised and Marketed at Farmers Markets and through a Catalog

SAE Description A local grower mentored this student in growing and showing gladiolus and allowed him to use some of his land to plant corms. The student obtained funds from the Farmers Home Administration Youth Loan program to purchase a used tractor with attachments and construct a 20' x 30' greenhouse. He produced a variety of gladiolus and sold them to local florists and at farmers markets. He also raised bedding plants and sold them each year as well.

The student is involved in gladiolus societies. He also exhibits his products at local and state fairs and at national gladiolus shows. He has participated in the National FFA Entrepreneurship and Proficiency Programs.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Students can alter or expand this SAE to include other types of cut flowers. Businesses involving perennial plants such as chrysanthemums lend themselves to rapid growth if a student is fortunate enough to possess land. Student can divide, sell or pot perennials and chrysanthemums directly into the soil. They can also check the Internet, the back of gardening magazines, nursery plant tags or a garden center for information on where to purchase wholesale stock.

SAE Type Greenhouse Management/Nursery Operations

SAE Description This student began a project in this area in the fifth grade and it eventually became an SAE later. The student built a 12' x 12' greenhouse of scrap materials in the backyard to propagate plants. The student's parents provided sand to establish the rooting beds and plastic to cover the greenhouse, which

was heated with a kerosene heater. The student expanded the SAE to include growing and wholesaling 3 1/2 acres of nursery stock.

The student attended trade shows, conventions and other industry gatherings as well as joined the American Nurseryman Association.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Home Animal Care Service

SAE Description This student developed a love for animals into a multifaceted business by founding and operating a home animal care service. The idea for the business sprang from a need on the part of many residents who preferred to leave their pets, rather than keep them in kennels, while on extended vacations, especially during summer months. In addition, the student watered plants and monitored her customers' homes to guarantee security.

In addition, the student offers horseback riding lessons, a horse exercising and training service as well as a model horse club and brokerage service. The model horse club and brokerage service developed as an outgrowth of the student's hobby of collecting model horses. The club offers lessons in the different aspects of model horse collecting to new enthusiasts who often would have to learn about the hobby through experience.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Home and Community Development

SAE Description This student planted and assisted in installing and maintaining the landscape and lawn for her parent's new home. She helped to finish the house and in the process learned to build forms as well as pour and finish concrete. She also learned to sand, stain, finish woodwork and paint.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Few students have the opportunity to landscape their family's home. Homeowners in urban areas, where there is a lot of construction, are often looking for a relatively inexpensive way to landscape or finish their homes and may be willing to hire students. Homeowners can often supply students with the tools needed for landscaping projects if they do not own them; however classroom instruction is a must if students are to perform their assignments competently.

SAE Type Home and Community Development

SAE Description The student wanted to gain a background in carpentry, masonry, plumbing and residential wiring. To acquire these skills, the student assisted in remodeling his family's home. He planted a windbreak, rewired several outbuildings, constructed a perimeter fence, trenched electrical lines, demolished a silo shed, capped a well pit and manhole and painted another outbuilding.

To prepare for his SAE program, he viewed home and farm exhibits at several fairs and consulted with a wholesale supplier, attended a health and safety fair as well as participated in the "Plant A Tree For Your Future" Program.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Home and Community Development

SAE Description School officials hired this student to improve the program farm. The student rebuilt existing beef and sheep pens by replacing broken boards, rusty pipes and support posts. To increase water pressure, the student replaced the main water line and individual lines running to sheep pens. The student also removed an existing wall to expand the steer washing rack and placed micro-sprinklers in the orchard to enhance water placement and fruit development. Finally, the student pruned and thinned tree (orchard) limbs to improve the quality of harvested fruit.

The student learned skills in these areas: welding, plumbing, surveying, concrete use, general maintenance, and heavy equipment operation, including use of a backhoe, blade and box scraper.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Home and Community Development

SAE Description To gain experience in landscaping and building construction, this student completed projects around the family home. The student planted 88 trees, an 80-foot hedge, many shrubs and flowers as well as cared for the lawn.

To learn about the construction trade, the student installed windows, a garage door, sheet rock, roofing materials and several electrical receptacles; painted the house and garage as well as constructed a deck and garage. The student also learned how to mix, place and finish concrete as well as use tools powered by a small gasoline engine.

SAE Career Cluster Scientists, Engineers and Related Specialists

SAE Type Home and Community Development

SAE Description This student's home and community development SAE started with an interest in raising beds of flowers. The student developed a vacant and unused parcel of land near the family home. The student accomplished this by planting and maintaining seedling trees, building flower beds and rock gardens, constructing a retaining wall, developing a tree plantation in the three-acre front yard, clearing and maintaining the woods behind the house, developing a wetlands area consisting of three ponds that flowed into a creek and installing wood duck houses.

The student worked with the U.S. Wildlife and Fish Service and participated in the landscape, wildlife management and forestry proficiency programs. The student supplemented these activities by joining the Fur and Feather Club, attending a watershed project workshop and working on a tree farm plantation.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Home and Community Development

SAE Description The student's FFA chapter was involved with the former Building Our American Communities program. This involvement motivated this student to assist with a community landscaping project, food drive, public safety information night and petting zoo.

The student also wrapped gifts for nursing home residents, participated in a Citizen Yard Clean-up program and a bicycle rodeo. The student assisted in organizing the Christmas in the Park, Adopt-A-Family, Carrot Dig For the Needy and Valentines for Seniors programs.

SAE Career Cluster Social Service Professionals

Other Comments Community development activities provide many opportunities for student SAEs. Town or city council members as well as local Rotary, Lions or Kiwanis Club members can assist in finding ideas for community involvement.

SAE Type Home and Community Development

SAE Description This student improved the community by cleaning a vacant lot, which had become a dumping site. The student planted perennials and trees to turn this eyesore into a green space. The student also renovated a church lawn.

In addition, the student beautified the community by erecting and maintaining planter boxes. The student also adopted a local building and installed a new sidewalk, pruned the shrubs and manicured all plantings.

SAE Career Cluster Social Service Professionals

Other Comments Community residents usually respond favorably to improvement projects conducted by youth. Students can implement this type of SAE in any rural, suburban or urban community. They may want to begin such a project by consulting with town or city council members. Most local leaders are content in donating plants and other needed materials if student supply the labor and creativity.

SAE Type Home and Community Development—Community Garden

SAE Description This student helped create a community garden through reclaiming unused land. She involved a support group for mentally- and physically-challenged persons in the project to assist them in learning life skills. She wrote a grant and received 50 percent of the funding needed to complete the project. Her duties included writing the grant, testing soil, designing a site plan as well as creating and implementing the project.

SAE Career Cluster Social Service Professionals

Other Comments This SAE idea gives students an opportunity to witness the advantages and importance of volunteerism, mentoring, activism and community pride. This SAE could be implemented in any area of the United States.

One SAE idea involves creating a friendship garden at a local park, near the agriculture facility or school grounds, a local nursing home or just among friends. The idea allows friends to share plants among themselves or a single individual to start a personal garden. A garden club could be established to facilitate the sharing of plants and ideas. Organizing such a club would be a great leadership teaching tool.

SAE Type Horseshoeing Business

SAE Description The student owns and operates a horseshoeing business. He became the youngest person (at age 14) to graduate from the Kentucky Horseshoeing School. He borrowed $2,000 from his father for the tuition and a starter tool set. The student operates a mobile horseshoeing unit from his pick-up truck, which is equipped with a band saw, drill press, wire welder, propane forage, television, VCR and a cellular phone. He uses the television and VCR to demonstrate different horseshoeing procedures to customers. The phone allows him to remain in contact with customers, check voice mail and schedule appointments.

The student works primarily with gaming and show horses. He also works with a local veterinarian in corrective shoeing and reconstructive hoof repair.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

SAE Type	Horticulture—Fruit and Vegetable Production
SAE Description	The student became interested in small fruit production after taking high school agriculture courses. After further research into the topic, the student used a portion of his father's garden to establish a 150 plant strawberry plot. The student obtained a private applicator's license, which expanded his pest control options. He learned how to select high quality foundation stock, identify and control insects and weeds, improve plant winter survival through mulching and use records to assess business progress.
SAE Career Cluster	Agricultural and Forestry Production
Other Comments	Only a small amount of space is needed to produce small fruits. The yields in a small-scale operation may not be as high as in a large scale SAE, but the knowledge, principles and practices needed to grow produce are just as important. Container gardening, companion plantings and dual purpose landscape materials are ways to use limited space wisely. Balconies, sun porches, patios and rooftops make excellent area to grow these fruits also. Individual plants and their microclimates demand special cultural and maintenance requirements.

SAE Type	Horticulture or Food Science—Vegetable Garden and Canned Goods
SAE Description	This student revived some family food processing traditions. She raised broilers, hens, turkeys, fruit, vegetables and berries for her own family and to sell to others. She processed her SAE commodities by making pints of salsa, jams and jellies. She also processed and preserved a hunted deer. The student used a pressure cooker, preserving pot, electric knife and a commercial electric slicer. She also purchased an electric feather plucker and constructed a dehydration room with stainless steel racks.
SAE Career Cluster	Agricultural and Forestry Production

SAE Type	Hydroponics
SAE Description	This student became interested in hydroponics while enrolled in an agriculture course. Students in the course were exploring practical methods of growing plants using hydroponics that would utilize wastewater from the program's aquaculture facility. While touring "The Land" exhibit at Disney's EPCOT Center, the student saw a vertical planter and comprehended an answer to their situation. The student drafted a version of the planter with special educational features, such as windows to view developing roots. The student envisioned a self-

contained planter with grow lights and attached wheels for ease of movement. In addition, the student devised lesson plans, making the future product a great tool for teachers.

The student built a prototype and contacted a major supply house for educational science materials. Currently, the student is pursuing a United States patent for the invention and a contract with the supply company.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Landscape Management

SAE Description This student found his niche in designing and installing water gardens and waterfalls. He studied design principles, plant types and their uses in water gardens.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Students can begin landscaping projects with very few tools and resources. Container gardening is one form of landscape design that is being used more and more. Imaginative containers and attractive designs are important marketing strategies to employ. Student can expand their businesses by designing and installing perennial gardens as well as by weeding, dividing, fertilizing and replanting existing gardens.

In addition to designing water gardens, producing water garden plants can be a good extension to this enterprise.

See Specialty Crops—Water Garden Plants.

SAE Type Landscape Management

SAE Description The student worked for a local landscape business. While at the firm, he or she read and drafted work plans; operated a maxi-sneaker, skid steer loader and trencher; installed electronically-controlled sprinkler systems; handled customer questions and hydro-seeded various residential lawns.

The student installed pipes, valves and sprinklers as well as built seedbeds, retaining walls and berms.

SAE Career Cluster Scientists, Engineers and Related Specialists

SAE Type Landscaping

SAE Description After completing an agriscience and several horticulture courses, the student began working for a local landscape business, which specialized in aqua-scaping, bonsai and Japanese gardens. While working for the landscape business, the student built waterfalls, ponds and oriental gardens. The student also learned to identify more than 250 species of landscape plants as well as select, mix, and apply fertilizers and pesticides.

Additionally, the student participated in the landscaping and floriculture career development events, joined a nursery association and read a living/landscape magazine.

SAE Career Cluster Scientists, Engineers and Related Specialists

Other Comments Students interested in landscaping often recognize a need to install accents to gardens. Accents such as rocks are an integral part of a Japanese garden and other natural settings. Students can help farmers collect rocks from their fields and negotiate for their ownership. These rocks could then be used in students' designs or sold to other landscape contractors or the general public.

SAE Type Nursery Operations

SAE Description Because of an interest in plants and being outdoors, the student sought a job at a nursery not more a mile from the family home. The student secured the position and obtained many valuable experiences such as organizing the state FFA nursery judging career development event (CDE). The student became proficient at rooting hardwood cuttings and transplanting them into containers. The student annually wraps more than 7,500 plants in burlap after first removing them from the ground by hand or with a tree spade. The student also maintains plants in a hoop house during the winter months.

Participation in the nursery and agricultural sales CDEs provided this student with valuable experiences for working in the retail center of a nursery operation.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Nursery Operations—Plant Hospital

SAE Description This student used the school facilities to propagate and care for plants needing rejuvenation. He propagated new plants from those that were impossible to save and revived others near the brink of death. He became known as the “Plant Doctor.”

SAE Career Cluster Agricultural and Forestry Production

Other Comments	Student can make equipment and use grow lights to start this SAE. Students can expand this SAE into a rent-a-plant business, where they supply plants to businesses and maintain them. Students would be responsible for selecting the appropriate plant for the right environment.

SAE Type	Outdoor Recreation
SAE Description	This student worked at her parents' guest ranch where she cared for their guests' general welfare. While working on the ranch, she developed public relations, organizational, management, animal health, safety and maintenance skills. This student developed outdoor recreational activities for younger guests that focused on agricultural literacy. Young guests learned about wildlife, ecosystems, farm animals and their care as well as Native American history. She used her horsemanship skills and knowledge of livestock to plan and implement the activities.
SAE Career Cluster	Marketing, Merchandising and Sales Representatives
Other Comments	This student was fortunate to have access to many resources, but this SAE could be implemented at local and state parks, various campsites and retreats also. The student used creativity and imagination to build SAE success. Nature hikes, environmental activities and farm animal petting zoos are excellent means of teaching others how to care and preserve the environment. Officials at the Department of Natural Resources, extension service and local park services can serve as excellent resources. Instructors should assist students in reviewing local ordinances and regulations that pertain to petting zoos.

SAE Type	Outdoor Recreation—Campground Worker
SAE Description	The student started work on a campground when his family began constructing their facility. He removed dead trees, built roads and arranged the campground. The student installed electrical power; constructed shower and recreation buildings, a beach and pier; placed picnic tables and fire rings at each campsite. Once the original construction ended, the family opened the business, advertised the campsite and operated the office. The student provided hayrides and worked at the camp's petting zoo.
SAE Career Cluster	Marketing, Merchandising and Sales Representatives
Other Comments	Students can expand this type of SAE into an agricultural literacy seminar, a Partners in Active Learning Support (PALS) program or an FFA week activity by using the resources available to them.

SAE Type Outdoor Recreation—Charter Boat Business

SAE Description The student worked on the family's charter boat as a part of an SAE program. The student was a deck hand who baited lines, prepared the boat for touring, assisted passengers when they caught fish and cleaned the boat after touring. An aspect of the SAE included identifying marine animals as well as studying their travel patterns and feeding habits. The student learned a lot from passengers who specialized in environmental science, biology and ecology.

The student completed first aid courses and a CPR class, toured several independently owned fishing charters and aquariums and attended two whale habitats seminars. The student is also a member of the American Biology Society and Depoe Bay Charters.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

Other Comments Students must possess an interest in environmental and wildlife studies, become involved as well as learn about their region's bio-diversity and how they can protect, enhance and conserve it. Officials at the Department of Natural Resources, extension service, universities, Department of Parks, and Soil or Water Conservation Services can offer many resources.

SAE Type Outdoor Recreation—Lodging and Hunting

SAE Description This student and his family grow and harvest logs for cabins and pulpwood. The student and his father built a lodge and rental cabins from logs grown on their property. Lodging is available to tourists or hunters who want to enjoy the snow and winter weather as well as relax near water with a scenic environment in the summer.

This student profits from the harvested trees and preserves the environment that contributes to his other SAE venture's profitability.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Outdoor Recreation—Petting Zoo

SAE Description This student developed and implemented entertaining activities with animals to promote agricultural literacy. The program also taught younger children about the proper care and handling of animals.

SAE Career Cluster Social Service Professionals

Other Comments This type of SAE is ideal for students with a nonfarm background. No inventory, special tools or equipment are needed, just an imagination and possibly a nearby public recreational facility with a small petting zoo. Animals could be taken to preschools, elementary schools, day-care centers, fairs, festivals and nursing

homes to entertain and assist with tasks. Animals trained for tasks should remain in a student's possession at all times.

If such a facility cannot be found nearby, students can build partnerships with local animal shelter officials who are often eager to loan healthy animals, especially if such arrangements lead to adoptions. Officials at some university information centers provide insects for educational purposes. Besides reflecting on insects' small sizes, elementary students can race and measure them as well as examine their color patterns. Fish are also interesting and entertaining for children.

Advisors should check on all local rules or regulations pertaining to SAEs of this type, including animal transport guidelines and student release procedures to name a few areas. Community involvement in this type of SAE can increase the visibility of an FFA and effectively promote agricultural literacy.

SAE Type Outdoor Recreation—Resort Worker

SAE Description Because of his interest in fishing, this student applied for a job as a dockworker at a local resort. While working as a dock worker, he filled the boats' tanks with gas, prepared rental boats, repaired boats and their motors, packed and cleaned fish, shingled and rewired cabins and studied characteristics of the lakes. After three years of employment, the student now works as a full-time guide for the resort. He learned to work with the customers and meet their individual needs.

The student received additional training in boat safety and first aid, including CPR. Because of these skills, he became a registered fishing guide in both Canada and Minnesota.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Outdoor Recreation—Work in a Sporting Goods Department

SAE Description The student used his background in hunting and fishing to gain employment at a sportsman's store. There he assisted customers with selecting equipment, instructed them on servicing and maintaining their purchased products, processed telephone orders, recorded store inventory, completed sales receipts and invoices and restocked shelves.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

SAE Type Pets—Mice and Gerbils

SAE Description After purchasing a pair of breeding mice at a pet store, the student started an enterprise raising mice and gerbils to market to pet stores, research laboratories and a local zoo. This enterprise started with an initial investment of $2 for that first pair of mice.

As the business grew, room to house the animals decreased. A neighbor gave the student an unused mobile home in exchange for moving it off the property. After moving the mobile home onto a grassy spot behind the family home, the student removed the interior walls and lined the exterior walls with shelves on which to set rodent cages. The trailer provided the perfect environment in which to house the animals. By controlling the climate inside the mobile home, the student was able to improve the animals' performance.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Pets—Working at a Zoo

SAE Description This student raised a menagerie of pets in her home. She extended her SAE by volunteering at a local children's zoo. Soon after, she became a paid part-time worker. Her experience with home pets prepared her well to care for more exotic animals at the zoo. She exercised and stimulated the animals through grooming and back-rubs when necessary and interacted with the public in both impromptu situations while working with the animals and through guided tours. She also cleaned and sanitized the facilities and fed the animals daily.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Poultry Production and Agricultural Processing

SAE Description This student raised market broilers and turkeys by using some empty pens in a small building. The student obtained growing and processing equipment through family contacts. In all, the student raised and sold 102 turkeys and 533 market broilers. The student had all market birds processed at a local facility. The student plans to produce state inspected dressed poultry and purchase slaughtering equipment.

The student kept accurate records and developed a customer list, which included the customer's name, address, phone number and purchasing history.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Poultry Production—Easter Egg Sales

SAE Description Raising chickens and selling the eggs was fun for this student who eventually purchased 75 chicks to raise for slaughtering. The student exchanged labor for feed and equipment. She learned how to erect heat lamps, cooling fans and medicated waterers for her birds.

Later that first summer, she purchased some layers from her parents. She gathered, cleaned, packaged and sold the eggs. To extend her SAE, the student painted the exterior of eggs after removing their contents. This process allowed her to sell one decorated egg for the same price as two dozen eggs.

She exhibited chickens at the county fair. She also kept production and sales records on the computer.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Poultry Production/Placement

SAE Description This student secured a job as a freshman at an egg packaging and distribution center. The student began the experience by pulling weeds and cleaning the dock and warehouse area. After a year of work, the student began to clean, grade and size eggs, which were packaged in containers and categorized by grade, organized by expiration dates and then prepared for shipment. Because of these experiences, the student was able to train new employees. The student now loads and unloads semitrailers used in hauling and distributing eggs for resale. The student also supervises warehouse maintenance and cleanliness.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

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SAE Type Sheep Production Placement

SAE Description This student worked with a flock sheep. He collected the wool from the shorn sheep and processed it. He then wove the wool into Native American blankets to preserve his cultural traditions and heritage.

SAE Career Cluster Social Service Professionals

Other Comments This type of SAE teaches students about this country's rich diversity and its citizens. It also reminds them to appreciate agricultural practices and traditions of past generations.

SAE Type	Small Animal Care—Doggie Day-care
SAE Description	This student provided a dog sitting service at her home's kennel. She learned how to handle overly excited dogs, feed proper rations, administer medication and communicate with the public.
SAE Career Cluster	Marketing, Merchandising and Sales Representatives
Other Comments	This SAE could be expanded through grooming, long-term boarding and breeding animals. Students who don't have the resources and live in suburban or urban areas can walk and care for dogs as an SAE. These experiences can provide opportunities leading to a vocation.

SAE Type	Soil and Water Conservation
SAE Description	This student became involved in the soil and water conservation proficiency area because an interest in preventing water and wind erosion. As a part of the SAE, the student applied no-till and contour farming practices as well as planted cover crops on Conservation Reserve Program (CRP) land. The student also planted trees to reduce erosion, established a windbreak, repaired broken drainage tile as well as operated heavy soil moving equipment, including a bulldozer, tiling machine and backhoe. The student also tested water for bacteria, pruned windbreak trees, maintained field borders, riprapped washouts, drilled soybeans, initiated compaction reduction practices and mowed CRP fields. The student also learned how to judge land, apply accurate fertilizer rates, read and interpret aerial photographs and understand the mission of the Cedar Creek Watershed Conservation Board.
SAE Career Cluster	Scientists, Engineers and Related Specialists

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SAE Type	Soil and Water Management
SAE Description	The student worked for the Natural Resources Conservation Service part-time during the school year and full-time during the summer months. Through this position, the student became informed about many conservation programs, including the Wetland Reserve and Conservation Reserve Programs. The student also learned about the regulations relating to highly erodible land, wetlands, rangeland management, grazing plans and soil and water control structures. FFA activities such as the crops, land judging and range judging competitions supplemented the student's SAE program.
SAE Career Cluster	Scientists, Engineers and Related Specialists

Other Comments	Wetlands are important to the environment. Students can apply for grants to assist them in fulfilling the goals and visions of their soil and water management SAEs and in attending workshops to develop the necessary skills so they can share their knowledge of wetlands and bio-diversity with others.

SAE Type	Soil and Water Management—Farm Pond
SAE Description	The student helped to build a pond on her family's farm. She sowed a mixture of prairie grass and fescue around the pond. After the grass was established, she fertilized it to increase forage production. She also placed biodegradable excelsior netting on the pond's bank to prevent runoff water from carrying soil and grass into the pond. As a means of beautifying and protecting the area from wind erosion, she plants several pine trees.
SAE Career Cluster	Scientists, Engineers and Related Specialists

SAE Type	Specialty Animal or Agricultural Processing—Honey Bees
SAE Description	The student purchased two honeybee colonies, from which he or she collected the honey in late summer. The student extracted the honey from the combs, bottled it in containers, labeled each container, advertised the honey in the local newspaper and sold it to customers.
SAE Career Cluster	Agricultural and Forestry Production
Other Comments	**Special attention:** Salmonella poisoning is possible when eating or working with raw honey.

SAE Type	Specialty Animal Production—Basset Hounds
SAE Description	The student purchased a male Basset Hound from another breeder. He then entered into an agreement with an older sister to purchase her female dogs and equipment and rented kennel facilities from his parents. He advertised the puppies in a nearby metropolitan newspaper and sold many of them, within four weeks of weaning, due to customer referrals. The student raised two litters per female annually.
SAE Career Cluster	Agricultural and Forestry Production

Other Comments	Students who enter into this type of SAE must possess a working knowledge of dogs. They need to examine the market carefully to determine which dog breeds are best suited for their areas. It is a good business practice for students to follow-up with customers to increase future sales and referrals. One effective idea includes sending "doggy" cards to those customers who purchased puppies to remind them of their animal's birthday.

SAE Type	Specialty Animal Production—Crawfish
SAE Description	Because of her interest in crawfishing, this student rented some land to operate and manage a pond of her own. The student filled the ponds with rain and pumped water. Her parents also provided some equipment. The student sold small live crawfish for peeling as well as medium and large crawfish for use in ready-to-serve and boiling situations. She sold the majority of the crawfish at an exchange and catered boiled crawfish to a local restaurant.
SAE Career Cluster	Agricultural and Forestry Production

SAE Type	Specialty Animal Production—Dairy Goats
SAE Description	The student began her SAE with a small Toggenburg project and expanded it by adding champion Toggenburg and Nubian lines. She improved her operation by using an automatic milking device instead of milking twice a day by hand. She currently is building a full production dairy with her brother, a move that will enable her to buy more goats and increase her operation's overall production. The student developed an outstanding SAE program using programs from the National Dairy Goat and Dairy Herd Improvement Associations.
SAE Career Cluster	Agricultural and Forestry Production

SAE Type	Specialty Animal Production—Llama Production
SAE Description	This student raised and sold llamas for meat. After seeing extraordinary pictures of llamas in a magazine article, she began raising them at an early age after participating in a 4-H "lease-a-llama" program. The student purchased additional llamas upon joining the FFA. She now raises three female and three male llamas. The student trained her llamas to show them at fairs and public events such as petting zoos, parades and town gatherings. She also exhibited one of her young llamas in a live nativity scene.
SAE Career Cluster	Agricultural and Forestry Production

SAE Type	Specialty Animal Production—Miniature Horses
SAE Description	The student owned one miniature horse upon enrolling in agricultural education. The student's enterprise grew to include seven mares, which produced six foals (four mares and two studs). The student converted a milking barn into a building to stall, clip and wash horses. Building and maintaining a fence was also a major part of the student's SAE. While in FFA, the student exhibited her miniature horses at numerous local, state, regional and national shows.
SAE Career Cluster	Agricultural and Forestry Production

SAE Type	Specialty Crop Production—Grass Seed Production
SAE Description	The student seeded, cultivated, harvested and marketed grass seed. The student also learned how to properly maintain and operate equipment as part of this SAE.
SAE Career Cluster	Agricultural and Forestry Production
Other Comments	This is an interesting and different SAE that is possible to develop on a large scale if adequate resources are available. This SAE is often too expensive because of its need for equipment and land. Instead, students can raise ornamental grasses on a smaller scale. Those who live in apartment complexes can grow and gather seeds from window boxes, rooftops and balconies. Producing ornamentals can provide students with a source of cash income or they can use the seeds to create a green space in a downtown area or park.

SAE Type	Specialty Crop Production—Herb Garden
SAE Description	The student started a production SAE because of her interest in the outdoors, plants and soils. She produced cilantro, a popular Mexican herb widely used at home and in restaurants, which she sold at farmers markets. Eventually, the student marketed her product to grocery stores. She learned how to till, plant, cultivate, apply pesticide and harvest the herb.
SAE Career Cluster	Agricultural and Forestry Production
Other Comments	There are a number of culinary herbs that are good tasting when eaten fresh and not dried. Herb butters are easy and inexpensive to produce and is a product students can sell to local eateries. Spaghetti pots, clay pots with herbs for use in spaghetti sauce, are another processed item. Students can raise Rosemary for aesthetic purposes. Emilie Tolley and Chris Mead have written excellent books on herbs and their uses. Students need to study and follow herb cultural requirements to produce a quality product.

SAE Type Specialty Crop Production—Spearmint, Peppermint and Waxy Corn

SAE Description This student chose to produce spearmint, peppermint and waxy corn because of being raised on a farm and having an interest in growing crops. The student secured a loan to rent land and purchase spearmint roots. The student already owned 10 percent of the equipment on the family farm due to a subchapter-S corporate farm arrangement.

The student learned to monitor the mint market, graph and record the markets on the Chicago Board of Trade, grade mint oil and make land contracts. The student also side dressed anhydrous ammonia, planted rye as a cover crop on moldboard plowed mint fields and used minimal tillage practices to conserve water and prevent soil erosion.

SAE Career Cluster Agricultural and Forestry Production

SAE Type Specialty Crop Production—Water Garden Plants

SAE Description This student supplied customers and nurseries with plants that she propagated and grew in old bathtubs. Advertisements in the local media, at expos and on the Internet increased her SAE's profitability. She also sold plants to individual gardeners. Her business finally encompassed ten 500-gallon tanks where she grew 30 different varieties of water plants, which she sold to commercial nurseries.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Students engaged in this type of SAE need to possess a knowledge of plant materials and cultural habits. They also need to know how to operate and maintain related equipment. Resources may often be inadequate. Students can grow water plants in wooden barrels if they don't leak. Students should locate partners to winter their plants by sharing space in their greenhouses.

Besides producing plants, designing and implementing water gardens offer another way to expand this SAE without significant inventory change or cash outlay.

SAE Type Specialty Crop Production—Wildflower Seed Harvesting

SAE Description This student harvested wildflower seeds and marketed them. He learned how to identify plants and use corresponding terminology. His harvesting techniques have increased his business's profitability. He conducts germination tests as well as cleans and dries the seeds before marketing. He collects the seeds and leaves the roots untouched. He also plans to develop a web page to market his seeds to a larger customer base.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

Other Comments This SAE is a fun way for students to preserve and enhance our natural environment. The expenses associated with this program are very low.

Students can conduct this SAE without living in a rural area by monitoring roadsides for wildflowers, keeping a journal of locations and identifying plants. Instructors should assist students in determining whether it is legal for them to collect and sell wildflower seeds in their areas. Officials at the Department of Natural Resources may be able to answer related questions.

SAE Type Turf Grass Management

SAE Description The student worked for a local country club as a turf specialist, overseeing the clubhouse landscape and golf course fairways and greens.

The student learned how to care for ornamental topiary plants, maintain the golf course, trim shrubs and plant annuals, care for grass on the practice tees and greens, identify common turf grass weeds, operate a wide variety of turf grass equipment and landscape basic features around the clubhouse.

SAE Career Cluster Scientists, Engineers and Related Specialists

Other Comments This SAE requires knowledge that can be beneficial in preparing students for many career development events.

SAE Type Turf Grass Management—Mowing Lawns

SAE Description The student first worked with a landscaper and mowing contractor where he developed an interest in owning a lawn mowing service. He then began his own business with only a push mower and trimmer. He found his first customers by placing an advertisement in the local newspaper. After mowing residential lawns for a year, the student saw an opportunity to expand his SAE by submitting bids to large commercial firms to mow their properties. He now mows a large percentage of the area's commercial properties and has business from as far as 60 miles away.

SAE Career Cluster Marketing, Merchandising and Sales Representatives

SAE Type Veterinary Hospital Internship

SAE Description This student quickly accepted an offer to work part-time at a local veterinary hospital because of an interest in animals. The student cleaned and sanitized kennels, tested animals for heartworms, assisted in restraining animals and completed required paperwork. Additional duties included taking x-rays, performing dentals on dogs, clipping nails and cleaning the ears of both cats and dogs.

The student learned how to prepare animals for surgery, perform other diagnostic duties and communicate better with customers and co-workers.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Wildlife Management

SAE Description The student lives near Flaming Gorge National Recreation Area and the Ashley National Forest in Utah. The student worked with the Forest Service for two years in a youth program and then at a local marina.

The student constructed wilderness trails, improved wildlife habitats, conducted summer employee educational programs about Forest Service opportunities and assisted boaters at the marina.

The student learned how to apply safety precautions to wildlife projects, construct wilderness trails, control habitat degradation and implement integrated pest management systems.

SAE Career Cluster Scientists, Engineers and Related Specialists

Other Comments This SAE could be altered or expanded into an environmental study. Students can collect data and monitor habitat bio-diversity, including what shelters and animal species are present. Students should review available grants, which can provide monies if needed. Forest Service and Department of Natural Resources officials are often willing to assist students with studies of the environment.

SAE Type Wildlife Management

SAE Description The student maintained wildlife houses and planted food plots as part of a multiple use forest management plan. The student planted forest and fruit trees, stacked brush for wildlife cover and maintained salt stations. The student maintained pond edges to prevent soil erosion, stocked and fed fish in a pond, constructed bluebird and duck houses as well as installed martin gourds. The student also recorded wildlife patterns, sightings and harvest statistics.

SAE Career Cluster Scientists, Engineers and Related Specialists

Other Comments If students don't have the personal resources to establish this SAE, then volunteering at a park may be a good solution to their challenge. Department of Natural Resources, extension service and Soil and Water Conservation officials can help locate areas to conduct this type of SAE or suggest alternative studies.

SAE Type Wildlife Management

SAE Description Through his involvement in Boy Scouts, the local sportsman's club and various hunting and fishing activities, this student learned to appreciate wildlife and wanted to preserve it. He planted oak and white pine trees, stacked brush and tree tops in the woods for rabbit habitat, erected bird feeders, raised pheasants for the sportsman's club, distributed salt blocks for deer, improved trout stream banks, worked at an Earth Day activity, attended environmental career workshops and established wood duck houses.

SAE Career Cluster Scientists, Engineers and Related Specialists

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SAE Type Wildlife Management—Improving Wildlife Habitats

SAE Description This student improved wildlife habitats through educational programs. He built nests and pheasant feeders, developed food plots, caught and released fish and convinced farmers to leave field borders for wildlife.

The student learned about the habitat needs and nesting habits of different birds, the winter survival mechanisms of wildlife and the benefits of predators.

SAE Career Cluster Agricultural and Forestry Production

Other Comments Students can use this type of SAE for animals other than pheasants, such as turtles. Students and instructors need to check whether animals raised as part of their SAEs pose any legal or health concerns. This SAE can provide a good introduction to an environmental studies course or a topic for a public presentation.