

Vision for Pennsylvania Agricultural Education

**A Handbook for Program Planning and Curriculum
Development**

March 2009



**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF EDUCATION**

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INTRODUCTION

Food and fiber production requires only 2% of the nation's workforce. However, more than 20% of the workforce is employed somewhere in the food and fiber system including plant and animal science, food production, supply, processing, transportation, finance, economics, marketing, leadership, public policy, regulation, human nutrition, recreation, trade, environmental stewardship, agricultural research, natural resource conservation and education. Agricultural education must be responsive to the needs of this broad industry.

Within the next 35-40 years, world demand for food will double. To leverage future opportunities and meet responsibilities associated with increased population and purchasing power in developing countries, our nation needs a highly-talented cadre of professionals, technicians and skilled workers in the food system to be competitive.

Since the National Research Council released "Understanding Agriculture - New Directions for Education" in 1988, the agricultural education community has been looking to the future through a process of strategic planning activities at the national level.

Following in the footsteps of the national strategic planning activities, the Pennsylvania Agricultural Education family began a process of planning for the future. In the Fall of 1994, the Pennsylvania State University's Agricultural Education Department conducted a statewide needs assessment of agricultural education teachers. Seven areas of need were identified. The Pennsylvania Association of Agricultural Educators adopted and developed goals for these seven areas of need at their 1995 inservice meeting in Carlisle, PA. The first of these goals was to develop a comprehensive statewide plan for Pennsylvania Agricultural Education.

In response to this goal, the Solanco School District, in collaboration with the Pennsylvania Department of Education, the Pennsylvania Department of Agriculture, the Pennsylvania State University and the Pennsylvania Association of Agricultural Educators, has developed a statewide agricultural education curriculum framework, grades K-adult. This handbook charts the future for program design, development and implementation of agricultural education in Pennsylvania.

IS THIS HANDBOOK FOR ME?

Are you a/an...

- agriculture teacher
- academic teacher
- school counselor
- school administrator
- school board member
- local advisory committee member
- parent
- community member
- member of the agricultural industry
- local government official

...wanting to know more about agricultural education because you are...

- getting ready to develop new curriculum for an existing agricultural education program?
- looking to redesign and update your agricultural education program?
- considering starting a new program?
- integrating agriculture into other program areas and academic curricula?
- wanting to know more about agricultural education and the opportunities it offers students?

Yes! Then this handbook is for you!

This handbook contains information and resources that you will find helpful to accomplish any of these tasks. The resources found in this handbook are not meant to be an exhaustive list. There will be other places you will want to look for additional resources to help you with your goals. You may find only part of the handbook of use to you today. However, there may be a time when you will need the other resources in the handbook. Keep this material handy for future reference.

Before you start. . .

KEY FACTORS FOR SUCCESS

Here are a few keys to success that you should have in place to assist you in developing an agricultural education program that meets your community's needs. Not all of these keys are necessary, but the chances of your plan being successfully implemented will be greatly enhanced if they are available to help you open the door to new possibilities.



DESIRE TO CONSIDER NEW ALTERNATIVES

Don't embark on this journey unless you are willing to accept where it takes you. Considering new ways to do what has been done, or never done, takes an open mind and a willingness to listen to many people's points of view. Everyone involved in this process must come to the table without a hidden agenda and with the commitment to develop consensus using the results discovered.



COMMUNITY INVOLVEMENT AND SUPPORT

Any curriculum change or addition must have the support of the community in which the implementation is to occur. Community in this sense means teachers, students, parents, business, and industry and any other partners the school plans to involve. These constituents must then be involved in the planning process to obtain the buy-in needed to ensure successful implementation.



DECISION-MAKERS SUPPORT

The administration, school board, advisory committee and other decision-making groups must support the goals of implementing an agricultural education program in the system over which they have control. The best plans and processes can be derailed when decision-makers are not kept informed.



AGRICULTURAL INDUSTRY SUPPORT

The agricultural industry can be a tremendous resource when implementing an agricultural education curriculum. They can provide financial, physical, and human resources and expertise not readily available within the educational system. Involve them in the planning process to ensure their support before expecting them to help implement the program.



FINANCIAL RESOURCES

Any change brings with it potential financial investment. Don't assume you can make your planned changes without also planning for the financial needs. Be creative about the sources of these financial resources.



PHYSICAL RESOURCES

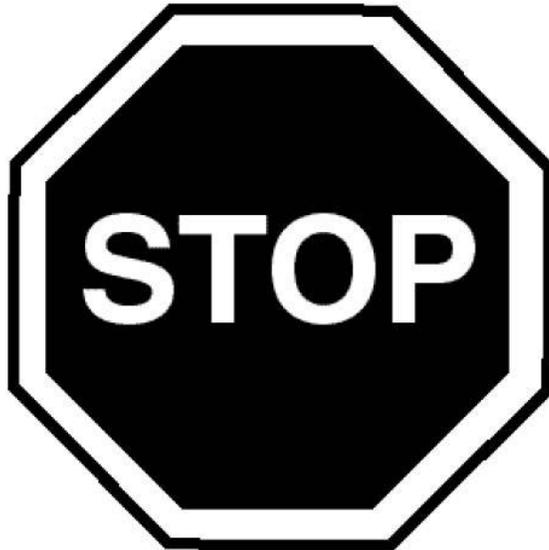
Implementing an agricultural education curriculum, no matter how it is done, brings with it the need for supportive physical facilities. Whether this is simply the school cafeteria, a garden area, lab facilities, a greenhouse or a school farm, be sure your planning is realistic to the availability of those resources needed.



HUMAN RESOURCES

Teaching agricultural education cannot be done by just anyone. Having an expert or access to an expert to assist teachers is a must. This expert should be a certified agriculture teacher who acts as the instructor or as a resource for other teachers integrating agriculture into their curriculum. Either way, it is important that you locate the expertise you need.

**IF YOU DO NOT HAVE THESE
KEYS TO SUCCESS IN PLACE,
*DON'T START!***



**MAKE ACQUIRING THEM A PRIORITY IN
YOUR WORK PLAN!**

DIRECTIONS FOR USE

This handbook is organized in steps to help lead you and your planning team through the most efficient and comprehensive planning process. Each step builds on the work you have done in the previous step.

- **Getting Started** helps to educate you about agricultural education and presents a model for you to consider.
- **Building a Team** takes you through the process of developing a diverse planning group that will bring the best players to the table to develop your plan for the future.
- **Collecting Information** provides you with tools and methods for collecting data and information that will help you in the decision making process in developing your plan.
- **Setting a Target for the Future** leads you through a series of exercises to help your team develop a vision, mission, goals and objectives for your agricultural education program.
- **Designing a Program** introduces you to a variety of strategic models that you may want to incorporate in your agricultural education program.
- **Determining Curriculum Content** provides you with resources and tools to help you develop the most appropriate curriculum for your students and community.
- **Implementing Your Planning** helps you take all the information you have developed in the other steps and organize it into a comprehensive agricultural education improvement plan.

Each section contains some common elements that will help you navigate your way:



This symbol refers you to the resources appendix at the end of the handbook for more information about the resource mentioned in the text. The resources appendix contains contact information about national and state organizations and curriculum.



Each section contains tools that can be used as resource handouts with your planning team.



Each section contains worksheets that help your planning team through the planning process in that section. Copy these worksheets for the planning team to use. Collect them to help you develop your improvement plan at the end of the process.

GETTING STARTED

Take time to educate yourself about agricultural education and the planning process. There are many alternatives and proven models to consider. Broaden your horizons before you get started, you'll have plenty of opportunity to narrow them as you go through each step.



"I have been a member of the agricultural education advisory committee at our school for the past five years. Over that time the program has struggled and doesn't look much different than when I was a student. I think that is why we have been having problems with enrollment. The students taking agricultural education at the high school do not have agricultural backgrounds and need a different program than we were exposed to years ago. We would discuss this issue over and over at our advisory meetings, but didn't know where to turn to get more information. The materials presented here helped us consider ways to update our program and consider expanding it throughout the school district, from kindergarten to adults. I must admit this was a real educational process for me, because whenever I heard anyone talking about the 'ag program,' I always assumed they meant the high school vocational program. Considering offering agricultural education to all students at all levels really makes sense."

EXPLORING THE PROGRAM PLANNING PROCESS

RECOGNIZE THE NEED TO CHANGE

Program planning and curriculum development need to have a high priority if agricultural education programs are to remain viable in the future. As educational reform initiatives continue to be introduced, appropriate collaborative planning becomes imperative. Delivering the same instruction year after year does not promote a healthy program. A good course of study facilitates innovative teaching and improved student learning. It allows the teacher to fit the lessons together to make the best use of available resources to match community and student

needs. It also serves other functions, such as improving public relations and coordinating curriculum changes among teachers.

Sometimes these changes are large scale, involving the entire agricultural program; other changes may be small or involve only a unit of instruction. Regardless of the size of the changes, a planning process is necessary.

Program planning and curriculum development is an ever-cycling process that requires input from a variety of sources and requires time and commitment from the teachers and others involved.

PROGRAM AND/OR CURRICULUM MODIFICATION MAY BE REQUIRED FOR A NUMBER OF REASONS. . .

- The need to restructure a traditional program in the light of recent research findings or the emerging needs of students
- Local, state or federal statutory changes, such as the passage of graduation requirements, participation in a competency-based testing program or implementation of statewide standards
- The impact of educational technology on local curriculum
- The demands for excellence affecting local curriculum
- The need to incorporate equity concepts and multicultural, sex-fair course objectives into a curriculum

UNDERSTAND THE DEVELOPMENT PROCESS

Effective program planning and curriculum development requires a structure for establishing responsibility along with authority, acquiring materials and equipment, securing services and making decisions. This process requires the involvement of all levels of the school and community for the results of the planning to be successful. It is important to first organize a development process to assist you in identifying the resources you will need to complete it. Considering the process used will also help you think clearly about what steps to follow. For planning to be successful, it must be comprehensive and involve all stakeholders.

Program planning and curriculum development require a network of support

from the administration, school and community. Review the resources section for potential resources to assist you in this process.



Your school district or area career and technical school is involved in a statewide strategic planning process. Before establishing a parallel process, see how your review of the agricultural education program fits into the district's overall strategic planning. You may find much of the work already completed or you may be able to include your specific planning needs in the district's overall plan. Whatever you do, be sure you are coordinating your efforts with the district's strategic planning efforts.

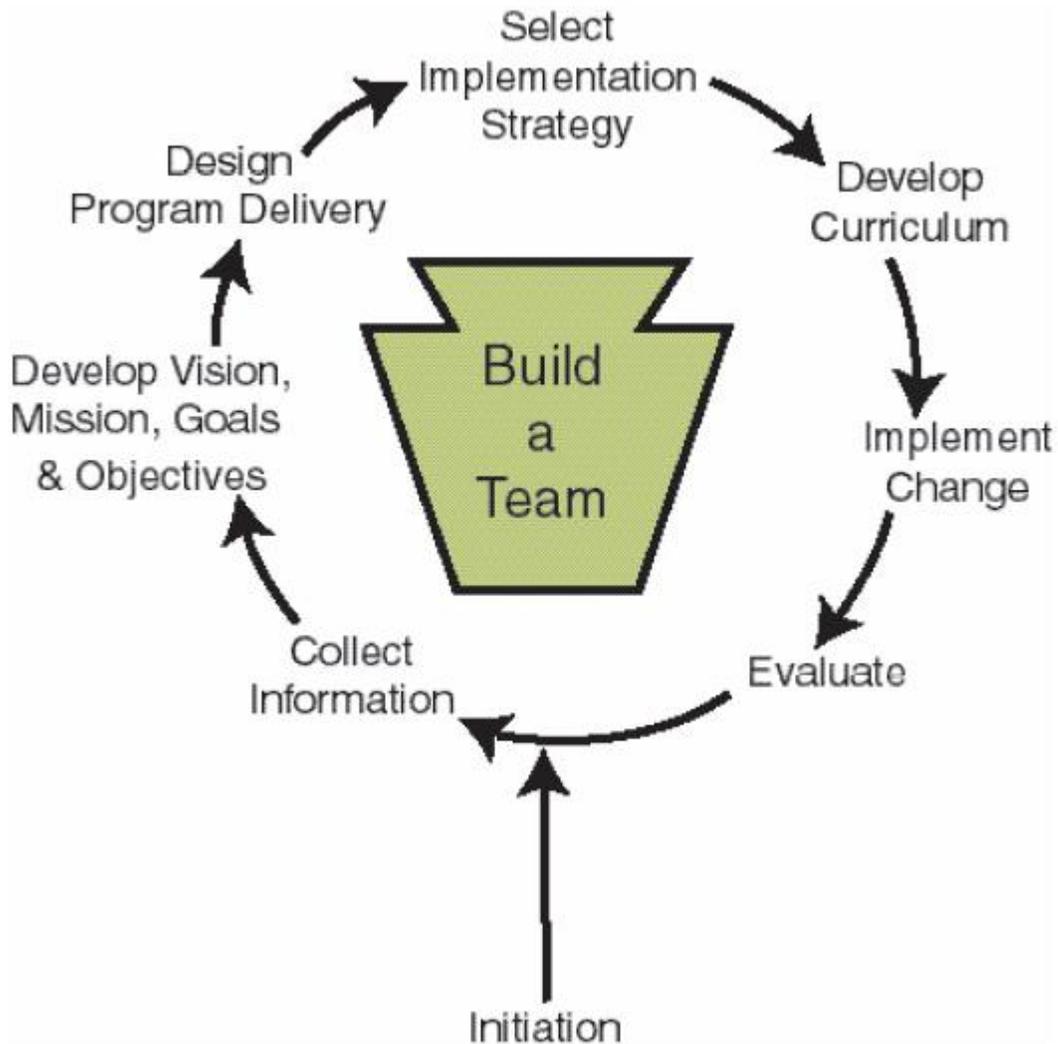
HERE ARE A FEW PLACES YOU SHOULD SEEK ASSISTANCE. . .

- Pennsylvania Department of Education, Agricultural Education Advisor
- Pennsylvania State University, Department of Agricultural and Extension Education
- Pennsylvania Department of Agriculture
- Pennsylvania Department of Environmental Protection
- Pennsylvania FFA
- Pennsylvania Young Farmers Association
- Pennsylvania Association of Agricultural Educators
- Pennsylvania Agricultural Awareness Foundation
- Pennsylvania Alliance for Environmental Education



TOOL

SAMPLE ORGANIZATIONAL STRUCTURE



This figure shows a sample organizational structure for orderly development, implementation and evaluation of curriculum change. This handbook will lead you through each phase of the process and is a valuable tool for you to use in designing your own process. Remember, the process you use needs to reflect the level of change needing to occur.

LOOKING BACK

A HISTORY OF AGRICULTURAL EDUCATION IN PENNSYLVANIA

Agricultural education on a semivocational basis was introduced in the Waterford High School, Erie County, PA, in 1905. The Pennsylvania School Code of 1911 made it compulsory to teach one year of agriculture in every rural high school. The Vocational Education Act of 1913 provided more specifically for this type of education and the legislature that year appropriated \$50,000 to be given to rural school districts to assist in establishing and maintaining approved courses in agriculture. Five departments of agricultural education were started in the fall of 1913 in Waterford, Erie County; in Troy, Bradford County; in Montrose, Susquehanna County; in Honesdale, Wayne County and in Mt. Pleasant Township, Westmoreland County. Three of the original departments are still in operation, the other two closed during the First World War.

In 1914, the first rural community vocational school was established in Elders Ridge, Indiana County, PA. This school, and the others to follow it, were rated as



1940s' Photo from Solanco FFA Scrapbook

first class secondary schools and were designed to place emphasis in instruction upon training for the 95% of the population who were not intending to enter college. Students could then continue their vocational training in the 11th and 12th grade or pursue a college preparatory program. The state provided significant financial incentives for rural districts to develop community vocational schools. By 1930, 78 rural community vocational schools were established.

By the early 1940's, agricultural education in Pennsylvania expanded beyond rural community vocational schools to secondary schools. There were 235 active FFA Chapters with a membership of 4200 boys. Departments of vocational agriculture were established with a minimum enrollment of twelve. At the same time "day-unit classes" of 90 minutes, one day per week, taught by an itinerant agriculture teacher, were made



1950s' Photo from Solanco FFA Scrapbook

available to school districts within a county as a way to promote the development of full-time departments of agriculture.

Agricultural education programs continued to grow throughout Pennsylvania and the nation. In 1950, the U.S. Congress passed Public Law 81-740, which granted the FFA a Federal Charter and stipulated that a U.S. Department of Education staff member be the national FFA advisor. Today, FFA continues to be recognized by Congress as an intra-curricular part of the educational program. In 1955, the Pennsylvania FFA had over 10,500 members. In 1969, girls were admitted membership in the FFA. Today, more than one-fourth of the national FFA membership is female.

During the 70's and 80's, agricultural education programs were established at both comprehensive secondary schools and area vocational technical schools throughout Pennsylvania. The role of these programs changed over this time from serving primarily students with farming backgrounds, to serving students with diverse backgrounds. Many programs moved away from preparing students for farming or production agriculture occupations directly from high school, and began prepping students for all kinds of futures. Those programs that survived the transition adapted by becoming more diverse in content, including all aspects of the agricultural industry, and increasing the academic content of their curriculum to prepare students for postsecondary education.

In the 90's, agricultural education in Pennsylvania took on a whole new perspective. With the increasing urbanization of the state and the importance of the agricultural industry to the economy of Pennsylvania, policy makers were concerned about the ability of the general public to make informed choices regarding the food and fiber industry.

In 1995, Act 26, passed by the general assembly, required the Department of Education to develop and disseminate agricultural educational materials that incorporate agricultural concepts into the basic education or K-12 curricula and are designed to educate the general student population about the importance of the agricultural industry and the role of agriculture in the students' lives.

The increasing awareness of the need for agricultural literacy and the reforms in education attempting to increase the relatedness of learning to the world of work, has lead to an increase in the numbers of agricultural education programs. In 2000, there were 167 approved career agricultural education programs in Pennsylvania.

In addition to these programs, many secondary and elementary schools throughout the state are implementing agricultural literacy programs. The *Agriculture in the Classroom* program in Pennsylvania best illustrates the impact the industry has had on infusing agriculture into the curriculum in the elementary grades. Over 500 elementary school teachers have attended training and are using agriculturally-based instructional materials with their students.

Each of these school-based programs is designed to meet the needs of its particular community and student population. If you were to visit a random sample of programs throughout the state, you would find a different curriculum in each school, different program designs and different participation options for students and different levels of involvement by the school and community. Each program is planned locally and is uniquely based primarily on the expertise of the teachers, commitment of the administration, involvement of the community, interests of the students, the surrounding agriculture and a variety of other factors.



A VISION FOR PENNSYLVANIA AGRICULTURAL EDUCATION

Educating people for life through agriculture: food, fiber and natural resource systems

As you might suspect, ours is a global vision, but let's start at the beginning. So, what is agricultural education? Defining agricultural education is much like trying to define agriculture. Everyone has his pre-conceived notion of what it is, based on his/her own personal experience. You may too!

Webster defines agriculture as “the science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting food and fiber products.”

When you consider agriculture as the production, processing, marketing and distributing of food and fiber products, your image of someone involved in this industry broadens. You might imagine a banker who specializes in agricultural loans or the grocer or butcher at your local supermarket, even

the researcher at the university laboratory. They are all involved in the agricultural industry. When all the associated industries are included in the definition of agriculture, you can see why more than 20% of the workforce is employed in agriculture. Did you think agriculture was just farming? Far from it!

Agricultural education provides instruction "about" and "in" agriculture.

Education "about" agriculture, or agricultural literacy, provides individuals with practical and appropriate knowledge of food and fiber production, processing and domestic and international marketing and distribution. It also should include enough knowledge of food and nutrition to make informed personal choices about diet and health. Learning about agriculture is a lifelong process and should be included in

the formal educational system K-adult. Achieving the goal of agricultural literacy will produce informed citizens able to participate in establishing and revisiting policies that will support a competitive agricultural and food industry in this country and abroad.

Education "in" agriculture has a long history in American education. Most programs consist of three parts: classroom and laboratory instruction, supervised agricultural experiences (SAE's) and leadership activities through the FFA. These programs are found in schools starting in the seventh grade and continuing into college. They are designed to give students the skills needed to enter and advance in agricultural careers and/or pursue postsecondary education.

Over 500 individuals involved in agriculture participated in developing a vision for Pennsylvania agricultural education. The vision statement "educating people for life through agriculture; food, fiber and natural resource systems" reflects the broad-reaching impact agricultural education has on everyone's lives. The visioning process, completed through the Reinventing Agricultural Education for the Year 2020

project, also resulted in the development of a set of goals and objectives for six key areas.

These areas included:

- Lifelong Learning
- Personal Development (for all students)
- Professional Development (for all educators)
- Environmental Stewardship
- Long-term Agricultural Viability
- Emerging Technologies

See the Resources Section for information about how to obtain copies of the Reinventing Agricultural Education for the Year 2020 report. The visioning process used in this project is described in the section *Setting a Target for the Future*.



THE PENNSYLVANIA AGRICULTURAL EDUCATION MODEL

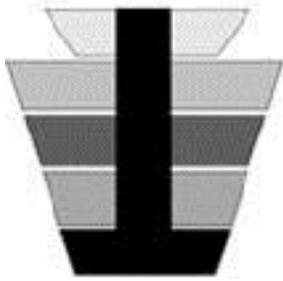
The Pennsylvania Agricultural Education Model represents a suggested overall design for delivery of agricultural education.

This tool is designed to help give direction to local education planners regarding the role of agricultural education in the school

system. The model is a means to help identify what specific direction the program of agricultural education should take to meet the needs of diverse clientele groups having an interest in agricultural education. The local program must be flexible to meet local needs.

PRINCIPLES GOVERNING DESIGN FOR DELIVERY. . .

- Agricultural education should be designed for, and available to, all students with either general or occupational interests.
- Agricultural education delivery systems should be flexible to address the needs of a diverse clientele.
- Agricultural education should be experientially-based and focused on problem solving.
- Agricultural education should be locally planned and conducted in such a manner that it addresses student and community needs, and contributes to the development of the learner's capacity to learn how-to-learn, apply what is learned and seek and act upon those occupational and educational opportunities appropriate for the learner.
- Agricultural education should have strong school- and work-based delivery components.
- Agricultural education should include the most up-to-date technology, knowledge and skills at the time of delivery.



AGRICULTURAL LITERACY AND CONSUMER AWARENESS

The model suggests that formal education about agriculture begins as soon as a child enters the educational system in kindergarten. The level of agricultural literacy in the elementary school will depend on the local community needs. All students, whether of rural or urban background, need to be introduced to agricultural principles and practices at an early age before misconceptions have become entrenched.

In 1995, the General Assembly of Pennsylvania passed Act 26, which requires

the Department of Education to develop and disseminate agricultural education materials for schools that shall incorporate agricultural concepts into the basic school curricula, and shall be designed to educate the general student population about the importance of the agriculture industry and the role of agriculture in the students' lives.

The Department of Education has developed agriculture literacy standards for students K-12, as part of the Academic Standards for Environment and Ecology, and for Science and Technology.

These standards further outline  student expectations, what students should know and what students can do upon achieving each standard. Standards have been developed for the primary intermediate, middle, and high school levels.



To guide institutions and individuals in developing literacy programs, the Kellogg Foundation has been supporting an initiative conducted through the Oklahoma State University that has produced an agriculture literacy framework and learner outcomes for grades K-8. The document describes the scope and knowledge that students should develop regarding the food and fiber system. In Pennsylvania, the Milton Hershey School is participating in this project as a national field test site.



There are a variety of agricultural education programs focused on young people to increase their awareness of the agriculture and food industry and the environment. The best known of these programs in Pennsylvania is Agriculture in the Classroom. This program trains elementary teachers to integrate agriculture into their curriculum, and has developed materials and resources for elementary teachers to use.



The district's agricultural education teacher(s) and high school agriculture students can act as an excellent resource to the elementary teacher in implementing an agricultural literacy program. Students from the high school program can make great presentations in elementary schools as part of class projects. PALS, the National



FFA mentoring program, can help build solid communication links between school administrators, elementary/high school counselors, teachers, students and the local community.

Many middle schools implement agriculture literacy by offering agricultural survey courses for all students in a nine-week rotation, on a semester basis, as year-long courses, with other curricular areas or by integrating agricultural principles into the core curriculum. Either way, with the advent of academic standards in agriculture and the related assessments, all students will need to have an understanding of the diversity of agriculture and the role it plays in their daily lives. When courses are offered, they can be very successful in introducing students to careers in agriculture and recruiting interested students into the agricultural education



program offered at the high school. These courses are designed to introduce students to all aspects of the agriculture and food industry and are introductory in nature.

The goals of an agricultural literacy program at the secondary level will vary depending on the needs and goals of the local district. These goals may be to prepare students to be informed consumers, citizens and decision makers. As consumers, we all need to understand how the food we eat is produced and processed, so we can make wise decisions for our health and nutrition. As citizens, we are often placed in the position of voting for influencing legislation that affects the agriculture and food industry. In this role, it is important that we understand the impacts of these decisions.

An agricultural literacy program can be implemented in a variety of ways. It can be consciously integrated in all curricular areas through the concerted efforts of the district's curriculum specialists and teachers. Agricultural principles and examples can be used in all academic disciplines to apply the concepts being taught. A thematic approach using agriculture can be used with teachers working as a team to develop a cross-curricular student project. For example,

students could develop a project on the impact of agriculture on the environment in their local community that integrates English, Social Studies, Mathematics and Science.

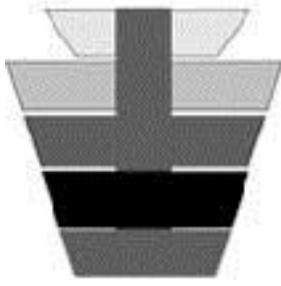
In a district where the resources of an agriculture program are available, the agricultural literacy program may be integrated into the curriculum through a survey course that introduces students to the diversity of agriculture. This may be a semester course, year-long course or a series of courses that students can take to expand their understanding of agriculture. These courses are taught by the agriculture teacher, and often act as a way for students to determine if they are interested in pursuing this career path and taking additional courses.



Agricultural education is a "natural" as a method for many students to accomplish their academic goals. Complete course sequences can be designed that allow students to complete their academic requirements for graduation and college entrance through the agricultural education curriculum. Agricultural sciences courses can be designed that fulfill biology, physics, mathematics, chemistry and other academic requirements. Actually, students have expressed their enthusiasm for learning science by hands-on methods in a contextual setting rather than through theory. The only limiting factor is your ability to think outside of the box.

Lifelong learning in agricultural education is a goal available to everyone. Agricultural literacy and consumer awareness opportunities exist in both the formal and nonformal setting for youth and adults. These can be industry-based, such as the materials available from the Dairy Council, or community-based, such as Farm Bureau sponsored field days. The Pennsylvania Cooperative Extension Service develops programs and materials and can be a great resource for nonformal agricultural educational opportunities in your community. There are many organizations in Pennsylvania interested in continuing to educate the adult public about the food and fiber system.





CAREER EXPLORATION



In the middle school, agricultural education, beyond basic agricultural literacy, can be incorporated into the curriculum in a variety of ways. In schools that have developed comprehensive career guidance programs involving middle school students, careers in the agricultural industry should be included. Many students limit their career choices based on biases and stereotypes that can easily be removed if they have the opportunity to see and meet people who are doing the job.

Middle school programs also offer the opportunity for students to explore agriculture either through an elective survey course, or through incorporating agricultural sciences as an option for students to obtain science credits. For schools with agricultural education programs that include a certified agricultural education teacher, students will also have the opportunity to develop leadership skills and share with other agricultural education students through FFA activities. Students can also increase their knowledge and apply the skills they have learned by developing a supervised agricultural experience project as part of their instructional program. The addition of agricultural sciences-based courses in the school offerings broadens the choices students have, and may also give them the chance to develop interests in agriculture that they can pursue in the future in high school.





WORKFORCE DEVELOPMENT

Agricultural education provides students with the knowledge and skills necessary to pursue employment or entrepreneurship in agriculture and/or a postsecondary education, and allows students to discover the field of agriculture in greater depth and explore specific areas of interest. The program is based on three components:

AGRICULTURAL CLASSROOM/LABORATORY

The core of the agricultural education program is the classroom instruction component. Curriculum developed in agricultural education must reflect the agriculture of your community, state, nation and the world. The world is becoming a very small place, and students need to be aware of the impacts agriculture is having globally. Areas of study include:

- Animal Science
- Biotechnology
- Food Science
- Forestry
- Leaderships and Career Development

- Management, Economics and Marketing
- Natural Resource Management
- Plant and Soil Science
- Power and Systems Technology

When developing curriculum, it is important to take into consideration the interest of students and the background and training of the teacher. Agriculture is a broad area of study and focusing on those areas, which are both of interest to your students and well known by the teacher, will help make the program a success. Agricultural education content standards for secondary programs have been developed to assist locals in developing curriculum that is comprehensive and up-to-date. These standards have been reviewed by the industry to ensure their relevance. See the section *Determining Curriculum Content* for the Pennsylvania Agricultural Education Content Standards.



Curriculum must be relevant, up to date and challenging. The agricultural education curriculum is best taught in a contextual setting using hands-on instructional methods. There are many good materials available that have been developed by industry, universities or commercially that can be used and adapted to meet your students' particular needs.

WORK-BASED LEARNING

A student's supervised agricultural experience (SAE) is one of a teacher's ways of extending instruction beyond the walls of the classroom, shop, field lab or other school facility. Through this medium, the teacher is able to provide planned learning experiences for the student that would not otherwise exist.

The application of knowledge gained through directed learning in the classroom, shop or field lab often can occur only in "real" situations, which do not or perhaps cannot, exist in the school. Action taken by the teacher to place students in "real" situations and supervise their experience in that situation is an essential part of their teaching assignment in agriculture.

WHAT IS AN SAE?

- It is an activity which is identified with a specific agricultural enterprise or occupation and involves the student in hands-on experiences, which are directly associated with that enterprise or occupation.
- The student may be self-employed in the enterprise/occupation; may be employed by another, either paid or unpaid, conducting an agricultural science research project or a natural resource/wildlife management project.
- The student's involvement in this experience occurs outside of his usual school-time hours.
- Under some circumstances, the student's SAE may be located on school facilities.
- The student plans the SAE with the assistance of the agricultural education teacher and conducts it under the regular supervision of that instructor.
- The agricultural education teacher allocates a significant portion of his/her work hours to the supervision of student's SAE's.
- Students keep records pertaining to their SAE's, as prescribed by the teacher, and those records are periodically reviewed by the teacher.
- Students may be individually engaged in SAE or cooperatively with other students.
- The student's plan for SAE includes goals and provisions for growth in scope and complexity.

SAE's provide students opportunities to pursue various levels of experience in career areas that interests them. The depth of their experiences can include simple job-shadowing opportunities that allow them a superficial look at someone's career to more in-depth experiences through internships or mentoring with people in their career fields of interest. Students can also pursue more extensive training opportunities through certified apprenticeship programs. With the increasing interest in providing more formal, work-based learning opportunities for students, youth apprenticeships are growing.



Although modern SAE's certainly can lead to establishments in farming, that is no longer the goal. In fact, the opportunities for young people to become fully established as entrepreneurs in any agricultural enterprise are few. Most agriculture students should not be encouraged to think of their SAE's as direct preparation for becoming established in an agricultural enterprise as owners/operators or as employees. Rather, they should expect their individual SAE's to benefit them in whatever careers they intend to pursue.



Especially for beginning agricultural students, the selection of SAE enterprises need not have a direct career goal relationship. Many of today's students are seeking to establish their occupational goals. The SAE can be an exploratory experience for them. Also, the personal characteristics developed through a successful SAE are relevant to most careers (even out of agriculture). Therefore,

the SAE will be beneficial in preparing one for work, even if it is not directly related to the career a person eventually pursues.

On the other hand, a student will gain maximum benefit from SAE if it is the same as, or directly related to, the career and/or advanced training entered upon leaving high school.

WHAT ARE THE PURPOSES OF THE SUPERVISED AGRICULTURAL EXPERIENCE?

- To provide opportunities for hands-on, worked-based experiences in skills and practices required for successful employment in agriculture.
- To provide opportunities to gain documented experiences in agriculture. This can provide references for future employment.
- To provide opportunities for students to identify, develop and demonstrate personal characteristics required for successful employment in agriculture. Some examples are initiative, responsibilities, dependability, self-reliance, etc.
- To provide opportunities for students to observe, participate and select a place in the "world of work."
- To capture, retain and focus student interest in agriculture.
- To provide an opportunity for students to discover and deal with the financial realities of agricultural production and/or employment.



LEADERSHIP DEVELOPMENT

This component of a workforce development program in agriculture is unique. Students have the opportunity to develop skills that will help them be successful no matter what career they choose. Leadership skills include working in groups, running and participating in meetings, decision making, parliamentary procedure and public speaking. Students participating in leadership activities, whether through FFA, 4-H, school or community-sponsored clubs or some more informal way, learn to become good citizens.

Typically, most secondary agricultural education programs develop student leadership through participation in FFA.

“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” is the official mission statement and the main goal of the National FFA Organization. For more than 68 years, the FFA has complemented agricultural instruction by making classroom lessons come to life through realistic applications. From its beginnings in 1928 with 33 delegates at the first national convention, the FFA has grown to encompass 444,497 members in all 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, Guam and Rota (Commonwealth of Northern Marianas Islands).



The heart of the organization is at the local level. FFA chapters may be chartered in any public school with an agricultural education program. Leadership is provided by student officers elected each year and the agriculture instructor, who serves as an advisor to guide the chapter. A Program of Activities organizes each chapter's year, serving as a road map for planning activities and accomplishing goals. Each member is assigned specific responsibilities within the Program of Activities to ensure total involvement of chapter members. A wide range of activities is planned to meet the needs of members and the community. Chapter meetings are held regularly. By participating, members learn communication, parliamentary procedure and team-building skills.

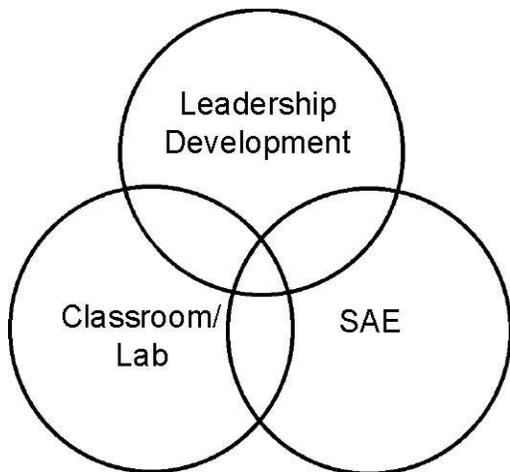
The FFA is structured into a degree program which rewards active FFA members for progress in all phases of leadership, skill and occupational development.

The Greenhand FFA Degree and the Chapter FFA Degree are awarded at the chapter level. State associations award members with the State FFA Degree. The highest degree, the American FFA Degree, is conferred on an elite group of members at the national level.

In addition to active membership, individuals can become alumni and collegiate members. Honorary memberships are conferred on those individuals who have rendered outstanding service to FFA and agricultural education. Alumni membership is open to former active members, collegiate and honorary members and others supportive of the FFA. Collegiate members belong to FFA chapters at two- or four-year postsecondary schools, and are enrolled in agricultural courses.

FFA is a vital component of the agricultural education program. Millions of Americans have benefited from the organization, and today thousands of young people are learning to lead the challenges in agriculture for a promising future.



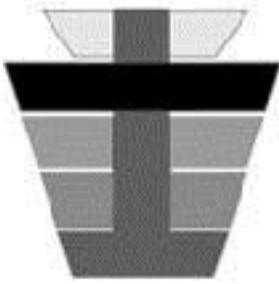


These three components – Classroom/Lab, SAE and Leadership Development – are essential for students to obtain the necessary skills to be successful. Learning by doing is the keystone of a quality agricultural education program. Students must have access to

information through classroom and laboratory experiences, and they must be able to apply what they have learned through work-based experiences and leadership opportunities.

This can be accomplished in a variety of ways, depending on the resources available to you. The factors that will limit the way the agricultural education program can be offered will include facilities, financial resources, teacher expertise, community resources, number of teachers available to teach agriculture, scheduling arrangement, etc. These factors will all need to be considered while you conduct your planning.





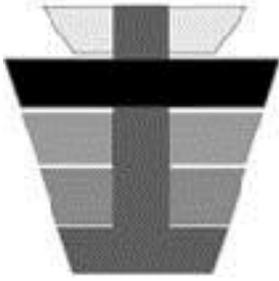
POSTSECONDARY EDUCATION

Upon completion of the secondary agricultural education curriculum, students are prepared to pursue postsecondary education. These pursuits could be in agriculture, or some related field where they can transfer the skills they have learned. The opportunities are endless.

Postsecondary education includes attending a community college, university or

other postsecondary program to add to their knowledge and skills in agriculture, or to study an area more closely. Students' goals might also include obtaining an associate degree and transferring to a four-year college or university. Some students may elect to attend a four-year university directly from high school to pursue a bachelor's degree in an agriculture area or other area of their interest. The point here is that a solid high school background in agricultural education prepares students for any kind of postsecondary educational experience they want to attain. It is important that students, parents, guidance counselors and agricultural education teachers work closely together to plan a high school program with this goal in mind.





CONTINUING ADULT EDUCATION

The opportunities for lifelong learning in agriculture are boundless. There are both formal and non-formal programs available to anyone interested.



YOUNG FARMERS

This adult agriculture program provides individual and group-organized instruction to agriculturists and the courses for the consumer in the local community. Specifically, the program is designed to assist those in production agriculture and agribusiness to become successfully established or to improve their current agricultural enterprise. Also, an educational focus is to improve understanding and communication between the consumer public and the agricultural community regarding concerns and issues. A principal goal of the Young Farmer Program is to increase the managerial efficiency through sound decision-making for those engaged in production agriculture or agribusiness careers. Adult

education programs are available in many districts throughout Pennsylvania.

COOPERATIVE EXTENSION SERVICE



Penn State Cooperative Extension conducts non-formal educational programs in each of the commonwealth's sixty-seven counties. The extension's educational programs, designed for both youth and adults, vary from county to county, and are based on specific needs of residents within the county. The current statewide plan of work focuses on four broad educational goals:

- Strengthen families, enhance the development of children and youth and build caring, safe and healthy communities.
- Foster the development and maintenance of productive, profitable and competitive businesses and a sustainable food system in Pennsylvania's changing economic climate.
- Ensure the long-term vitality and sustainability of Pennsylvania's natural resources and local environments.
- Enable people to reach informed public judgments on complex issues by fostering public dialogue.

AGRICULTURAL ORGANIZATIONS

Many agricultural organizations have related educational programs available for their members. There are over 230 agricultural organizations in Pennsylvania. These organizations represent the diverse agriculture of the Commonwealth. The Department of Agriculture compiles a directory of agriculture organizations. You should contact the organizations that represent your particular interest in agriculture and find out about their educational programs and services.



NON-FORMAL AGRICULTURAL EDUCATION PROGRAMS

There are many non-formal programs throughout Pennsylvania and the nation that provide excellent educational programs for adults and youth. Many of these are associated with non-profit organizations whose purposes are to educate the general public about agriculture and the environment.



EMPLOYMENT / ENTREPRENEURSHIP



For students who want to obtain employment or start their own enterprise once completing the agricultural education program, they also will have received the knowledge, skills and abilities to pursue this option. Many students will have already developed an enterprise or have full-time employment waiting for them through their supervised agricultural experience program. Again, the student, parents, guidance counselor and agricultural education teacher need to work closely together to plan a high school program with this goal in mind.

Proper planning and preparation help prepare students for a variety of options. It is important that the agricultural education program be designed to meet the needs of a variety of students. The program and the curriculum need to be flexible enough to accommodate students' changing goals as they learn more about a particular field. Students must complete the program with a variety of options available to them.



TOOL

AGRICULTURAL CAREER PROFILE

Over 20 percent of America's workforce is employed in some phase of the agricultural industry. There are seven people working in agribusiness for every farmer. In fact, there are over 8,000 job titles in agriculture. And they all work together to provide food and fiber for the planet's growing population.

Virtually, any career in which you may be interested can be applied to agriculture. Engineering? You bet! Today's farmers are leveling fields with lasers to decrease erosion and using robotic equipment to do dangerous or repetitive jobs. If progress is to continue, agriculture needs the best and brightest young minds working to solve tomorrow's agricultural engineering challenges.

An increasing population means a greater demand for qualified people in the agricultural industry. And the opportunities are increasing. Agriculture is changing rapidly, and many of tomorrow's careers have not been imagined. It is an exciting, challenging field in which to work.

For more information, write to:
National FFA Partner
Development Team
PO Box 15160
Alexandria, VA 22309-0160

Scientists, Engineers & Related Professionals	Agricultural Marketing, Merchandising & Sales	Managers & Financial Specialists
<p>Agriscience, with its related occupations of engineering, biochemistry, genetics and physiology, is the fastest growing area within the agricultural industry. This is agriculture's cutting edge. If you are interested in applying scientific principles to practical situations, this may be the career for you.</p>	<p>There are many demands for agricultural products today. Consumers expect to walk into supermarkets and find the shelves bursting with choices. If you are interested in sales and helping people acquire the goods and services they need, a career in agribusiness or agricultural marketing may be what you want.</p>	<p>In order for today's agricultural industry to operate, it must have management and financial specialists. From your local bank's agricultural loan officer to the USDA's economists, this is an area that demands both agricultural and business skills.</p>
<p>Agricultural Engineer Animal Scientist Biochemist Cell Biologist Entomologist Environmental Scientist Food Engineer Food Scientist Geneticist Landscape Architect Microbiologist Molecular Biologist Natural Resources Scientist Nutritionist Paravet/Animal Health Technician Pathologist Physiologist Plant Scientist Research Technician Resource Economist Soil Scientist Statistician Toxicologist Veterinarian Waste Management Specialist Water Quality Specialist Weed Scientist</p>	<p>Account Executive Advertising Manager Commodity Broker Consumer Information Manager Export Sales Manager Florist Food Broker Forest Products Merchandiser Grain Merchandiser Insurance Agent Landscape Contractor Market Analyst Marketing Manager Purchasing Manager Real Estate Broker Sales Representative Technical Service Representative</p>	<p>Accountant Appraiser Auditor Business Manager Credit Analyst Consumer Service Manager Economist Financial Analyst Food Service Manager Government Program Manager Grants Manager Human Resource Development Manager Insurance Agency Manager Insurance Risk Manager Policy Analyst Research and Development Manager Retail Manager Wholesale Manager</p>
Production	Education and Communications	Social Services Professionals
<p>If you enjoy working with plants and animals, there are broad opportunities in production agriculture.</p>	<p>More than ever before, the agricultural industry today needs to tell its story to the rest of the population. If you are interested in sharing the news, maybe a career in education and communications is for you.</p>	<p>Like many other industries, an increasing number of social professionals are needed. If you like working with people and filling an important role in your community, this may be the career for you.</p>
<p>Aquaculturalist Farmer Feedlot Manager Forest Resources Manager Fruit and Vegetable Grower Greenhouse Manager Nursery Products Grower Farm Manager Rancher Turf Producer Vitaculturalist Wildlife Manager</p>	<p>College Teacher Computer Software Designer Computer Systems Analyst Conference Manager Cooperative Extension Agent Editor Educational Specialist High School Teacher/FFA Advisor Illustrator Information Specialist Information System Analyst Journalist Personal Development Specialist Public Relations Representative Radio/Television Broadcaster Training Manager</p>	<p>Career Counselor Caseworker Community Development Specialist Conservation Officer Consumer Counselor Dietitian Food Inspector Labor Relations Specialist Naturalist Nutrition Counselor Outdoor Recreation Specialist Park Manager Peace Corps Representative Region Planner Regulatory Agent Rural Sociologist Youth Program Director</p>

BUILDING A TEAM

The most important part of any planning process is the people involved. Developing a strong effective team takes lots of preparation, but ultimately can have tremendous benefits when it comes time to implement what you plan. Be sure you have the key decision-makers involved on your team to ensure the success of the final improvement plan you develop.



“When we first established our planning team, we were sure we had covered all the bases. It wasn’t until we had visited other programs and conducted our internal inventory that we decided to expand our team. For example, we added an accountant, who provides support services to agricultural businesses in our community, and a student not in the agricultural education program. It took us some time and effort to get the new members up to speed, but their input and perspective were invaluable. Don’t be afraid to add new members to your team, if you discover you have the need to. Take time to bring them into the process by having good records of meetings and supportive information. Invite new members to a planning meeting, after spending personal time with them to review where the committee has been. New members to the committee will be much more effective when given adequate background information.”

WHY A TEAM APPROACH?

Improving agricultural education in your district, school or program is not a one-person job. It requires many people working together to achieve the same goals. In many cases, administrators initiate reform efforts. However, teachers must implement reforms, and students must respond to them. Having parents embrace reforms can also make a significant difference. To ensure that your school prepares students for their futures, it also helps to seek the advice and support of employers who hire graduates and the postsecondary institutions that enroll them. These stakeholders and others can contribute important perspectives to improvement efforts.

A good guiding principle when thinking about team membership is that all groups who will be responsible for implementing improvement efforts or who will have a stake in the results, should either be represented on the team or serve as consultants. It is also helpful to strike a balance between involving a large number of participants and building a team capable of working together productively.

“Good schools do not encourage silent partners.”

Renihan and Renihan 1989

BROAD PARTICIPATION IN IMPROVEMENT EFFORTS SERVES TO . . .

- Promote a high level of support for your efforts
- Generate sound solutions by expanding the discussion
- Motivate participants and their associates
- Increase the likelihood that the effort will lead to constructive action
- Prepare participants for their role in implementing improvements
- Increase ownership of and commitment to specific strategies
- Empower important stakeholder groups
- Foster lasting, rather than temporary, change

For the planning process to function best, facilitation is still an important component. One person needs to be identified as the leader of this development process. He or she should be responsible for initiating and coordinating the activities of the planning committee. School size, structure and the level of program/curriculum change will determine whether this person is a curriculum coordinator, principal, department chairperson or classroom teacher. It is recommended that the leader of the planning committee be someone who is a decision-maker that can facilitate the smooth transition of the changes

developed in the planning process. If a new program is being designed, it is recommended that the new teacher be intimately involved in this process as he or she will be expected to implement its results. Regardless of who is selected, it is important that this person have curriculum development experience, organizational skills and leadership qualities. Still, program planning is a complex task that should not be vested entirely in one individual, regardless of personal qualifications. A plan must be established to facilitate and ensure shared decision-making.



DECIDE ON THE SCOPE OF YOUR EFFORTS

A first step in building a team is deciding what the scope of the efforts will be. Are you interested in developing a district-wide agricultural education program where participants establish common goals and strategies for the entire district, possibly in addition to complementary goals and strategies for each school? Or are you interested in developing a school-based planning process that focuses on a single school and involves a cross-section of stakeholders from that school?

As a third option, you may be interested in developing a planning process for agricultural education that involves other schools or ones that are common to several schools, such as environmental education or tech-prep, involving a subset of stakeholders at each site. Agricultural education departments

or individual teachers might choose to create a planning process focusing on the specific issues facing them in their departments and classrooms, such as low achievement, enrollment issues or updating curriculum.

Before assembling a planning team, you will need to decide what scope of effort is best for your:

- District
- School
- Program
- Department
- Classroom

A district-wide effort that involves several schools will usually require a larger team than a school-based or classroom-specific planning effort.

ESTABLISH A TEAM

Below is a list of stakeholder groups that you may want to consider involving in your planning team. Selecting members of your team will require deciding which stakeholder groups are vital to your efforts and which are less essential. It is important at this stage of your preparation that you seriously consider whom you ask to participate. You will need to select individuals who are able to commit the

necessary time and are also committed to the improvement of the agricultural education program.

Be sure to think “outside of the box” when considering whom to invite to participate on your planning team. Often some of the more unlikely people will have some of the more creative ideas to bring to the process.

IMPORTANT STAKEHOLDER GROUPS. . .

- Teachers
- Department chairpersons
- Career or guidance counselors
- Other school staff
- Principals and other school administrators
- Superintendents and other district administrators
- School board members
- State or regional education agency staff
- Students
- Parents
- Employers
- Postsecondary education representatives
- Other community leaders
- Representatives of production agriculture and agribusiness
- Union leaders
- Agricultural advisory committee members
- Representatives of environmental organizations
- Representatives of the local Workforce Investment Board



TOOL

STAKEHOLDER GROUPS

Why involve the following Stakeholder Groups?

TEACHERS -Teachers are directly responsible for what students learn in school. As part of a planning team, teachers can help identify realistic learning goals, determine the reasons for poor performance in some areas and develop workable improvement strategies. Since teachers may be responsible for implementing many improvement efforts, it is important to involve them as key members of a planning team. By involving academic, career and special education teachers, a team will be able to address all-important learning objectives and the needs of all groups of students when shaping their vision for agricultural education in the district.

DEPARTMENT CHAIRPERSONS -These faculty representatives are in a strong position to communicate the concerns and suggestions of teachers in their departments to the planning team and to disseminate information from the team among faculty members. Since teachers' cooperation is crucial to the success for improvement efforts, department chairpersons are well positioned to act as intermediaries between the small improvement team and the entire faculty.

CAREER OR GUIDANCE COUNSELORS - Counselors are often responsible for assisting students in making course and career choices. Counselors may also be aware of how students' personal interests and problems may contribute to their performance, and can suggest strategies for addressing the most common concerns.

CLASSIFIED SCHOOL STAFF MEMBERS - Staff members other than teachers, counselors and administrators often assume key roles in the life of a school. Depending upon the scope of your improvement efforts: medical, social service, secretarial, media center, maintenance and food; service personnel can bring useful perspectives and contribute to the success of proposed improvement strategies.

SCHOOL ADMINISTRATORS - School administrators, including the principal and assistant principal(s), can be key players in mobilizing change in schools. Their involvement in improvement efforts can often lend legitimacy to the process and a sense of urgency. School administrators are also well positioned to help overcome barriers to implementation.

DISTRICT ADMINISTRATORS - District administrators, such as the superintendent and assistant superintendent, can contribute to an overall vision for the district. Because they are familiar with the common concerns in their jurisdiction, they can provide a strong link among schools. District administrators not only influence school-level priorities and can provide momentum to improvement efforts, but also maintain various data sources in the district office and can familiarize team members with these data and make them available to the team.

SCHOOL BOARD MEMBERS - School board members can also contribute to an overall vision for a district or school, and they bring a community perspective to discussions about agricultural goals. By participating in the program planning and development process, board members can learn more about the concerns of educators and other stakeholders and the rationale for improvement strategies. Moreover, participating board members may be able to make funds available for the overall process or for specific efforts.

STATE EDUCATION AGENCY STAFF - State education agency staff have a broad perspective on education efforts in the state and can contribute fresh ideas to your school's discussion of goals, perceived problems and potential solutions. Moreover, agency staff usually maintain a variety of education data in the state office and can familiarize team members with these data and make them available to them. In some cases, state agencies may be able to make funds available for planning and development efforts.

STUDENTS - Students contribute a unique perspective to identifying problems and developing potential solutions. Particularly where problems and solutions necessitate understanding student motivation, they can provide valuable insights. Involving students also helps increase general student interest in planning and development efforts.

PARENTS - Parents are important partners in the education process. Along with students, they are the chief “consumers” of education and, as such, provide a vital perspective on education goals and strategies. Parents want to know what their school’s strengths and weaknesses are and have a vested interest in helping find ways to improve education outcomes. Parents can also help mobilize community resources in order to support agricultural education efforts.

EMPLOYERS - Employers in your locality and state have an important stake in how your district, school or program performs. Whether they hire graduates directly out of high school or after some postsecondary education or training, employers depend on high school students obtaining a solid foundation of academic, critical thinking and general employability skills. In some cases, employers also have an interest in assuring that high school students obtain specific occupational skills. As planning team members, employers can contribute to discussions about desired agricultural education goals, student outcomes and learning strategies. Moreover, they can provide a constructive link to the agribusiness community that may be essential, if one of your school’s strategies includes increasing work-based learning opportunities for students or encouraging other school/work linkages.

POSTSECONDARY EDUCATION REPRESENTATIVES - Representatives of postsecondary institutions in your locality and state can bring an important perspective to your school’s agricultural education efforts. They not only have an interest in ensuring that high school graduates are adequately prepared for postsecondary work, but also are familiar with the entrance requirements and skills required for performing well and persisting in postsecondary education once students have enrolled. In addition, if secondary/postsecondary articulation agreements or tech prep programs are part of your school’s strategies, postsecondary representatives can also help establish them.

OTHER COMMUNITY MEMBERS - Depending on local circumstances and your site's particular agricultural education vision, you may want to involve other community members in your planning team. For example, you may want to consider recruiting labor representatives as team members. Labor representatives are knowledgeable about skill requirements in their industry and can provide a resource for teaching students about major industries and career opportunities related to agriculture in your area. You may want to involve representatives of government agencies involved in agriculture, your county agricultural extension agent, key community leaders, economic development agencies, etc. You should carefully consider your own special circumstances when deciding whether to involve a wider group of stakeholders in your planning team.

AGRICULTURAL ADVISORY COMMITTEE MEMBERS - If your agricultural education program already has an agricultural advisory committee, they can be a valuable resource for planning team members and helping you identify others in the community to invite to be part of your planning team. Because members of the agricultural advisory committee are already familiar with the agricultural education efforts of the district, they bring important information to the planning process.

INVOLVE BUSINESS AND COMMUNITY

All schools that have a state approved agricultural education program must have a local agricultural advisory committee that meets at least once a year. The major function of the local advisory committee is to assist in planning, developing and evaluating the local agricultural education program. Membership on the advisory committee should include local agriculturists, agriculture and food related businesses, school board members, parents of agriculture students and program alumni. The

agricultural education instructor(s) serve as a resource for the committee.

Involving the local district agricultural advisory committee in the planning process is important. In addition to having members of the advisory committee serve on the planning committee, it is advisable to involve the complete advisory committee in the process. In some cases, you may decide to use your local advisory committee as the planning committee with the addition of a few members.

THE ADVISORY COMMITTEE CAN. . .

- Conduct a survey of existing agriculture in the community
- Identify areas of potential placement for students and validate the related skills students need to be successful in these placements
- Coordinate a survey of local graduates
- Develop and participate in a program self-assessment
- Assist in conducting the community section of the needs assessment
- Sponsor a town meeting to get input from the community regarding the agricultural education program
- Identify curriculum areas to be included in the program that is supported by local agriculture
- Review and comment on the plan before it is submitted to the school board for approval



WORKSHEET

IDENTIFYING TEAM MEMBERS

You can begin building a planning team by completing the four activities that follow. The individual who is responsible for the planning process at your school should fill out the worksheet before convening the first team meeting.

1. Decide what the scope of your planning efforts will primarily be. As the planning team proceeds, this may change. It is important initially to identify the scope of your efforts to help you remain focused. Select one area for improvement and then identify the district(s), school(s), program(s), department(s) or classroom(s) you hope will participate:

- District _____
- School _____
- Program _____
- Department _____
- Classroom _____

2. Who should be represented on your team? Check (✓) all groups that apply and list key individuals from each group who should be invited:

- Students _____
- Parents _____
- Teachers _____
- Department chairpersons _____
- Career or guidance counselors _____
- School administrators _____
- Other school staff _____
- Union leaders _____
- State education agency staff _____
- Employers _____
- Postsecondary education representatives _____
- Other community members _____
- Representatives of production agriculture and agribusiness _____
- Agricultural advisory committee members _____
- Representatives of environmental organizations _____
- Representative of Workforce Investment Board _____

3. Who should be the team leader? _____

4. A conversation or phone call, followed by an invitation, should do the following things: (Space has been provided for you to jot down notes about what you might include in your invitation, and a sample invitation letter is included.)

Alert the potential planning team member to the upcoming agricultural education program planning efforts.

- What will you call the project? _____
- How can you get their attention? _____
- Explain the benefits of being involved.

- Briefly describe the project.

- Describe the time commitment team members will be expected to make.

- Specify the date, time and location of an orientation and organizational meeting.

- Explain the next step that prospective team members should take to demonstrate their interest.

Pennag Area School District

2537 East Street
Pennag, PA 18000

Ms. Jennifer Angus
Centerville Chamber of Commerce
111 Main Street
Centerville, PA 11111

SAMPLE

Dear Ms. Angus:

It was a pleasure speaking with you the other day about your involvement in the agricultural education planning that we are about to start at Pennag Area School District. This planning process will be an important component of the district's strategic plan and will help set future plans for coordinating agricultural education efforts throughout the district.

The purposes of this planning effort are to assess the current agricultural education opportunities available to students in the district and to develop a plan for improving those efforts to better meet the needs of all our students, grades K-12. We will be looking at agricultural literacy, career exploration and workforce development programs; how we should be offering them and what the curriculum should include.

We realize this is a big effort and will take time on your part to participate. We anticipate holding six meetings this year with some committee work. You should expect to spend approximately four hours a month involved in this project.

The orientation meeting for planning team members will be held Tuesday, September 18, 2000, at the Pennag Area School District Board Room, 2537 East Street, Pennag, PA, from 7:00 p.m. to 9:00 p.m. RSVP by calling me at 717-555-1212.

We look forward to you joining us. Your involvement will be very important to the success of our efforts.

Sincerely,

Planning Team Coordinator

PUT RESOURCES IN PLACE

In addition to the human resources needed to complete the planning process, other resources may be needed. Your team's ability to garner the resources necessary to develop and implement your plan will be one of the major limiting factors you will face. Take time to be sure you know what resources you have at your disposal so you can plan appropriately

to use those resources to their maximum. Review the *Keys to Success* at the beginning of this handbook, and be sure your planning team is confident you have these in place. If something is missing or you feel the commitment is weak, now is the time to spend the planning team's efforts on this important area.

RESOURCES TO CONSIDER . . .

- The amount of time committee members will have to devote to the process
- The materials available, including database searches, journals, exemplary programs, sample courses of study and curriculum and other models
- Available support services (secretarial)
- Consultant services
 - Department of Education
 - Agricultural or curriculum specialists from universities, colleges, intermediate units, other school districts
 - Local citizens or professional associations
 - Educational consultants
- The funding available to carry out the committee's work

CONDUCT ORIENTATION MEETING

It is important to start the process off on the right foot by having an initial orientation meeting to be sure everyone starts the process out at the same place. Take time at this initial meeting for team members to get to know each other and learn more about the purposes of the planning process. Review the planning process you will be using and what will be expected of them. Decide initial roles and responsibilities

and the group's ground rules and operating procedures.

It will be important to initially set the tone of any future meetings by having your orientation meeting start on time, end on time and accomplish the agenda. Because your planning team will consist of many volunteers, you need to use their time wisely and efficiently. Only hold meetings when necessary.

SAMPLE ORIENTATION MEETING AGENDA (TWO HOURS)

- Welcome
- Introductions
- Purpose of Agricultural Education Planning
- Review Planning Process
- Complete *Organizing Your Team Worksheet*
 - Additional members
 - Roles and responsibilities
 - Meeting times and locations
 - Ground rules and operating procedures
- Review *Plan of Action Worksheet*
- Set next meeting date, time and location



WORKSHEET

ORGANIZING YOUR TEAM

This worksheet should be completed by the participants at the first team meeting. You can begin organizing your planning team by completing the following five activities:

1. Use the space below to note any questions that you would like answered during the orientation and organizational meeting. Record any responses to those questions as they arise.

2. Are there any stakeholder groups of persons missing from the meeting who would be valuable additions to the team?

3. Discuss and record who will assume the following roles and responsibilities for your team.

Role

Person Responsible

Meeting facilitator (guides participants as they fill out worksheets and discuss important issues)

Archivist (keeps copies of completed worksheets and other documentation)

Meeting organizer (reserves meeting room, sends reminders)

Other role _____

Other role _____

4. Decide when and where your planning team will meet.

- How frequently will the team meet? _____
- About how long will team meetings last? _____
- When will the next meeting be held (date and time)? _____
- Where will the next meeting be held? _____
- Does anything else need to happen before the next meeting? If so, what? Who will be responsible?

Team members should plan to read the section *Setting a Target for the Future* before the next meeting.

5. Determine what your team ground rules and operating procedures will be. As a group, discuss and answer the following questions:

- How will team decisions be finalized (consensus, voting, other)?

- How will team members communicate with each other (meetings, newsletter, e-mail, other)?

- How will team members communicate with non-members (staff meetings, newsletter, e-mail, other)?

- Other rules or procedures?

DEVELOP A PLAN OF ACTION

Early in the process, the committee should develop a list of the tasks which must be carried out in order to complete the planning. These tasks should be listed in chronological order within the time frame established for planning. The committee should set approximate target dates for completion of each task. Where appropriate, individuals with primary responsibility for completing each task should be identified.

Although many members of the committee probably agree to serve because they are highly interested and have some degree of expertise in one area or another of agricultural education, there may be some who are not as well informed as others. In order to complete your task and timeline, a variety of inservice activities may be needed to explore contemporary trends in the field and help committee members develop a common frame of reference.

THINGS TO CONSIDER. . .

- How well educated is the planning team about issues in agricultural education?
- How much time do people have to spend on this?
- What expertise do people bring to the table?
- Whom else might you get to help accomplish the task that is not on the planning team?
- Be realistic about what you can accomplish and how long it will take.
- Choose to do only those things you feel are necessary to accomplish your ultimate goal.



WORKSHEET

PLAN OF ACTION

It is important to set a roadmap for your planning and to track your progress. Here is a *Plan of Action* with each of the steps to help your team get started.

Task Description	Person Responsible	Resources Needed	Deadline Date	Completed
BUILDING A TEAM				
Identify Team Members				
Conduct Orientation Meeting				
COLLECTING INFORMATION				
Develop a Community Profile				
Conduct an Internal Inventory				
Make Site Visits				
Conduct Student Needs Assessment				
Conduct Graduate Survey				
Conduct Community Needs Assessment				

Task Description	Person Responsible	Resources Needed	Deadline Date	Completed
SETTING A TARGET FOR THE FUTURE				
Develop Vision Statement				
Develop Mission Statement				
Set Goals and Objectives				
DESIGNING A COMPREHENSIVE PROGRAM				
Identify Program Delivery Factors				
Select a Delivery Strategy				
Design a Delivery Model				

Task Description	Person Responsible	Resources Needed	Deadline Date	Completed
DETERMINING CURRICULUM CONTENT				
Identify Curriculum Content Areas				
Identify Students Standards and Benchmarks				
Identify Curriculum Resources				
Analyze Curriculum Materials				
Develop Planned Courses of Study				
Develop Lesson Plans				

WORKSHEET-Plan of Action continued

Task Description	Person Responsible	Resources Needed	Deadline Date	Completed
IMPLEMENTING A PLAN				
Complete the Agricultural Education Improvement Plan				



WORKSHEET

PLAN OF ACTION

Task Description	Person Responsible	Resources Needed	Deadline Date	Completed

COLLECTING INFORMATION

Before starting to plan for the future, the committee should determine the current status of the agricultural education program. This will help identify discrepancies between present practice and desired outcomes. The committee must decide what information to collect, how that information will be collected and how it will be analyzed. At this time, you should also review the district's strategic plan to determine what analysis of the agricultural education program has already been conducted.



“Collecting information seemed like an easy step, but in the end we were overwhelmed by the information we had gathered. Conducting an internal inventory was one of the hardest steps for us. It almost felt like a program evaluation process. Emotions ran high among the committee members. We finally decided to ask an outside person, not involved with the program or the school, to help us so the results would be impartial. It really helped us accept the results and use what was discovered to our best advantage. We also did an exhaustive survey of the community, agribusinesses, parents, students, and graduates. We carefully developed the surveys so the questions asked what we needed to know, and the results were reliable and usable. It took us time to analyze the results, but the information was very revealing. These results probably influenced the future planning we did the most. I was amazed how candid people were and how willing they were to complete the surveys. We had a very high response rate.”

DEVELOP A COMMUNITY PROFILE

A community profile will help you identify resources in your community that can be accessed when implementing your program. The detailed description of the agriculture and food-related businesses in the area will help you when making curriculum decisions. Implementing a curriculum that reflects the agriculture in the local area is important.

Much of this information can be found already compiled for you at the District Office, Intermediate Unit, Chamber of Commerce, local Cooperative Extension Service office and other locations. Your local library can be a great help when doing research on local community resources. This would even make a great project for a class or individual research project.

THIS COMMUNITY PROFILE SHOULD INCLUDE. . .

- Geographic area of the district's boundaries
- Description of communities within these boundaries
- Population and demographic information
- Description of educational services available
- Description of business and industry in the area
- A detailed description of the agriculture and food-related businesses in the area



WORKSHEET

DEVELOPING A COMMUNITY PROFILE

Distribute these questions to the planning team. Ask them to find the answers and bring them back to the next meeting. Compile the answers into a community profile that will help you in your planning.

1. Describe the geographic area of the school district. Include size and general geographic characteristics. Include a map of the district boundaries.
2. Describe the communities within the boundaries of the district and any special characteristics. Include population distribution information, school locations and enrollment statistics.
3. Describe the demographics of the district. Include race and income status for the population enrolled at each of the school sites.
4. Describe the educational services provided by the district to the community. Include all services available K-adult.
5. Describe the non-agricultural economic base of the community served by the district. Identify leading business organizations that would be appropriate contacts for future assistance (i.e., Rotary, Lions Club and Chamber of Commerce).
6. Describe the agricultural economic base of the community served by the district. Identify agricultural businesses in the community. Identify leading agribusiness organizations that would be appropriate contacts for future assistance.
7. Identify the political entities within the district's boundaries and the people currently in office. Include city, township, county, state legislators, members of Congress, district board members, etc.
8. Identify the agricultural resources available in the communities served by the district. Include cooperative extension personnel, potential field trip sites, federal, state or local outdoor education sites, potential guest speakers or other experts.

CONDUCT AN INTERNAL INVENTORY

The first place to start in determining the current status of agricultural education in your school, district or community is to conduct an internal inventory. An internal inventory will require the planning team members to interview various sectors of the system. Many agricultural education efforts currently being conducted may range from individual teacher initiatives in the classroom to school-wide activities. These activities may be conducted by school personnel or by community organizations. They may be

school-based activities or community-based activities. They may be included as formal parts of the student curriculum or supplemental activities for students with interest. Whatever the case, it will be important for the planning team to build a picture of what agricultural education efforts are currently being implemented in the school or district in order to build on these.

Once all these efforts are identified, the checklists provided may be helpful to the planning team in assessing their effectiveness.

CHECKLIST TO HELP YOU DO YOUR INTERNAL INVENTORY. . .

- Program Objectives
- Program Content
- Support Services
- Staff/Instruction
- Facilities
- Equipment
- Supplies
- Placement Data and Employer Satisfaction



WORKSHEET

CONDUCTING AN INTERNAL INVENTORY

Once the planning team has identified the agricultural education efforts in the district, use this checklist to determine how comprehensive and effective the efforts are.

PROGRAM OBJECTIVES	Completely Achieved	Satisfactory	Unsatisfactory	Unsure
1. Program objectives are well-defined.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Program objectives are measurable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Program outcomes are measured.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PROGRAM CONTENT	Completely Achieved	Satisfactory	Unsatisfactory	Unsure
1. The program is directly related to employment in the community/region.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. The program reflects current industry philosophy and practices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The program establishes the climate needed to develop appropriate skills and abilities needed in agricultural education.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Instruction includes employability skills such as good work habits, communications, and human relations skills, preparation of resume, interviewing techniques, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Program content reflects all aspects of the industry.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. The curriculum is standards-based.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. There is a balance between theoretical and practical knowledge and skills.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. The agricultural education curriculum is integrated with the academic curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Completely Achieved	Satisfactory	Unsatisfactory	Unsure
9. The curriculum accommodates a variety of student abilities and interests.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Student organizations are available and encouraged as a part of the curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Safety is an integral part of the curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The curriculum has been developed with the cooperation and advice of the agricultural education advisory committee.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Follow-up information is systematically used to make program improvements.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. The curriculum provides a pretest/posttest to determine improvement in student proficiency.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Instruction is provided in the maintenance and repair of equipment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Placement data and employer satisfaction data are utilized in evaluations of the curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SUPPORT SERVICES	Completely Achieved	Satisfactory	Unsatisfactory	Unsure
1. The program has effective recruitment, placement and follow-up services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Employment and job placement information is available to all.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Sufficient staff is available to provide classroom support to students with special needs and those with nontraditional status.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

STAFF/INSTRUCTION	Completely Achieved	Satisfactory	Unsatisfactory	Unsure
1. Instructional staff practices current skills and techniques in agricultural education.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Instructional staff is periodically updated in agricultural education through training, employment or inservice workshops.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Instructional staff maintains contact with employers and former students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Supervised agricultural experience projects are available to students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The instructor is teaching the curriculum as stated in the course of study.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Field trips to related job sites are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Visitations by specialists from the agriculture industry are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Placement data and employer satisfaction data are utilized in evaluations of the curriculum, instruction, tools and equipment.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FACILITIES	Completely Achieved	Satisfactory	Unsatisfactory	Unsure
1. The room provides the most advantageous use of space available.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Room lighting is adequate for the health and safety of the students.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The room/lab areas are clean.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Tools and equipment are arranged in an orderly and task-appropriate manner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The area has adequate storage facilities for permanent and consumable supplies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Completely Achieved	Satisfactory	Unsatisfactory	Unsure
6. Panic buttons are properly located.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Panic buttons are in operating condition.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Strategic floor areas are properly lined.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Strategic floor areas are free of obstructions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. There is adequate storage for flammable and toxic materials.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. There is adequate ventilation for flammable and toxic materials.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Fire extinguishers are visible, accessible, properly maintained and adequate in number.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Classroom space for instruction is adequate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. The classroom/shop/laboratory temperature is comfortable.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. The classroom/shop/laboratory is large enough for the number of students served.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Persons with disabilities are accommodated in the classrooms/shops/laboratories.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Students have appropriate access to equipment and supplies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

EQUIPMENT AND SUPPLIES		Completely Achieved	Satisfactory	Unsatisfactory	Unsure
1.	The supply of tools and equipment is adequate to implement the curriculum.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Equipment and tools meet current industry standards and are appropriate for teaching agricultural education.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	The condition of the equipment indicates proper care and maintenance.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Equipment meets OSHA safety standards with respect to guards, shields, grounding, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Safety protection (safety glasses, shields, etc.) and instruction in the proper use of them are provided.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Supplies are adequate to implement program objectives.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	An inventory of equipment is maintained by the teacher or other staff member.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	A schedule for repair and replacement of equipment, tools and supplies is maintained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	A security system for the use of tools, equipment and supplies is maintained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Material Safety Data Sheets (MSDS) are provided for each flammable, toxic or explosive material as required by OSHA.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CONDUCTING AN EXTERNAL INVENTORY

In addition to conducting an internal inventory of existing program conditions, this would be a good time to conduct an external inventory. External inventories, generally conducted through site visits to other programs, are a great way to expand your horizons. It may give you the opportunity to identify new

possibilities, as well as convince you that you are doing the right thing.

It is important to be well prepared before making visits to other programs, to ensure that you maximize the opportunity. Use the *Preparing for a Site Visit Worksheet* to help you get ready.

WHEN VISITING OTHER PROGRAMS, YOU SHOULD RESEARCH. . .

- Resources
- Curriculum
- Facilities
- Integration Practices
- Student Recruitment
- Professional Development
- Program Management
- Community/Business Involvement
- Leadership Development
- Work-based Learning
- Program Design



WORKSHEET

PREPARING FOR A SITE VISIT

When making visits to other programs, it is important that you be well prepared to maximize the opportunity. Prior to your visit, complete this worksheet.

Name of Visit Site _____

Name of Contact Person _____

Address _____

Phone _____ Fax _____

E-mail Address _____

Date of Visit _____

The Tool Sheet *On-site Visit Survey Questions* contains a series of potential questions you could ask while visiting other programs. With the planning team, review the questions and select those you intend to ask. Limit your questions to those particular areas you are most interested in. Don't ask too much or too little. Try to be realistic about what you can accomplish during your visit. Send those questions you selected to the contact person at the site so they will be adequately prepared for you as well.

What questions will you ask? Circle these on the Tool Sheet *On-Site Visit Survey Questions*. Write any additional questions your team wants to ask below:



TOOL

ON-SITE VISIT SURVEY QUESTIONS

RESOURCES

What is the budget for the agricultural education program?

Do you conduct any additional fundraising activities for the program? If so, please describe.

What kind of in-kind donations have you been able to receive from the community, and how were you able to do this?

CURRICULUM

What is the program of study for the agricultural education program?

What process do you use to update existing curriculum or design new curriculum?

How are students' interests and needs determined? Are these used to design the curriculum?

What level of academic rigor is expected in the curriculum?

Is hands-on learning an important component? If yes, how is it included?

What are the most effective teaching techniques that the agricultural education teachers have incorporated into their classroom instruction?

What types of alternative assessments are you using to measure student achievement?

Do students receive graduation credit for any of the agricultural education courses they take?

Do you have any articulation agreements set up to assist students in transitioning to postsecondary education?

FACILITIES

What facilities are available for use by the agricultural education program?

Which of these facilities are essential?

What creative ways have you been able to obtain additional facilities without direct district support?

INTEGRATION OF ACADEMIC AND AGRICULTURAL EDUCATION

Do the agricultural education teachers and other teachers at the school do any shared curriculum planning or team teaching?

What efforts have you made to integrate academics into the agricultural education curriculum?

What efforts have you made to integrate agricultural education into the academic curriculum that all students take?

STUDENT RECRUITMENT

How are students recruited for the agricultural education program?

Do you use or have you developed any print or media materials for student recruitment?
If so, please share them.

How are the guidance counselors involved in the student recruitment process?

PROFESSIONAL DEVELOPMENT

What types of professional development activities do the agricultural education teachers participate in for In-service?

Are there opportunities for teachers to develop new skills through industry internships or other activities?

PROGRAM MANAGEMENT

How is the agricultural education program incorporated into the entire school program and the district's strategic plan?

What kind of schedule do you use, and how have you adapted the agricultural education program to accommodate this schedule?

Do the agricultural education teachers have release time or extended contracts to supervise student activities during out-of-school time and the summer? Please describe.

In a multi-teacher department, how are responsibilities divided, implemented and reported?

How is the rest of the school being kept apprised of the activities occurring in the agricultural education program?

What level of support is there from the school administration and the school board?

COMMUNITY/BUSINESS INVOLVEMENT

Do you have an agricultural education advisory committee? If so, how is it organized, how often does it meet and what are its purposes?

How supportive is the community of the agricultural education program? How is this level of support measured?

Is the agricultural industry involved in the program? (i.e., guest speakers, field trips, mentors, job shadowing, internships, work-experience sites, etc.)

LEADERSHIP DEVELOPMENT/FFA

How is leadership development or the FFA incorporated into the program?

To what degree are students involved in leadership development/FFA activities?

Is leadership development/FFA considered an integral part of the curriculum?

WORK-BASED LEARNING/SUPERVISED AGRICULTURAL EXPERIENCE

To what degree are students involved in supervised agricultural experience projects?

How is work-based learning/supervised agricultural experience incorporated into the curriculum? How is it assessed?

Is career exploration part of the curriculum? Do students develop individual career plans? How is this coordinated with the career guidance program at the school?

Is entrepreneurship part of the curriculum?

How is record keeping incorporated into the curriculum?

Is involvement in a supervised agricultural experience project considered an integral part of the agricultural education curriculum?

ELEMENTARY/MIDDLE SCHOOL PROGRAM

Is there an agricultural education program offered to students at the middle school? If so, please describe how it is implemented.

Do your existing agricultural education program, teacher and students have any involvement with teachers or students at the elementary or middle school?

Have you made any efforts to incorporate agricultural literacy into the elementary or middle school curriculum?

PROGRAM DESIGN

Are there any unique aspects of how the agricultural education program is implemented that you feel make it particularly effective?

Have you tried to incorporate any aspects of Tech Prep or School-to-Work into the agricultural education program?



WORKSHEET

VISITING OTHER PROGRAMS

Complete this worksheet after making an on-site visit. This activity will help you formulate some general impressions that you can share with your planning team at its next meeting.

Visit Site _____

Contact Person _____ Phone _____
Fax _____
E-mail _____

1. What was the most impressive thing you saw when visiting?

2. What was most remarkable about the facilities?

3. What was most impressive about the curriculum?

4. What was most impressive about the staffing?

5. What was most impressive about the students?

6. Now that the visit is over, what question(s) would you like to have asked but didn't?

In addition to these general impressions, summarize the results of the on-site survey questions you used while making your visit.

IDENTIFY NEEDS

After collecting information about the current status of the agricultural education program, a needs assessment should be conducted to determine the match between the existing program design and curriculum and the needs of the students and community. This needs assessment should be developed by the planning committee and reflect the specific areas of concern or interest you are considering redesigning. This needs assessment should be conducted with all the stakeholder groups involved in the agricultural education program.

The needs assessments designed for each of these groups should reflect the particular interests of each group. For example, the student survey might include questions asking them about their areas of interest and career goals; their perceptions of the agricultural education program; why they are enrolled or why not; what barriers exist to their participating in the agricultural education program; what improvements they would suggest.

CONDUCT NEEDS ASSESSMENTS WITH. . .

- Students enrolled in the program
- Students not enrolled in the program
- Graduates of the program
- Parents
- Faculty, staff and administration of the school
- Agricultural business and environmental communities
- Food and nutrition businesses and professionals
- Other community members such as public officials, media and community service organizations

Conducting a graduate survey will be one of the most valuable needs assessments you can perform. Graduates often have had the opportunity to use what they have learned and can give you very practical feedback about what was valuable to them and what they needed. Check with your counseling department or school administration to determine if any graduate follow-ups are currently being conducted by the school. They may be able to help you participate in the

school-wide survey or locate addresses of program graduates so you can conduct your own.

Be sure the school administration approves any surveys prior to distribution.

Once these needs assessments have been completed and returned, their results must be compiled into a summary that the planning committee can use during the rest of the program planning and curriculum development process.





TOOL

CONDUCTING SURVEYS AND STUDIES

PHASE 1 - SURVEY DESIGN

The survey design phase is perhaps the most important within the study. Within this phase, a specific survey instrument is developed which addresses the critical issues that are important in meeting the study's overall goals. Failure to develop a clear, concise survey will result in a low response rate and inconclusive results. The contribution of a cross-section of individuals insures that the final survey instrument will address all critical issues in the best possible manner.

PHASE 2 - PILOT STUDY

Once a preliminary survey is developed, the survey is field tested using individuals similar to the intended audience to be surveyed. This pilot study presents the survey to several selected individuals to insure that these recent graduates completely understand the survey. If segments of the survey are unclear, changes can be made before the final survey is printed and mailed to the entire sample group.

PHASE 3 - SAMPLE GROUP DETERMINATION

To conduct an effective study, a group of individuals must be selected to provide their opinions. Each member of the group receives a questionnaire and is asked to participate. Surveying every member of the group serves to eliminate potential bias in the sample group.

PHASE 4 - SURVEY PRINTING

An important element in any study involves projecting an image of sincerity. If it is hoped that the group will be willing to provide their time to complete the survey, it is imperative that the survey appears professional. To insure that the efforts placed in the survey design phase are fully taken advantage of, the final survey instrument is professionally printed.

PHASE 5 - SURVEY FOLLOW-UP

A key element in any successful study is effective survey follow-up. This program consists of two separate follow-up phases. These serve as a reminder and assist in convincing sample group members of the importance of their individual responses. The end result is a significantly higher response rate.

PHASE 7 - SURVEY TABULATION

The returned surveys are entered and tabulated by computer. These tabulated results are then statistically analyzed and used to make conclusions about the quality of educational service provided.

PHASE 8 - STATISTICAL ANALYSIS

The tabulated results are analyzed statistically to reveal additional information about the results. The goal within this phase is to utilize statistical techniques to better explain certain relationships and to add credibility and certainty to the tabulated results.

PHASE 9 - FORMAL WRITTEN PRESENTATION

This final phase summarizes the entire study in report form. Detailed information is provided concerning each specific element of the study. The survey results are presented and analyzed.



TOOL

SAMPLE STUDENT SURVEY

We are conducting a survey of students to determine public perceptions and attitudes about agriculture and careers. Your answers will help us shape the future direction of the agricultural education program. Please assist us by providing the information requested below. All answers will remain confidential.

Name _____ Home Phone _____

Street _____ Town/City _____ State _____ Zip _____

Age _____ Grade _____

Do you live in the city _____ in a town _____ in the country _____ on a farm _____?

Do you plan to continue your education past high school? Yes _____ No _____

ACTIVITIES AND HOBBIES

Which of the following activities are of interest to you? (Check all that apply)

- | | | |
|---|--|------------------------------------|
| <input type="checkbox"/> Sports | <input type="checkbox"/> Music | <input type="checkbox"/> Travel |
| <input type="checkbox"/> Contests | <input type="checkbox"/> Hunting/Fishing | <input type="checkbox"/> Camping |
| <input type="checkbox"/> Motorcycles | <input type="checkbox"/> Public Speaking | <input type="checkbox"/> Mechanics |
| <input type="checkbox"/> Hiking | <input type="checkbox"/> Photography | <input type="checkbox"/> Fairs |
| <input type="checkbox"/> Livestock Exhibition | <input type="checkbox"/> Computers | <input type="checkbox"/> Science |
| <input type="checkbox"/> Art | <input type="checkbox"/> Animals | <input type="checkbox"/> Drama |
| <input type="checkbox"/> Clothes/Fashion | <input type="checkbox"/> Crafts | <input type="checkbox"/> Boating |

CAREER INTERESTS

Which of the following career areas are of interest to you? (Check all that apply)

- | | | |
|---|--|--|
| <input type="checkbox"/> Broadcasting | <input type="checkbox"/> Newspaper/Magazine Editor | <input type="checkbox"/> Marketing |
| <input type="checkbox"/> Forestry | <input type="checkbox"/> Computer Programming | <input type="checkbox"/> Engineering |
| <input type="checkbox"/> Auto Mechanics | <input type="checkbox"/> Electronics | <input type="checkbox"/> Crop Production |
| <input type="checkbox"/> Livestock Production | <input type="checkbox"/> Public Relations | <input type="checkbox"/> Ranching |
| <input type="checkbox"/> Government Service | <input type="checkbox"/> Graphic Design/Commercial Art | <input type="checkbox"/> Scientific Research |
| <input type="checkbox"/> Landscaping | <input type="checkbox"/> Horticulture | <input type="checkbox"/> Sales |
| <input type="checkbox"/> Health Services | <input type="checkbox"/> Chemistry | <input type="checkbox"/> Accounting |
| <input type="checkbox"/> Teaching | <input type="checkbox"/> Botany/Plant Science | <input type="checkbox"/> Banking |
| <input type="checkbox"/> Military | <input type="checkbox"/> Natural Resource Management | <input type="checkbox"/> Machine Repair |
| <input type="checkbox"/> Travel and Tourism | <input type="checkbox"/> Performing Arts | |

AGRICULTURE

Which of the following agricultural subjects are of interest to you? (Check all that apply)

- | | | |
|--|---|---|
| <input type="checkbox"/> Mechanics | <input type="checkbox"/> Horticulture | <input type="checkbox"/> Animal Science |
| <input type="checkbox"/> Animal Production | <input type="checkbox"/> Crop Science | <input type="checkbox"/> Crop Production |
| <input type="checkbox"/> Business Management | <input type="checkbox"/> Marketing | <input type="checkbox"/> Floriculture |
| <input type="checkbox"/> Computers | <input type="checkbox"/> Electronics | <input type="checkbox"/> Outdoor Recreation |
| <input type="checkbox"/> Soil Science | <input type="checkbox"/> Communications | <input type="checkbox"/> Sales and Service |
| <input type="checkbox"/> Forestry | <input type="checkbox"/> Woodworking | <input type="checkbox"/> Aquaculture |
| <input type="checkbox"/> Natural Resource Management | <input type="checkbox"/> Biotechnology | <input type="checkbox"/> |

(Include a copy of the Agricultural Career Profile Tool, found in the Getting Started section, as part of the student survey instrument.)

SAMPLE



TOOL

SAMPLE STUDENT EXIT SURVEY

Have you ever. . . (Mark (X) all that apply)	Once	More than once	Found it helpful	I'd like to*
1. Learned about jobs or careers in class?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Learned how academic subjects are used outside the classroom or in business/work?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Taken a tour of a workplace to learn about the industry and careers?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Followed someone around at their job (job shadowed)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Taken a career interest inventory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Worked on a class project in which you learned about jobs or a career area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Gone to a career fair?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Done college planning with a counselor?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Developed your own written academic/career plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Met with a mentor (person to support you toward your future goals)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Worked toward certification?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Done an internship or apprenticeship?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**If you have not participated in an activity but wish you could.*

When are you most motivated to learn? (Mark (X) all that apply)

When I . . .

- Am interested in the subject.
- Like the teacher.
- Can seek additional help.
- See how the class relates to the real world.
- Know the class relates to my career interests.
- Understand the importance of the content.
- Other _____.

When the teacher . . .

- Is knowledgeable about the subject.
- Takes a personal interest in me.
- Sets high standards for achievement.
- Show concern about my education.
- Shows enthusiasm about the subject.
- Encourages everyone to participate.
- Remembers the student's perspective.
- Uses humor (related to the subject).
- Other _____.

When the class instruction includes. . .

- Completing worksheets.
- Solving real life problems.
- Setting the subject within the context of life.
- Getting involved in a community project.
- An atmosphere that encourages thinking.
- Examples of how to make the content relevant.
- Technology (computers).
- Homework.
- Variety in how the material is presented.
- Listening to lectures.
- Active, hands-on chances to apply a lesson.
- Letting us have assignment choices.
- Tests on reading assignments and/or lectures.
- Field trips.
- Watching a video.
- Applying lesson in community/business.
- Other _____.



TOOL

SAMPLE GRADUATE SURVEY

SECTION I. YOUR EMPLOYMENT AND EDUCATION SINCE GRADUATION

1. What year did you graduate from high school? _____
2. Were you raised on a farm? _____
3. What is your present work status? (Circle only one)
 - a) Employed full time
 - b) Employed full time and attending school
 - c) Employed part time
 - d) Employed part time and attending school
 - e) Unemployed, looking for work
 - f) Unemployed, not looking for work
 - g) Military service
 - h) Homemaking, full time
 - i) Attending school, full time
4. What best describes your present occupation?
 - a) Farmer
 - b) Agricultural occupation other than farming
 - c) Non-agricultural occupation
 - d) Part time in agricultural occupation
 - e) Part time in non-agricultural occupation
 - f) Student
5. If answer to question 4 was b, c, d or e, please specify the occupation. _____

6. Were you employed in any agricultural occupation within one year after graduation?
 - a) Yes (please specify) _____
 - 1) Full time
 - 2) Part time
 - b) No (please specify) _____
 - 1) Continued formal education
 - 2) Entered non-agricultural field

7. How many jobs have you had since graduation from high school?

- a) 1 – presently the one I am in
- b) 2
- c) 3
- d) 4 or more

8. How did you discover your first job after graduation? (Circle all that apply)

- a) Help from agriculture teacher
- b) Help from guidance counselor
- c) Employment agency
- d) Help from friends or relations
- e) On my own – visits, newspaper and magazine ads

9. Did you continue your formal education beyond graduation?

- a) Yes (please specify) _____
 - 1) 4-year degree
 - 2) 2-year degree
- b) No
- c) Other (please specify) _____

10. If presently enrolled in a postsecondary school, what type of school and major area?

- a) 4-year college – agriculture major
- b) 4-year college – non-agriculture major
- c) 2-year college – agriculture major
- d) 2-year college – non-agriculture major
- e) Trade school
- f) Other (please specify) _____

SECTION II. YOUR OPINIONS ABOUT THE AGRICULTURAL EDUCATION PROGRAM

Think in terms of the agricultural education program you completed, and respond to the following statements.

Please circle the number which best represents your opinion.

Scale: 1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree

Agricultural Education Program	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1. Classroom instruction and agricultural practices are integrated to meet the needs of individual students.	1	2	3	4	5
2. Instruction in agriculture is tied in with other subject areas.	1	2	3	4	5
3. The agricultural education program provides the knowledge needed for entry into the world of work.	1	2	3	4	5
4. The agricultural education program provides students opportunities for useful experiences in production agriculture.	1	2	3	4	5
5. The agricultural education program provides students opportunities for useful experiences in agricultural business-related areas.	1	2	3	4	5
6. The animal production portion of the program is adequate to meet student needs.	1	2	3	4	5
7. The crop production portion of the program is adequate to meet student needs.	1	2	3	4	5
8. The agricultural mechanics aspect of the program sufficiently meets student needs.	1	2	3	4	5
9. The agribusiness management part of the program sufficiently meets student needs.	1	2	3	4	5

- | | | | | | |
|--|---|---|---|---|---|
| 10. The leadership development (FFA) part of the program sufficiently meets student needs. | 1 | 2 | 3 | 4 | 5 |
| 11. Very few of the principles taught in agriculture are also taught in other high school courses. | 1 | 2 | 3 | 4 | 5 |

SECTION III. YOUR OPINION ABOUT SECONDARY AGRICULTURAL EDUCATION

1. What should be taught in a secondary agricultural education program?

Listed below are topics which may be included in a high school agricultural education program. We would like to have your opinion regarding teaching the following areas in the agricultural education program.

Please circle the number which best represents your opinion whether the topic should be included in a secondary agricultural education program.

Scale: 1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree

Topic Areas	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Livestock production (beef, sheep, swine)	1	2	3	4	5
Dairy production	1	2	3	4	5
Poultry production	1	2	3	4	5
Specialty animal production (horses, small animals, veal, goats)	1	2	3	4	5
Small grain production (oats, wheat)	1	2	3	4	5
Major field crop production (corn, beans)	1	2	3	4	5
Specialty crops (tobacco)	1	2	3	4	5
Aquaculture (fish production)	1	2	3	4	5
Fruit and vegetable production	1	2	3	4	5
Biotechnology	1	2	3	4	5

Topic Areas	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Recordkeeping in agriculture (inventory, budget, cash flow)	1	2	3	4	5
Marketing principles for agriculture	1	2	3	4	5
Sales principles in agriculture	1	2	3	4	5
Basic agricultural job skills (interviewing, human relations)	1	2	3	4	5
Using computers in agribusiness	1	2	3	4	5
Leadership (decision making, planning, organizing, working with people)	1	2	3	4	5
Agricultural tractors and implements	1	2	3	4	5
Small gasoline engines	1	2	3	4	5
Welding	1	2	3	4	5
Tool use and repair	1	2	3	4	5
Safety	1	2	3	4	5
Concrete and masonry	1	2	3	4	5
Electrical wiring, motors, controls	1	2	3	4	5
Building construction	1	2	3	4	5
Plumbing	1	2	3	4	5
Surveying	1	2	3	4	5
Diesel mechanics	1	2	3	4	5
Soil management and conservation	1	2	3	4	5
Water management and conservation	1	2	3	4	5
Water and air quality	1	2	3	4	5
Wildlife management	1	2	3	4	5
Forestry (timber) production	1	2	3	4	5
Wood product utilization	1	2	3	4	5
Food science principles	1	2	3	4	5
Milk processing	1	2	3	4	5
Meat processing	1	2	3	4	5
Landscape design and maintenance	1	2	3	4	5
Greenhouse crops	1	2	3	4	5
Floriculture and design	1	2	3	4	5
Other areas (specify)					
1. _____	1	2	3	4	5
2. _____	1	2	3	4	5
3. _____	1	2	3	4	5

2. To what degree do you feel agricultural education is important to you?
Check one response category.

- Essential
 - Very important
 - Moderately important
 - Somewhat important
 - Not important. If you feel it is not important, explain why.
-

3. To what degree do you feel adult education in agriculture is important to the residents of this school district? Check one response category.

- Essential
 - Very important
 - Moderately important
 - Somewhat important
 - Not important. If you feel it is not important, explain why.
-

4. To what extent do you feel agriculture is important in the school district curriculum (K-12)?
Check one response category.

- Essential
 - Very important
 - Moderately important
 - Somewhat important
 - Not important. If you feel it is not important, explain why.
-

Thank you for your assistance!



TOOL

SAMPLE AGRIBUSINESS SURVEY

SECTION I. INFORMATION ABOUT YOUR BUSINESS AND EMPLOYMENT NEEDS

1. Please indicate which of the following describes your business. (Circle all that apply)
 - a. Production agriculture (growing farm crops, vegetables, fruits or livestock)
 - b. Agricultural supplies and sales (selling, handling, or storing feeds, seeds, fertilizers or chemicals)
 - c. Agricultural mechanics (servicing and selling agricultural equipment, machinery or building materials)
 - d. Agricultural products processing (processing milk, meats or other agricultural products)
 - e. Horticulture (growing greenhouse crops, nursery stock, providing landscape services or lawn and turf management)
 - f. Forestry and wood products (logging, lumbering or processing wood products)
 - g. Natural resources and conservation (includes maintenance of recreational areas, or work related to soil and water conservation)
 - h. Other (briefly specify the nature of your business)

2. As you think of your operation over the next five years, are there significant changes you foresee in the type of business you have? (For example, size of operation, management practices, etc.) Circle one.
 - a. No
 - b. Yes

If yes, briefly explain the change(s):

3. What are the numbers of workers in your agricultural operation or business? Please include yourself in reporting numbers.

	Projected Number In 2000	Number For 2005
a. Full-time workers (working at least 30 hours per week for more than five months of the year) related to:		
1. Production agriculture (farming)	_____	_____
2. Agriculture other than production agriculture	_____	_____
3. Non-agricultural	_____	_____
4. Other (specify)	_____	_____

	Projected Number In 2000	Number For 2005
b. Part-time workers (working less than 30 hours per week for less than five months of the year) related to:		
1. Production agriculture (farming)	_____	_____
2. Agriculture other than production agriculture	_____	_____
3. Non-agricultural	_____	_____
4. Other (specify)	_____	_____

4. For people you employ, how important is it that they have completed high school? Check one response category.

- Very important
- Important
- Undecided
- Somewhat important
- Not important. If you feel it is not important, explain why.

5. For your employees, to what extent would it be beneficial for them to have classroom knowledge of agriculture? Check one response category.

- Very important
- Important
- Undecided
- Somewhat important
- Not important. If you feel it is not important, explain why.

6. For people you employ, how important is it that they have completed some postsecondary training in an agriculture-related field? Check one response category.

- Very important
- Important
- Undecided
- Somewhat important
- Not important. If you feel it is not important, explain why.

SECTION II. YOUR OPINION ABOUT SECONDARY AGRICULTURAL EDUCATION

1. What should be taught in a secondary agricultural education program?

Listed below are topics which may be included in a high school agricultural education program. Please give your opinion only on those topic areas listed below which are most closely related to your business.

Please circle the number which best represents your opinion whether the topic should be included in a secondary agricultural education program.

Scale: 1-Strongly Disagree, 2-Disagree, 3-Undecided, 4-Agree, 5-Strongly Agree

Topic Areas	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Livestock production (beef, sheep, swine)	1	2	3	4	5
Dairy production	1	2	3	4	5
Poultry production	1	2	3	4	5
Specialty animal production (horses, small animals, veal, goats)	1	2	3	4	5
Small grain production (oats, wheat)	1	2	3	4	5
Major field crop production (corn, beans)	1	2	3	4	5
Specialty crops (tobacco)	1	2	3	4	5
Aquaculture (fish production)	1	2	3	4	5
Fruit and vegetable production	1	2	3	4	5
Biotechnology	1	2	3	4	5
Recordkeeping in agriculture (inventory, budget, cash flow)	1	2	3	4	5
Marketing principles for agriculture	1	2	3	4	5
Sales principles in agriculture	1	2	3	4	5
Basic agricultural job skills (interviewing, human relations)	1	2	3	4	5
Using computers in agribusiness	1	2	3	4	5
Leadership (decision making, planning, organizing, working with people)	1	2	3	4	5

Topic Areas	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Agricultural tractors and implements	1	2	3	4	5
Small gasoline engines	1	2	3	4	5
Welding	1	2	3	4	5
Tool use and repair	1	2	3	4	5
Safety	1	2	3	4	5
Concrete and masonry	1	2	3	4	5
Electrical wiring, motors, controls	1	2	3	4	5
Building construction	1	2	3	4	5
Plumbing	1	2	3	4	5
Surveying	1	2	3	4	5
Diesel mechanics	1	2	3	4	5
Soil management and conservation	1	2	3	4	5
Water management and conservation	1	2	3	4	5
Water and air quality	1	2	3	4	5
Wildlife management	1	2	3	4	5
Forestry (timber) production	1	2	3	4	5
Wood product utilization	1	2	3	4	5
Food science principles	1	2	3	4	5
Milk processing	1	2	3	4	5
Meat processing	1	2	3	4	5
Landscape design and maintenance	1	2	3	4	5
Greenhouse crops	1	2	3	4	5
Floriculture and design	1	2	3	4	5
Other areas (specify)					
1. _____	1	2	3	4	5
2. _____	1	2	3	4	5
3. _____	1	2	3	4	5

2. To what degree do you feel agricultural education is important to you?
Check one response category.

- Essential
 - Very important
 - Moderately important
 - Somewhat important
 - Not important. If you feel it is not important, explain why.
-

3. To what degree do you feel adult education in agriculture is important to the residents of this school district? Check one response category.

- Essential
 - Very important
 - Moderately important
 - Somewhat important
 - Not important. If you feel it is not important, explain why.
-

4. To what extent do you feel agriculture is important in the school district curriculum (K-12)?
Check one response category.

- Essential
 - Very important
 - Moderately important
 - Somewhat important
 - Not important. If you feel it is not important, explain why.
-

Thank you for your assistance!

SETTING A TARGET FOR THE FUTURE

Now is the time to set some direction for your planning, based on the information you have collected. This is the step where many of your planning team's ideas will begin to come into focus. Try to get as specific as you can when setting your goals and objectives, and remember to be realistic considering your particular circumstances.

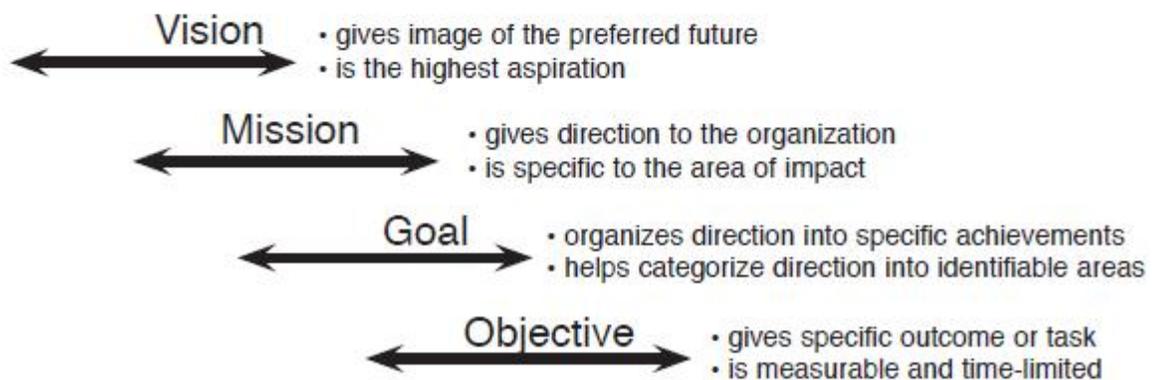
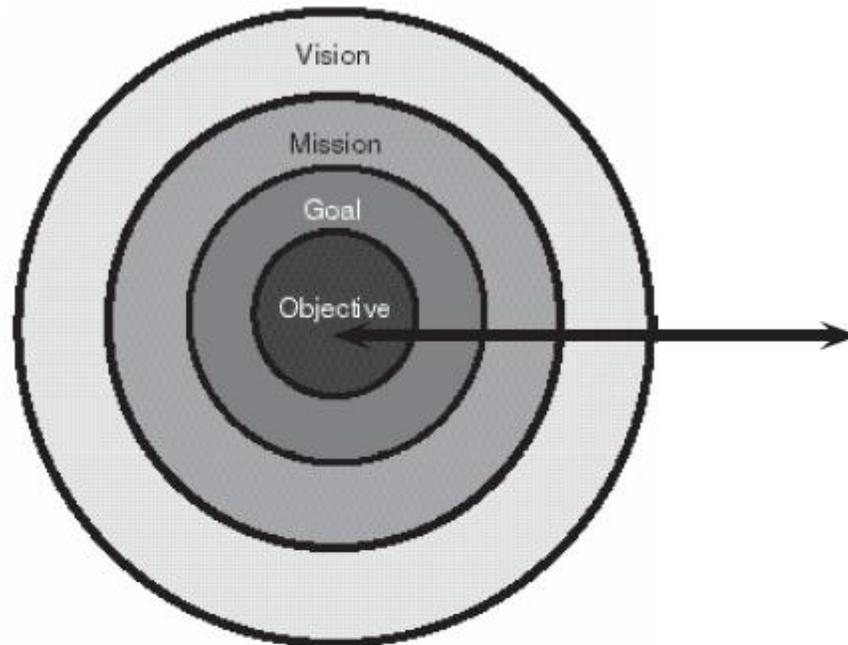


“I’m a real concrete thinker, and the process of visioning was a difficult one for me. I must admit though, it really helped build the context for the mission, goals, and objectives that we developed. Without the visioning process, I don’t think our goals and objectives would have had as much meaning. We also had lots of differing ideas about where we thought the agricultural education program should be going. This process helped us prioritize our ideas and set realistic goals considering the resources we had available to us. We actually were quite amazed that many of the goals we set required little financial resources and were adopted by those necessary to implement them.”



TOOL

SETTING A TARGET



WHAT IS A VISION?

A vision is a compelling image of the preferred future that sets out a group's or an organization's highest aspirations in clear, powerful, confident language. Business guru Peter Senge puts it this way in his book, *The Fifth Discipline*:

“A shared vision is not an idea. It is not even an important idea such as freedom. It is, rather, a force in people's hearts, a force of impressive power. It may be inspired by an idea, but once it goes further – if it is compelling enough to acquire the support of more than one person – then it is no longer an abstraction. It is palpable. People begin to see it as if it exists.”

A vision's importance lies in what it does – its power to motivate and align efforts – rather than in what it says. It is perfectly possible for a group or organization to go through a shallow “visioning exercise,” which results in eloquent language on a piece of paper that everyone subsequently ignores. It is equally possible for a group to be aligned around a powerful vision without ever writing it down.

Visions motivate high achievement, because when people are really committed to a vision, they will stretch themselves and their organizations to make it happen. Visions raise people's personal aspirations and provide a

focus for collective activity. They create a “big picture” of “where we are going” that makes day-to-day activity more meaningful. Within organizations, shared vision allows management to decentralize. People can be given more freedom to act independently and creatively when they have a clear sense of direction and know the importance of their “piece” in the realization of the vision.

To be a force in people's hearts, a vision must:

- *Be legitimate*
- *Be shared*
- *Express people's highest aspirations for what they want to create*
- *Stretch beyond the limits of current realities*
- *Conceivably be achievable within a specific time frame*

THE NATIONAL VISION FOR AGRICULTURAL EDUCATION

“Agricultural education envisions a world where all people value and understand the vital role of agriculture, food, fiber, and natural resources in advancing personal and global well-being.”

CREATE A VISION?

There are many exercises you can use with your group to help create your vision of the preferred future of agricultural education in your community. Your planning team will want to invite broad representation from your community to participate in your visioning activities.

This section contains exercises that your organization can use to create its vision of the preferred future of agricultural education.

Additional exercises are available from the *Reinventing Agricultural Education for the Year 2020 Project*.



You can use these exercises in many ways. For example, if all your participants are local, you can assemble a visioning group to meet every day at lunch for a week, doing one exercise per day and rotating the responsibility for hosting and facilitating the lunches. Or you can organize a full scale workshop devoted to visioning, and go through the exercises all at once.

You will need a core group of two or three people who can continue to work to create a formal vision statement after the participatory visioning exercises have been



completed. Large groups can generate ideas for a vision, but only a talented individual or group of two or three people, who work well with each other, can integrate these ideas into a coherent, poetic and powerful statement. For this task, you need your best writers. They must also be people you can count on to faithfully express the ideas and priorities of the larger group and not impose their personal agenda on the vision.

A vision workshop will require at least one large room in which the whole group can meet. If you have a room large enough so that working groups can stake claims around the room, then everyone can be together. If a sufficiently large room is not available, you will need breakout rooms. The advantage to a larger room is the sense of camaraderie and cohesion; the bustle that neighboring discussion engenders. When everyone is working together, instructions can be given and questions answered to everyone at once. But if having everyone together will be too crowded and make the noise level too high, it is better to use smaller breakout rooms that offer the advantages of privacy and insulation from distraction.

The instructions for individual exercises identify the specific supplies and materials you will need. In general, you will want to have a flip chart pad and water-color magic markers for each small group of 6-12 people, and you will want other supplies such as pads and pencils, 3x5 cards, colored dots and masking tape.

If possible, coffee, tea, fruit juices and soda should be supplied throughout the day (this is thirsty work), and if you can supply food for participants, it will cut down the time needed for a lunch break.

To help participants get geared up for the work to be done, you should make the relevant materials from this handbook available to them two weeks before your workshop. It is critical for workshop success that people feel relaxed, comfortable and informal. Visioning works best when people feel free to shed their official roles and positions and “be themselves.” Make sure that invitations stress casual clothes. Arrange your room, or rooms, so that groups work in circles and so people can move chairs and tables around if they feel like it.



TOOL

EXERCISE MATRIX

Warm-Up Exercise Matrix

Exercises	Time (min.)	Objective
* What Agriculture Education Means to Me	30	Define key values; meet one another; practice listening actively
Changes in Agricultural Education, Past and Future	45	Appreciate extent, speed of change; begin to build a mental timeline of change; practice brainstorming
Trends and Emerging Developments Shaping Food Systems	45	Appreciate external forces and key trends affecting agricultural education

Imagination-Stretching Exercise Matrix

Exercises	Time (min.)	Objective
* Removing the Constraints on Visionary Thinking	15	Break “out of the box”; imagine highly positive differences from the present
Scenario Exercise 1	45	Imagine highly divergent future situations; identify the most positive elements in each of them

Visioning Exercise Matrix

Exercises	Time (min.)	Objective
Letters to a Grandchild	45	Explore heartfelt personal aspirations in relation to agricultural education
* Personal Vision Development	60	Express personal views of characteristics that would make agricultural education the best it can be
Small Group Vision Development	90 or more	Create newspaper front pages describing the best possible news about 2020

* These sample exercises are included. Additional exercises and more information about the Reinventing Agricultural Education 2020 Project are available from the National Council for Agricultural Education.



Exercise Instructions



FACILITATOR RESOURCE SHEET gives facilitators basic information on the objective of the exercise, its time requirements, the number of people or group size appropriate for the exercise, the setup, material requirements, potential problems facilitators may encounter and options for customizing.



EXERCISE SUMMARY explains how the exercise is done. Facilitators can follow these instructions closely or even read them out loud, in guiding their groups. All participants should also have these exercise summaries to make it easy for them to understand how the exercises are done.



RECORDER CAPTURE SHEET contains directions for the recorder and a structured space in which to take notes. For exercises that have a capture sheet, facilitators will need to make sure that their groups have picked recorders to take notes on the conversation. The capture sheets ensure that good ideas generated by participants are recorded and saved. They are a convenient way to gather ideas from many simultaneous small group discussions and “see what they add up to” after the workshop is over.



TOOL

WHAT AGRICULTURAL EDUCATION MEANS TO ME

FACILITATOR RESOURCE SHEET

OBJECTIVE: To help participants define their key values and learn to listen actively and neutrally.

TIME REQUIREMENTS: 30 minutes

NUMBER OF PEOPLE: Two per group; participants work in pairs during this exercise.

MATERIAL REQUIREMENTS: Each participant should have a pad of paper and a pencil or pen.

SETUP: Split the participants up into pairs; ask them to rearrange their seats, if possible, so they can focus on what their partners are saying. Encourage them to take notes while listening to their partners and remind them that “notes” can be either words or pictures – evocative doodles, cartoons and sketches can help the listener visualize the other person’s key values.

POTENTIAL PROBLEMS: People may get carried away talking and listening. This exercise runs the risk of running over time. Ask each person to monitor when it is their turn to talk and ask their partner for time checks. This is not meant to rush people, but merely to indicate consideration for sharing time equally.

OPTION: The facilitator can take an additional 15 minutes to lead a report-out. Ask people to share the things they heard that were most moving and inspiring. Have a recorder write these comments on the Recorder Capture Sheet for later review.



TOOL

WHAT AGRICULTURAL EDUCATION MEANS TO ME

EXERCISE SUMMARY

ACTIVE LISTENING

INSTRUCTIONS: Introduce yourself to someone you have not yet talked to at length; that person will be your partner. Your task for this exercise is to explain as clearly as possible what agricultural education means to you personally – what you most value about the field, what attracted you to it, what you feel its highest purpose is. Each of you should spend at least five minutes actively listening to the other; you have 15 minutes total.

ACTIVE LISTENING MEANS:

- Listen as an **ALLY**: Listen to **UNDERSTAND**, not to evaluate; listen positively, not as an adversary.
- **RESPOND** to your partner: Nod; when you agree with something, say so; verbally let your partner know that you're still following the verbal track.
- **TAKE NOTES**: It legitimatizes what the speaker is saying, it helps you remember, it allows you to highlight or question for clarification quickly.
- Ask **QUESTIONS**: Don't be afraid to ask "dumb" questions – you may get unexpected answers; give your partner every opportunity to explain in detail.
- Ask **OPEN-ENDED** questions: Could you elaborate on that last part?
- **REPEAT** the message occasionally: Okay, what I think I hear you saying is. . . Is that right?
- Be **POSITIVE**; **ENCOURAGE** the speaker: That's an interesting point; please explain further. . .
- Use **BODY LANGUAGE**: Relax, sit back and keep your arms and hands open; **SMILE**.

TAKE THIRTY MINUTES



WORKSHEET

WHAT AGRICULTURAL EDUCATION MEANS TO ME

RECORDER CAPTURE SHEET

RECORDERS: This exercise involves working in pairs. At the end of that process, you have the option of sharing with each other the things you heard that were most moving and inspirational. If this group sharing is done, use the sheet to record the things people say.

Things That Struck Participants as the Most Moving and Inspiring:



TOOL

REMOVING CONSTRAINTS ON VISIONARY THINKING

FACILITATOR RESOURCE SHEET

OBJECTIVE: To help participants envision positive differences between the present and the future, and get past “yes, but...” thinking; it also hones team process and brainstorming skills.

TIME REQUIREMENTS: 15 minutes

NUMBER OF PEOPLE: 6-12 people; the workshop breaks up into small discussion groups.

MATERIAL REQUIREMENTS: At least one easel, flipchart pad, three or four different colored magic markers per small group, a supply of colored dots and masking tape.

SETUP: Split people into working groups, if they are not already, and ask each group to choose a recorder. Groups should quickly pick one exercise and then attempt to generate as fast and as possible: brainstorming rules apply.

POTENTIAL PROBLEMS: Groups may get bogged down choosing which of the listed exercises to attempt. If time is critical, assign an exercise to each group, or assign an exercise per table, and let participants divide themselves into working groups by choosing the table and exercise they prefer. Also, many of these exercises push thinking past logical extremes into the realms of the absurd. Encourage the outrageous idea whenever possible: an idea that has broken the bonds of convention, which is the point of this exercise.



TOOL

REMOVING CONSTRAINTS ON VISIONARY THINKING

EXERCISE SUMMARY

Before developing a vision, it is important to break free of conventional assumptions and imagine new possibilities. This often requires practice in removing current constraints to our thinking. Below are four such exercises. Choose one and brainstorm to generate a list of the changes and impacts possible. Do not worry if some of your ideas sound absurd. Do WOT (Way Out There), not NOFE (Not Out Far Enough).

1. ASSUMPTION REVERSAL

Start with key assumptions that underlie the existing food system, e.g., “Food has to be grown in fields of soil.” Reverse the assumption and explore where it leads, e.g., “Food is grown much more intensively in greenhouses.”

2. CONSTRAINT REMOVAL

What is keeping the agricultural education system from being all that it could be? Remove those constraints and explore where the field might go.

3. BEST OF ALL WORLDS

If the agricultural education system were perfect, what would it look like?

4. BLANK SHEET

Assume that you are designing agricultural education from scratch. You have a blank sheet and all the money you need. What would you include in your design?

In the last three minutes of the exercise, give each participant two colored dots and ask them to “vote with their dots” for “interesting ideas worth further consideration.” Have someone in the group use the **RECORDER CAPTURE SHEET** to write down the ideas that receive the most votes.

TAKE FIFTEEN MINUTES



WORKSHEET

REMOVING CONSTRAINTS ON VISIONARY THINKING

RECORDER CAPTURE SHEET

RECORDERS: At the end of the exercise, participants will use colored dots to vote for especially interesting ideas that are worth further consideration. Use this sheet to record the ideas that receive the most dots.

Ideas Worth Further Consideration:



TOOL

PERSONAL VISION DEVELOPMENT

FACILITATOR RESOURCE SHEET

OBJECTIVE: To allow participants time to articulate and express the characteristics that make agricultural education the best it could be from their perspective.

TIME REQUIREMENTS: 60 minutes

NUMBER OF PEOPLE: Individuals; for this exercise, participants work on their own, focusing on their own hopes and dreams for agricultural education.

MATERIAL REQUIREMENTS: Each participant will need a sheet of newsprint and several colors of magic markers.

SETUP: Tell participants to find comfortable seats; a comfortable corner of the floor; a place to lie down, close their eyes and visualize or whatever environment they need to let their imaginations run wild. Reinforce that they should express their idea of the best that agricultural education can be: a “plausible ideal.” Briefly remind them of the emerging trends, the array of alternative futures possible and the ideas they generated in removing constraints on their thinking. Explain that appropriate behavior in this exercise is “out far enough”; inappropriate behavior is “not out far enough.” Encourage people to draw as well as write. After participants have worked on their own for 30 to 40 minutes, you can then lead people to explain their pictures to each other.

POTENTIAL PROBLEMS: Educators are very verbal. Many still express themselves in terms of lists, organizational charts or other collections of words. Strongly urge participants to draw images to express some of their thoughts. Tell them that using images can tap into parts of their creativity and mental functioning that they seldom use. It does not matter at all what they draw.



TOOL

PERSONAL VISION DEVELOPMENT

EXERCISE SUMMARY

BEGIN VISUALIZING: What images best sum up your personal vision for the preferred future of agricultural education? How would you draw the relationship among people involved in your ideal system? Be abstract or representational as the mood strikes. And remember, in this workshop, **EVERYBODY** can draw! We can all draw circles, arrows, triangles, boxes, stick figures, sunshine, doors, etc. Use what you can to express your ideals graphically.

After you have drawn something, then resort to words to clarify and add details to your ideal system. Remember, you are trying to convey your goals, your dreams and what you would most like agricultural education to be and to achieve.

You might begin by asking yourself the following questions. In your vision for the future of agricultural education:

- What are the three most critical values embodied by this visionary system?
- What is the primary goal of agricultural education in your vision?
- Who are the primary beneficiaries of this visionary system?
- How do things improve for each of these beneficiaries?

After you have worked on your own for 30 to 40 minutes, you can share your results explaining your pictures to each other.

TAKE SIXTY MINUTES



WORKSHEET

YOUR PLANNING TEAM'S AGRICULTURAL EDUCATION VISION STATEMENT

Using the results of your visioning exercises, describe your team's vision of the agricultural education program.

REMEMBER: *A vision is a compelling image of the preferred future that sets out a group or organization's highest aspirations in clear, powerful, confident language.*

Write your vision statement below.

DEVELOP A MISSION STATEMENT

A mission statement has a more narrow focus, written specifically for the sector of the community you are wanting to impact. Usually this is the school-based agricultural education program.

THE NATIONAL MISSION FOR AGRICULTURAL EDUCATION

“Prepare students for successful careers and a lifetime of informed choices in the global agriculture and natural resources systems.”

Your mission statement will evolve out of the review and compilation of the results of the visioning exercises you have done. If the intended impact of this activity is to create change in schools in the community, the school district’s strategic plan should be consulted to see if the concepts in the district’s mission statement have bearing here. Have the writing group develop a mission statement that reflects

a specific interpretation of the action to be taken as a result of the vision you have set. The vision and mission statements should be reviewed and agreed to by the planning team.

The philosophy governing program planning, curriculum development and instruction in agricultural education should reflect the local community’s educational philosophy. For all essential purposes, the “community” is the local school district. However, in this ever-changing world with its greater capacity for communications, the word “community” has taken on new meaning. State, national and international spheres of influence are all a part of our community because each person is touched more and more each day by these former “outside” forces and realities. It is only logical then that a statement of mission reflect not only local needs, but also those of our broader “community.” To prepare students for the “world” in which they will function, we must have them share a broad philosophy. The statement of mission should reflect current professional developments in agriculture, local values and provide for future needs.



WORKSHEET

YOUR PLANNING TEAM'S AGRICULTURAL EDUCATION MISSION STATEMENT

From the results of your visioning activities and the development of your team's vision statement, you should also be able to develop a mission statement.

REMEMBER: *“A mission statement reflects your vision but has a more narrow focus, written specifically for the sector of the community you want to impact.”*

Write your mission statement below.

SET GOALS AND OBJECTIVES

To operationalize your vision and mission, goals and objectives should be developed that are specific to the program's needs. These goals and objectives should reflect the needs identified through the needs assessment conducted in the Collecting Information section. However, be sure the goals and objectives you set for the program are attainable. Setting a goal to offer a comprehensive farm power program in a district with a small basic mechanics shop, and

no additional resources to support the program, is unrealistic. You may not be able to meet all the needs identified in the needs assessment. It is important to meet those needs that you can, in order to keep your program viable.

Whether reviewing and revising existing goals or establishing new ones, you should assess your goals according to the criteria listed below. These criteria help ensure that your selected goals will be effective in bringing about the change you desire.

GOALS SHOULD BE . . .

- MEANINGFUL
- REALISTIC
- COMPLEMENTARY
- GIVEN CLEAR PRIORITIES
- AGREED UPON BY ALL STAKEHOLDERS
- MEASURABLE

1. A goal is *meaningful*, if its meaning is clear to all stakeholders and it produces something of educational value.
2. A goal is *realistic*, if you can feasibly achieve it over time.
3. Goals are *complementary*, if they contribute to your overall vision. Any goal that conflicts with others should be reexamined.
4. Because limited resources may prevent you from pursuing all goals simultaneously or with equal attention, you should set *clear priorities* among your goals.
5. *All persons who have a stake in the education process, or who will be responsible for helping to achieve the goals, should be familiar with and support them.*
6. A goal is *measurable*, if it specifies the level of performance that is expected or a numerical target.



TOOL

SETTING GOALS AND OBJECTIVES

These sample goals and objectives presented here are not to be considered as a boiler plate for you. Use them as the beginning point of a discussion for developing your own. This can be a very time consuming process. Be patient; it is particularly important that you take the time necessary to build consensus and buy-in from those who will ultimately implement the vision, mission, goals and objective for the program.

SAMPLE

NATIONAL REINVENTING AGRICULTURAL EDUCATION FOR THE YEAR 2020 GOALS AND OBJECTIVES

GOAL #1

- All students have access to seamless, lifelong instruction in agriculture and natural resources through a wide variety of delivery methods and educational settings.

OBJECTIVES

- Career education prepares students for successful employment in the global agriculture and natural resources systems.
- All students in urban, suburban and rural schools have access to high-quality programs of instruction in agriculture and natural resources.
- Student enrollments in agriculture and natural resources represent the diversity of the school-ages population.
- Every student in agriculture and natural resources education has opportunities for experiential learning and leadership development.
- Instructional methods and materials for agriculture and natural resources education provide for diverse learning styles.
- Collaboration among educational systems ensures students benefit from educational effectiveness and efficiency.

SAMPLE

DISTRICT AGRICULTURAL LITERACY PROGRAM GOALS AND OBJECTIVES

GOAL #2

- Educate all students in the district about agriculture to assist them in becoming informed citizens and consumers.

OBJECTIVES

- Integrate agriculture across the curriculum using it as a method of applying theoretical principles currently taught out of context.
- Field trips to agricultural businesses are included as part of the off campus educational program for all students.
- Students will celebrate Farm City Week throughout the district with school-based activities and community-sponsored events.
- Over the next five years, all teachers will attend the Ag in the Classroom training during the summer.
- Teachers will collaborate across grade levels to incorporate agricultural education as part of the district's peer teaching and learning program.



WORKSHEET

ESTABLISHING GOALS

This worksheet will help you establish a set of education goals for the vision and mission you have set. If you are working as part of a team, your entire team should plan to complete this worksheet together in order to reach consensus on your goals.

1. Display or distribute copies of the following five criteria: “Goals should be meaningful, realistic, complementary, given clear priorities, agreed upon by all stakeholders and measurable.”
2. As a **LARGE GROUP**, review the examples of goals provided. Goals may be written in broad or specific terms, and may focus on all students, a subset of students or the program as a whole.
3. **INDIVIDUALLY**, think about what you believe are the most important educational goals for your agricultural education program. Your goals should describe desired student or program outcomes. Record your ideas in the space below.

4. Break up into **SMALL GROUPS** of three to five persons to share the goals you identified in Activity 3. Ask yourselves the following question: Which of these goals do we all value for our students? Record areas of agreement and disagreement below. If you have a long list of agreed-upon goals, check off the 10 goals that your small group considers most important, and designate a spokesperson who will describe these goals to the large group.

5. Everyone returns to the **LARGE GROUP**. The designated spokesperson from each small group shares his or her group's goals (including areas of agreement and disagreement) with the large group. Then the large group identifies and discusses themes that are common among all the groups, and the facilitator records them and lists the different goal statements that fall under each theme.

6. Break up into **SMALL GROUPS** of three to five persons (mixing up the membership of previous groups). The facilitator then assigns one or more thematic areas to each group, so that all themes are assigned. In your small group, review your theme and the related goal ideas and then draft one or more goal statements to summarize your thematic area. Designate a spokesperson for your group.

Your group's theme(s):

Summary goal statement(s):

7. Everyone returns to the **LARGE GROUP**. The designated spokesperson from each small group shares his or her group's goal statements with the large group. The facilitator then records the goal statements and displays them where everyone can see them.

8. As a **LARGE GROUP**, team members discuss any differences of opinions that may have come up over goal selection or wording and attempt to agree on a common set of goals.

9. In the space provided below, write down the final agreed-upon goal statement(s) for your **SMALL GROUP'S** thematic area. The facilitator should record all of final goal statements so they are available for future use.

Final goal statement(s) for your thematic area:



WORKSHEET

SETTING PRIORITIES AMONG YOUR GOALS

After completing the *Establishing Goals Worksheet*, you are ready to assess your goals, and then set priorities among the remaining ones. Limited resources may prevent you from pursuing all goals simultaneously or with equal effort, or may require you to phase in program or curriculum change efforts. Moreover, starting small may be a better strategy for success than tackling all of your goals at once. Delineating clear goal priorities at the outset will help your team organize its improvement efforts.

1. Display or distribute copies of the final goal statements that your team agreed upon when completing the *Establishing Goals Worksheet*. As a large group, review the goal statements by discussing the questions listed below. Flag any goal statements that do not meet the following criteria:

Is the *meaning* of the goal clear? Will the goal yield something of educational value?

Can the goals be *realistically* achieved over time?

Do the goals *contribute* to an overall vision? Does any goal conflict with the others?

Have the goals been *agreed upon* by most team members? By the larger education community? If not, what steps should be taken to obtain broad consensus?

Think for a moment about budget, staffing or political constraints at your site. Should any goals be more or less of a *priority* than others based on these constraints?

Can you foresee how you might measure progress toward *achieving* the goals?

2. As a large group, reexamine any goals that you flagged in Step 1. You may choose either to eliminate or revise a problematic goal. If you decide to revise any of the goals, record the revised goal statements in the space below.

3. Goals that meet the six criteria described in this section should receive higher priority than those that do not. As a large group, discuss which goals should receive top priority, beginning with priority number one.

4. Record your final goal statements in priority order below. (It will help you focus your efforts, if you have no more than 10 priority goals.)

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.



WORKSHEET

IDENTIFYING SPECIFIC OBJECTIVES

Activities 1-4 in this worksheet help you identify specific objectives for the goals you established. Complete one worksheet for each goal.

1. Divide your team into small groups of three to five persons, and assign one goal from Worksheet *Setting Priorities Among Your Goals* to each group. This will make the activity more focused and less time consuming. Depending on the number of people and goals you have, the small groups may need more than one goal to work on.
2. If you have several goals, work on them in order of their priority. Write down the goal you are currently working on in the space provided.
3. Discuss the specific student objectives or program objectives implied by your goal, and then record them in the space provided.
4. Repeat Activities 2 and 3 for each goal you were assigned, using separate worksheets.

GOAL

OBJECTIVES (Be as specific as possible.)

1.

2.

3.

4.

5.

DESIGNING A COMPREHENSIVE PROGRAM

Typically, most people would want to start developing curriculum and focusing on classroom strategies as the next step. It's not that time yet! There are many other program components that need to be decided and put into place before or at the same time as curriculum decisions are made.



“As a math teacher on the planning team, I wanted to start talking about curriculum as soon as we had set the program’s goals and objectives. I had no idea that there were so many other factors to consider, particularly when it came to the design of the high school agricultural education program. When we conducted some focus groups during our collecting information phase, we discovered that students assumed they couldn’t take any agricultural education courses if they intended to go to college. We had to look hard at our guidance and counseling process, how we presented the agricultural education major in our student planning handbook, how courses were scheduled, and credit options. We needed to find a way to open the options up for college-bound students that were interested in agricultural education. We didn’t have to make too many curriculum changes; most of the problems seemed to revolve around the processes and relationships we had developed over the years within the school. I’ve heard students in my classes talking about the changes we’ve made!”

IDENTIFYING PROGRAM DELIVERY FACTORS

The purpose of this step is to determine *how* you will offer the agricultural education program. Take the time now to also consider the alternatives in delivering the program. This step in the process requires the planning committee to review factors identified that affect how the agricultural education program is delivered.

There are many ways to deliver the agricultural education program. The following section may initiate some new ideas or confirm

some you have already discussed. You may choose to take ideas from several models to blend into your program design. You may want to copy those parts of the section that describes the model you are considering implementing as a resource handout for the planning committee. The resources section also contains names and contact information for experts who are available to assist you. Don't hesitate to contact them for help.



FACTORS THAT AFFECT HOW THE AGRICULTURAL EDUCATION PROGRAM IS DELIVERED. . .

- Program setting, i.e., comprehensive, career-tech, private, etc.
- School scheduling
- Graduation requirements
- Facilities usage and availability
- Number of teachers
- Participation in education reform initiatives, i.e., school-to-work, tech prep, high schools that work, etc.
- Integration of academics and agricultural education
- Youth and adult offerings
- Articulation with postsecondary institutions
- Day and evening programs



WORKSHEET

IDENTIFYING PROGRAM DELIVERY FACTORS

Have your planning team identify the program delivery factors that affect the decisions you need to make regarding the design of your agricultural education program. The worksheet suggests those factors that may be common to most situations. You may have additional factors that you will need to identify that may apply enhancements or constraints to your planning.

As a team, identify below for each of the categories suggested those factors that impact the type of program you will be able to design and implement. If you are designing a program that will be located at multiple sites (i.e., high school and elementary school) complete a *Program Delivery Factors Worksheet* for each site.

Site:

Program setting:

Level of administrative support:

School schedule:

Graduation requirements:

Facilities available for use by the program:

Teachers/Staff available to implement the program:

Financial resources available to implement the program:

Current initiatives being implemented that impact the agricultural education program:

Articulation with other institutions:

Current agricultural education activities in place:

Other:

Use this worksheet to help you complete the *Program Delivery Model Worksheet*.

SELECTING A DELIVERY STRATEGY

Delivery strategies in agricultural education are driven by the expected student outcomes and purposes of the program delivery. These may include students becoming literate in agriculture, pursuing agriculture as a career and seeking employment upon completion, enrolling in postsecondary education in agriculture or a related area or some variation of these. The delivery strategies that are used can assist a student in obtaining these goals more easily, quickly and successfully than in a traditional delivery strategy.

INTEGRATION OF ACADEMIC AND AGRICULTURAL EDUCATION

There are a variety of methods of integrating academic and agricultural education. Each of these methods is dependent upon the resources, commitment and expertise available at the local level. We have identified seven methods for you to consider:

1. Agricultural education teachers introduce academic competencies into agriculture courses. This is probably the simplest method, because it can be done without much disruption or expense. It has the potential for increasing the academic capabilities of agriculture students as technical requirements increase. However, only those students enrolled in agricultural education benefit.
2. Academic teachers work with agriculture teachers to introduce academic competencies into agriculture courses. The strength of this method is the collaboration between the agriculture teachers and the academic teachers. It still, however, lacks broad impact.
3. Teachers modify the academic curriculum to make it more agriculturally relevant. This method gives academic subjects a more applied context and could affect all students.

4. Teachers modify both the academic and agricultural education curricula to incorporate strengths of each other's curriculum. Using this method, all teachers cooperate to modify and coordinate their courses. Students are able to have the prerequisite skills for all courses and are able to practice skills in both academic and agricultural education courses. This method affects all students.
5. SENIOR PROJECTS: Seniors replace electives with projects which cause the students to apply the knowledge and skills developed throughout their high school careers. Credit is given, and the project must be completed for graduation. Teachers may incorporate research, experimentation and problem solving into their courses to help prepare students for their senior projects. The curriculum is structured around the senior project, rather than around courses and course sequences.
6. ACADEMY OR SCHOOLS-WITHIN-SCHOOLS: Typically, four teachers collaborate in an academy: one in math, one in English, one in science and one in agricultural education; that is the core of the academy. Each class of students takes all four subjects from these teachers, and they stay with the same teachers for two or three years. Other subjects – social studies, history, foreign languages and other

electives – are taken in the regular high school outside the academy structure. One essential element of the Academy Method, then, is that a group of teachers works with one group of students and with each other consistently over a period of years. The opportunities for coordinating their courses (vertical alignment) are substantial.

7. OCCUPATIONAL CLUSTERS AND CAREER PATHS: This method maintains conventional academic and career departments with added requirements that students and teachers be organized in "career paths" or occupational clusters. Conventional departments are replaced with occupational clusters. Since all academic teachers are preparing students within a single broad occupational area like agriculture, the incentives to bend academic instruction toward agriculture are strong, and the resources to do so – especially the agriculture teacher(s) with whom examples and exercises can be developed – are right at hand.

One of the best strategies for implementing an agricultural literacy program in a school that does not have the resources of an existing agricultural education program is through the integration of agriculture into the existing academic curriculum. This can be done by providing teachers with professional development opportunities with agricultural professionals and through programs offered by the non-formal sector. Many of these programs

have developed curriculum materials that can replace or augment existing curriculum and are designed to be used K-12.



In some cases, teachers may want to use agricultural principles or examples to show how a theory is applied in real life situations. Agricultural professionals in your community can be helpful in identifying local resources available to teachers. These might include field trip sites, laboratory resources, guest speakers, materials for specific hands on activities or just some great ideas. If your school does not have an agricultural education program, you may want to contact the agriculture teacher in a neighboring district to get some assistance. Integration of agriculture into academic subjects can be done in all areas but is most commonly included in science, environmental education, mathematics and social studies. Revising academic courses, or developing new ones to teach concepts by using functional and applied strategies, enables students to see the relationship between course content and the future they envision for themselves. The possibilities are limitless; it all depends on your creativity.

Integration of academics and agricultural education can also occur in concert with the implementation of programs that offer specialized courses in agricultural education for the purpose of agricultural literacy or career

preparation. Increasing the academic rigor of agricultural education courses will only establish higher expectations. Revising courses to expand the emphasis on advancing the communication, mathematics and science competencies and the cognitive, intellectual and problem-solving skills of students will accelerate their achievement. Work with academic teachers to incorporate academic concepts taught in other course work where appropriate. In many instances, courses can be designed that will fulfill academic course work requirements for student graduation. Depending on the content of the courses, these may be one unit or two units of agriculture course work for one unit of graduation credit. When designing these courses, it is important to work closely with the academic teacher and/or curriculum specialist in your district to be sure students are achieving comparable standards.

Whatever method of integrating academic and agricultural education you choose to use, it is imperative that the district provide agriculture and academic teachers with staff development, materials and time to work together.





TOOL

MODELS OF INTEGRATING CAREER AND ACADEMIC EDUCATION

MODELS	CURRICULUM CHANGES	TEACHER CHANGES	STUDENTS TARGETED	INSTITUTIONAL CHANGES
1. Incorporating more academic content in vocational courses	Career courses include more academic content	Career teachers modify courses	Career students	None
2. Combining career and academic teachers to enhance academic content in career programs	Career programs include more academic content, in either career courses or related applied courses	Academic teachers cooperate with career teachers	Career students	None
3. Making academic courses more career relevant	Academic courses include more career content; sometimes new courses (e.g., applied academics) adopted	Academic teachers (usually) modify courses or adopt new ones	Potentially all students	None
4. Curricular alignment: horizontal and vertical	Both career and academic courses modified and coordinated across courses and/or over time	Career and academic teachers cooperate; numbers range from two to all	Potentially all students; actual targets vary	None necessary; curriculum teams may foster cooperation
5. Senior projects	Seniors replace electives with a project; earlier courses may change in preparation	None necessary; teachers may develop new courses or modify content to better prepare students	All students	None necessary
6. The Academy Model	Alignment among academy courses (English, math, science, career) may take place	Career and academic teachers may collaborate on both curriculum and students	Usually potential dropouts, sometimes students interested in specific occupational areas	School-within-a-school; block rostering; smaller classes; links to employers
7. Occupational clusters career paths and majors	Coherent sequences of courses created; alignment may take place among courses within clusters	Teachers belong to occupational clusters rather than (or in addition to) conventional departments; collaboration facilitated	All students clusters; enhancement of possible cluster activities	Creation of occupational career counseling

Source: *The Cunning Hand, the Cultured Mind: Models for Integrating Vocational and Academic Education*, W. N. Grubb, J. Plihal, G. Davis, J. Lum, and C. Morgaine, Berkeley: National Center for Research in Vocational Education, University of California at Berkeley, 1991.

SCHOOL-TO-CAREER

School-to-career is an approach to learning that links students, schools, workplaces and the community. Locally driven and community-based, it is an effort to reform education that combines high-level academic achievement with a graduated understanding of the world of work. A new way of preparing young people for their ultimate entry into the workplace, school-to-career also encourages schools at the secondary and postsecondary levels to develop school-to-career systems cooperatively – together with employers, unions, civic groups and other public and private sector organizations.

Every school-to-career system must contain three core elements, known as school-based learning, work-based learning and connecting activities. School-based learning is classroom instruction based on high academic and occupational skill standards. Work-based learning is work experience, structured training and mentoring at job sites. And last, connecting activities develop courses that integrate classroom and on-the-job instruction, match students with participating employers, train job-site mentors and build and maintain bridges between school and career. If you are at all familiar with the three components of agricultural education, this should sound familiar.





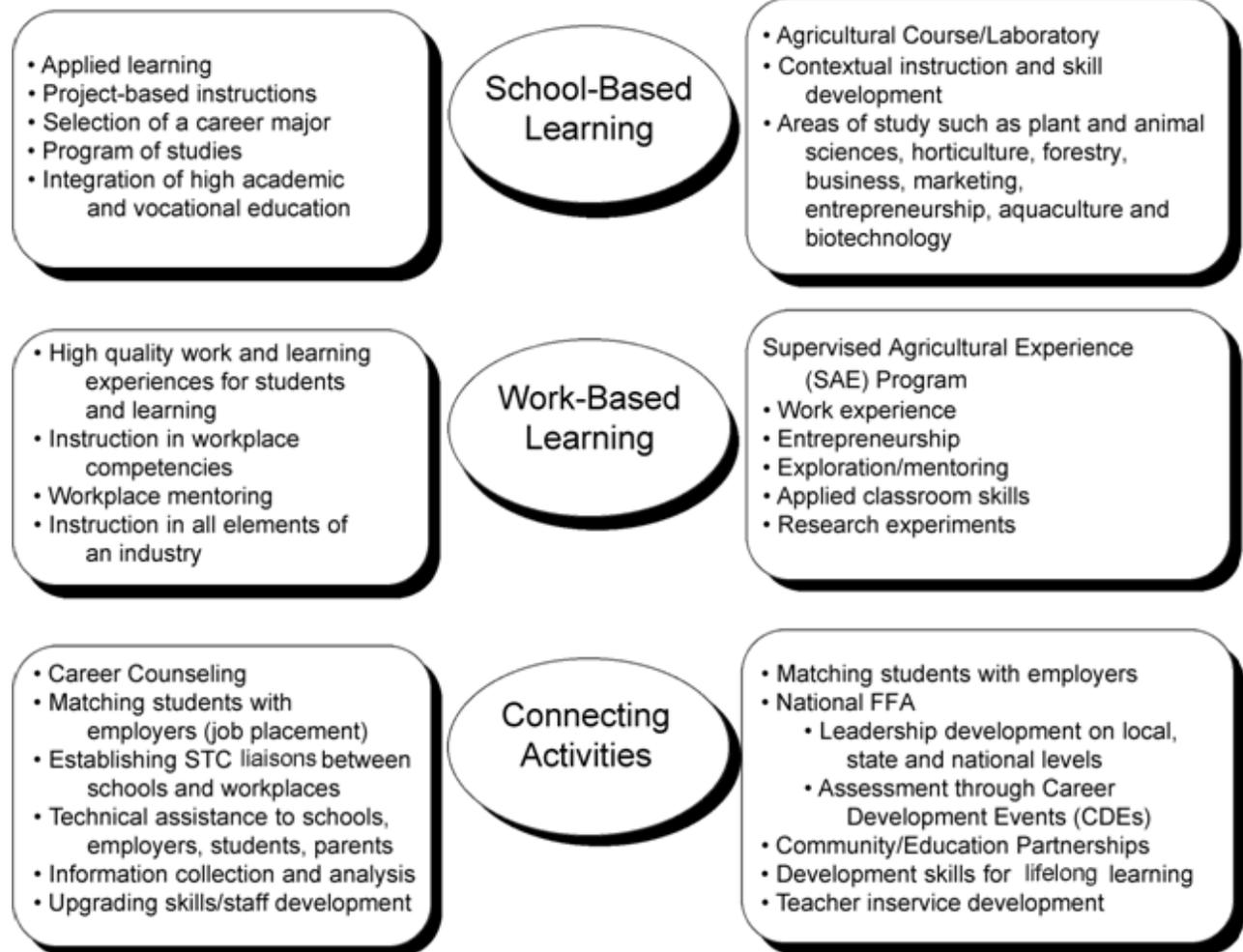
TOOL

SCHOOL-TO-CAREER AND AGRICULTURAL EDUCATION

The three components of agricultural education – classroom/laboratory instructions, SAE and FFA, mesh well with the three basics of school-to-career education – school based learning, work-based learning and connecting activities. Just as you must have all three components of agricultural education to have a successful program, you must have all three elements of school-to-career education to effectively reach students. The areas are not mutually exclusive; rather, they are interconnected.

School-To-Career has three basic parts to guide state planning:

The agricultural education program goals for School-to-Career



Fact: 18-20% of U.S. jobs are in careers related to agriculture.

Source: National FFA Organization, *Local Program Success for Agricultural Education Handbook*.

TECH PREP

Tech Prep education is a 4+2, 3+2 or a 2+2 planned sequence of study in a technical field beginning in the ninth, tenth or eleventh grade. The sequence extends through two years of postsecondary occupational education or an apprenticeship program of at least two years following secondary instruction, and culminates in an associate degree or certificate.

The expectations of Tech Prep include: an associate degree, or a 2-year certificate or transfer to a 4-year baccalaureate program; technical preparation in agriculture; competence in math, science and communication and ultimately, employment.



SEVEN ELEMENTS OF TECH PREP PROGRAMS. . .

- An articulation agreement between secondary and postsecondary consortium participants
- A 2+2 or 4+2 design with a common core of proficiency in math, science, communication and technology
- A specifically developed Tech Prep curriculum
- Joint inservice training of secondary and postsecondary teachers to effectively implement the Tech Prep curriculum
- Training of counselors to recruit students, ensure program completion and appropriate employment
- Equal access of special populations to the full range of Tech Prep programs
- Preparatory services such as recruitment, career and personal counseling and occupational assessment
- Tech Prep programs are developed in consultation with business, industry, labor unions and student institutions of higher education

In some cases, a school district or area career-technical school may not want to implement a complete Tech Prep program, but may want to have opportunities for students to easily transition from secondary to post-secondary education. This can be facilitated through simple course articulation agreements with either community colleges or four-year institutions. Generally, articulation agreements are made for a specific course to be accepted as fulfilling a comparable course found in the college's curriculum. This has advantages for both the student and the articulating institutions. It encourages the student to attend the articulating college, since units toward a degree will have already been fulfilled prior to entering. It acts as a great recruitment tool for the articulating college and can motivate a

student to take coursework in agriculture that they may have overlooked without this incentive.

Articulation agreements and procedures for students to obtain credit are best negotiated by the teacher and the head of the college department offering the comparable course. The teacher may want to place grade point average or prerequisite coursework criteria for enrollment to ensure students are well prepared. Agreements may include specific examination requirements and passing criteria. Students may also have to pay a fee to have their grade and credits recorded at the articulating college. Whatever the requirements are, be sure a letter of agreement is developed between the school district and the articulating college to be sure there are no misunderstandings.





TOOL

SAMPLE PROGRAM OF STUDY SCOPE AND SEQUENCE

	9th Grade	10th Grade	11th Grade	12th Grade	1st Semester	2nd Semester	3rd Semester	4th Semester
Math	Algebra (1)	Algebra II (1)	Modern Geometry (1)	Basic Geometry (1) Basic Geometry (1)	Math 100 Int. Algebra Math 103 College Algebra			
English	Eng. 9 (1) or CP Eng. 9 (1)	Eng. 10 (1) or CP Eng. 10 (1)	Eng. 11 (1) or CP Eng. 11 (1)	Eng. 12 (1) or CP Eng. 12 (1)	Eng. 101 Written Comm. Eng. 108 College Writing	MCM 110 Effective Speaking MCM 120 Interpersonal Communications		
Science	Physical Science (1)	CP Biology (1) Biology (1)	Env. Science (1)	Chemistry (1)	Bio. 101 General Biology		Chem. 101 General Chem. or Chem. 103 Fund. of Chem. and Bio. 111 Clinical Aspects of Microbiology	
Social Studies	American Cultures (1)	Cultural Studies (.5) World History (1)	American History (1)	S.S. Elective (1) Psychology, Sociology or Economics				S.S. Elective or Psy. 110 Into Psychology
Other	Wellness & Fitness (.5)	Wellness & Fitness (.5)	Wellness & Fitness (.5)	Wellness & Fitness (.5)		CS 110 Intro. to Comp-based Sys. or CS 115 Bus. Software & Tools		
Technical	Ag. Bio. Sci. (1) and/or Intro. to Ag. (1) and/or SAE (1)	Biotechnology of Plants & Animal Science (1) SAE (1)	Computer Appl. In Ag. Business (.5) and/or Applied Physics in Agriscience (.5) and/or Equine Science (.5) Small Animal Care & Mgmt. (.5) SAE (1)	CP Vet. Sci. (.5) Poultry & Livestock SAE (1)	VMT 115 Intro. to Animal Mgmt.	VMT 116 Anat. & Physio. of Domestic Animals VMT 231 Clinical Practices I VMT 210 Parasitology Summer VMT	VMT 208 Pharmacology VMT 214 Clinical Practices II	VMT 204 Animal Diseases & Nutrition VMT 215 Clinical Exp. VMT 212 Lab Tech. VMT 211 Lab Animal Sci. Summer Vet Internship



WORKSHEET

SELECTING DELIVERY STRATEGIES

1. Review the goals and objectives you set for the development of your agricultural education program. Do any of these goals indicate a need to implement a special strategy? If so, list those goals here.

Goal # _____

Goal # _____

Goal # _____

2. Based on the goals above, identify an implementation strategy that you would want to use. You may choose more than one. Be realistic about what you are capable of implementing successfully.

- Integration of academic and agricultural education
- School-to-Career
- Tech Prep
- Others _____

3. Briefly describe how your team would plan to design the strategy(s) you have selected for each of the goals.

Goal # _____

Goal # _____

Goal # _____

DELIVERY MODELS

The following sample delivery models are provided as examples of how programs could be organized and delivered at the local level. These models help conceptualize the organization of selected courses to meet local needs, but also allow for the greatest amount of flexibility in the program.

The most important aspect of the delivery model is the design of the model. The subject matter content may change from school to school, but the concepts of sequential courses and flexibility are present in all models. Each sample has the following components in common:

- **FACTORS:** These are the circumstances that will apply specific enhancements or constraints on the delivery mechanism you might choose to implement. They include the number of teachers qualified to teach agriculture, their specific expertise, the facilities available, the number of periods of instruction, the financial resources available, etc. All these factors should have been identified in the Collecting Information phase of the planning process. Use the Identify Program Delivery Worksheet to help you identify the factors of your situation.
- **PROGRAM GOALS:** These goals will determine the level of planning, commitment and involvement of the school and community required for successful implementation of the model. Keeping these goals in mind will help you identify the various supportive components you may need to include in your plan. These goals include both delivery (agricultural literacy, workforce development or career exploration) and implementation strategies (i.e., tech prep, school-to-career, integration, etc.) Use the goals and objectives you developed in the previous section to help you identify program goals.
- **ELEMENTARY SCHOOL:** A description of how the agricultural education program will be implemented at the elementary level.

- **MIDDLE SCHOOL:** A description of how the agricultural education program will be implemented at the middle school level.
- **HIGH SCHOOL:** A description of how the agricultural education program will be implemented at the high school level, including work-based learning through supervised agricultural experience and connecting activities through leadership development.
- **ADULT EDUCATION/CONTINUING EDUCATION:** A description of the agricultural education opportunities available to adults in the community. Many of these will be in the non-formal sector.
- **POSTSECONDARY EDUCATION:** A description of any relationships that have been implemented to assist students in making an easier transition from high school or employment to postsecondary education.
- **EMPLOYMENT:** Developing support systems that assist students in obtaining employment are an important component of a comprehensive agricultural education program.

SAMPLE DELIVERY MODELS

The models presented in this document are samples only. They may assist local educational planners in designing more appropriate models for meeting local school district and community needs, goals, and policies. It is suggested that curriculum planners carefully study the models in order to determine and eventually develop the best delivery model for agricultural education for

their local school district. Again, these are only samples of what an agricultural education program may look like.

Use the Delivery Model for Agricultural Education Worksheet to develop your own plan. This worksheet will help you build a conceptual framework for your program that you will develop into a complete plan in the Implementing a Plan section.



TOOL

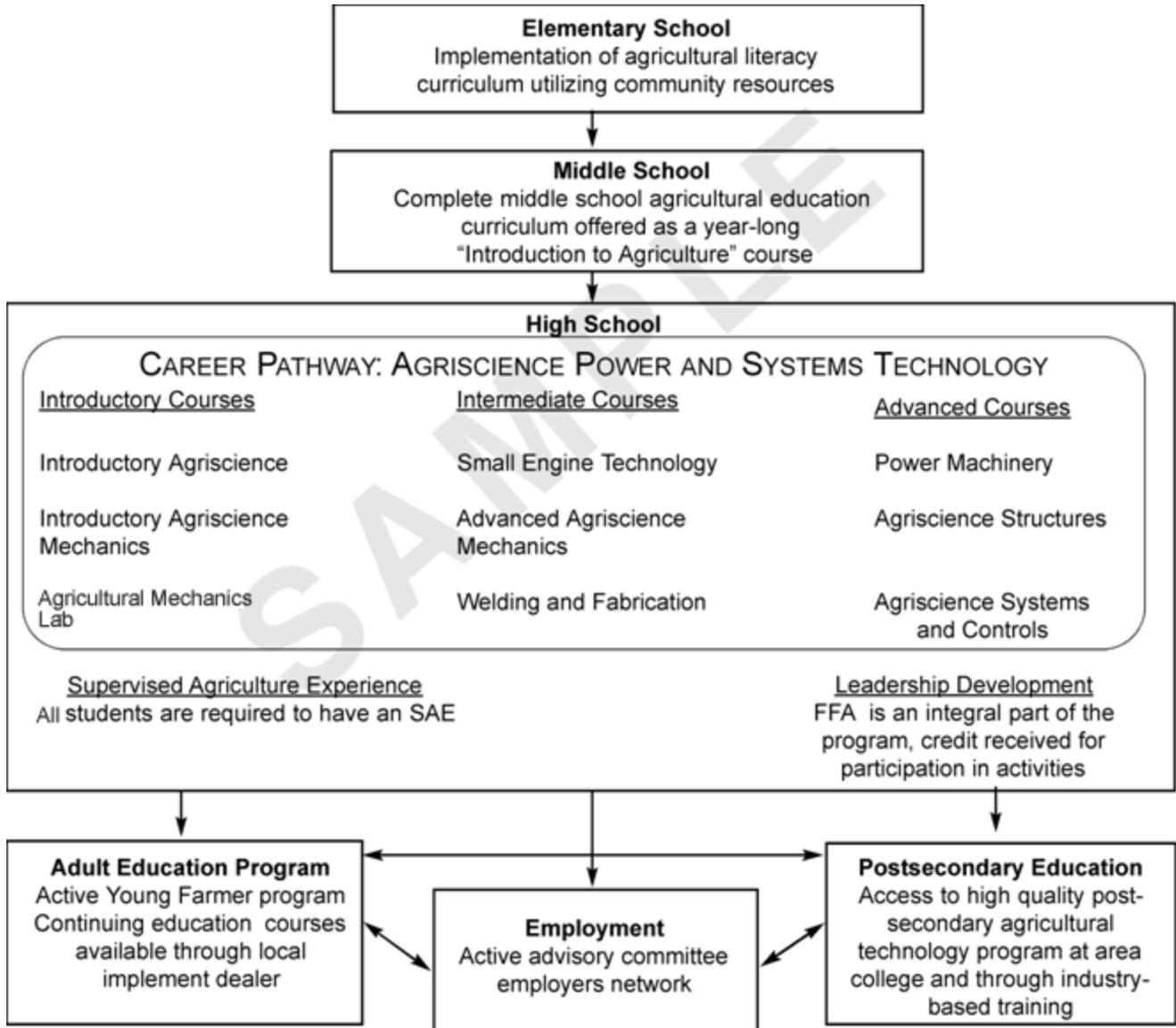
SAMPLE DELIVERY MODEL A

Factors:

One agriculture teacher
 Seven periods of instruction
 one classroom and one ag. mech. lab

Program Goals:

Workforce Development
 Agricultural Technology



SAMPLE A



TOOL

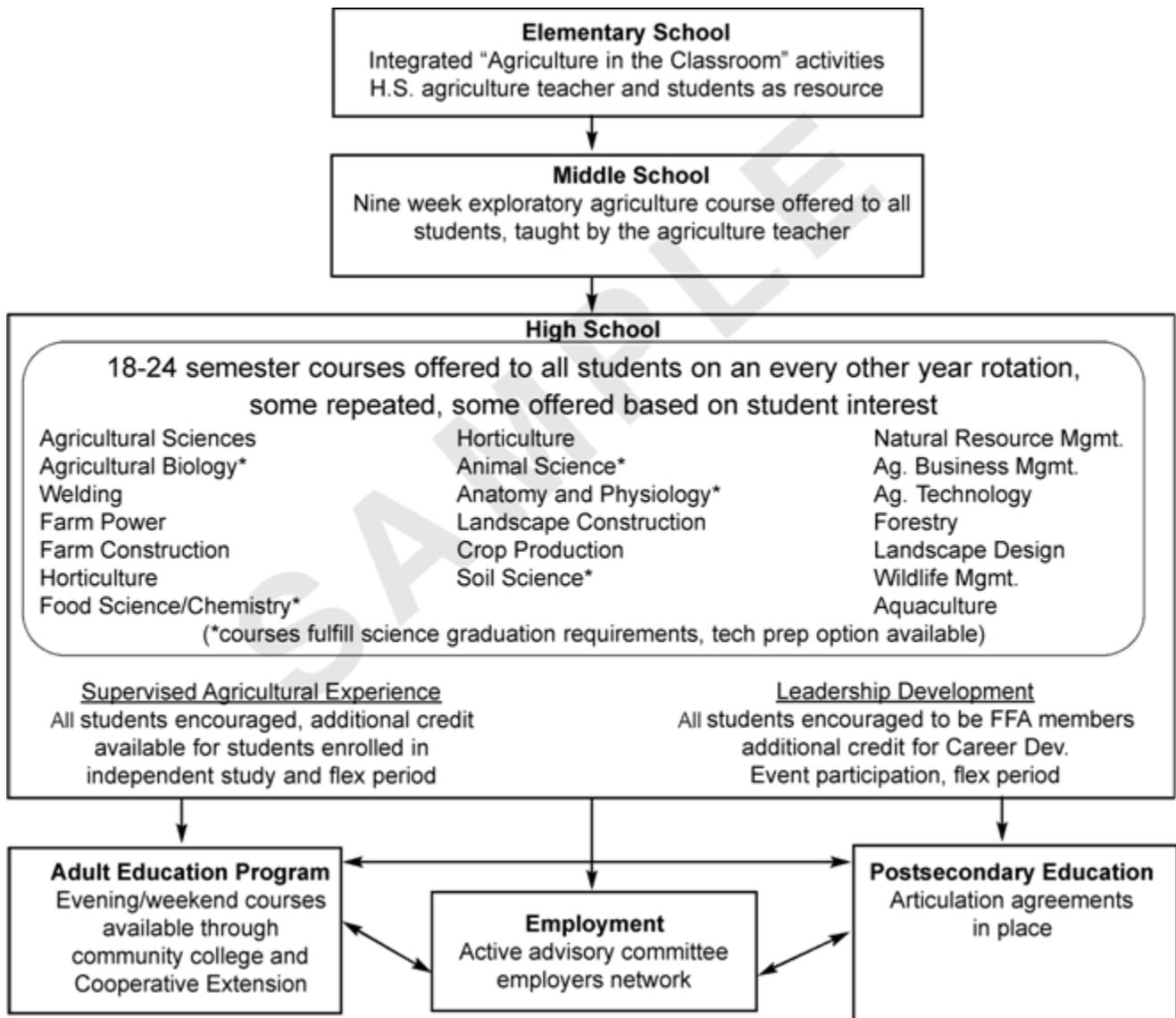
SAMPLE DELIVERY MODEL B

Factors:

Two agriculture teachers
 Seven periods of instruction
 one classroom and one ag. mech. lab
 Greenhouse, landscape, and natural resource area

Program Goals:

Agricultural Literacy
 Tech Prep



SAMPLE B



TOOL

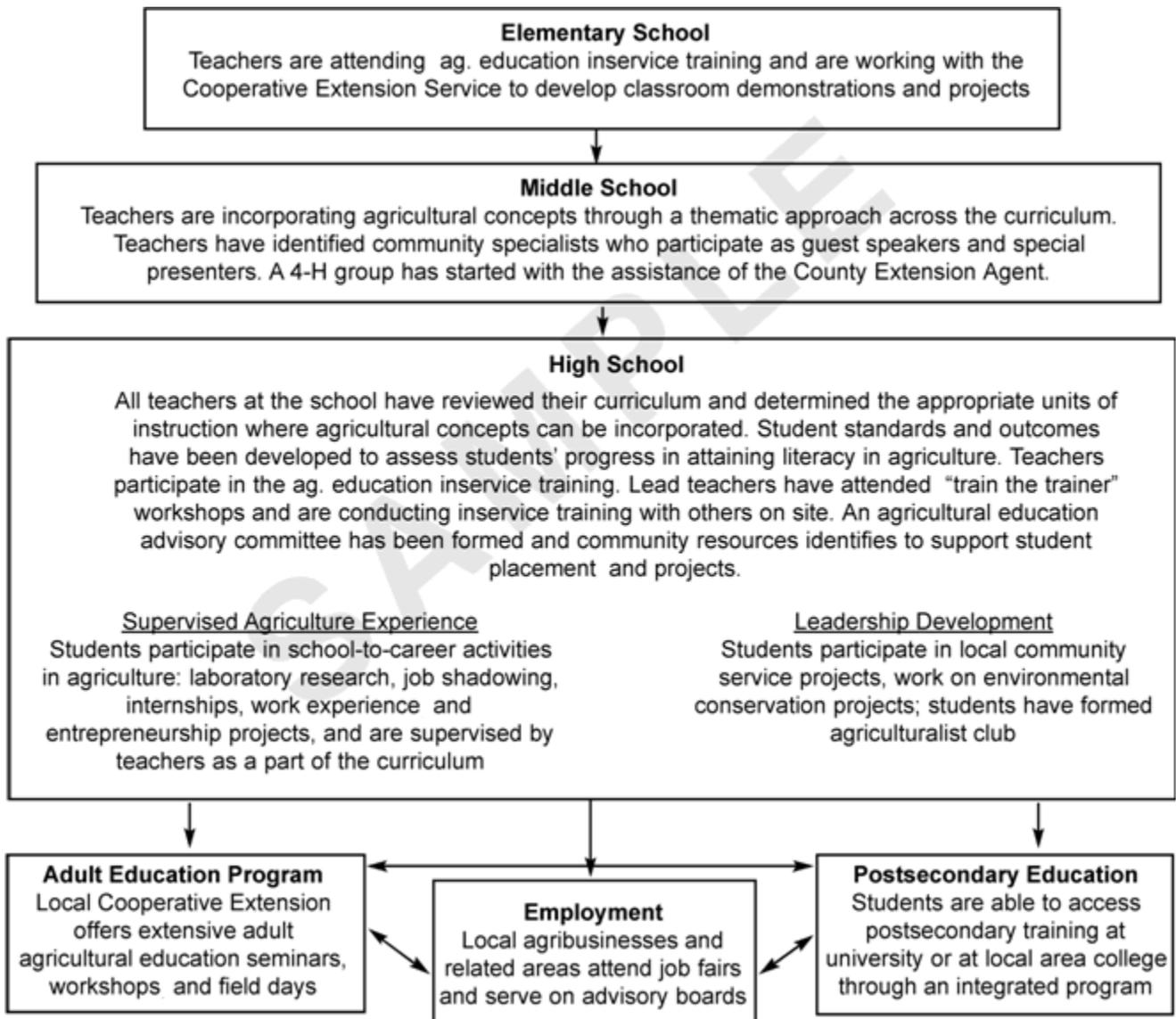
SAMPLE DELIVERY MODEL C

Factors:

- No formal secondary ag. ed. program
- Strong agricultural-based industry
- Natural resource area located behind the school

Program Goals:

Agricultural Literacy



SAMPLE C



WORKSHEET

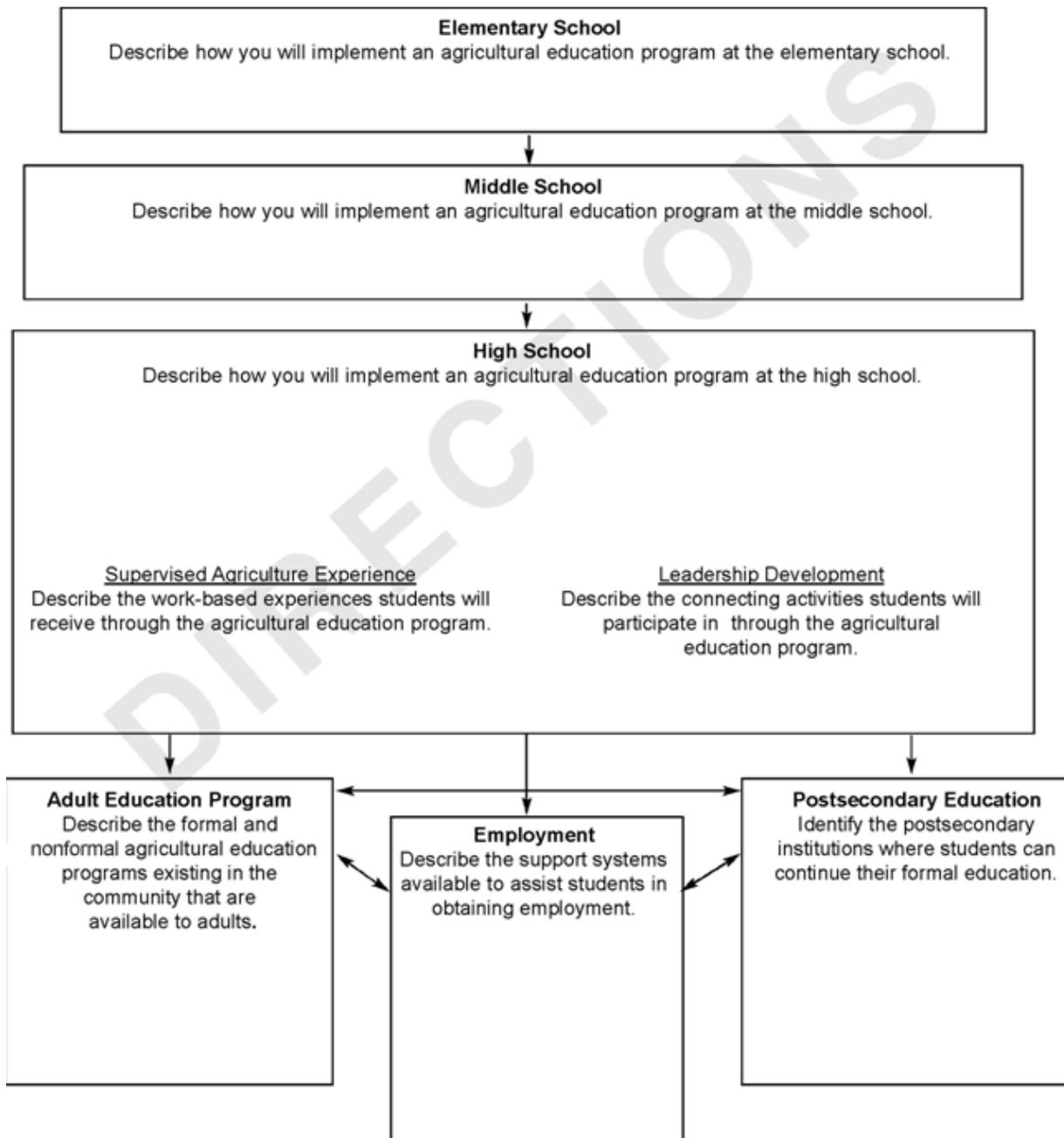
DESIGNING YOUR DELIVERY MODEL

Factors:

Identify the facilities and resources available to
Implement the program

Program Goals:

Identify the goals of the program



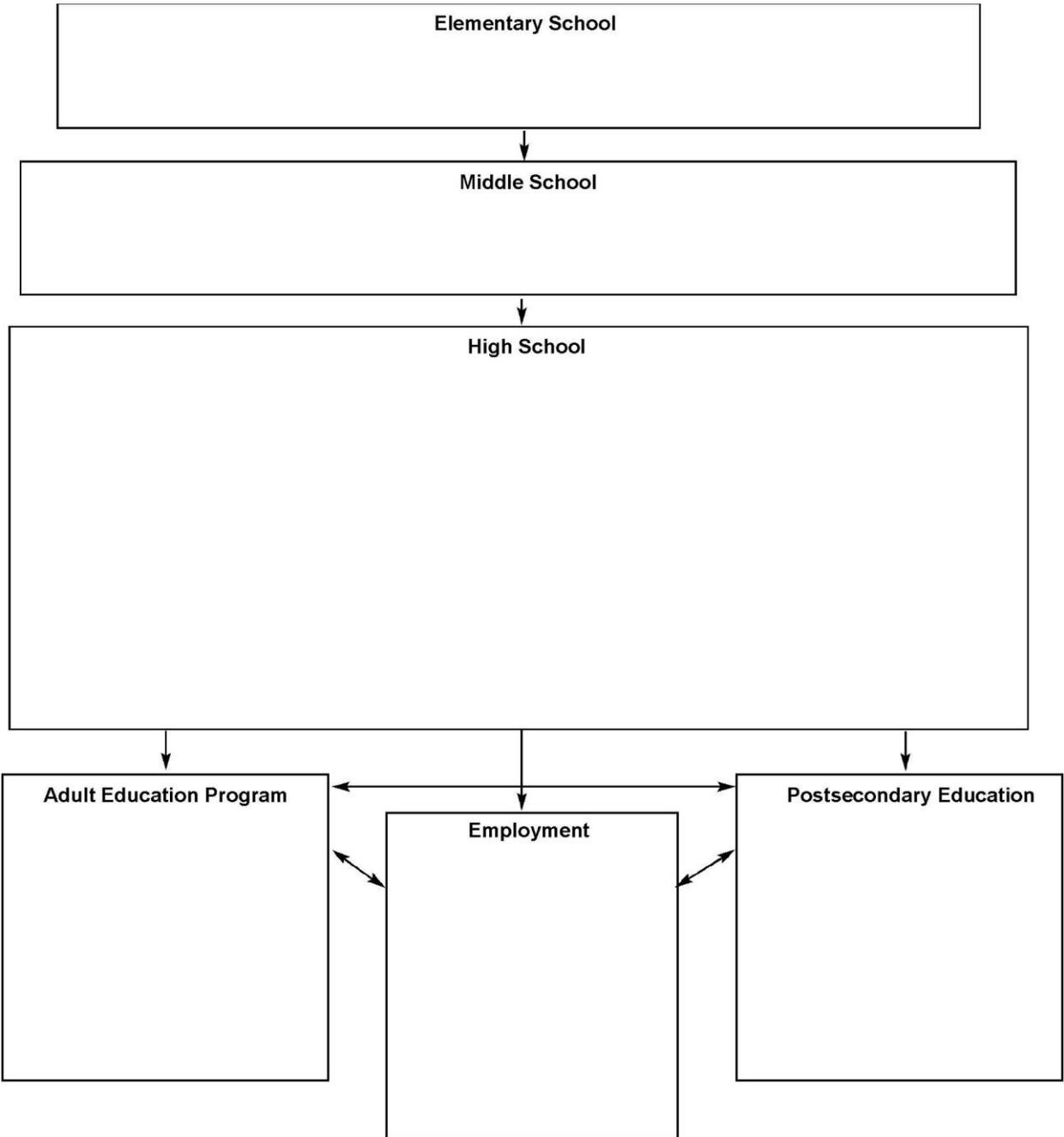


WORKSHEET

DESIGNING YOUR DELIVERY MODEL

Factors:

Program Goals:



DETERMINING CURRICULUM CONTENT

Some of the goals and objectives that you have set may require some new curriculum to be developed. These changes may require new courses of study, new lesson plans or just some new teaching methods. Whatever the change, being organized and well prepared will help your students be successful.



“One of the things that came out of the student survey we conducted in the collecting information phase was this very strong student interest in natural resources and wildlife management. I have always taught a small unit on this subject in my introduction course, but I had no idea that other students in the school might be interested in the subject. Our program has always had a focus on production. It’s time to change that. We have access to a great woodland area behind the school and are close to a fishery and conservancy. The content area standards and benchmarks have helped me identify content, and the resources section of the handbook really helped me get on the right track locating curriculum. I have been having a great time gathering the resources to teach a semester course and have gotten support from the administration due to the data that I have that proves there is student interest.”

IDENTIFY CURRICULUM CONTENT AREAS

During the Collecting Information phase, you should have conducted an agricultural education interest survey with students at your school. The results of this survey should give you the information you need to determine the content areas in agricultural education that students have an interest. You also did a community survey that inventoried the agriculture and natural resources available in your community and the facilities available to support your program.

From the results of these two surveys and consideration of the facilities, equipment, resources and expertise of the instructor, you will be able to identify the content areas of the curriculum the program will be able to offer.

There are many resources available to assist you in developing the curriculum. Select these resources based on the level and type of program you are planning to develop. The Pennsylvania Department of Education's Academic Standards project has developed K-12 standards for Environment and Ecology and for Science and Technology which incorporate agricultural education. If you are developing an elementary



and/or middle school agricultural literacy program, you should also review The Food and Fiber System Framework developed by Oklahoma State University through a grant from the Kellogg Foundation. The framework includes agricultural literacy learner outcomes for grade K-8 in five areas.

THE FOOD AND FIBER SYSTEM FRAMEWORK

- The Food and Fiber System: Understanding Agriculture
- Historical, Cultural and Geographic Significance
- Science: Food and Fiber – Environmental Interdependence
- Business and Economics
- Food, Nutrition and Health

For those who are working at the secondary level, either developing a new agricultural program or upgrading an existing program, the Pennsylvania Agricultural Education Content Standards and Benchmarks are included in this section.

In addition to these standards projects, reviewing developed curriculum materials can also be very helpful in helping you identify your curriculum content.





TOOL

AGRICULTURAL EDUCATION CONTENT AREAS

Animal Science	Bio-Technology	Food Science	Forestry	Leadership and Career Development
Impacts of Animal Science	Impacts of Biotechnology	Trends in Food Science	Introduction to Forestry	Fundamentals of Leadership and Career Development
Safety	Safety	Safety	Safety	Employability Skills
Careers in Animal Science	Careers in Biotechnology	Careers in Food Science	Careers in Forestry	Job Readiness and Retention Skills
Economics of Animal Science	Basic Biotechnology Concepts	Food Economics	Forest Ecology and Conservation	Citizenship
Technological Advances	Genetics and Genetic Engineering	Food Chemistry, Biology and Nutrition	Dendrology	Purpose, Structure and Function of FFA
Industry Standards, Breed Improvements and Selection	Biotechnology in Plant Science	Food Processing Technology	Forest Management	Individual and Group Leadership
Reproduction	Biotechnology in Animal Science	Quality and Assurance	Silviculture	Communication and Public Speaking
Genetics	Microbial Biotechnology in Agriculture	Food Preparation and Presentation	Harvesting	Information Research Skills
Nutrition	Biotechnology and the Environment		Manufacturing Lumber	Supervised Agricultural Experience
Behavior and Psychology	Resource Recovery		Forest Products	
Housing and Sanitation			Urban Forestry	
Health Management				
Animal Products				
Consumer Safety				

Management, Economics and Marketing	Natural Resource Management	Plant and Soil Science	Power and Systems Technology
Impact of Agribusiness on the Economy	National Resource Conservation and Preservation	Impacts of Plant and Soil Science	Historical Applications and Future Implications
Safety	Safety	Safety	Safety
Careers in Agribusiness	Careers in National Resource Management	Careers in Plant and Soil Science	Careers in Agricultural Power and Systems Development
Business Organizations	Environmental Protection	Botany and Physiology	Metals Fabrication/Welding
Establishing a Business	Fish and Wildlife	Plant Reproduction	Small Gas Engines
Agricultural Business Management Procedures	Soil and Soil Conservation	Plant Pathology	Machinery and Equipment Systems
Accounting and Financial Systems	Water	Plant Nutrition	Energy Systems
Savings and Investments	Air	Managing Agricultural Soils	Structural Systems
Credit	Land Use	Environmental Factors	Environmental and Natural Resource Systems
Inventory Control and Warehousing	Energy and Minerals	Plant Identification	
Marketing	Outdoor Recreation Systems	Integrated Pest Management	
Human Resource Management	Laws, Statues and Regulations	Plant Science Equipment	
Agribusiness Support Services	Sustainability	Field Crop and Specialty Crop Production	
Agricultural Law and Regulation		Fruit and Vegetable Production	
International Agribusiness		Greenhouse Management	
		Floral Design	
		Nursery Management and Production	
		Turfgrass Production	
		Landscape Design, Installation and Maintenance	
		Horticultural Construction	



WORKSHEET

DETERMINING THE AGRICULTURAL EDUCATION CURRICULUM CONTENT

Have the individual(s) responsible for implementing the instruction, the teacher(s), complete this worksheet.

FOR ELEMENTARY AND/OR MIDDLE SCHOOL AGRICULTURAL LITERACY PROGRAMS:

Review the resources identified in the resource section and on a separate sheet of paper. Make a list of all the potential content area topics you could include in the program. Using this list, start to eliminate content areas by answering the questions below.

FOR SECONDARY AGRICULTURAL EDUCATION PROGRAMS:

Take a look at the content area chart to give you an idea of the breadth of topics that can be covered. Make a copy of the content area chart found in the handbook. Using the chart, start to eliminate content areas by answering the questions below.

1. Have the students indicated an interest in this topic either through a student survey, informal discussions with students or as a direct request? If not, cross it off.
2. Does the site have the appropriate facilities to support instruction in this area? If not, cross it off.
3. Does the community have related agribusiness, or does the content area have regional, state, national or global agricultural significance that should be included? If not, cross it off.
4. Does the teacher have the expertise or the willingness to seek assistance to teach the material? If not, cross it off.

Identify below those content areas that remain.

List here any additional content areas you feel are important to include in your curriculum that maybe have not been on the suggested content area chart.

IDENTIFY STUDENT STANDARDS AND BENCHMARKS

After selecting the curriculum content areas your curriculum will address, select those standards and benchmarks you will include in your instruction. You may choose to include all the recommended student standards and benchmarks or you may only select those that you feel are relevant to the needs of your students, the agriculture of your community or your own teaching expertise.

If you are developing an integrated agricultural literacy program, use the resources identified and develop your own specific to your community.

If you are developing a comprehensive secondary agricultural education program, use the recommended Pennsylvania student standards and benchmarks for secondary agricultural education programs as a place to start.





TOOL

PENNSYLVANIA CONTENT STANDARDS AND BENCHMARKS FOR SECONDARY AGRICULTURAL EDUCATION

The Pennsylvania agricultural education content standards are organized using a three-level hierarchy.

EXAMPLE

Level 1:	Content Area	Animal Science
	Level 2: Content Standard	Students will understand nutrition
	Level 3: Benchmark	Students will be able to formulate feed rations

DEFINITIONS

CONTENT AREA: Content area describes the general area of content within agricultural education. These represent strands of related information that could be delivered as a course, career pathway, or combined with other content areas for survey or introductory courses.

CONTENT STANDARD: Content standards describe the goals for individual student achievement. In this context, content standards are stated as students will understand some body of content. These standards represent a collection of related information that could be delivered as a unit of study. Content standards describe a subset of the content area.

BENCHMARKS: Benchmarks describe the specific developmental components of the general subject-area knowledge identified by a content standard. Benchmarks describe what a student will be able to do; a skill or ability a person might use to solve a real-life problem. They should not focus on activities, projects, techniques or instructional devices. These benchmarks are written as end of interval expectations for 9-12 grade level. In other words, students would be expected to have met these benchmarks upon completion of the program in the twelfth grade. Benchmarks are still somewhat general in nature and should not describe the instructional technique or activities that would be used to assist a student to meet that benchmark.

EXAMPLE

Students will be able to safely handle animal products.	Yes
Students will be able to render animal fat into candle products.	No

EXAMPLE

Students will be able to administer an intravenous injection.	Yes
Students will be able to inject sterile saline solution intravenously into the jugular vein of a horse using a 3cc syringe and a 22 gauge needle.	No

CONTENT AREA: ANIMAL SCIENCE

LEGEND

1. Standard: Students will understand. . .

1.1. Benchmark: Students will be able to. . .

1. Impacts of Animal Science

- 1.1. Identify cultural and societal uses of animals locally and globally
- 1.2. Graph historical timelines of technological advances in animal science
- 1.3. Describe ways in which animals have and continue to contribute to the standard of living
- 1.4. Describe the positive and negative impacts of animal agriculture on the environment

2. Safety

- 2.1. Demonstrate safe animal handling techniques for production, laboratory and recreation purposes
- 2.2. Identify and demonstrate the proper use, maintenance and storage of livestock/poultry/laboratory animal equipment
- 2.3. Safely handle animal products (health products, meat, milk, wastes)

3. Careers in Animal Science

- 3.1. Identify career opportunities in animal science
- 3.2. Identify advanced training and postsecondary education options in animal science

4. Economics of Animal Science

- 4.1. Compare and contrast local and global marketing and distribution of animal use, products and related services
- 4.2. Identify industry and commodity groups as resources
- 4.3. Develop a marketing plan for a value-added animal product
- 4.4. Explain the influence of local and global conditions on market values
- 4.5. Research the world food outlook, effects of natural phenomena (e.g., drought), population growth trends and global trade issues
- 4.6. Describe the diversity of the animal industry and its impact on local, state and the national economy

5. Technological Advances

- 5.1. Describe current biotechnology techniques in animal science
- 5.2. Describe environmental, food, medicines, public safety, and biosecurity issues related to animal health
- 5.3. Analyze the impact of new and emerging technologies on the marketing and management of animals

6. Industry Standards, Breed Improvement and Selection

- 6.1. Identify species, breeds and associated products and uses
- 6.2. Research and utilize breed associations, commodity groups and associated groups
- 6.3. Analyze trends and the effect of industry standards on consumer preferences and vice versa
- 6.4. Identify basic anatomy of animals

- 6.5. Evaluate a group of animals for a specific purpose
- 6.6. Interpret trial performance data based on species/industry criteria
- 6.7. Describe personal conduct and code of ethics regarding fitting/showing techniques for specific species

7. Reproduction

- 7.1. Explain the physiology of animal reproduction
- 7.2. Identify the organs and functions of the reproductive systems
- 7.3. Use associated reproductive equipment
- 7.4. Describe animal reproductive behavior
- 7.5. Interpret technical publications, charts and tools relating to animal reproduction
- 7.6. Compare and contrast artificial insemination, embryo transfer, cloning, as well as future emerging technologies
- 7.7. Describe current reproductive management techniques (i.e., heat detection, estrous synchronization, etc.)
- 7.8. Identify genetic engineering techniques in animal agriculture and describe their potential benefits and consequences

8. Genetics

- 8.1. Explain animal pedigrees and family lines
- 8.2. Predict genetic types using the punnet square method
- 8.3. Explain the principles of animal genetics
- 8.4. Describe the heritability of character traits
- 8.5. Describe animal cell structure, function and division

9. Nutrition

- 9.1. Identify the essential nutrients for animal growth, performance, maintenance and reproduction
- 9.2. Identify feeds and feed components
- 9.3. Analyze feed tags and labels
- 9.4. Formulate feed rations
- 9.5. Interpret feed trial results
- 9.6. Calculate feed ration costs using the least cost formula
- 9.7. Determine the economic impacts of various feeding programs
- 9.8. Identify the organs and functions of the digestive system
- 9.9. Explain and compare digestive systems and physiology of digestion between various species
- 9.10. Identify the advantages and disadvantages of the use of hormones, growth regulations and medications in animal agriculture.

10. Behavior and Psychology

- 10.1. Describe normal animal behavior by species, along with causes and potential results of abnormal behavior (social, sexual and ingestive)
- 10.2. Explain behavioral modification and its use in managing animals
- 10.3. Demonstrate proper handling techniques and describe the related psychological/behavioral principles

11. Animal Management

- 11.1. Explain the appropriate use of various animal management record keeping methods
- 11.2. Identify animal identification techniques and their proper application
- 11.3. Describe the purposes of animal management practices used to control animal behavior, handling safety and housing

12. Housing and Sanitation

- 12.1. Describe housing systems
- 12.2. Demonstrate the safe use of housing and sanitation equipment
- 12.3. Research the various water and waste management systems and analyze their limitations
- 12.4. Develop a nutrient management plan

13. Health Management

- 13.1. Identify the organs and functions of the pulmonary, circulatory and immune systems
- 13.2. Recognize, identify and evaluate the effects of common diseases, parasites, and poisons
- 13.3. Describe preventative animal health and treatment techniques
- 13.4. Explain local, state, federal and international laws/regulations which govern animal health
- 13.5. Develop a preventative health management plan for a specific species
- 13.6. Interpret animal health product labels
- 13.7. Demonstrate safe and proper application and administration of animal health products

14. Animal Products and Processing (also see Food Science)

- 14.1. Identify by-products of animals and their uses
- 14.2. Explain animal product labeling and packaging
- 14.3. Describe the uses of animal products for human and animal consumption

15. Consumer Safety and Concerns

- 15.1. Research and describe current consumer food trends
- 15.2. Identify the various animal welfare groups and describe their purposes
- 15.3. Research the state and federal legislation which govern animal issues
- 15.4. Explain local and global consumer concerns of animal agriculture over food safety and animal welfare
- 15.5. Analyze the impact of bioterrorism on animal agriculture from both the consumer and producers perspective

CONTENT AREA: BIOTECHNOLOGY

LEGEND

1. Standard: Students will understand. . .

- 1.1. Benchmark: Students will be able to. . .

1. Impacts of Biotechnology

- 1.1. Analyze the public benefits and risks of biotechnology from the environmental, health and ethical aspects
- 1.2. Analyze and research the social, political and economic impact of the use of biotechnology in agricultural production
- 1.3. List the regulatory agencies, and describe the laws and attitudes about foods produced through bioengineered products
- 1.4. Survey and assess consumers knowledge and attitudes about foods produced through biotechnology

2. Safety

- 2.1. Explain human safety issues related to genetically engineered foods and their impact on agricultural production
- 2.2. Understand the laws and regulations regarding the use of bioengineered products
- 2.3. Demonstrate proper lab procedures, including aseptic technique and use of all laboratory equipment

3. Careers in Biotechnology

- 3.1. Examine career pathways in biotechnology
- 3.2. Identify advanced training and postsecondary education in biotechnology

4. Basic Biotechnology Concepts

- 4.1. Define biotechnology, and describe key historical events in its development
- 4.2. Demonstrate the steps in the scientific method
- 4.3. Understand product modifications via biotechnology and their origins (i.e., wool, cotton, peanuts, mushrooms, etc.)

5. Genetics and Genetic Engineering

- 5.1. Describe the levels of organization of living material
- 5.2. Identify basic cell structures
- 5.3. Recognize the types of cell reproduction
- 5.4. Describe the structure of genetic material
- 5.5. Explain the basic stages involved in the transfer of genetic information
- 5.6. Define genetic engineering
- 5.7. Describe the various methods of gene transfer

6. Biotechnology in Plant Science

- 6.1. Describe the purposes of plant biotechnology
- 6.2. Analyze the differences between traditional plant breeding and genetic engineering of plants
- 6.3. List the requirements for, and conduct laboratory micropropagation and plant culture(s)
- 6.4. Describe animal applications of plant culture

7. Biotechnology in Animal Science

- 7.1. Identify the purposes of biotechnology in animal sciences
- 7.2. Compare the differences between traditional animal breeding and genetic engineering of animals
- 7.3. Describe the uses of biotechnology in the genetic engineering of animals and animal products
- 7.4. Define the terminology related to immunology
- 7.5. Demonstrate methods of stimulating an immune response
- 7.6. Describe the types of immunity
- 7.7. Define and describe the uses for monoclonal antibodies

8. Microbial Biotechnology in Agriculture

- 8.1. Describe the types of microorganisms used in biotechnology
- 8.2. Describe the purposes and steps of fermentation process
- 8.3. Describe the types and components of fermentation systems
- 8.4. Identify the products of fermentation
- 8.5. Analyze the cost and benefits of microbial biotechnology to production agriculture, the food processing industry and the environment

9. Biotechnology and the Environment

- 9.1. Identify and describe techniques used for detecting environment pollutants
- 9.2. Identify biotechnology techniques used for bioremediation
- 9.3. Describe how natural and genetically engineered plants clean up toxic wastes
- 9.4. Describe how microbes can be used to clean up the environment

10. Resource Recovery

- 10.1. Define and describe biomass conversion, as it relates to fuels and energy
- 10.2. Identify regulations that affect the management of agricultural waste
- 10.3. Explain how biotechnological changes of agricultural products may change waste management options
- 10.4. Describe the use of genetically altered bacteria in human and animal waste management
- 10.5. Identify the appropriate disposal process for bioengineered products

CONTENT AREA: FOOD SCIENCE

LEGEND

1. Standard: Students will understand. . .

1.1. Benchmark: Students will be able to. . .

1. Trends in Food Science

- 1.1. Identify emerging technologies and their impact on food products and processing
- 1.2. Define trends in food production, world population and supply and demand for food products
- 1.3. Describe the historical development of food processing and preservation
- 1.4. Analyze steps required in food research for developing new food products, testing food products, food packaging, transportation and marketing of foods
- 1.5. Examine how food production, processing and packaging techniques affect the environment
- 1.6. Identify food safety issues and consumer concerns affecting food science

2. Safety

- 2.1. Evaluate federal and state regulations and guidelines for food safety and inspection
- 2.2. Analyze and demonstrate food handling safety
- 2.3. Identify food borne diseases, their symptoms and effects
- 2.4. Describe safe food production, food processing and preservation techniques

3. Careers in Food Science

- 3.1. Examine career pathways in food science
- 3.2. Identify advanced training and postsecondary education opportunities in food science

4. Food Economics

- 4.1. Describe the global economic and political implications of food science technology
- 4.2. Determine how international trade of food products affects the producer
- 4.3. Recognize the importance of maintaining and expanding the food supply for the homeland and also for developing nations
- 4.4. Recognize value-added products and their impact on consumer purchasing trends
- 4.5. Describe the process that an agricultural product takes from producer to consumer
- 4.6. Explain food cost trends locally, regionally, nationally and internationally
- 4.7. Identify marketing strategies to deliver quality food products to consumers

5. Food Chemistry, Biology, and Nutrition

- 5.1. Explain the food nutrition pyramid guide
- 5.2. Identify food borne microorganisms
- 5.3. Describe the positive and negative effect of pesticides, chemicals and preservatives on foods
- 5.4. Describe the biochemistry of digestion and assimilation of food
- 5.5. Explain the physical and chemical processes involved in various food production and food processing techniques

6. Food Processing Technology

- 6.1. Identify various food products common in the agriculture industry
- 6.2. Identify and explain equipment and procedures utilized for food processing
- 6.3. Explain the impact customer demand has on food production, processing and presentation
- 6.4. Describe the use of biotechnology in food processing

7. Quality and Assurance

- 7.1. Identify how the quality of global foods is assured
- 7.2. Identify food industry standards and grades
- 7.3. Describe safe food preparation techniques, along with the food inspection system
- 7.4. Identify food additives and enhancers by examining food labels for content

CONTENT AREA: FORESTRY

LEGEND

1. Standard: Students will understand. . .

1.1. Benchmark: Students will be able to. . .

1. Introduction to Forestry

- 1.1. Describe the history of Pennsylvania's forests
- 1.2. Describe the varied and multiple uses of forests
- 1.3. Identify current issues and policies in forest management

2. Safety

- 2.1. Identify and demonstrate the use of personal safety equipment
- 2.2. Identify unsafe acts or conditions at a logging site or in the forest
- 2.3. Use fire extinguisher
- 2.4. Use first aid kit
- 2.5. Understand the forest fire danger rating system
- 2.6. Maintain equipment in safe working order

3. Careers in Forestry

- 3.1. Examine career pathways in forestry
- 3.2. Identify advance training and postsecondary education in forestry

4. Economics of Forestry

- 4.1. Describe the role of forestry in the local, state, national and international economy
- 4.2. Discuss issues related to full-cycle utilization of products (e.g., raw to manufactured)
- 4.3. Understand the role of trade and regulatory pressures on forest businesses
- 4.4. Describe how incentives and penalties are used in the forestry industry
- 4.5. Describe the impact of local policies (e.g., noise, no trucks, etc.) on forest economies

5. Forest Ecology and Conservation

- 5.1. Describe basic concepts of forest ecology and conservation
- 5.2. Describe sources of forest ecosystem variability and diversity
- 5.3. Describe the effects of temperature, moisture, soil and solar radiation on tree growth
- 5.4. Describe competition and successions role in forest ecology
- 5.5. Describe basic forest conservation policies and practices that lead to sustainability

6. Dendrology

- 6.1. List and describe the U.S. forest types
- 6.2. Identify trees and shrubs
- 6.3. Identify range, tolerance and site requirements for major forest species

7. Forest Measurement

- 7.1. Scale and grade logs
- 7.2. Measure tree diameter and height
- 7.3. Perform a timber cruise (inventory), and describe its purpose
- 7.4. Determine a trees age and health
- 7.5. Demonstrate surveying techniques
- 7.6. Calculate elevation, slope and acreage
- 7.7. Interpret map scales and symbols

8. Silviculture

- 8.1. Describe methods of planting trees
- 8.2. Perform thinning and pruning techniques
- 8.3. Describe situations utilizing prescribed burns
- 8.4. Describe the methods used for natural and planted forest regeneration
- 8.5. Identify tree stand cultivation, growth and management practices
- 8.6. Identify forest pests, diseases and their management

9. Harvesting

- 9.1. Describe various harvesting methods, as well as when and why they are appropriate
- 9.2. Demonstrate felling, limbing and bucking techniques
- 9.3. Demonstrate safe loading and hauling practices

10. Manufacturing Lumber

- 10.1. Sort logs by species and grade
- 10.2. Saw logs for value and product specifications
- 10.3. Measure, edge and trim lumber for grade and volume
- 10.4. Demonstrate safe operation of a sawmill
- 10.5. Describe the various processes for seasoning lumber
- 10.6. Plane, sort and sticker lumber
- 10.7. Prepare lumber for shipment
- 10.8. List basic lumber sizes
- 10.9. Compare manufacturing and marketing of hardwoods and softwoods

11. Forest Products

- 11.1. Recognize, name and describe the processing of the major forest products
- 11.2. Describe species utilization

12. Urban Forestry

- 12.1. Describe the benefits and roles of urban forestry
- 12.2. Identify and select proper trees and shrubs for urban setting
- 12.3. Plant, fertilize and trim trees and shrubs
- 12.4. Demonstrate safe tree climbing techniques
- 12.5. Practice safe removal of limbs and trees
- 12.6. Identify traits of hazardous trees and common problems of urban trees and shrubs

CONTENT AREA: LEADERSHIP AND CAREER DEVELOPMENT

LEGEND

1. Standard: Students will understand. . .

1.1. Benchmark: Students will be able to. . .

1. Fundamentals of Leadership and Career Development

- 1.1. Identify and describe leadership styles
- 1.2. Identify the factors in developing effective leaders
- 1.3. Identify traits of effective leaders
- 1.4. Identify and relate various learning styles to leadership development
- 1.5. Describe changing trends in agriculture and how they affect career opportunities
- 1.6. Identify transferable skills from one career pathway to another within agriculture
- 1.7. Design a continuing education plan to assist someone to move up a career ladder in a particular pathway
- 1.8. Research salary and benefits for chosen career path and compare to target lifestyle
- 1.9. Establish personal and professional short- and long-term goals

2. Employability Skills

- 2.1. Research career information and resources for use in career decision making
- 2.2. Compile a career portfolio including a resume and samples of highlighted projects, personal newspaper clippings, etc.
- 2.3. Understand the necessity of continuing education and lifelong learning to enhance career ladder development
- 2.4. Participate in a mock interview, including the completion of a sample application

3. Job Readiness and Retention Skills

- 3.1. Understand appropriate workplace attire and etiquette
- 3.2. Demonstrate ability to work successfully within a team atmosphere
- 3.3. Demonstrate problem solving techniques
- 3.4. Understand diversity and work effectively with all individuals
- 3.5. Work independently and be self motivated
- 3.6. Demonstrate conflict resolution techniques

4. Citizenship

- 4.1. Identify and describe various community-based youth, civic and professional organizations
- 4.2. Participate in a selected community-based youth, civic or professional organizations
- 4.3. Develop an understanding of the purpose, structure and function of governmental units at all levels
- 4.4. Describe how public policy and laws are developed at the local, state and national level
- 4.5. Identify the limits of local government and the impact of state and federal laws on local governments

5. The Purpose, Structure, and Function of FFA

- 5.1. Identify the aims, purposes and structures of the FFA
- 5.2. Explain FFA tradition and principles
- 5.3. Describe the historical development of the FFA
- 5.4. Participate in Career Development Events
- 5.5. Understand the role of the FFA Foundation and Alumni
- 5.6. Understand the intracurricular connection between FFA and agriculture education
- 5.7. Recognize the role FFA plays in personal and professional development
- 5.8. Understand the practical application of the FFA motto

6. Individual and Group Leadership

- 6.1. Demonstrate the ability to use parliamentary procedure in organizational business meetings
- 6.2. Identify the key factors in building successful teams
- 6.3. Conduct successful meetings
- 6.4. Develop and implement an annual program of activities for the FFA chapter
- 6.5. Analyze personal strengths and weaknesses
- 6.6. Identify personality traits and how these affect relationships with others in the workplace

7. Communication and Public Speaking

- 7.1. Demonstrate effective communication skills, including oral, written, listening and questioning
- 7.2. Create and deliver a prepared and extemporaneous speech demonstrating proper public speaking skills and etiquette
- 7.3. Memorize and recite the FFA creed and motto
- 7.4. Demonstrate basic journalism and writing skills
- 7.5. Demonstrate the appropriate techniques for writing press releases and working with the press
- 7.6. Demonstrate the use of current and emerging technologies as a tool for increasing effective communication

8. Information Research Skills

- 8.1. Conduct extensive research on a selected topic using a variety of sources
- 8.2. Identify techniques used for conducting market research, including surveys and studies
- 8.3. Develop alternative solution scenarios for a problem using sound research methods
- 8.4. Understand the importance of utilizing diverse and reliable information

9. Supervised Agricultural Experience

- 9.1. Develop short, mid- and long-term range project plans
- 9.2. Develop a Supervised Agricultural Experience (SAE) based upon individual interests/career goals
- 9.3. Maintain complete and accurate records
- 9.4. Analyze records to determine strengths and areas for improvement
- 9.5. Conducts a research project using the scientific method

CONTENT AREA: MANAGEMENT, ECONOMICS AND MARKETING

LEGEND

1. Standard: Students will understand. . .

1.1. Benchmark: Students will be able to. . .

1. Impact of Agribusiness on the Economy

1.1. Discuss the historical significance of agriculture to U.S. and global economic strength

1.2. Identify and describe agribusiness in the community and its importance/role in the local economy

1.3. Explain the current and future role agribusiness plays in the economy of the state and nation

2. Safety

2.1. Identify and describe state and federal agencies that regulate business safety issues

2.2. Describe the cost and benefits of a safe workplace

2.3. Describe generic worker safety notification procedures, as well as the appropriate worker safety notification procedure for a sample business

2.4. Develop a workplace safety program

3. Careers in Agribusiness

3.1. Examine agribusiness career pathways

3.2. Identify advanced training and postsecondary education in agribusiness

4. Business Organizations

4.1. Discuss and describe the four types of operational organization of businesses

4.2. Discuss the roles and responsibilities of employees within a business

4.3. Examine entrepreneurship principles for agribusiness

4.4. Analyze successful and unsuccessful business practices

4.5. Explain agricultural cooperatives, their role and current trends

4.6. Evaluate agribusiness operations and set strategies for the future

4.7. Describe the various types of business/professional associations and the roles that they play

5. Establishing a Business

5.1. Demonstrate techniques for goal setting and production planning

5.2. Identify and analyze business inputs and resources by enterprise

5.3. Develop a business and marketing plan specific to a certain enterprise

5.4. Describe various methods of capitalizing a business and its importance in supporting the establishment phase

5.5. Describe the role of estate planning and planning for intergeneration transfer

5.6. Describe the role of information technology in business operations

6. Agricultural Business Management Procedures

- 6.1. Identify functions, role and purpose of management in a business
- 6.2. Describe business organizational charts and lines of reporting
- 6.3. Identify and define business expansion through vertical or horizontal integration
- 6.4. Describe the pros and cons to consolidations, monopolies and mergers
- 6.5. Describe profit center management
- 6.6. Explain various methods of risk management and diversification
- 6.7. Analyze supply and demand, the relationship between them and price and how they affect management decisions
- 6.8. Describe the role of the decision-making process in effective management
- 6.9. Describe the critical role of business ethics in management

7. Accounting and Financial Systems

- 7.1. Maintain accurate business and financial records
- 7.2. Construct and analyze financial statements
- 7.3. Analyze financial ratios
- 7.4. Calculate a break-even point
- 7.5. Utilize budgets and conduct budget analysis
- 7.6. Analyze financial data to determine business opportunities and the cost of doing business
- 7.7. Calculate, summarize and integrate financial data into standard business documents

8. Savings and Investment

- 8.1. List the reasons for savings and investments
- 8.2. Compare characteristics of various types of investments
- 8.3. Explain the concept of interest costs and interest income
- 8.4. Describe how investments can grow in value, and calculate the present and future value of money

9. Credit

- 9.1. Discuss the reasons people have for obtaining credit
- 9.2. Discuss the importance of the ability to obtain credit
- 9.3. Identify possible types and sources of credit
- 9.4. List advantages/disadvantages of credit cards and loans
- 9.5. Identify sources where personal and business loans are available
- 9.6. Differentiate between secured and unsecured loans (recourse and nonrecourse)
- 9.7. Compare interest rates of various personal and business loans and their repercussions
- 9.8. Obtain and organize the information generally necessary to obtain credit cards, personal loans, business loans and lines of credit
- 9.9. Explain the factors that should influence the decision to obtain credit and the resulting business implications
- 9.10. Discuss the critical link between credit worthiness and credit availability

10. Inventory Control and Warehousing

- 10.1. Describe inventory records
- 10.2. Describe the relationship between inventory and lost sales
- 10.3. Determine the cost of warehousing (overhead and commodity)
- 10.4. Identify advantages and disadvantages of handling products in bulk
- 10.5. Describe how storage affects quality

11. Marketing

- 11.1. Describe the elements of marketing
- 11.2. Explain the concept of product utility and consumer satisfaction
- 11.3. Analyze and evaluate supply and demand functions
- 11.4. Conduct market research for a specific product/service
- 11.5. Develop a marketing plan for a specific product/service
- 11.6. Identify industry standards, grades and inspection procedures for agricultural products as they affect marketing
- 11.7. Describe the various types of multi-level marketing
- 11.8. Explain the role customer relations has in marketing
- 11.9. Describe the role of agricultural commodity (futures) and options markets as a marketing tool

12. Human Resource Management

- 12.1. Describe jobs that contribute to achieving an organization's mission
- 12.2. Identify methods for recruiting qualified personnel
- 12.3. Design and conduct an employee selection process
- 12.4. Describe an employee orientation program
- 12.5. Describe an employee policies and procedures manual
- 12.6. Describe various compensation and benefit plans
- 12.7. Describe the process for evaluating employees (subjective vs. objective)
- 12.8. Identify methods to improve employee relations and employee self improvement
- 12.9. Identify factors associated with a successful personnel training program
- 12.10. Describe the termination process and rationale

13. Agribusiness Support Services

- 13.1. Identify and describe the purposes and importance of various agribusiness support resources
- 13.2. Collect, calculate and analyze agricultural information
- 13.3. Formulate agricultural issue and policy statements and ideas

14. Agricultural Law and Regulation

- 14.1. Investigate the origins of a specific regulation
- 14.2. Describe how laws, rules and regulations are made
- 14.3. Identify and describe the major laws and new legislation that relate to agriculture and the circumstances that brought it about
- 14.4. Identify the role of a lobbyist
- 14.5. Identify groups that lobby on agricultural issues
- 14.6. Identify required governmental agency reports required to be filed by an agribusiness

15. International Agribusiness

- 15.1. Describe the U.S. and foreign import/export policy for agricultural products
- 15.2. Identify and describe the purposes of key organizations involved in U.S. and foreign import/export policy for agricultural products
- 15.3. Describe the impact global markets have on agricultural production and pricing
- 15.4. Identify current and future global market trends for agricultural products and services
- 15.5. Analyze the economic impact of food imports and food exports on domestic producers

CONTENT AREA: NATURAL RESOURCES MANAGEMENT

LEGEND

1. Standard: Students will understand. . .

1.1. Benchmark: Students will be able to. . .

1. Natural Resource Conservation and Preservation

- 1.1. Describe the history of conservation in the United States through the present time
- 1.2. Identify renewable and non-renewable natural resources
- 1.3. Demonstrate conservation and preservation practices
- 1.4. Explain the relationships among organisms, populations, habitats, ecosystems and the impact of human activities on these relationships
- 1.5. Describe and demonstrate the concept of stewardship on natural resources
- 1.6. Describe current issues and public concerns in natural resource conservation

2. Safety

- 2.1. Demonstrate outdoor safety techniques
- 2.2. Identify safe hazardous waste disposal techniques
- 2.3. Demonstrate the safe use of natural resource tools

3. Careers in Natural Resource Management

- 3.1. Examine career pathways in natural resource management
- 3.2. Identify advanced training and postsecondary education in natural resource management
- 3.3. Demonstrate technological awareness and computer competence, as it relates to careers in natural resources

4. Environmental Protection

- 4.1. Identify natural resources and how they are protected both voluntarily and by law
- 4.2. Define and identify pollutants, toxins and safe environmental practices
- 4.3. Know the roles of conservation, protection and preservation organizations
- 4.4. Understand the effect of economics and social trends on the implementation of environmental protection
- 4.5. Identify potential terrorism/biosecurity threats to municipal water supplies, impoundments, waterways, food system, etc.

5. Forests and Vegetated Areas

- 5.1. Describe the history of human impact on forestry resources
- 5.2. Identify non-consumptive uses of forests and vegetated areas
- 5.3. Describe conservation practices for forests and vegetated areas

6. Fish and Wildlife

- 6.1. Describe the history of human impact on fish and wildlife management of Pennsylvania
- 6.2. Identify fish and wildlife found in Pennsylvania
- 6.3. Explain and identify fish and wildlife management techniques
- 6.4. Understand the impact of land use on fisheries and wildlife
- 6.5. Plan and install a habitat improvement project

7. Soils and Soil Conservation

- 7.1. Demonstrate the use of the County Soil Survey
- 7.2. Describe the major soil characteristics and how they affect soil usage
- 7.3. Define soil erosion and what causes soil erosion
- 7.4. Explain how to control farm and non-farm soil erosion
- 7.5. Describe soil health and soil fertility

8. Water

- 8.1. Explain the hydrologic cycle
- 8.2. Investigate water pollution and ways to control and prevent it
- 8.3. Explain the importance of water use planning
- 8.4. Examine water quantity use and trends
- 8.5. Identify alternative water collection methods (rainwater, greywater, etc.)
- 8.6. Examine stormwater impact and management in rural, suburban and urban settings

9. Air

- 9.1. Identify basic chemical components of air
- 9.2. Identify sources of air pollution
- 9.3. Analyze air pollution's affect on the environment and humans
- 9.4. Describe air quality improvements and pollution prevention practices
- 9.5. Identify issues surrounding air-borne odors

10. Land Use

- 10.1. Identify the various types of land uses
- 10.2. Use County Soil Survey information to identify appropriate land use of various soil types
- 10.3. Describe land use planning and growth management methods, and stress importance of land use planning to allow for agriculture, residential, commercial, etc. usage
- 10.4. Explain the history of land use in Pennsylvania
- 10.5. Explain the effects of technology on land use in urban and rural settings
- 10.6. Describe the various programs used to deal with the preservation of valuable agricultural land, such as tax breaks, agricultural security areas, nuisance law protection, sale or transfer of development rights, etc.

11. Energy and Minerals

- 11.1. Describe the energy industry in terms of non-renewable and renewable sources
- 11.2. Develop working models of, and compare alternative energy sources, such as biofuels, biomass, solar, geothermal and wind
- 11.3. Understand impacts of limited supplies of fossil fuels and cost of extraction on human activity
- 11.4. Describe the usage of metals and minerals in today's society
- 11.5. Describe the impacts of resource extraction and best management practices used in recovery/remediation of these sites

12. Outdoor Recreational Systems

- 12.1. Identify and describe the federal, state and local recreational structure and facilities
- 12.2. Identify various mandatory and voluntary safety courses (hunting, trapping, boating, ATVs, etc.)
- 12.3. Analyze recreational uses and their impact on the environment
- 12.4. Discuss competition for resources and the impact on private property rights and responsibilities
- 12.5. Analyze the impact of declining purchases of hunter, trapper and fishing licenses on agencies who manage wildlife resources
- 12.6. Understand the causes of injuries/death from unsafe use of recreational vehicles (ATVs, boats, horses, mountain bikes, etc.)
- 12.7. Describe the role of outdoor recreation on development of a child's physical, emotional and mental health

13. Laws, Statues and Regulations

- 13.1. Identify and analyze legislation that affects natural resources
- 13.2. Defend an opinion on a natural resource issue in a simulated county, state or federal political setting
- 13.3. Demonstrate an understanding of the legislative process
- 13.4. Describe the role of legislative laws and power held by the independent Game Commission and Fish/Boat Commission

14. Sustainability

- 14.1. Identify the multiple and various definitions of sustainability
- 14.2. Identify ethical issues in the sustainability of natural resources
- 14.3. Describe how local practices link to sustainability at the national/international level
- 14.4. Explain the tie between preserving farmland, and preserving the farmer and agri-business infrastructure
- 14.5. Describe the application of appropriate technologies, including integrated alternative energy systems and modified lifestyles
- 14.6. Draw connections between natural resource issues at local, state, national and global levels and sustainability of the planet
- 14.7. Integrate basic elements of humanity (food, water, shelter, transportation, institutions and energy) into a local plan for increased sustainability

15. Waste Management

- 15.1. Understand waste management hierarchy of prevention, re-use, recycling and safe disposal
- 15.2. Identify waste management practices and describe how they affect water quality
- 15.3. Describe the importance of manure management (storage, handling and utilization)
- 15.4. Explain the importance of solid waste management and the NIMBY (not in my backyard) attitude
- 15.5. Understand the beneficial reuse of biosolids/human waste management system

16. Aquatic Habitats

- 16.1. Define a watershed
- 16.2. Describe the various elements of aquatic ecosystems
- 16.3. Describe abiotic water quality parameters and perform water tests
- 16.4. Calculate biotic index of a waterway by collecting, identifying and classifying aquatic macro-invertebrates
- 16.5. Examine the physical components of a stream to determine stream flow
- 16.6. Examine a waterway for various effects of human impact such as acid mine drainage, sedimentation and over use
- 16.7. Describe effects of human development, such as impervious surface construction, on flood plains

CONTENT AREA: PLANT AND SOIL SCIENCE

LEGEND

1. Standard: Students will understand. . .

1.1. Benchmark: Students will be able to. . .

1. Impacts of Plant and Soil Science

- 1.1. Describe the historical development of plant science
- 1.2. Compare/contrast the effect mankind has made on various plants, including invasive plant material
- 1.3. Determine how development of certain plant species has affected cultural development
- 1.4. Describe the role plant science plays in the economy of the state and nation
- 1.5. Identify current issues regarding plant and soil management that impacts agronomic and horticultural practices
- 1.6. Explain the psychological impact of plants on people and society
- 1.7. Discuss the benefits of organic plant production and organic weed and pest controls

2. Safety

- 2.1. Identify dangerous plants
- 2.2. Identify safety laws, regulations and procedures that affect plant science enterprises
- 2.3. Describe crop production food safety procedures that ensure safe food for consumers
- 2.4. Demonstrate the use of protective clothing and equipment
- 2.5. Demonstrate workplace safety, including proper use of protective clothing, equipment and first aid
- 2.6. Explain the components of a pesticide label and be able to interpret an MSDS sheet

3. Careers in Plant and Soil Science

- 3.1. Examine career opportunities in plant science
- 3.2. Identify advanced training and postsecondary education in plant science

4. Botany and Physiology

- 4.1. Describe the process of photosynthesis, respiration, translocation and transpiration
- 4.2. Identify cell structure, organization and function
- 4.3. Identify plant structures and explain their functions
- 4.4. Identify flower structure and describe the events in pollination
- 4.5. Identify seeds and seed structures and explain their functions
- 4.6. Identify elements essential for germination
- 4.7. Explain the environmental factors that affect the growth and development of a plant
- 4.8. Demonstrate the use and affects of plant regulators

5. Plant Reproduction

- 5.1. Demonstrate sexual and asexual plant propagation methods
- 5.2. Research and manipulate vegetative and sexual plant growth processes

6. Plant Nutrition

- 6.1. Identify plant nutrient requirements
- 6.2. Select appropriate nutrient supplements to correct a specific plant nutrient deficiency
- 6.3. Describe the composition of commercial fertilizers and calculate their usage

7. Managing Agricultural Soils

- 7.1. Identify and describe soil characteristics
- 7.2. Analyze and interpret soil surveys
- 7.3. Identify soil nutrients
- 7.4. Conduct basic soil testing
- 7.5. Interpret commercial soil test reports
- 7.6. Identify physical limitations of soils using soil profiles
- 7.7. Describe criteria for selecting fertilizers and other soil amendments
- 7.8. Describe factors influencing fertilizer application
- 7.9. Identify potential land use based on soil limitations
- 7.10. Plan a crop rotation using field histories
- 7.11. Plan a cropping system for a specific crop and soil type

8. Environmental Factors

- 8.1. Identify environmental factors that affect plant growth
- 8.2. Describe techniques used to control environmental factors
- 8.3. Explain the types of irrigation systems and techniques
- 8.4. Explain the types of cultural systems and techniques
- 8.5. Determine plant populations and area calculations
- 8.6. Describe how weather and climate impact growing conditions and crop selection

9. Plant Identification

- 9.1. Classify plants and use appropriate taxonomic terminology
- 9.2. Identify plant material including herbaceous and woody plant material
- 9.3. Demonstrate knowledge of plant sensitivities (shade, sun, moisture, etc.)

10. Entomology

- 10.1. Identify insects which benefit plant reproduction and food production
- 10.2. Identify insect classifications
- 10.3. Compare beneficial vs. non-beneficial insects
- 10.4. Identify stages of insect development

11. Integrated Pest Management

- 11.1. Identify and differentiate pests and diseases as variables in plant production
- 11.2. Utilize pheromone traps to assess insect population levels
- 11.3. Analyze various techniques which serve to reduce pest and disease problems
- 11.4. Describe the use of agricultural chemicals
- 11.5. Determine pesticide toxicity and formulations
- 11.6. Analyze the affect of insect growth regulators on populations
- 11.7. Analyze the economics of various methods of pest control
- 11.8. Develop an integrated pest management plan
- 11.9. Monitor and control plant pests
- 11.10. Define economic threshold and calculate for a specific crop with specific pest

12. Plant Science Equipment

- 12.1. Identify equipment, tools and materials and their hazards
- 12.2. Demonstrate safe use of plant science equipment
- 12.3. Safely store and handle equipment, tools, materials and chemicals
- 12.4. Calibrate spreaders and sprayers for effective application
- 12.5. Correctly measure and determine area, perimeter and volume

13. Field Crop and Specialty Crop Production (Corn, Forages, Soybeans, Small Grains, Grapes, Potatoes, Mushrooms and Tobacco)*

- 13.1. Identify crops and develop a cropping plan
- 13.2. Identify and select seed and seedlings
- 13.3. Design a fertility program for specific crops
- 13.4. Demonstrate seedbed preparation techniques for specific crops
- 13.5. Demonstrate planting and transplanting techniques
- 13.6. Identify weed control options
- 13.7. Identify crop diseases and control measures
- 13.8. Demonstrate techniques used to check crop yield
- 13.9. Identify harvesting, storage, and curing options
- 13.10. Develop a crop production budget and understand risk management tools
- 13.11. Understand the marketing of field and specialty crops
- 13.12. Understand the new technologies incorporated into seeds and the regulations for their usage

14. Fruit and Vegetable Production*

- 14.1. Identify kinds, varieties and uses of fruits and vegetables
- 14.2. Demonstrate knowledge of commercial seedbed preparation, planting and spacing method
- 14.3. Describe the use of proper cultivation techniques and their scheduling
- 14.4. Determine appropriate harvesting schedules, techniques and crop rotation
- 14.5. Judge specimens for maturity and fresh market sale
- 14.6. Identify and control insects, diseases and weeds that affect fruit and vegetables
- 14.7. Identify and describe the use of fruit and vegetable tools and equipment
- 14.8. Identify common fruit and vegetable marketing methods

15. Greenhouse Management*

- 15.1. Properly identify and label plant material
- 15.2. Determine growing conditions for cuttings and seedlings
- 15.3. Describe the kinds and uses of plant growth regulators and hormones
- 15.4. Demonstrate propagation techniques
- 15.5. Maintain plants (watering, pruning, fertilizing, repotting, insect, disease and weed control)
- 15.6. Demonstrate knowledge and use of greenhouse environment requirements and their control
- 15.7. Evaluate various growing media and describe their uses
- 15.8. Demonstrate knowledge of disease, insect, pest and weed control that affect greenhouse crops
- 15.9. Identify and describe the use of greenhouse tools and equipment, including the calibration of sprayers and spreaders

16. Floral Design*

- 16.1. Identify floral varieties used by the floral industry
- 16.2. Identify and describe the characteristics/use of cut flowers and fillers
- 16.3. Identify and describe the use of containers and floral supplies
- 16.4. Demonstrate use of wire/tape in floral design
- 16.5. Prepare cut flowers for storage
- 16.6. Demonstrate floral design techniques for display and wearable arrangements
- 16.7. Identify and demonstrate use of floral design tools and equipment

17. Nursery Management and Production*

- 17.1. Identify and demonstrate knowledge of grading standards for nursery stock
- 17.2. Receive and handle nursery stock
- 17.3. Demonstrate and understanding of basic irrigation techniques
- 17.4. Maintain nursery stock (watering, pruning, fertilizing, weed control and overwintering)
- 17.5. Identify and control insects, diseases and weeds that affect nursery stock
- 17.6. Prepare nursery stock for marketing
- 17.7. Identify and describe the use of nursery tools and equipment, including the calibration of sprayers and spreaders
- 17.8. Propagate nursery stock
- 17.9. Evaluate various production techniques (pot in pot, container growing, etc.)
- 17.10. Demonstrate the ability to produce woody and herbaceous plant material

18. Turfgrass Production*

- 18.1. Identify typical northeastern U.S. turfgrasses
- 18.2. Evaluate and select grasses and seed mixes/blends for particular purposes or areas
- 18.3. Plan the preparation of a new turf area for a particular purpose
- 18.4. Describe grading and installation of drainage and irrigation system
- 18.5. Prepare and install a seed bed incorporating selective herbicides and fertilizers
- 18.6. Install and establish sod
- 18.7. Describe hydroseeding techniques
- 18.8. Demonstrate the methods and procedures for turf maintenance
- 18.9. Determine/maintain soil fertility and pH

- 18.10. Identify and control lawn insects, weeds and diseases
- 18.11. Identify and describe the use of turfgrass tools and equipment; including the calibration of sprayers and spreaders

19. Landscape Design, Installation and Maintenance*

- 19.1. Describe the basic principles of landscape design
- 19.2. Measure site and develop scaled drawings
- 19.3. Interpret blueprint or site plan to include calculating areas and volumes
- 19.4. Identify utility locations and right of ways
- 19.5. Determine drainage/elevations
- 19.6. Level and grade soil
- 19.7. Prepare and plant turf using seed or sod
- 19.8. Select kinds and sizes of plant materials
- 19.9. Demonstrate planting and transplanting plant material
- 19.10. Demonstrate knowledge of various mulches and proper application and installation
- 19.11. Identify the appropriate type of irrigation system and installation method
- 19.12. Identify and describe the use of landscaping tools and equipment; including the calibration of sprayers and spreaders
- 19.13. Demonstrate proper pruning techniques
- 19.14. Determine maintenance schedules as appropriate for various turf and ornamental installations
- 19.15. Demonstrate the principles of job cost estimating
- 19.16. Identify the environmental impact of landscape projects

20. Horticultural Construction*

- 20.1. Identify and describe the use of various hardscape materials
- 20.2. Apply construction mathematics to solve design and installation problems
- 20.3. Construct wooden features
- 20.4. Install retaining walls
- 20.5. Install block, brick pavers, flagstone, concrete and tile materials
- 20.6. Identify and describe the use of horticulture construction tools and equipment

* Due to the diversity of the Plant and Soil Science Content Area, these Standards may be selected based on the type of program being offered. For example, a program offering a plant science program focused on ornamental horticulture, may only address Standards 1-11 and 13, 14, 15.

CONTENT AREA: POWER AND SYSTEMS TECHNOLOGY

LEGEND

1. Standard: Students will understand. . .

1.1. Benchmark: Students will be able to. . .

1. Historical Applications and Future Implications of Agricultural Power and Systems Technologies

1.1. Describe and discuss the historical development of agricultural power and systems technologies

1.2. Identify global applications of agricultural power and systems technologies

1.3. Identify emerging technologies and their potential impact

1.4. Identify methods of changing appropriate technology for various applications (size, social and cultural)

2. Safety

2.1. Demonstrate positive safety attitudes and responsibilities

2.2. Recognize and demonstrate safety rules and regulations

2.3. Describe safety regulations and consumer safety protection opportunities

3. Careers in Agricultural Power and Systems Technology

3.1. Examine career opportunities in agricultural power and systems technologies

3.2. Identify advanced training and postsecondary education in agricultural engineering and systems technologies

4. Tools Equipment and Hardware

4.1. Identify, select, adjust, maintain and safely use common hand tools and power tools

4.2. Adjust, maintain and safely use common agricultural power shop equipment

4.3. Identify and select hardware used in the agricultural industry

4.4. Demonstrate accurate use of measurement devices and techniques for calculating measurement

5. Material Fabrication and Welding

5.1. Identify and select various types of metals and plastics, and welding and cutting equipment

5.2. Select, adjust and operate oxy-fuel and plastic welding equipment with and without appropriate filler rods

5.3. Select and safely operate appropriate electric and oxy-acetylene welding equipment

5.4. Demonstrate and identify the various types of quality welds and cuts, and their components to insure quality products

6. Engine Systems

- 6.1. Identify principles of small engine operation
- 6.2. Demonstrate the use of measuring devices for small engines
- 6.3. List the component parts of a small engine
- 6.4. Disassemble and reassemble a small engine using all diagnostic tools
- 6.5. Troubleshoot an engine and adjust to industry specifications
- 6.6. Maintain a small engine
- 6.7. Select engine coolants, lubricants, fuels, engine additives, electrical components and drive systems needed for various applications
- 6.8. Identify how the concern with engine emissions have affected the development of engine technologies
- 6.9. Identify new technology in diesel applications, such as common rail and computerized fuel systems
- 6.10. Identify biofuels and describe their effect on engine and fuel system maintenance

7. Machinery and Equipment Systems

- 7.1. Review service schedules and conduct procedures
- 7.2. Select, measure, use and calibrate testing devices for agricultural machines
- 7.3. Perform disassembly and assembly procedures
- 7.4. Select and safely connect, engage and operate machinery and power units
- 7.5. Demonstrate the correct selection and safe use of agricultural machinery and equipment systems
- 7.6. Demonstrate the use of auxiliary systems, including hydraulics, pneumatics and electronics
- 7.7. Conduct troubleshooting procedures

8. Energy Systems

- 8.1. Identify the parts and functions of the specific energy systems of mechanical power, solar power, wind power, electrical power and chemical power systems
- 8.2. Perform energy system maintenance, testing and evaluation
- 8.3. Discuss and explain the operating principles for energy systems
- 8.4. Explain and describe principles of power transmission, heat transfer, evaporation, fluid movement, conductivity, satellite transmission, conservation, sensing and regulation
- 8.5. Use computer applications in energy systems management
- 8.6. Identify and investigate emerging technologies and their economic impact on energy systems
- 8.7. Select appropriate industry standards for energy systems

9. Structural Systems

- 9.1. Conduct a site evaluation and determine elevation, slope and cut and fill requirements
- 9.2. Design, draw and interpret plans and drawings for structures with consideration to building codes, regulations and inspection requirements
- 9.3. Develop an itemized bill of materials; determine costs, delivery, storage requirements and construction time

- 9.4. Layout a structure foundation, erect batter boards, frames or forms
- 9.5. Identify and evaluate building construction materials, methods and styles
- 9.6. Calculate ventilation, insulation, heating, cooling, lighting, electrical, water and waste handling needs based on the enterprise considered (i.e., dairy, veal, hogs, plants, etc.)
- 9.7. Calculate, mix and finish concrete and masonry units
- 9.8. Design and construct wall and roofing systems
- 9.9. Demonstrate skills in the construction of an agricultural structure

10. Plumbing, Irrigation and Water Systems

- 10.1. Identify the various plastic and metal components and their functions within water supply, waste and vent systems
- 10.2. Cut, assemble and pressure test components within various types of water supply systems
- 10.3. Determine pump and pipe size, based on water requirements, head and friction losses for water and irrigation systems
- 10.4. Construct and identify the components in agricultural irrigation systems based on crop, greenhouse or landscaping needs
- 10.5. Identify the requirements of a safe water supply and necessary water treatment procedures

11. Environmental and Natural Resource Systems

- 11.1. Identify environmental problems and use equipment and tools needed to measure the problems in livestock, crop handling, processing, nursery and landscaping, aquaculture, forestry and agribusiness industries
- 11.2. Use various map types and aerial photos for land use, soil, watershed, wildlife, natural resource management and conservation
- 11.3. Use global positioning systems, remote sensing and collection equipment for agricultural applications
- 11.4. Read legal land descriptions and determine land areas using maps and onsite measuring techniques
- 11.5. Identify, construct and evaluate storage and waste disposal systems and procedures
- 11.6. Assemble environmental and natural resource system equipment and structures



WORKSHEET

IDENTIFYING STUDENT STANDARDS & BENCHMARKS

Have the individual(s) responsible for implementing the instruction, the teacher(s), complete this activity.

FOR ELEMENTARY AND/OR MIDDLE SCHOOL AGRICULTURAL LITERACY PROGRAMS

Using the content areas identified in the previous worksheet and the resources you have collected, identify student standards and benchmarks for each of the content areas you are planning to include in your agricultural education curriculum.

For example: (from the “Food & Fiber System Framework”)



Content Area - Understanding Agriculture

Standard - Society’s relationship to the Food & Fiber System

K-1 Benchmark - Students will appreciate that they use the products of agriculture every day. They will give examples of agricultural products that they use.

FOR SECONDARY AGRICULTURAL EDUCATION PROGRAMS

Make copies of the student standards and benchmarks sheets included in this section for the content areas you identified in the previous worksheet. Review these and cross out any standards that are not applicable to the program you are developing. There may also be additional student standards and benchmarks you will want to add that are unique to your program. When you have completed the task of identifying curriculum content areas and students standards and benchmarks, you will be ready to develop course outlines, units of instruction and lesson plans.

IDENTIFY AND ANALYZE CURRICULUM MATERIALS

Don't attempt to reinvent the wheel. There are many curriculum material services available. Textbook companies, university curriculum materials services and other successful local programs are good starting places for locating new material.

Gather information by:

- Reviewing the appropriate professional, educational or commercial literature and the Internet

- Contacting the appropriate professional, educational or commercial association's main office
- Contacting colleges, universities and national, state and local departments of education
- Seeking the advice of authorities in the field
- Attending meetings and conferences related to the curricular need
- Visiting successful programs in operation
- Seeking input from local personnel



Once you have obtained curriculum materials, it is important to determine if they are appropriate.

While reviewing curriculum materials, you may want to pick and choose, mix and

match. Whatever you do, be sure the materials are appropriate for the grade level, address the student standards you are teaching to and use multiple instructional strategies to address all students learning styles.

**WHEN REVIEWING THE CURRICULUM MATERIALS,
LOOK FOR THE FOLLOWING THINGS. . .**

- Purpose – main intent, goals or objectives match your identified students standards and benchmarks
- Appropriate to the grade level
- Successful approaches, techniques and ideas
- Clear information for the teacher and student
- Necessary facilities, equipment, materials and resources
- Varied assessment strategies identified

DEVELOP PLANNED COURSES OF STUDY

Courses of study should next be developed for each course you are planning to teach. Whether you are incorporating agricultural principles into an academic course or teaching an agriculturally based course, having a plan for your instruction is very

important. Find out the process for getting curriculum changes approved. Every district has its own format for a planned course of study. You should check with the curriculum coordinator in your district to get the district's format.

PLANNED COURSES OF STUDY GENERALLY INCLUDE. . .

- Course title
- Grade level
- Course length
- Lesson frequency
- Time
- Course credit
- Requirements for graduation or elective
- Prerequisites
- Description of course
- Major course objectives
- Student performance indicators
- Crosswalk with the Pennsylvania Academic Standards
- Content outline and time allocation
- Text materials and major resources
- Procedure for assessment
- Special conditions or prerequisites
- Course evaluation procedure
- Accommodations: corrective and enrichment

DEVELOP LESSON PLANS

Using the planned course of study you have developed, take the time to develop lesson plans to address each of the student performance indicators. Lesson plans are a blueprint to help you to be prepared to teach the highest quality lesson possible.

Take time to develop complete lesson plans, when you teach a lesson for the first time.

After completing the lesson, you may have found a variation that made things go more smoothly, you may want to make some changes to your procedure, or you may want to scrap the whole idea if the lesson was not successful. You will find yourself adapting lessons you have taught before so they become more effective each time. The important thing is to never be afraid to try something new.

LESSON PLANS INCLUDE. . .

- Activity name
- Setting
- Grade level
- Learner outcomes
- Estimated teaching time
- Materials needed
- Procedure
- Assessment options
- Extensions and variations
- Resources



WORKSHEET

LESSON PLAN FORMAT

ACTIVITY

Activity Name: _____

Activity Setting: _____

Grade Level: _____

Applied Academics: (check one)

- Science Social Studies Other _____
 Math Communication/English

ACTIVITY FOCUS

Brief Description

Learner Outcomes

Estimated Teaching Time

DIRECTIONS FOR THE TEACHER

Materials Needed (attach any worksheets, handouts, etc.)

Procedure (attach additional pages, if necessary)

Assessment Options (attach any paper instruments or rubrics)

Extensions and Variations

Resources

IMPLEMENTING A PLAN

Taking the time to develop a comprehensive agricultural improvement plan is the final step in the process. This plan will help you organize everything you have learned and decided while completing the planning process. Use the worksheets you have completed from all the previous sections to help you build your road map to the future.



“Developing a complete and detailed implementation plan was a really important final step for our planning team. Many of us just wanted to start doing things helter-skelter. Our planning team leader distributed the goals and objectives we had developed to us in pairs. We met for our final team writing and included anyone that came up as responsible for any task in our implementation plan. It was great to see how many people were involved and committed. We have a very clear road map, and everyone knows where we are headed!”

DEVELOP AN AGRICULTURAL EDUCATION IMPROVEMENT PLAN

Now that you have completed your research, analyzed the results, set goals for the future, reviewed various delivery and implementation models and determined the curriculum content, it is time to make the necessary plans to make your dreams a reality. This process is the real test of whether or not you have had the appropriate people involved in your planning process. If you have, you should find implementation a snap, since all the decision makers have been involved in developing the plan and should be ready to move forward. If you haven't, you

may find a few stumbling blocks along the way that you didn't anticipate.

To help your team consolidate its work, you must take time to develop a detailed improvement plan to ensure the success of all your planning to this point. This plan will identify the specific tasks that need to be completed in order to implement the decisions you have made during your review and planning process. Use the worksheets that you completed throughout the handbook to help you complete the implementation plan.

AN IMPROVEMENT PLAN INCLUDES. . .

- Goal/Objective
- Task Description
- Timeline
- Resources Needed
- Estimated Costs
- Person Responsible



Now it's time to get to work!



WORKSHEET

YOUR AGRICULTURAL EDUCATION IMPROVEMENT PLAN

Complete an improvement plan worksheet for each of the goals you have set for your agricultural education program.

COMMITTEE CO-CHAIRS: Identify the specific people who prepared this part of the plan, so they can be contacted for further clarification or questions. Many plans are expected to be implemented by others who may not have been involved in the development process.

GOAL AND OBJECTIVE: Select a goal and one objective from the “Identifying Specific Objectives” worksheet in the “Setting a Target” section for each page of your improvement plan. This level of specificity will help you develop a plan that is clear and easier to implement.

TASK DESCRIPTION: Describe the action to be taken. These may correspond to the objectives you have written or may be a subset of these objectives. Be sure to describe the task in sufficient detail so that someone else could complete the task.

TIMELINE: Indicate the expected start-up and completion date for the task identified.

RESOURCES REQUIRED: This may be a list of equipment needed or other people who need to be involved. Resources may also refer to another project developed under another goal (like a recruitment brochure), but used to help implement this goal.

ESTIMATED COSTS: Estimate the expense involved in implementing this task. Financial resources can often be a limiting factor and will need to be considered.

PERSON RESPONSIBLE FOR COMPLETION: Ultimately, someone needs to be sure the task gets completed. Identify that person(s) here, but be sure they know they are responsible for see the plan gets implemented.



TOOL

AGRICULTURAL EDUCATION IMPROVEMENT PLAN

Goal #3: Increases enrollment in the agricultural education program

Objective: Develop an agricultural education program brochure

Task Description	Timeline Begin	Timeline Complete	Resource Required	Estimated Costs	Person Responsible
<i>Take photos of students in program (action shots, various locations, gender balance, diversity)</i>	Sept. 15	Oct. 15	<i>Camera, film</i>	<i>\$100 film and developing (volunteer photographer)</i>	<i>Photographer</i>
<i>Collect existing photos</i>	Sept. 15	Oct. 31	<i>Scrapbooks, alumni, parents</i>		<i>FFA President</i>
<i>Write brochure text</i>	Sept. 15	Oct. 31	<i>Program materials</i>		<i>English teacher Ag teacher</i>
<i>Develop brochure layout</i>	Nov. 1	Nov. 30	<i>Computer and graphics program</i>		<i>Art department chair</i>
<i>Get feedback from potential users via focus groups</i>	Dec. 1	Dec. 30	<i>Classroom</i>		<i>Students – Marketing ed. Ag ed.</i>
<i>Edit text and layout</i>	Jan. 1	Jan. 31			<i>English teacher Ag teacher</i>
<i>Get brochure printed</i>	Feb. 1	Feb. 15		<i>10,000 @ .25 \$2,500.00</i>	<i>Local printer</i>
<i>Distribute to: Counselors, Parents, Administrators, Teachers (elementary and secondary)</i>	Feb. 15	Mar. 15	<i>Mailing labels Envelopes donated by district</i>		<i>Ag teacher Counselors</i>



WORKSHEET

AGRICULTURAL EDUCATION IMPROVEMENT PLAN

Committee Co-Chairs: _____

Goal: _____

Objective: _____

Task Description	Timeline Begin	Timeline Complete	Resource Required	Estimated Costs	Person Responsible



RESOURCES

AGRICULTURAL EDUCATION RESOURCE ORGANIZATIONS

AMERICAN ANGUS ASSOCIATION

3201 Frederick Avenue
St. Joseph, MO 64506
P: 816-383-5100
F: 816-233-9703
<http://www.angus.org/>

Breed material

AMERICAN ASSOCIATION FOR AGRICULTURAL EDUCATION

M. Susie Whittington, President-Elect
The Ohio State University
203A Ag Administration Building
2120 Fyffe Road
Columbus, OH 43210
P: 614-292-6321
F: 614-292-7007
<http://aaaeonline.org/>

AMERICAN ASSOCIATION OF COMMUNITY COLLEGES

One Dupont Circle NW
Suite 410
Washington, DC 20036
P: 202-728-0200
F: 202-833-2467
<http://www.aacc.nche.edu/>

AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS

<http://www.asa.org/>

AMERICAN CHEMICAL SOCIETY (ACS)

1155 Sixteenth Street NW
Washington, DC 20036
P: 800-227-5558
F: 202-872-6257
<http://portal.acs.org/portal/acs/corg/content>

AMERICAN FARM BUREAU

FOUNDATION FOR AGRICULTURE
600 Maryland Avenue SW
Suite 1000W
Washington, DC 20024
P: 800-443-8456
<http://www.ageducate.org/activities/>

AMERICAN GELBVIEH ASSOCIATION

10900 Dover Street
Westminster, CO 80021
P: 303-465-BEEF
F: 303-465-2339
<http://www.gelbvieh.org/>
Breed material

AMERICAN HEREFORD ASSOCIATION

PO Box 014059
Kansas City, MO 64101
P: 816-842-3757
F: 816-842-6931
<http://www.hereford.org/>
Breed material

AMERICAN HORTICULTURAL SOCIETY EDUCATION DEPARTMENT

7931 East Boulevard Drive
Alexandria, VA 22308-13000
P: 703-768-8700
<http://www.ahs.org/>

AMERICAN-INTERNATIONAL CHAROLAIS ASSOCIATION (AICA)

11700 NW Plaza Circle
Kansas City, MO 64153
P: 816-464-5977
F: 816-464-5759
<http://www.charolaisusa.com/>

Breed material

AMERICAN QUARTER HORSE ASSOCIATION

PO Box 200
Amarillo, TX 79168
P: 806-376-4811
F: 806-349-6411
<http://www.aqha.com/>
Breed material

AMERICAN SHEEP INDUSTRY ASSOCIATION

9785 Maroon Circle
Suite 360
Englewood, CO 80112
P: 303-771-3500, Ext. 32
F: 303-771-8200
<http://www.sheepusa.org/>
Breed material

AMERICAN SIMMENTAL ASSOCIATION

1 Simmental Way
Bozeman, MT 59715-9733
P: 406-587-4531
F: 406-587-9301
<http://www.simmental.org/>
Breed material

**APPRENTICESHIP AND TRAINING
COORDINATOR**

Bureau of Labor Law Compliance
PA Department of Labor and Industry
1301 Labor and Industry Building
651 Boas Street
Harrisburg, PA 17121
P: 800-932-0665
<http://www.dli.state.pa.us/>

**ASSOCIATION OF CAREER AND
TECHNICAL EDUCATION**

Dauphin County Technical School
John Polto, Executive Director
6001 Locust Lane
Harrisburg, PA 17109
P: 717-652-3170
<http://www.acteonline.org/>

**CENTER ON EDUCATION AND TRAINING
FOR EMPLOYMENT (CETE)**

College of Education and Human Ecology
1900 Kenny Road
Columbus, OH 43210
P: 800-848-4815
<http://www.cete.org/>

CENTER FOR RURAL PENNSYLVANIA

200 North Third Street, Suite 600
Harrisburg, PA 17101
P: 717-787-9555
<http://www.ruralpa.org/>

**EDUCATION RESOURCES
INFORMATION CENTER**

ERIC Project
c/o Computer Sciences Corporation
655 15th Street, NW, Suite 500
Washington, DC 20005
P: 800-538-3742
<http://www.eric.ed.gov/>

FOUNDATION CENTER

79 Fifth Avenue
116th Street
New York, NY 10003-3076
P: 212-620-4230
<http://foundationcenter.org/>

HOLSTEIN ASSOCIATION USA, INC.

1 Holstein Place
PO Box 808
Brattleboro, VT 05302-0808
P: 800-952-5200
F: 802-254-8251
<http://www.holsteinusa.com/>
Breed materials

KELLOGG FOUNDATION

One Michigan Avenue East
Battle Creek, MI 49017-4058
P: 269-968-1611
<http://www.wkkf.org/>

MPR ASSOCIATES, INC.
2150 Shattuck Avenue
Suite 800
Berkley, CA 94704
P: 510-849-4942
<http://www.mprinc.com>

**NATIONAL ASSOCIATION OF
AGRICULTURAL EDUCATORS**
300 Garrigus Building
University of Kentucky
Lexington, KY 40546-0215
P: 800-509-0204
<http://www.naae.org/>

**NATIONAL ASSOCIATION OF STATE
DIRECTORS OF CAREER TECHNICAL
EDUCATION CONSORTIUM**
8484 Georgia Avenue
Suite 320
Silver Spring, MD 20910
<http://www.careertech.org/>

**NATIONAL ASSOCIATION OF SUPERVISORS
OF AGRICULTURAL EDUCATION**
300 Garrigus Building
University of Kentucky
Lexington, KY 40546-0215
<http://www.teamaged.org/nasae/>

**NATIONAL COTTONSEED PRODUCTS
ASSOCIATION (NCPA)**
866 Willow Tree Circle
Cordova, TN 38018
P: 901-682-0800
F: 901-682-2856
<http://www.cottonseed.com/>
Video and brochures

**NATIONAL COUNCIL FOR
AGRICULTURAL EDUCATION**
<http://www.teamaged.org/>

NATIONAL FFA ORGANIZATION
PO Box 68960
6060 FFA Drive
Indianapolis, IN 46268-0960
P: 317-802-6060
<http://www.ffa.org/>

**NATIONAL POSTSECONDARY AGRICULTURAL
STUDENT ORGANIZATION**
<http://www.nationalpas.org/>

**NATIONAL RESEARCH CENTER FOR
CAREER AND TECHNICAL EDUCATION**
University of Louisville
College of Education and Human Development
Louisville, KY 40292
P: 502-852-4727
<http://www.nrccte.org/>

**NATIONAL YOUNG FARMER
EDUCATIONAL ASSOCIATION**
PO Box 20326
Montgomery, AL 36120
P: 334-213-3276
<http://www.nyfea.org/>

NORTH AMERICAN LIMOUSIN FOUNDATION
7383 South Alton Way
Suite 100
Centennial, CO 80112
P: 303-220-1693
F: 303-220-1884
<http://www.nalf.org/>
Breed-specific videos and materials

**PENNSYLVANIA ASSOCIATION FOR
SUSTAINABLE AGRICULTURE**
PO Box 419
114 West Main Street
Millheim, PA 16854
P: 814-349-9856
<http://www.pasafarming.org>

PENNSYLVANIA ASSOCIATION OF AGRICULTURE EDUCATORS
Gerald W. Reichard, Executive Secretary
11820 Ivanhoe Drive
Waynesboro, PA 17268
P: 717-762-7793
<http://www.paae.org/>

PENNSYLVANIA ASSOCIATION OF CAREER AND TECHNICAL ADMINISTRATORS
Jackie Cullen, Executive Director
23 Meadow Drive
Camp Hill, PA 17011-8331
P: 717-761-3381
<http://www.pacareertech.org/>

PENNSYLVANIA ASSOCIATION OF CONSERVATION DISTRICTS, INC.
25 North Front Street
Harrisburg, PA 17101
P: 717-238-7223
<http://pacd.org/>

PENNSYLVANIA CENTER FOR ENVIRONMENTAL EDUCATION
164 South Main Street
Slippery Rock, PA 16057
P: 724-738-9020
<http://www.pcee.org/>

PENNSYLVANIA DEPARTMENT OF AGRICULTURE
2301 North Cameron Street
Harrisburg, PA 17110-9408
P: 717-787-4737
<http://www.agriculture.state.pa.us/>
<http://www.marketplaceforthemind.state.pa.us/>

PENNSYLVANIA DEPARTMENT OF EDUCATION BUREAU OF CAREER AND TECHNICAL EDUCATION
Agricultural Education Advisor
333 Market Street, 11th Floor
Harrisburg, PA 17126
P: 717-783-6957
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