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Agricultural Education Scope And Sequence And Program Management Guide 1989

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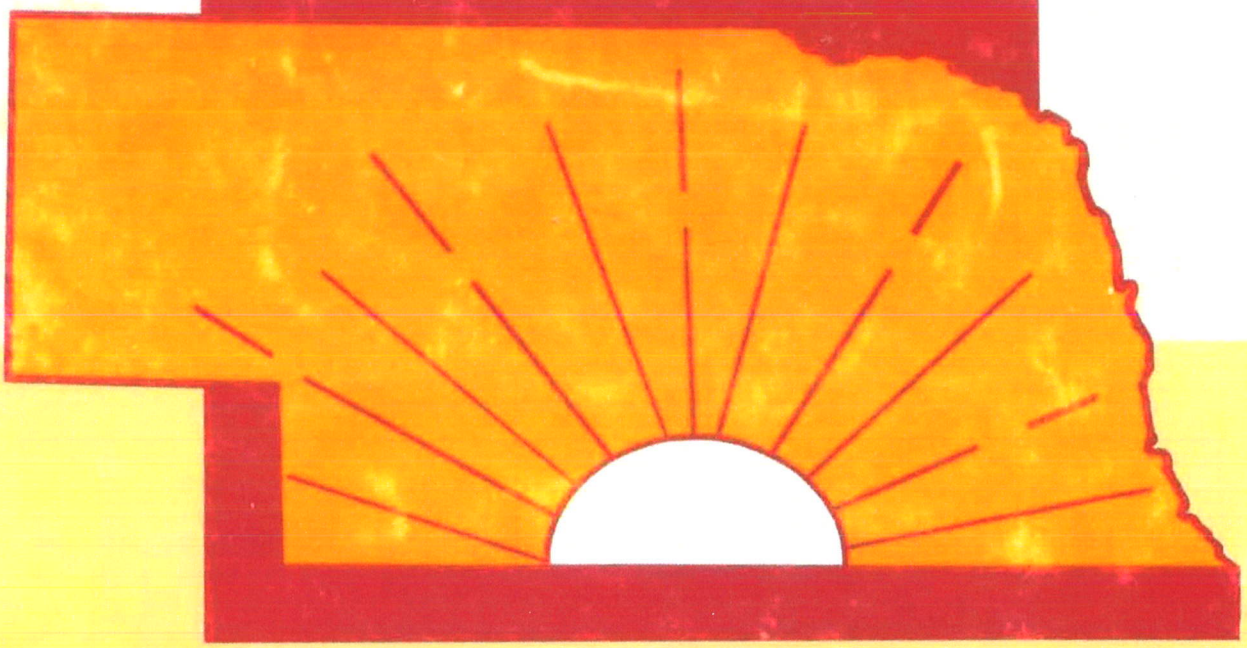

FOCUSING ON THE FUTURE

AGRICUTURAL EDUCATION
SCOPE AND SEQUENCE
AND
PROGRAM MANAGEMENT GUIDE

A guide for planning, conducting, and evaluating Comprehensive Agricultural Education Programs in Nebraska

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Preface

Agricultural Education in Nebraska is a program in transition. It doesn't just prepare students for the world of work, but assists them in achieving a balanced and productive life as an employee in the agricultural industry and/or a consumer of agricultural products. Agricultural Education enhances both the technical and personal skills needed by students.

Agricultural Education provides for programs to be integrated into the elementary, junior high school, and the high school levels, as well as for adult educational programs. Agricultural Education is truly a community based program, and therefore has responsibility for community Agricultural Education programming.

This manual is designed to provide an overall view of the Nebraska Agricultural Education Program, and provide assistance in program planning and curriculum development for local school systems. The chapters in this manual give background information on all program components as well as some of the issues and relationships with which Agricultural Education must deal.

A suggested scope and sequence of secondary Agricultural Education curriculum is provided as an example of the format and the topics which may be appropriate for a Nebraska program. However, it is still necessary for the local instructor and administrator to review this suggested scope and sequence document carefully and tailor it to the needs of their community.

A suggested curriculum is presented for junior high school students enrolled in Agricultural Education. It is complete with suggested activities for each area of instruction. It is intended that the junior high school program be more than a "shop" class, and that the overall objectives at that time include enrichment information about the role of agriculture in society and the world (seventh) and career exploration and personal development (eighth). Should instructors choose to use this specific material, it will result in students being very active and engaged in investigative and reporting types of activities.

Adult Education in Agriculture will likely continue to increase in importance and frequency as the population base changes in rural Nebraska. Adult instruction is designed for immediate application. Instructors can use this manual to effectively plan and implement adult education programs.

Changes in agriculture demand that programs designed for agricultural education also change to be responsive to the needs of the people. Nebraska Agricultural Education is now focusing on the future to meet the needs of our growing clientele in agriculture.

AGRICULTURAL EDUCATION SCOPE AND SEQUENCE AND PROGRAM MANAGEMENT GUIDE

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CHAPTER 1:

INTRODUCTION TO AGRICULTURAL EDUCATION

Historical Perspective

Agricultural education has been a significant part of the Nebraska educational program since the early 1900's. Nebraska became a state in 1867, and the College of Agriculture in Lincoln was established in 1872. In 1895, the first secondary agriculture school was established as a part of the College of Agriculture. This program was a three year course of study of six-month duration. The fourth year was added in 1910, making it an approved high school in Nebraska.

A second State Secondary School of Agriculture was established in Curtis in 1913 and administered as a statewide residential program until 1967, at which time the program converted to a post secondary technical school.

With the passage if the Smith-Hughes Act of 1917, public secondary vocational agriculture had its roots in Nebraska. From two high schools beginning vocational agriculture programs in 1917-18 *(Hastings and Scottsbluff)*, the program grew to a high of 150 programs in 1955-56 to the present 125 programs in 1989-90. The number of official programs operating in Nebraska has been somewhat stable since the early 1970's.

Traditional Mission and Scope of the Program

The mission of the agricultural education program in Nebraska has changed over the years, as has the scope of agricultural educational activity. In the beginning, the primary purpose of the "vocational agriculture" program was to prepare high school age male students to enter and progress in agricultural occupations *(mainly farming and ranching)* and to educate adult students about the new developments in production agriculture. The purpose was fairly narrow, and concentrated on occupations in food production and on students who would enter occupations requiring less than a baccalaureate degree. Therefore, "vocational" students rarely went on to higher education.

This type of system did quite well, especially between the years 1917 - 1968. The has become a nation without equal in the ability to produce high quality food and fiber in quantities enough to feed this country and millions of others around the world. Today, every U.S. farmer grows enough food to feed 120 persons. Vocational agriculture and agricultural education programs have played a part in this success story.

Modern Mission and Scope

Today, agricultural education has taken on a new image and an expanded mission and scope. Secondary agricultural education is not "vocational agriculture". The name "Agricultural Education" is used in Nebraska to indicate the increased breadth of the curriculum and a significant change in mission. The following program characteristics are discussed briefly to indicate the scope and mission of the new agricultural education program in Nebraska.

Agricultural Literacy - Students from all communities and towns across Nebraska have a significant dependence on agriculture and the agricultural industry. Approximately 40 percent of the Nebraska work force is employed in some phase of the production, distribution and processing of agricultural products. This percentage is the highest for any state in the country. Because of this large dependence on agriculture and the tremendous impact of agriculture on the state economy, all citizens have a need to be knowledgeable of agriculture.

Agriculture uses a significant amount of economic and natural resources in Nebraska. A well informed population is better able to deal with economic, political, social, and environmental issues affecting agriculture and their own living standards and conditions.

Today's agricultural education program is designed to provide agricultural literacy education to all elementary, junior high, and secondary students, regardless of their occupational or career interest.

Occupational Preparation - Students having career interests in the agricultural industry have more opportunities for occupational exploration and preparation than ever before. Today, less than 3 percent of the nation's work force is engaged in actual food and fiber production *(farming or ranching)*. The secondary agricultural education program has expanded opportunities to explore the interrelationships or agriculture and careers available in the industry, specifically though the junior high school curriculum, and later in secondary programs.

Newer areas of emphasis include both awareness and preparation for the ever expanding opportunities in agribusiness and marketing, high technology fields, international agriculture, horticulture, entrepreneurship opportunities, etc. Instruction in agricultural education now emphasizes the need for post-secondary education for entry into highly technical fields. Therefore, opportunities for attending vocational technical schools, state and community colleges, and universities are emphasized as well as direct entry to the world of work.

Adult Education - Since agricultural education has a major impact on all residents of the typical Nebraska community, the clientele served by the agricultural education program has to reflect the community as well. Adult education in agriculture should be an integral part of the total agricultural education program in every community.

Adult education opportunities enables new and innovative knowledge and practices to be introduced into a community in an efficient and effective manner. The adult population of the school district are the tax paying patrons. They are the community leaders and decision makers. They make up the school board, fair board, and other decision making bodies in the community. The needs of adults are

as real as the needs of youth, and the application of the material learned is much more immediate and meaningful. Therefore, adult education in agriculture can be an important component of the comprehensive agricultural education program.

The agricultural education program in any community should reflect the agriculturally-related needs of the entire community. Therefore the agricultural education program is a district wide endeavor, with components at the elementary, junior high and secondary levels in the public school, as well as an adult education component. This is the agricultural education program that will meet the needs of Nebraska in the future.

Program Planning for Agricultural Education

As mentioned, the agricultural education program in a school district is a community-based program aimed at meeting the needs of district wide clientele. Because of this broad mission and appeal, the community should have significant input into the curriculum offerings as well as the organization and administration of the program. The following principles should be observed in developing and planning a sound agricultural education program:

1. The program should be based upon the needs and interests of the clientele in the community; i.e., students, adults, business persons, farmers, etc.

2. Participants *(or students' parents)* should be involved in the planning process.

3. Instructional units and subject matter content should be consistent with the mission and philosophy of the agricultural education program and the school district.

4. An advisory committee *(or council)* should be used to assist in planning, implementing, and evaluating the total program.

5. The program should function within the rules and regulation of the local school district.

6. The goals and objectives should be within reasonable limits of the resources available and needed for success.

7. Information provided should be clear, concise, accurate, up-to-date, and based on a reliable educational and agricultural knowledge base.

8. A variety of methods and instructional techniques should be used in conducting classes.

9. An evaluation plan should be used as the basis for program improvement and accountability.

10. A written plan outlining program goals and objectives, and a realistic scope and sequence of instruction should be developed, updated, and followed.

Use of the Advisory Committee

In order to fully involve the community into the agricultural education program, a departmental advisory council should be formed and used to assist in formulating program objectives and procedures to follow in achieving the objectives. The primary duties of such a council should be:

1. Provide assistance in deciding the type of program needed by various clientele groups within the community.

2. Assist in locating community resources for use within the program. Examples may be:
   - Resource persons and paraprofessionals to assist in providing instruction.
   - Community instructional resources for use in field trips, visitations, demonstrations, etc.
   - Business and industry placement opportunities for occupational placement experiences *(cooperative education)* for students.

3. Assist with evaluating program direction and content.

4. Assist with integration of new ideas and innovations to enhance learning and student performance.

5. Provide community support and public relations for the program.

Several considerations should be taken into consideration when selecting advisory council members.

Representation of the community - Advisory council members should be representative of the community at large, being sure to provide an avenue for input from:
- all geographic areas within the district,
- the minority populations within the district,
- agricultural business interest within the district *(i.e., farm, business, government agencies, etc.),*
- clientele of male and female gender, and
- parents of agricultural education students.

School board members and/or members of the school district administration may wish to serve on the agricultural education advisory council as ex-officio members in order to maintain a clear and open line of communication between the Board and the agricultural education program. However, an ex-officio status may be in the best interest of both the advisory council and the administration representative to avoid conflict of interest in directing the program.

Role of the instructor - It should be noted that the role of the advisory council is to "advise" and the role of the instructor is to listen to that input and weigh it carefully in making the best possible decisions for the good of the program. The instructor is normally considered the administrator of the agricultural education program and does so under the rules and guidelines granted by the school district administration. Therefore, the agricultural education instructor is in great

need of the information, advice and direction provided from the advisory council to insure that the program will continue to meet the needs of the district.

Who Should be Encouraged to Enroll in Agricultural Education?

Because of the expanded mission and appeal of agricultural education, all students may gain significantly from enrollment in agricultural education related instruction. In elementary grades, agricultural education would be integrated into the daily instructional programs of math, science, social studies, art, writing, reading, etc. This integration not only provides real life application of the basic skills curriculum, but also provides an awareness of the integral role of agriculture in every day life. Therefore, all elementary students should benefit from agricultural instruction through integration into the existing curriculum.

Junior high school students are at the age at which career exploration and a knowledge of the relationships between themselves and the world around them is important. Junior high level agricultural education concentrates on providing an overview of the interdependency of agriculture and society, environment, standard of living, food security, etc., primarily at the seventh grade level. At the eighth grade level, students are asked to learn more about themselves in relation to the world of work, as well as learn about the career opportunities within the agricultural industry. Therefore, all students could benefit from enrollment in agriculture at this level.

Secondary agricultural education provides both understandings about agriculture (**literacy**) and competency in agriculture ***(career preparation)***. Students learn about leadership and personal development as it relates to being successful within any occupation. Specifically, students can gain the experiences and technical competencies needed to enter directly into some agricultural occupations, or prepare for enrollment into post-secondary institutions for further education.

Adults in business and/or production agriculture can certainly find value in participation in the adult education component of a district wide agricultural education program. Business persons on main street or on the farms and ranches are looking for ways of maximizing returns and minimizing costs. Because of the sparsely distributed population in some parts of Nebraska, some Nebraskans may not have the opportunity to upgrade their skills and competencies because community college or area postsecondary attendance centers are not readily available. The agricultural education adult program can fill this void by provided coordinated adult education services for rural communities, either through a sponsoring community college program or through the initiative of the secondary school program itself.

Enrollment in agricultural education is open to all persons, regardless of race, creed, gender or handicapping conditions. With an expanded vision of the agricultural industry, it must be realized that traditional male occupational roles are no loner acceptable. Farming represents only a small portion of the total opportunities in the industry. The vast majority of career opportunities being developed in agriculture center around the increased use of technologies, information processing, and processing and distribution of products. Enrollment is

therefore recommended for any person who can benefit from a systematic instructional program in agricultural education.

Role of the Agricultural Education Instructor

With such a change in the mission and image of the agricultural education program, there is sure to be questions about the appropriate role of the agricultural education instructor in the local school district. The job description may differ from school to school, primarily depending on the extent to which all program components are integrated into any one school district.

If a school district integrates an elementary level agriculture program, the subsequent function of the agricultural educator will be to serve primarily as a resource person and a coordinator of activities. More is discussed about elementary agricultural education programs in another chapter.

If the school district integrates a junior high school component, the subsequent function of the agricultural education instructor with be one of actual classroom teaching and facilitation of learning activities. This direct teaching responsibility would be the result of the instructor being the most qualified person to teach about interrelationships with agriculture and the career opportunities in the industry. However, thought should be given to including paraprofessionals or perhaps an additional instructor to meet the total instructional needs should the program warrant additional teaching assistance.

If the school district integrates a secondary agricultural education program, the primary responsibilities would again lie in providing direct instruction and facilitation of learning activities and experiences. It may also be in serving as a resource person to assist other teachers in integrating agricultural examples *(literacy)* into basic skill courses. To meet the instructional needs for the agricultural instructional materials, direct teaching for occupational awareness and preparation will be a part of their responsibilities.

If the school district integrates an adult education component, the primary responsibility of the agricultural instructor may be in instruction. However, it may likely be in coordination of the instructional program using resource persons with specific technical expertise.

Summary

The role of the teacher in providing Nebraska communities with a comprehensive agricultural education program requires excellent teaching and coordination skills. Agriculture instructors may need additional in-service education to enable them to fully utilize the resources available to formulate and carry out such a program. However, the impact on the total public school agricultural education program will be dependent upon the cooperative efforts of the teacher and his/her administrators to put the pieces together.

Nebraska needs a sound system of comprehensive agricultural education.

CHAPTER 2:

ADMINISTERING AGRICULTURAL EDUCATION PROGRAMS

Administrative Relationships To Agricultural Education Programs

The quality of the agricultural education program is dependent on the effectiveness of the administrative team and the respect they have for the teacher and the instructional program itself. The contribution that the agricultural education department can make in the community has to be identified and steps taken to insure the agriculture program is properly organized and administered to fulfill its mission and obligations to the community.

Administrators at the school district level should have a fundamental knowledge and understanding of agricultural education and the community-based nature of the program. If they are not knowledgeable of the program and the benefits received by the clientele served, the agricultural education instructor should accept the responsibility to provide needed information. It is the superintendent and elected school board members who will set the stage for both financial and educational support of the program.

The principal in charge of administering the attendance centers in which agriculture is taught must also be in agreement with the aims and purposes of the agricultural education program. Whether in the elementary, junior high, or high school program, the principal will be the person who will supervise the program and establish the educational environment in which agricultural education will be taught. It is the principal who will determine the participation level of teachers and students in agricultural education activities.

The teacher of agriculture can help maintain a strong administrator - teacher relationship by:

1. Being a part of the activities of the total school district faculty.
2. Keeping administrators informed of developments in the instructional program as well as in the youth leadership program.
3. Being responsive to the needs of youth, their parents, and the community in general.
4. Following the proper channels of authority when requesting resources or making substantial changes in the program.
5. Providing a well organized, planned program of study in agricultural education.
6. Being a professional educator when it comes to representing the school

district and the educational profession.

Role Of An Advisory Committee

An advisory committee for agricultural education should be maintained to provide community input and direction for the agricultural education program. The actual make up of an advisory committee may differ depending on the community. The following key points should be considered in organizing the advisory committee.

Purpose: The primary purposes of the advisory committee are:

1. To advise agricultural education teachers in planning, organizing, and evaluating the local program.
2. To help coordinate the work of the agricultural education department with other instructional programs and related services in the community.
3. To provide opportunity for those citizens affected by the agricultural education program to have a role in directly or indirectly evaluating the program.
4. To assist in securing modern equipment and supplies for the agricultural education department.
5. To assist in establishing a community based, and experienced based educational program in the community.
6. To assist in providing good public and community relations.
7. To evaluate the advantages to major changes suggested for the program.
8. To provide continuity for the agricultural education program during periods of instructor change.
9. To assist in broadening the program direction to serve a greater community clientele.
10. To assist in improving the quality of agricultural education for all members of the community.

Organization: The selection and organization of the advisory committee is tremendously important. Key concerns in formulating the advisory committee include:

1. Receive the school board's approval to formulate an advisory committee for the agricultural education program.

2. Decide on the number of committee members necessary.
   Note: It is recommended that 6-9 members be appointed or elected for the board. This allows enough members so if a few happen to be absent for a meeting, business can still be conducted. If all attend, it is still a manageable group to coordinate and conduct business.

3. Decide on the method of selecting members.
   Note: Initially, members may be appointed and approved by the school board. Subsequent selection may be accomplished through voting by existing advisory committee members with the approval of the school board. A three year term with terms expiring on a staggered year basis allows for maintaining experience on the advisory committee, while providing for an orderly exit from the committee as well.

4. Select members who are well respected in the community, have an interest in serving, and will accept the responsibility to maintain a quality program.

5. Select a committee that is representative of the entire community. Be cognizant of the distribution of the committee based on: age, gender, ethnic background, geographic location within the district, occupations, etc. The committee should truly reflect the community in which the program serves.

6. Have the school board president or the superintendent officially notify the newly selected board members of their appointment.

7. Prepare a formal statement of policy to guide the action of the advisory committee.

8. Explain the relationship of the advisory committee to the teacher, the program, the school district, and the board of education.

9. Elect a chairperson and secretary for advisory committee meetings.
   Note: The teacher of agriculture may wish to maintain the position of secretary to facilitate meeting announcements, agenda makeup and committee correspondence.

10. Decide on the tentative number of meetings per year.
    Note: The number of meetings per year may vary, depending on the activities of the department. In a normal year, the number of meetings may be as little as three. In an active year which may include program evaluation, curriculum changes, etc., the committee may need to meet as necessary to enable change to take place.

11. Have a definite agenda and purpose for each meeting.
    Note: DO NOT WASTE COMMITTEE MEMBERS TIME

12. Conduct all advisory meetings in the agricultural education facility.

Assistance on establishing a local advisory committee for agricultural education programs may be obtained from the following sources:

Nebraska Council on Vocational Education
419 Nebraska Hall
University of Nebraska-Lincoln
Lincoln, Nebraska 68583-0551

Nebraska Department of Education
Division of Vocational Education
P.O. Box 94987
301 Centennial Mall South
Lincoln, Nebraska 68509-4987

Department of Agricultural Education
University of Nebraska-Lincoln
303 Agriculture Hall
Lincoln, Nebraska, 68583-0709

The Administrative Team

The agricultural education instructor should take the initiative in establishing an administrative team to assist in planning and implementation of the program. Members of the team should be those who impact the delivery and quality of the instructional program. Some suggestions are:

1. The agricultural teacher(s) who are given the responsibility of instructional program planning and delivery.
2. The principal(s) charged with coordination and administrating of the academic schedule.
3. The guidance counselor(s) charged with career guidance and class scheduling of agricultural education students.
4. Chairperson of the advisory council who provides the primary input from the community at large.

The duties of the administrative team consists primarily of:

- Assessing the instructional activities that would become a part of the curriculum for both appropriateness and quality of the activity.
- Scheduling instructional activities and field trips outside the community.
- Arranging for program evaluation and assessment.
- Providing administrative support for implementing change in the curriculum and in the program.
- Maintaining clear and open channels of communications among everyone associated with the administration of the program.

The administrative team should meet at least three times per year in an effort to maintain a quality program. In the spring of each year, the team should review the activities to be carried out in the year ahead, especially those to be conducted during the summer extended contract period, as well as those that require excusing students from school during the academic year. The teacher(s) should be prepared to justify the educational benefits of providing instruction outside of the school facilities. Activities identified as being of sound educational value can then be placed on the official school schedule so that they may have priority over other activities of only extracurricular value.

The administrative team may wish to meet in the fall to evaluate the instructional program itself and the educational activities for the remainder of the school year. All phases of the program should be reviewed, including the FFA and youth leadership component, the Supervised Agricultural Experiences Program, and the adult education component.

The Extended Contract Period

Teachers of agricultural education are employed beyond the academic (*9 month*) year to provide instructional services to agricultural students on a year round basis. This extended instructional time is normally during the summer months and provides opportunities for individualized instruction to really meet the occupational and personal needs of students. Teachers should take advantage of the opportunity to teach about agriculture when agricultural production and the businesses that support the farmer/rancher are the most active; that is in June, July, and August. The length of the extended contract is decided locally and should reflect the time required to accomplish sound instructional and supervision activities related to the agricultural education program.

Appropriate activities for the extended employment contract include, but are not limited to:

- Individualized instruction for agricultural education students who are interested in both production and agribusiness careers.
- Individualized instruction of both youth and adult students when their needs are most current and the teachable moment is best.
- Supervision of Supervised Agricultural Experience activities for youth and adults.
- Coordination and implementation of leadership development activities through the FFA and Young Farmer/Rancher Education Association

Planning the Curriculum:

The agricultural education curriculum should be a natural outgrowth of the local, state, national, and international trends and issues facing the agricultural food and fiber industry. The curriculum should have the dual responsibility of preparation for careers in agriculture, and preparing citizens to be informed consumers of agricultural products and services.

The four year instructional scope and sequence and/or the semesterized instructional courses provided in Appendix C are examples of the recommended curriculum for Nebraska secondary agricultural education programs. This curriculum places emphasis on learning about agriculture, preparing for careers in agriculture, developing leadership and communicative skills, and developing more of a global perspective of the agricultural food and fiber system.

Curriculum should be planned and developed with the assistance of the advisory committee (*community representatives*), as well as informed technically qualified agriculturalists. Experts in the field of agriculture are needed to maintain the quality and currency of the curriculum. At the same time, resource persons with educational expertise are needed to maintain the student centered curriculum, guaranteeing that the curriculum meets the changing needs of youth and adults as well as being technically appropriate.

The role of the instructor in the curriculum planning process is to bring the curriculum development (*educational*) specialist and the subject matter specialist together to accommodate both the technical and interpersonal needs in the curriculum of the agricultural education program. This is no small task, however, the quality of the agricultural education program depends on the balance and quality of these two functions.

Qualities of a Exemplary Agricultural Education Program In Nebraska

The following are guidelines (*recommendations*) for an exemplary program of agricultural education in Nebraska public schools. It is important to recognize that these are not requirements, but quality standards to pursue through continual program evaluation and improvement.

Instructional Program:

1. The department's annual and five year goals and objectives are on file in the local department and with the local administration.

2. A written statement of philosophy for agricultural education is in harmony with the philosophic statement of the total school system.

3. The instructional program is reviewed and modified in light of state and national agricultural labor trends.

4. Validated competencies needed for student entry into modern agricultural careers are used for the basis of a sound instructional program.

5. The instructional program contains the necessary balance of class time, laboratory activity, field trips, and agricultural experiences necessary to prepare students for employment or placement in postsecondary education programs.

6. Students enrolled in agricultural education are also enrolled in other appropriate academic courses, including science, math, social studies, English, etc.

7. Provisions are made to accommodate students with handicapping conditions and/or learning disabilities.

8. Community resources, facilities, and industries are identified and utilized to enhance the quality of the instructional program.

9. Appropriate lesson plans are used that includes the instructional objectives, learning activities and resources to be utilized during instruction. (Note: *Suggested course outlines and instructional materials are available from the Nebraska Department of Education and the Department of Agricultural Education at the University of Nebraska-Lincoln.*).

10. Modern and technically accurate instructional materials and textbooks are utilized for instruction.

11. Instruction in safety is provided prior to any laboratory instruction where students may be at risk.

12. Transportation is provided for all planned, off-campus instructional activities.

Facilities and Equipment:

1. The classroom and laboratory stations are adequate for the number of students enrolled in the course.

2. Facilities and equipment meet all state and federal safety regulations.

3. The classroom and laboratory areas are maintained in a safe, orderly, and attractive condition.

4. A land laboratory convenient to the school is provided whenever possible for use in the instructional program.

5. The departmental office is located to provide optimum supervision of all student activities and facilities.

6. Supplies and equipment are stored in a systematic and safe manner.

7. Maintenance and service records of all equipment are on file in the departmental office.

8. Facilities are designed for maximum use and efficiency in the agricultural mechanics instructional area:
- minimum of 2400 square feet of laboratory space
- adequate working tools are available for all phases of instruction
- adequate heating, lighting, safety, and ventilation are provided
- adequate storage facilities are provided

9. Greenhouse and horticultural laboratory are adequate for instruction.
- minimum of 70 square feet per student provided in the greenhouse
- head house and work area at least 600 square feet total
- walk-in cooler and storage provided

10. Other laboratory facilities available for instruction as needed

Staffing:

1. The instructor possesses the personal, technical, professional, and occupational competencies necessary to prepare students for entry-level occupations or advanced educational programs.

2. The instructor is sensitive to the needs of students and can recognize and make provisions for the individual needs of students within the instructional program.

3. The instructor is employed on an extended contract to provide for continuous education and supervision of students throughout the year.

4. The instructor submits to the school administrators a carefully planned program of instructional responsibilities to be accomplished throughout the entire year.

5. Responsibility for what is taught, how it is taught, and to what extent the program is expanded into specialized areas rests largely with the local school's instructor(s), administrators, and advisory committee members based on local needs.

Supervised Agricultural Experience Programs:

1. Students are offered supervised agricultural experience programs that are related to their occupational interests and objectives and are appropriate in light of their abilities.

2. The instructional program provides a minimum of three on-site supervisory visitations during a twelve month period of time.

3. The instructor's schedule includes at least five hours per week for SAE supervision during the regular school year.

4. The instructor, students, parents and employers (when appropriate) cooperative plan and supervise SAE programs. Training plans and agreements are utilized.

5. Students employed in occupational settings are employed in accordance with all applicable state and federal labor regulations and laws.

6. Instructors maintain adequate SAE visitation records on all students.

7. Students are encouraged to maintain accurate and up to date SAE financial and program records.

Leadership Development:

1. Leadership development activities are an integral part of the comprehensive instructional program.

2. The FFA chapter involves members at the local, district, state and national levels.

3. The organization and implementation of a FFA program is recognized as an integral part of the total instructional program in agricultural education.

4. All students enrolled in agricultural education programs are strongly encouraged to be members or the local FFA chapter.

5. The adult education or Young Farmer/Rancher Education Association program provides leadership and communication skill development as part of the total learning program.

Student Recruitment, Enrollment and Counseling

1. Enrollment in agricultural education classes includes, but is not limited to those who are interested in the study of agricultural occupations. Students with interests in just knowing more about agriculture (literacy) are encouraged to participate to the extent to which their interests are satisfied.

2. Agricultural education courses, while emphasizing development of agricultural competencies, should also provide exploratory and literacy courses for students not interested in occupational preparation.

3. It is recommended that students enrolling in specialized courses also enroll in or have completed a one or two year basic agriculture program.

4. Prospective students and their parents are contacted by the instructor to explain the agricultural education program of study.

5. A student file is maintained for all students. The file contains current information of occupational objectives, SAE program, FFA activities, courses completed, and other pertinent information.

6. Enrollment policies permit flexible entry and exit from the agricultural education program.

7. The instructor advises each student on a regular basis and assists those students with special educational needs to obtain needed assistance from qualified school personnel.

Public Relations:

1. Through an effective public relations program, the faculty, parents, employers, advisory committee members, administrators, and community clientele understand the objectives, activities, and accomplishments of the agricultural education program.

2. The instructor makes monthly and annual reports of travel and activities to the local administrators.

3. The instructor establishes and maintains effective working relationships with community business and civic leaders.

4. The instructor is actively involved in professional agricultural education organizations in the state and is engaged in continuing teaching improvement and faculty development activities.

Administration and Support:

1. The local agricultural education program is an integral part of the local public school and is provided for as part of the comprehensive vocational education efforts within the district.

2. In multiple teacher departments, one instructor is designated and compensated for being the department chairperson. The chairperson job description is on file in the local department and with the local administration.

3. A cooperative administrative team jointly plans and implements a progressive program of agricultural education in the local district.

Placement:

1. The instructor, with the help of the school counselor, assists in student placement and follow-up activities. A placement file and employment record is maintained.

2. Reports regarding placement and follow-up of graduates are completed and submitted as required by the state.

Evaluation:

1. One and three year follow-up surveys of graduates are made to determine their current occupational or educational status.

2. Results obtained from program evaluations are used to promote, develop, and improve the instructional program in agricultural education.

3. The comprehensive program is evaluated continually for possible program revision and improvement.

4. Curriculum and experiential programs are adjusted annually to reflect changes in clientele and societal needs based on a well planned and conducted needs assessment.

5. An "external" evaluation is held within each five year period to enhance program offerings and effectiveness. (NOTE: *Agricultural education consultants from the Nebraska Department of Education and from the University of Nebraska-Lincoln are available for program evaluation activities upon local district request.*)

Developing Community Linkages

Developing sound community ties to educational agencies and organizations serves to strengthen the ties to the community and recognizing the agricultural education program as a community based, educational program. The benefits derived from strong linkages are enjoyed by the entire school system. Administrators are pleased to have community participation in the school system that directly benefits from community tax dollars and interested patrons. The agricultural education program derives instructional assistance and support, as well as benefits from the added accountability required to maintain that type of open relationship.

A few of the community organizations or agencies that are of special interest to agricultural education programs are as follows:

Cooperative Extension Service: The extension service has a similar mission to that of the agricultural education program. In agriculture, the extension service provides educational consultation and instruction in a nonformal classroom setting. The extension method is one of individualized, specialized instruction on the farm or ranch, or in community meetings and forums.

Paraprofessionals in Agriculture: The linkages with persons with subject matter expertise in the community are essential as well. Professionals and paraprofessionals offer the expertise and technical skills that may be unavailable to the program if relying only on the skills of the agricultural education instructor. The training necessary for teaching agriculture consists of a broad agricultural background and skills, and specific expertise in pedagogy. In other words, most teachers are more expert in facilitating the instructional process than in possessing all of the technical skills.

The instructor should utilize the technically skilled resource persons available in the community to address instructional needs in which he/she lacks the technical experience and skills. Such areas may include:

- metals and welding fabrication
- horticulture and floriculture skills
- artificial insemination or embryo transplants
- financial record analysis
- computer technology applications
- large scale machinery maintenance or overhaul
- etc.

Summary

The importance of administering an effective agricultural education program can not be over emphasized. It takes a cooperative effort between teachers and administrators and must be built on mutual trust and respect. Care must be taken that everyone concerned are knowledgeable about the role and mission of the agricultural education program. Administration is a continual exercise in assessment and evaluation, followed by joint planning for improvement and implementation of new ideas or activity. If quality programs are to be maintained, the administrative team must have a uniform vision of the present and future agricultural education program for the local district.

It is a very appropriate that the agricultural education program develop a linkage with the extension service. Cooperative activities are possible in a variety of areas, including youth leadership development (4-H and FFA), utilization of agricultural instructional materials and resources, adult education programs, community and county agricultural fairs and shows, advisory and consultative services, etc.

Agricultural education instructors are strongly encouraged to maintain continuous professional relations with his/her extension service counterpart. Both are agricultural educators. And both can benefit greatly from cooperatively addressing the agricultural education needs of the community.

FFA Alumni: The FFA Alumni Chapter in a local community provides a variety of support services to the FFA chapter, its members, and adviser. Composed primarily of former members and persons wanting to support the leadership and personal development of secondary youth, the Alumni can be a valuable resource to the FFA chapter and its adviser.

Activities carried out by Alumni members may include:

- Providing college scholarships for agricultural students,
- Sponsoring leadership development events,
- Conducting livestock or crop fairs or shows,
- Conducting livestock judging events,
- Serving as resource persons or consultants,
- Raising money for special projects,
- Assisting with awards banquets or recognition events,
- Purchasing award plaques or certificates,
- Training FFA contest participants,
- And the list could go on and on ....

The agricultural education instructor uses the Alumni most effectively when they are allowed to enhance the effectiveness and efficiency of the FFA chapter. The instructor should not take over the operation of the Alumni chapter and guide their activities and expenditure of funds. Rather, the Alumni members should remain autonomous in their organization and set their own objectives and activities as they see the need.

Community Business and Industry: The linkages to be established and maintained with community business and industry representatives is the heart of the agricultural education program. After all, how can one have a community based instructional program without the involvement of the community itself? The primary linkages with business and industry are beneficial for the enhancement of:

- the development of instructional resources
- the acceptance of the agricultural education program
- training and instructional sites in the community
- involvement in instructional planning and evaluation
- technical subject matter updates
- civic involvement and leadership development
- etc.

CHAPTER 3:

ELEMENTARY AGRICULTURAL EDUCATION (K-6) PROGRAMS

The Nature Of Agriculture

Agriculture, broadly defined, is too important a topic to be taught only to the relatively small percentage of students considering careers in agriculture and pursuing agriculture education in secondary schools. In the State of Nebraska, it is essential that all citizens have a basic understanding of the agricultural industry. Currently, about 40 percent of the employment opportunities in the state are related to agriculture.

With less than 3 percent of the population nationwide being needed to grow the food and fiber for all Americans and a sizable number of others around the world, it is unlikely that all students need to learn how to actually be farmers and ranchers. However, it is important that Nebraska students have a basic understanding (*literacy*) about agriculture in order to be wise consumers, and to provide support to the agricultural industry that means so much to the economy of the state and nation.

Most Americans know very little about agriculture, its social and economic significance in the United States, and particularly, its relation to human health and environmental quality. There have been few educational efforts made to teach or otherwise develop agricultural literacy in students of any age. When children are taught something about agriculture, the material taught tends to be somewhat fragmented, frequently outdated, usually production oriented only, and often negative or condescending in tone.

An agriculturally literate person has an understanding of the food and fiber system including its history as well as its current economic, social, and environmental influence on all Americans. An agriculturally literate person will have some knowledge of food and fiber production and processing as well as both domestic and international agricultural relationships. Instruction in agriculture should also include enough knowledge of nutrition to allow informed personal choices about diet and health. Achieving the goal of agricultural literacy will make the citizens of Nebraska more qualified to participate in establishing the policies that will support a competitive agricultural industry in this country and abroad for years to come.

These basic premises highlight the importance of an educational thrust toward including agricultural literacy within the public education system of Nebraska and in America. The primary focus of this chapter focuses on the basis of all educational preparation -- kindergarten through sixth grade. It is at this level that students are exposed to the types of knowledge, understandings, and attitudes they will use as a foundation throughout most of their educational experiences. As we look to the future, we need to look at where agriculture and education about agriculture can play a significant role in the education of our youth.

Student Needs Profile

It is important when looking at agricultural education within an elementary classroom to understand the student for whom the content is directed. Iowa State University's Project 2000 *(1977)* developed a profile of the student needs through different stages of education and development. They identified basic sociological, psychological, and educational needs of students. The findings indicated that a student within the elementary age group has an educational need for fundamental life skills: a) reading, b) writing, c) calculating, and d) speaking. They have a need to make intelligent choices for career awareness, for their own personal understanding, as well as for understanding of the world of work. Finally, this age group also has a need for familiarity with everyday living.

This breakdown of the educational needs of the student, within the elementary age group, becomes very important as we look at what types of curricula to incorporate that will meet student needs. Education in agriculture can serve as the ideal medium to observe all these relationships in a pure and natural setting.

Several agricultural organizations and agencies have realized the need for providing agricultural education to elementary age students. They most often resort to providing instructional materials and information about their particular agricultural interest area. For example, the Nebraska Dairy Association provides information on dairy products and their use, as well as the nutritional and health benefits. Teachers of elementary age students used their discretion on whether the material fit into the curriculum.

In the early 1970's, the National FFA Organization also realized the need for educating younger age students and provided such efforts through the Food For America program. FFA members in local communities developed programs to present to elementary students that emphasized the role of agriculture in the every day life styles of everyone. Farm tours and animal exhibitions made the instruction real.

The first nationwide coordinated effort to deliver an organized elementary school agricultural curriculum was through the efforts of the Agriculture in the Classroom *(AITC)* program. In Nebraska, the comprehensive efforts to infuse agricultural information is accomplished through the three efforts from the FFA sponsored Food For America, the Agriculture in the Classroom program, and through individual efforts of commodity and agricultural promotions groups.

Agriculture In The Classroom

The legacy of the Agriculture In The Classroom *(AITC)* program began in 1981 when John R. Block, Secretary of Agriculture, and Tyrell Bell, Secretary of Education, raised the issue of the need for agricultural literacy in our public schools. Through their encouragement, a national task force was created with representatives from agriculture, business, education, and governmental agencies. After considerable discussion, these representatives decided the issue must be addressed on a local school district basis, through the cooperative efforts of agriculture and education. Thus, the "grass roots" effort to help students acquire knowledge about the sources of food and fiber, and agriculture's role in the nation's economy and society was created. The Agriculture In The Classroom program was established.

The "grass roots" supporters in each state responded to this national initiative by creating individual state task forces. The time of responding to the initiative varied in each state, but significant progress was made through newly developed partnerships between agriculture, business, education, government, and dedicated volunteers. In fact, a key element to making AITC a successful program has been this very broad base support.

Through cooperative partnerships, each state developed a plan to coordinate existing curriculum with educational materials on agriculture and the food and fiber system. In some states, agricultural curricula and learning activities were created, while other states adapted already available material to meet their needs.

Agriculture In The Classroom encourages educators to teach more about the source of our food and fiber and the role of agriculture in the total economy and society. Emphasis is placed on incorporating basic concepts into a wide variety of subjects *(math, science, art, reading, etc.)* that are already being taught in the schools.

The basic AITC topics include:

Agriculture and history. Agricultural issues or events as major influences in human history, from making possible the first settled societies, to current world food issues.

Geographical influence of agriculture. Discovery of how climate, altitude, soil types, and societal preferences influence what and where elements of the food and fiber system are grown.

Agriculture science and technology. An exploration of the symbolic relationships between the advancement of agriculture and the results of scientific research in the last 100 years.

Agriculture economics and society. An investigation of the development of agriculture from a self sustaining, agrarian based society to revealing the interrelationships of the national economy and agriculture

Agriculture and the world. The basics of the food and fiber system can be examined worldwide from primitive cultures of those influenced by high technology with recognition of the many intermediate steps.

Agricultural career awareness. Careers in agriculture and related industries abound with a strong influence from technical knowledge for adaptation to the field of science and business.

Agricultural public policy. The concern with issues such as open space, biotechnology, genetic engineering, animal rights/welfare, development rights, environmental quality, land use, world food supplies, and others have forced society into making decisions never before considered important to human existence.

The AITC program is carried out in each state primarily by a group composed of educators, government officials, representatives from farm organizations, and representatives from agribusiness companies. Each state is responsible for developing its own program. State groups operate in different ways based on their specific needs. In Nebraska, a Director and Associate Director coordinate the state wide AITC efforts, primarily through the Nebraska Department of Agriculture.

Nebraska Agriculture In The Classroom Program

An AITC program in any Nebraska elementary school can be established through the use of numerous resources that are available for teachers to incorporate agriculture into curriculum. In cooperation between the Nebraska Agriculture In The Classroom Project, Nebraska Natural Resource Districts, and the Natural Resources Commission a curriculum guide was developed containing a large amount of ideas and activities for school teachers to use to integrate agriculture into their existing curriculum. This represents an opportunity to provide students with basic information about agriculture while it allows them to apply the basics of education to the environment around them. It is important for educators to understand that the materials available are not intended to add an additional program in agriculture to an already crowded curriculum, but to provide some concrete examples and real life situations to enhance instruction within the existing curriculum.

Philosophy Of AITC

Each state has developed an AITC program that meets their individual needs. However, all programs are developed with two different implementation thrusts. The first, deals with taking the educational activities directly to the students. Through brochures, magazines, farm tours, and presentations the students are taught about agriculture by staff members within the program. Many states provide this type of program.

The second thrust, one which is used in Nebraska, is geared toward the education of elementary teachers. The basic information about agricultural concepts is taught to educators so they are able to return to their classroom with new activities, resources, printed materials, and computer programs. This is accomplished by teacher centered workshops, in-service sessions, and a Learning Activities Notebook which provides agricultural applications for all academic curriculum topics.

Purpose Of AITC

The primary purpose of AITC is not to change a teachers entire curricula, but rather to make it easier to teach math, science, social studies, and geography as it applies to agriculture. This accomplishes the dual purpose of enhancing the learning of the student in the academic subjects and developing an understanding of agriculture. There are several areas of implementation within the AITC program that can provide opportunities for the teacher to increase the agricultural literacy of elementary age students.

The following examples of curriculum, ideas, and activities are provided to illustrate how Agriculture In The Classroom activities enhance basic skill development.

AGRICULTURE IN THE CLASSROOM EXAMPLES

1. Getting to the Core *(Math/Science)*
2. Our Farm Friends *(Social Studies)*
3. Measurement Cow *(Math)*

Subject Area: **Science, Math**

Objective: **The student will:**

1. illustrate how much of the earth's surface can actually be used for food production as compared to how much of the earth is ocean, deserts, mountains, swamps, etc.
2. be able to make a graph depicting the portion of the earth used to grow our food versus the other areas of the earth such as water or various land regions.

Suggested Grade Level: **K - 6, modifying to fit appropriate grade level.**

Background: One of the most important natural resources that covers much of the earth's land surface is soil. All living things depend on it as a source of food, either directly or indirectly. The amount of land used to produce food remains the same, yet the world population continues to grow. This generation needs to use the soil wisely to insure the future for food production to feed the world. This activity uses an apple to illustrate the amount of the earth's surface that can be used for food production.

Resources: Contact your local Soil Conservation Service or the local Natural Resource District.

Materials:

1. a large apple
2. a paring knife
3. paper (to make the graph)
4. crayons or colored pencils (to make the graph)

Procedure:

1. Cut the apple into four equal parts. Three of the parts represents the area of the earth that oceans (or salt water bodies) cover. The fourth part represents the area of the earth that is land.

2. Cut the land section in half lengthwise, creating two one-eighth pieces. One of these pieces represents land such as desert, swamp, antartic, artic and mountain areas that are not suitable for man to live.

3. Take the other one-eighth section (which represents the areas that man can live on, but may not grow food) and slice it lengthwise into four equal parts (they will be thin). Three of these one-thirty second sections represent the areas of the earth which are too rocky, too wet, or too hot, for the production of food or are occupied by cities, factories and highways. Man can live in these areas.

(cont.)

Procedure: (cont.)

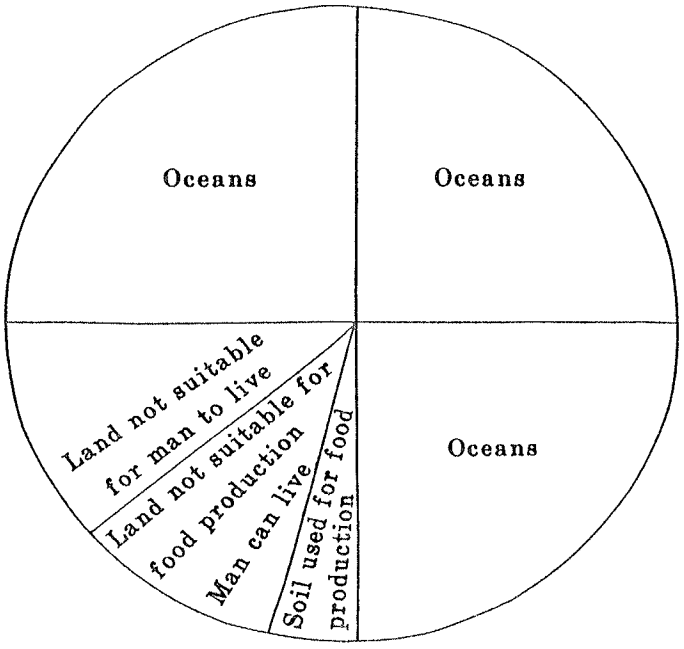
4. Carefully peel the last one-thirty second section. This bit of peeling represents the amount of soil which is used for the production of food that feeds the world.

5. Discuss what this soil is used for. Some possible discussion questions might include: What would we do if the valuable soil we depend on for food should suddenly disappear? What do we need to do if the earth's population continues to grow while this amount of valuable soil remains the same?

6. Have the students create a graph depicting the portions of the earth demonstrated earlier in this activity. The graph can be done individually in small groups or as a class. (Refer to Answer Key A).

Getting to the Core
Answer Key A

Areas of the Earth's Surface



Our Farm Friends

Subject Area: **Social Studies**

Objective: **The student will:**

1. discover what kinds of farms exist in Nebraska.
2. learn some of the towns and areas of Nebraska and be able to locate them.
3. learn more about the farms they are familiar or associated with.

Suggested Grade Level: **K - 6**

Materials:

1. A very large map of Nebraska, enclosed in "Library Books/ Resource Materials" folder in this notebook.
2. Worksheet A.
3. Yarn, pins and agriculture symbols (patterns for agriculture symbols are on Activity Sheets A1, A2 and B).

Procedure:

1. Brainstorm and discuss the kinds of farms the class is familiar or associated with. Some possible starter questions are: What kinds of farms are your grandparents, parents, or friends involved with? What other kinds of farms are there? (i.e. dairy cattle, beef cattle, sheep, hog, grain, combination, etc.).
2. Send the worksheet home for students and their families to fill out and return to the teacher.
3. After the worksheets have been returned, have each student pick the ag symbol that would be appropriate for their friend's or family farm.
4. Write the student's name, the farm's location (nearest town) and one fact about that farm on the symbol. The student can color or decorate the symbol if desired.
5. Have the students share the information they've gathered with the class.
6. Attach one end of a piece of yarn to the symbol and pin the other end to the appropriate location on the map. Attach the symbol to the bulletin board outside the Nebraska border (example on Activity Sheet B).

Our Farm Friends
Worksheet A

Student's Name _____

Can you help us with our agriculture unit? We need to know if any friends or relatives of your family has a farm in Nebraska. Please fill out the needed information for each farm.

Name of Farm Family _____

Farm Location (give the nearest town) _____

The Farm Itself:

How many acres is the farm? _____

Name any crops grown _____

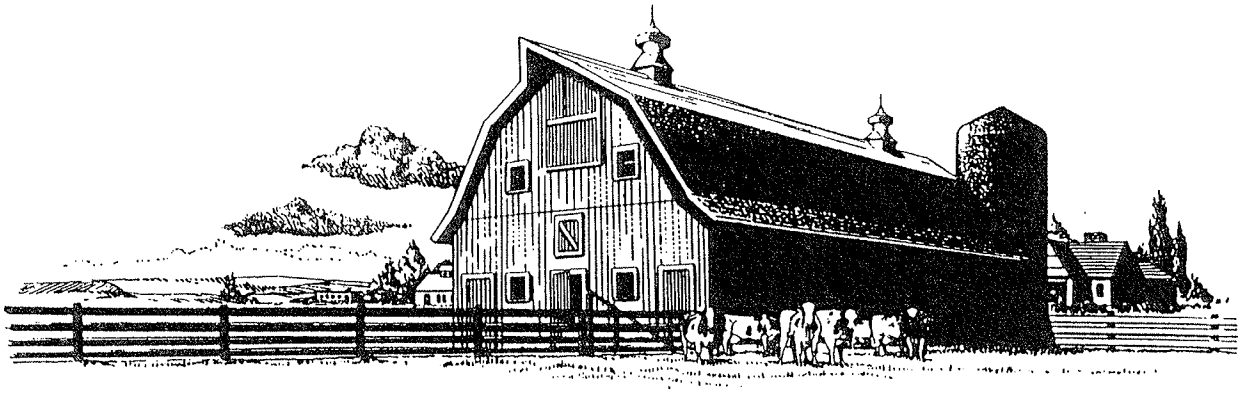
Name any animals raised _____

How many people live on this farm? _____

How long has the family owned the farm? _____

Any other interesting facts? _____

Thank you very much. This will help us to plot those farms on a large Nebraska map in our classroom.



Nebraska's
Ag in the Classroom
Program

Liquid Measurement Cow

Subject Area: Math

Objective: **The student will:**

1. be able to understand certain measurements and how they relate to each other. These measurements are: gallons, quarts, pints, and cups.

Suggested Grade Level: 3 - 6

Resources: Dairy Council of Central States, offices located at:

Suite 103 Hillcrest Building
Ralston, Nebraska 68137
Phone: (402) 592-3355

4740 A Street
Lincoln, Nebraska 68510
Phone: (402) 488-0153

620 Badgerow Building
4th and Jackson Streets
Sioux City, Iowa 51101
Phone: (712) 252-2932

Materials:

1. Worksheet A.
2. pencils or crayons
3. overhead with transparency of Worksheet A or a blank transparency or a chalkboard.
4. markers or chalk.
5. Empty gallon, quart, and pint jugs. A one cup measuring cup.
6. Answer Key A (for reference).

Procedure:

1. Discuss measures you can buy milk in such as gallons, quarts, pints, 1/2 pints, etc.
2. Explain the gallon as a large unit of measurement. Have each student draw a body for the cow on Worksheet A and label it one gallon. (Follow Answer Key A as an example for the following directions).
3. Experiment with water and see how many quarts it takes to fill a gallon. Since it takes four quarts to make a gallon, draw four rectangles on the cow, two to represent arms (legs) and two to represent legs. Label each of these one quart.

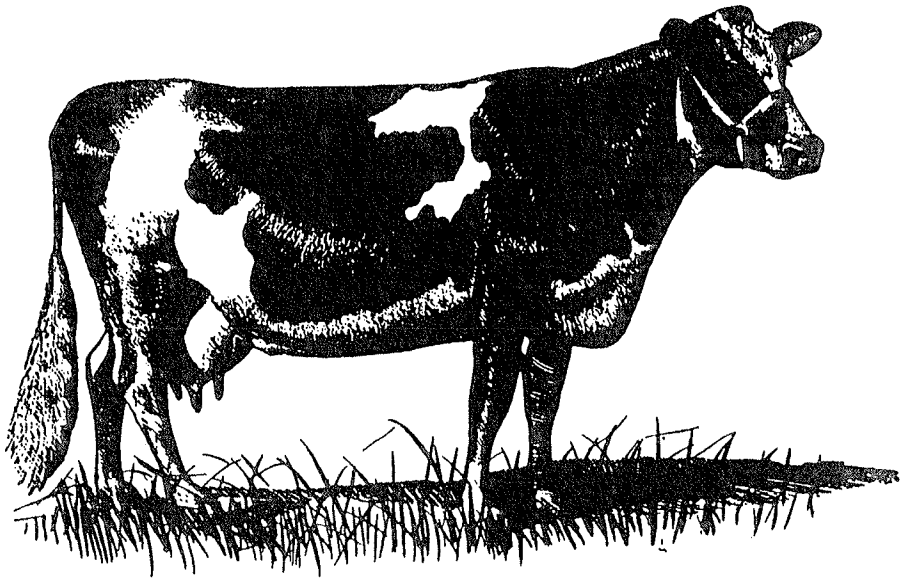
(cont.)

Procedure: (cont.)

4. Experiment with water to see how many pints it takes to fill one quart. Since it takes two pints to fill one quart, draw two pint rectangles to represent the rest of each leg (arm). Label each of these one pint.

5. Experiment with water to see how many cups are in one pint. Since there are two cups in one pint, draw two cups on each leg (arm) to represent hoofs. Label each of these one cup.

6. The drawing can be a reference to use for remembering liquid measurements.



Additional AITC Resources And Materials

The instructional materials developed specifically for the Agriculture In The Classroom program offers several opportunities for the elementary educator to strengthen the learning environment for students. There are, however, other materials that have been created in cooperation with AITC and other agencies to provide specific areas of understanding of our world's ecology and ecosystem. Just a few of the more comprehensive efforts are:

Project Wild;
Stop, Look, and Learn about our Natural World;
FFA Food for America programs;
.....and other resources developed by commodity and farm organizations to promote the use and consumption of agricultural products.

The instructional materials entitled *Stop, Look, and Learn About Our Natural World* was developed in cooperation with the Nebraska Natural Resources Commission, Nebraska Department of Education, USDA, Soil Conservation Service, Nebraska Natural Resources Districts, Nebraska Department of Agriculture, Agriculture In The Classroom, and the Institute of Agriculture and Natural Resources at the University of Nebraska.

The following agencies have resources and instructional materials for use with elementary age students, as well as additional information about the Nebraska Agriculture In The Classroom program.

Nebraska Department of Agriculture
P.O. Box 94876
301 Centennial Mall South
Lincoln, NE 68509

Natural Resources Comm.
P.O. Box 94816
301 Centennial Mall South
Lincoln, NE 68509

Role Of The Local Agricultural Education Program

It is not essential for a secondary agricultural education program to be in place within the school district or community in order for the Agriculture In The Classroom program to be offered. However, if your local district does offer a secondary agricultural education program, there in lies an opportunity for resources that other school districts may not possess. It is important at this point to identify the role of the local secondary agricultural education instructor.

The responsibilities of the secondary agricultural education instructor are not necessarily to actually teach and provide the specific integration of agricultural subjects into the elementary curriculum. That is still the responsibility of the elementary teachers. Rather, the agriculture instructor should serve as a resource person to provide the proper information, as well as to identify special resource persons and programs such as Food For America. The local agricultural education instructor is not the teacher of K-6, but a resource to help the Agriculture In The Classroom program achieve success.

Getting Started With Agriculture In The Classroom

The most effective way of establishing this program is to provide the Nebraska AITC staff an opportunity to present the possibilities for enhancement of the curriculum to the elementary teachers in the school district. This will allow teachers an opportunity to see the activities, ask specific questions, and see the need of the program first hand. The experience and time spent developing the program will provide a professional educational experience that addresses the agricultural literacy problem, as well as add interest and substance to the existing curriculum.

Local chapters of FFA may also provide individual assistance to elementary school programs through conducting the Food For America program. Secondary age students enhance their leadership and communication skills by increasing the younger students' knowledge of agriculture.

Many teachers may also receive information about specific agricultural commodities and obtain teaching materials from agricultural interest groups. Whatever the source of agricultural education, it is essential that elementary students become more aware of the industry that is a mainstay of the Nebraska economy.

Summary

All students in Nebraska should receive at least some systematic instruction about agriculture beginning in Kindergarten and continuing through twelfth grade. Much of the material can be incorporated into existing courses at the elementary level and need not be taught separately. Teachers should be encouraged to modify lesson plans to incorporate materials about the scientific, economic, and public health aspects of agriculture and related topics in accordance with school policy. To accomplish the goal of agricultural literacy, elementary teachers need up-to-date resources and support.

There have been several school districts and associations that have taken advantage of the opportunities that are available to enhance agriculture education in elementary programs. Their success with AITC programs is outstanding.

CHAPTER 4:

JUNIOR HIGH AGRICULTURAL EDUCATION PROGRAMS

Rationale For Junior High Programs

The Junior High Agricultural Education program is intended to provide agricultural literacy *(enrichment)* and career exploration in agriculture, primarily for grades seven and eight. Junior High programs are not intended to be "shop time", though education about agricultural mechanics may be a small portion of the curriculum. A recent report from the National Science Foundation entitled, "New Directions for Agricultural Education, indicated that a comprehensive agricultural education program should be offered from the kindergarten to the twelfth *(K-12)* grades and not limited to those students enrolled in traditional "vocational agriculture" classes at the secondary level.

In the future, agricultural enrichment will become an increasingly important part of agricultural education due to:

- changing technology;
- increased use of telecommunication systems;
- decline in the number of production agriculturalists;
- increases in the number of agricultural businesses, services and hobby farmers;
- increase in the public concern over the quality of air, water, and land resources; and
- increased consumer concern about preferences in the quality of food and fiber produced.

Junior high agricultural education programs have a three fold purpose. The first is to assist students in recognizing their role as global participants in food and fiber production, distribution, and consumption. The second is to assist students in gaining an awareness of the interrelationship of the agricultural industry with the ecology, economy, and social structure of every day life. The third purpose is to assist students in understanding themselves as they relate to careers in the ever expanding agricultural industry.

Iowa State University's Project 2000 identified the developmental needs of all students at various education stages. The Junior High School student is at a difficult stage in their lives. Students are trying to understand themselves in relation to the world around them. They are in need of information in a non-threating atmosphere. Appendix A provides information regarding the developmental needs of students of Junior High School age.

It is recommended that the seventh grade agricultural education program should utilize an enrichment curriculum which looks at agriculture globally. The primary aim at this level is to develop an understanding and appreciation of the agricultural industry and its role in society and the ecosystem. It is recommended that the eighth grade agricultural education curriculum have students explore the major components of the agricultural industry, especially career opportunities. Students are encouraged to interact with individuals actually employed in the agricultural work force to observe work ethics and career relationships. Therefore, the primary aim of the eighth grade agricultural program is career exploration in agriculture and interpersonal skill development.

At this level, the agricultural education program is composed of three primary components: the instructional *(classroom)* program, leadership education, and Supervised Agricultural Experiences *(SAE)*.

Leadership Development

Junior High school students are in the formative years in which role models and positive leadership development experiences can have major impact on their attitudes and actions for the rest of their life. At this level, leadership development in agricultural education takes shape as participation in the activities in a variety of student leadwership and personal development organizations, as well as through instruction and positive role modeling by the agricultural education instructor and older students enrolled in agricultural education.

The instructional program covers such topics as cooperative learning and team building. Care is taken stress the need for cooperative attitudes, working as a team, and leading a group to achieve success for the group, rather than the individual.

The local FFA chapter can now officially enroll Junior High students in their program should they so desire, due to a National FFA Organization constitutional revision in November, 1988. The Nebraska FFA Association also permits Junior High membership, but leaves the decision to the local chapter and community. Since the FFA chapter is normally seen as the primary vehicle for developing leadership, the following is provided for information purposes. However, it should be remembered that leadership development is the responsibility of the total curriculum, and not just the FFA Organization.

The FFA Organization

The FFA is a national organization comprised of students involved in agricultural education programs in public schools throughout the United States, Guam, the Virgin Islands, and Puerto Rico. The National FFA Organization has over 400,000 members participating in local agricultural education programs and FFA Chapters. The primary aim of the FFA is to develop agricultural leadership, citizenship and cooperation. The FFA allows youth to find their niche whether it be in public speaking, parliamentary procedure, cooperative activities, community service, or civic activities.

The FFA is an intra-curricular component of the agricultural education curriculum. It is best known for providing leadership and interpersonal development for youth. The FFA, used in its proper context, could be an excellent tool to enhance both personal and social development in Junior High programs. FFA activities foster democratic beliefs, enhance social interaction, improve self image, provides role models, develops a sense of citizenship, enhances cooperation with others in reaching a common goal, and provides self-directed activities.

FFA activities should primarily be the product or outcome of the classroom instruction. Leadership development should be included in the curriculum and highlighted in the activities carried out in the FFA. Involvement may include participating in a leadership/personal development conferences, leadership camps, community development activities, etc.

Supervised Agricultural Experience

Supervised Agricultural Experience *(SAE)* is an integral part of agricultural education for each student. Learning through supervised experiences is a very effective and meaningful way of developing essential agricultural competencies. Every program of agricultural education should seek to involve students in actual, hands-on experiences. Such skills need to be carefully planned, developed, supervised and evaluated.

Agricultural experience in the "real world" helps to make in-class instruction "come alive". Without an SAE program, the agricultural education students receive may be incomplete. The SAE program should be competency-based and designed to develop the essential skills needed by students to achieve their career goals, whether they be exploratory or preparatory in nature. At the Junior High level SAE activity may be more exploratory than preparatory in nature.

In developing quality SAE programs, instructors must analyze the needs of the student and the need for workers in the agricultural industry and determine ways to overcome deterrent to employment. Instructors must understand the types of SAE programs which are available and how to establish effective SAE programs.

Young people have many needs which influence their attitudes, ambitions and goals. Most youth at this age are concerned with becoming an adult, securing a job, making money, seeking economic independence, doing something worthwhile, developing self-confidence, developing self-esteem, satisfying personal needs, assuming responsibility, and obtaining job satisfaction.

A comprehensive set of learning experiences will help satisfy these basic needs and will usually be readily accepted. Young people want to become actively involved in a productive job which provides both monetary and personal rewards.

Agricultural education helps youth prepare for employment through SAE programs. By using the teaching tools available in agricultural education, students have the opportunity to gain real-life experiences through "hands on activities".

Barriers to Employment

There are many barriers to employment for Junior High students. The most obvious is the age of students in Junior High. Because of liability and child labor laws, agribusiness employers may not hire Junior High students. Other barriers that instructors should be aware of are:

- fewer competencies needed for work;
- less agricultural experience;
- no previous record of employment;
- less self-confidence;
- less maturity, both physically and mentally;
- failure to work well with others;
- fewer career choices; and
- little money management experience.

The type of SAE program best suited for Junior High students may be the accomplishment of a comprehensive set of agricultural experiences. Selecting agricultural experiences of particular career interest will allow students to explore occupational opportunities related to a certain agricultural career area. Students who complete agricultural experiences use a wide variety of human resources and utilize facilities provided by the school, community organizations, agribusinesses, community colleges, universities and parents. Students may be placed in an area agribusiness or farm or ranch to gain agricultural experiences, but at their age, they are not generally paid a wage.

An example of an agricultural experience project may include the completion of skills and competencies needed to become a veterinarian. Possible skills to be completed may include assisting a local veterinarian, reading about the job requirements, interviewing a veterinary technician, writing to a veterinary college representative on requirements for admissions, etc.

SAE is an important component of a comprehensive agricultural education program, though it may or may not be required at the Junior High level due to several reasons. Junior High students are in a unique position due to age and maturity. It is important that student experience a wide variety of agricultural experiences because of the need for exposure to the world around them as well as for career information. Because of age restrictions in the labor force, employment in agribusiness and on the farm or ranch may be limited. Therefore, SAE program should remain exploratory throughout the seventh and eighth grade years. Agricultural experiences may include, but are not limited, to shadowing, independent study and cooperative activities in the agricultural classroom and laboratory.

Local recognition will be received by those students who successfully complete their agricultural experience program. The competency based checklist found in the FFA Achievement Award program could be used in recognizing student accomplishments.

Junior High Curriculum Models

Depending on the school, different Junior High curriculum models may be appropriate for the agricultural education program. The right model should take into consideration the length of the offering *(semesters, quarters, etc.)*, the geographic setting *(rural, urban, etc.)*, number of students, school facilities, etc. The Junior High agriculture program may be offered in rotation with other vocational course offerings *(i.e., consumer homemaking industrial education, business education, marketing education, etc.)*.

It is important to remember, however, that Junior High courses are not meant to be the same as introductory agricultural education courses that are usually taught in the ninth grade or beyond. It is intended to offer appreciation, understanding and career exploration of the agricultural industry and serve as a foundation for future high school level agricultural education courses.

Several models may be appropriate. A few are:

Nine week course*(s)* - seventh and/or eighth grade: This model allows junior high students to begin with a 9 week seventh grade agricultural enrichment program. A 9 week course may be part of the comprehensive career exploration of vocational programs that includes a rotation of course offerings among consumer homemaking, business education, marketing education, industrial education, and agricultural education. Agricultural education in seventh grade is recommended to be solely an enrichment program, designed to educate students about the interrelationships of agriculture and society. Although the seventh grade curriculum offered as an example in Appendix B is intended for a full semester course, a local agriculture teacher may revise that content to meet the needs of a 9 week offering.

The seventh grade enrichment courses could be followed in the eighth grade by an agricultural career exploration course, which may be optional depending on the school's Junior High instructional format. The eighth grade agricultural education program is designed to educate students about the agricultural industry and the career opportunities available. The ninth grade begins the introduction to agricultural education followed by either semesterized or year long comprehensive courses.

Eighteen week course*(s)* - seventh and/or eighth grade: This model is designed for those schools who offer semester comprehensive career exploration of vocational programs in the junior high. If applicable both seventh and eighth grade curriculums can be used as the foundation for the comprehensive secondary agricultural education program. Although the complete semester course complete with units and suggested activities are presented in Appendix B, a sample seventh and eighth grade semester course outline is included here.

Semester Course Outline
Seventh Grade Agricultural Education Program

1. Efficiency of agricultural mechanization in agricultural production.
2. Agricultural industries compared to the nonagricultural industries.
3. Agricultural production.
4. Agricultural technology.
5. Food delivery systems.
6. Importance of agricultural products to various segments of society.
7. Agricultural products and services provided by non agricultural industries.
8. Agricultural products and services used in nonagricultural industries.
9. Marketing and processing techniques.
10. Agricultural events and developments that enhance the standard of living.
11. The agriculture industry since 1900.
12. Agricultural industry's effect on the environment.
13. Long-range impact of current agricultural practices on the environment.

Semester Course Outline
Eighth Grade Career Exploratory

1. Social value of working in agricultural occupations.
2. Economic importance of work.
3. Occupations within segments of the agricultural industry.
4. Changing skills and understandings requisite to employment.
5. Entry level skills requisite to employment.
6. Establish tentative agricultural occupational goals.
7. Explore occupational choices.
8. Distinguish avocational activities from vocational activities.
9. Specific outcomes from participation in avocational activities.
10. Basic components of one's life-style.
11. Personal life-style interests.
12. Requirements in avocational agricultural pursuits.
13. Involvement in avocational agricultural pursuits.
14. Identify and investigate agricultural subject areas.

Thirty-six week eighth grade offering: This model is for those schools that may be able to offer only one year of junior high agricultural education. In this instance, the eighth grade curriculum would consist of a combination of both a first semester agricultural enrichment and second semester exploring agricultural careers. Following such an offering, the ninth grade would begin the comprehensive secondary agricultural education program with full participation in the instructional program, FFA activities, and SAE involvement.

Student Profile

Junior High students are very active and curious learners. They are divergent in their actions and thinking. Therefore, instruction should use a variety of methods that allows for student interaction, hands on activities, field trips, laboratory activities, and cooperative learning. Lesson plans should last two to three class periods in order to maintain an active and dynamic learning environment. In utilizing the divergent thinking of Junior High students, the seventh grade curriculum should be primarily focused on being an enrichment experience *(agricultural literacy)* designed to introduce students to the field of agriculture.

The eighth grade program should be primarily an exploration of the agricultural industry and related careers. Instructors should attempt to take advantage of the natural impulses of students at this age *(i.e., curiosity, divergent thinking, etc.)*. Students should be encouraged to maintain an open mind on all topics discussed and be encouraged not to limit experiences and career investigations. Thus, the purpose of the Junior High program is to create divergent thinking, allow for enrichment and exploration of the agricultural industry, and provide a foundation for leadership and personal development skills.

Summary

Junior High school students can gain tremendously from exposure to agricultural education, both in classroom instruction and in related leadership and experiential activities. Agricultural education will provide the necessary information for them to gain knowledge about and experience in the vast Nebraska agricultural industry. Since over 40 percent of the Nebraska work force is employed in an occupation related to agriculture, the chances are good that they will be associated with the state's leading industry in some way during their lifetime.

Students will also gain valuable insights about the nature of the agricultural education program of study so they will be able to make a wise decision about enrolling in additional agricultural education classes. They would see that the agriculture needs well educated people in all phases of the industry, and that the agricultural industry of today and tomorrow will have its share of challenges and opportunities.

CHAPTER 5:

SECONDARY AGRICULTURAL EDUCATION PROGRAM

Since 1917, the primary focus of the public school agricultural education program has been that of the secondary "vocational" agriculture education program. It has long been the mission of agriculture education to train for the numerous employment opportunities in the vast agricultural industry. Over the years, the traditional instructional program in agriculture has had a tremendous impact on creating a higher standard of productivity and living for the people of the United States.

Today that same program has changed to meet the growing technological and educational needs of a country in which food production has become so efficient that only 2.6 percent of the population is needed to provide the food and fiber for all US citizens, plus millions of others worldwide. Today's agriculture education program is more than farming and it is more than just preparing for employment.

Agricultural Education in Nebraska prepares people to live in a society in which a knowledge of agriculture is essential in order to be wise consumers and an educated citizen of a state where over one-third of its population relies directly on agriculture for their livelihood. Secondary agriculture in Nebraska public schools is changing to meet the ever changing opportunities in agriculture.

Student Profile And Needs

The individual needs of students differ more at the secondary level than at any other time in their development. Both sociological and psychological adjustments have to be made as they learn how to cooperate with others and develop the human relations and communication skills needed to effectively participate in an adult world.

Educationally, students are developing the basic skills needed for self-expression, as well as the abstract thinking skills needed to solve problems, make decisions, and apply principles to differing situations. Students are establishing educational and career goals, and are in needed of information as well as skills.

The information acquired in agriculture should not only be the technical information needed to enter and progress in an agricultural career, but also those leadership and personal development skills needed to become an active and productive member of a social structure.

Methodology In Secondary Agricultural Education Programs

Agricultural education programs are deeply rooted in the "vocational" philosophy that embraces the principles of experience, active participation, and problem solving/decision making. It is these guiding principles that impact on the methodology by which all agricultural education is offered in the public school system.

Agricultural education is experience-centered. That is, teachers of agriculture realize that the best way to learn is through an experienced based curriculum and by using real life examples and instructional approaches, both in the structured classroom as well as within individualized instructional settings.

Agricultural education students are active participants in the instructional process. Students have input into instructional planning, and are asked to maintain involvement through well planned educational activities. Learning by doing is more than a motto, it is an instructional approach that requires students to practice and apply concepts learned in the classroom into everyday living. The community becomes the classroom for an effective agricultural education program with the use of community resources, field trips, paraprofessionals, resource persons, etc.

Agricultural education provides opportunities for students to develop higher level thinking and reasoning skills through the use of a problem solving and decision making orientation to the curriculum. All students are challenged to use the knowledge and understanding learned in the classroom to solve real life problems and make decisions. This immediate applications of instructional material to real life applications makes learning more fun, efficient, and practical.

Integration Of Applied Basic Skills In The Secondary Agricultural Education Curriculum

Students in agriculture education receive reinforcement of basic skills through the integration of science, mathematics, communications, and human relations competencies within the applied science of agriculture. Agricultural education can and often does serve as the motivating force that enables students to see the relevance in learning basic skills.

Applied Science: Since agriculture is an "applied biological science", the curriculum content in secondary agricultural education programs provide many rich examples of the application of chemistry, physics, biology and earth science concepts. Every effort is made to identify and reinforce science concepts when teaching science applications in agriculture. Just a few examples of areas in which such science concepts abound are: nutrition, genetics, soils, fertilizers, mechanics, and horticulture.

Applied Mathematics: Mathematics principles and processes also abound in agricultural applications. Concepts in algebra, geometry, and trigonometry are covered almost daily as students calculate business discounts, sale prices, acreages, board feet, rations, etc. Every effort is made to incorporate computer technology in the classroom, whether through computer assisted instructional support materials or though the actual use of telecommunications to gain agricultural information from data bases throughout the country.

Applied Communications: Interpersonal skill development and leadership training is an integral part of the total agricultural education program. Leadership development is a primary mission of both the FFA chapter and the instructional program. Developing effective reading and writing skills are as much a part of the preparation for careers in the agricultural industry as are the development of technical agricultural skills. Therefore, the secondary agricultural education program should be used to integrate basic skill development, and to practice those skills in real life learning situations which emphasize the practical use of basic skills.

Equity in Agricultural Education

The secondary agricultural education program has a democratic orientation in which all students who can benefit from a comprehensive education in agriculture are welcome to enroll. The program is open to all students regardless of race gender or national origin. With the increasing technological changes in the agricultural industry, the makeup of the traditionally male dominated industry is changing rapidly. Over half of the new occupations in agriculture will be filled by women. Traditional audiences labeled "minority" will become an increasingly important part of the total picture. All persons will need to be wise consumers of agricultural products, and approximately 30-40 percent of the total work force will continue to be employed in an occupation related to agriculture.

Secondary Curriculum Needs

Public schools offering secondary agricultural education in Nebraska range in size from Class D (*fewer than 50 students*) to Class A (*over 500 students*). Because school size may influence course selection alternatives, student enrollment numbers, and laboratory facilities available, agricultural education delivery format may vary significantly. Larger schools may find it more efficient and effective to utilize a semester approach that fits into the scheduling system used throughout the curriculum.

Smaller schools with less semester class alternatives and student numbers from which to draw, may wish to use a sequential four year program offering. The actual format may even be a combination of these delivery methods, however it must be emphasized that this is a local decision which should be decided cooperatively between the secondary school administration and the agricultural education instructor.

Semesterization of Course Work

Traditionally, agricultural education programs have been delivered in a sequential, four year program in which students entered as freshmen and exited as seniors. This approach was built on the premise that each student could benefit from a general education in agriculture, and that the same information was useful to all students. The four-year program concept is found more often in smaller school districts, where there may be less semesterized alternative classes in which students could enroll.

More recently, semesterized courses have had a major impact on agricultural education programs. The semesterized approach allows students more flexibility to enter and exit the program when course work exists that is of particular interest to them. Semester courses allows more in-depth study and placed definite parameters on the content and methodology so that courses have a definite beginning and ending. Semesterized programs are usually more prevalent in larger schools, where other course alternatives are available for students at semester breaks.

Semesterized classes have also allowed teachers of agriculture the opportunity to introduce new topics into the curriculum to broaden the program. Courses such as horticulture, natural resources, small animal care, leadership development, etc. have encouraged nonagricultural students to participate in the program.

Teachers of agriculture have found that semester courses have allowed them to actually plan a series of specialized courses that, together, provide a solid core of information in specific preparation areas. For example, a series of agribusiness related courses available to students with interests in that area enable them to graduate with greater skills and knowledge in business that other students may obtain. A series of horticulture classes may form the core of courses that will prepare students to enter a horticultural occupation or continue on in a postsecondary program in horticulture.

The following models have been developed to provide school districts in Nebraska with the options of adopting an agricultural education system that most meets their instructional needs.

Four Year Sequential Program

This model represents a four year comprehensive program of agricultural study that may be more applicable to smaller school systems with students enrolling in grades nine through twelve. The primary benefits of using this delivery model are as follows:

1. For use within a school system that has little or no semester course alternatives in the rest of the school.
2. Provides a systematic instructional approach that compliments material presented in previous years to build a firm agricultural education foundation for either occupational entry or postsecondary enrollment.
3. Provides a more general instructional program; that is, all students will tend to study the same information in the same sequence and in similar settings.

While the sample format of a four year comprehensive program may look more traditional in nature, the content being suggested in this model is meant to be more reflective of current and future trends in agricultural education. Content provided in each year is somewhat autonomous in nature; that is, the topics are covered in depth and not repeated in subsequent years of instruction. Those areas recommended to receive additional emphasis over the more traditional program are:

1. Agribusiness education and management
2. Entrepreneurship education
3. Agricultural economics and marketing
4. Food science and processing

5. International agricultural perspectives
6. Leadership and personal development
7. Computer technology and computer applications
8. Horticulture
9. Small animal care
10. Natural resource conservation
11. Career exploration/employment education

The broad topic outline and the recommended days of instruction for the four year sequential program are provided here for illustrative purposes. The more detailed scope and sequence of the curriculum is provided in Appendix C.

Four Year Sequential Agricultural Education Program Model

Agricultural Education: Year 1

Instructional Topic	Suggested Class Periods
Orientation to Agricultural Education	2
Careers in Agriculture	13
Supervised Agricultural Experience Programs (SAE)	15
Introduction to Record Keeping	20
Natural Resource Management	20
Soil and Water Conservation	15
Fundamentals of Leadership	20
Introduction to the Agriculture Industry	35
Fundamentals of Agricultural Mechanics	15
Applied Technology in Agriculture	10
Agricultural Relationships to the Society	15
	Total.....180

Agricultural Education: Year 2

Instructional Topic	Suggested Class Periods
Assuming Leadership Roles	20
Animal Science	
Introduction to the Livestock Industry	20
Livestock Evaluation and Selection	10
Managing Livestock Enterprises	20
Nutrition and Genetics	25
Forage Management for Livestock	5
Livestock Marketing	20
Records and Record Keeping - Livestock	15
Raising Companion Animals	15
Processing Livestock Products	20
Biotechnology in Agriculture	10
	Total.....180

Agricultural Education: Year 3

Instructional Topic	Suggested Class Periods
Leadership In Action	15
Crop and Soil Science	
Introduction to Crop and Soil Science	5
Sustainable Agriculture	10
Crop and Plant Science	15
Crop Management	15
Management of Specific Enterprises (i.e. Corn, Soybean, etc.)	25
Pasture and Forage Management	10
Surveying and Field Mapping	10
Alternative Crops for Nebraska	10
Record Keeping - Crop Management	15
Soil Science	15
Horticulture	20
Processing Crop Commodities and Products	15
Total.....	180

Agricultural Education: Year 4

Instructional Topic	Suggested Class Periods
Leadership For Business and Organization	15
Agribusiness Management and Marketing	
Marketing Agricultural Products	15
Computerized Record Analysis	10
Entrepreneurship in Agriculture	30
Agribusiness Management	45
Career Planning	10
Computer Uses in Agriculture	15
Agricultural Technology	15
International Agriculture	15
Agricultural Law	10
Total.....	180

The recommended sequential program model will normally require four daily contact hours of instruction. As previously noted, the instructional area of agricultural mechanics is recommended as additional classes (possibly semesterized) to be offered as supplemental course work to enrich agricultural education program opportunities. Descriptions of some possible courses are included here, while actual semester course outlines are provided in Appendix D.

Supplementary Semester Courses For Nebraska Secondary Agricultural Education Programs

Agricultural Mechanics
- Power and Machinery
- Wood and Metal Construction
- Metals and Welding

Animal Sciences and Production
- Animal Science
- Livestock Production
- Small Animal Care

Plant Sciences and Production
- Plant and Soil Science
- Crop Production

Horticulture
- Introduction to Horticulture
- Nursery and Gardening
- Floriculture and Greenhouse Management

Natural Resource Management
- Natural Resource Management
- Wildlife Management and Conservation
- Environmental Agriculture

Agribusiness Management
- Entrepreneurship
- Employment in Agribusiness
- Agricultural Business Management
- Food Science and Processing

Leadership and Personal Development
- Leadership and Human Resource Development

Model: Specialized Semester Course Work Following A Basic One Year Agricultural Literacy Course

This model has the flexibility of offering in-depth semesterized classes which are built on a base course introducing all students to the agricultural industry and the food production chain. The benefit lies in providing a basic understanding of the total system prior to allowing in-depth semesterized study in specific areas of interest to students.

The base course recommended is the same scope and sequence as Year 1 of the Sequential Program Model. The recommended course name and topical outline is as follows:

Introduction to the Agricultural Food and Fiber Industry

Instructional Topic	Suggested Class Periods
Orientation to Agricultural Education	2
Careers in Agriculture	13
Supervised Agricultural Experience Programs (*SAE*)	15
Introduction to Record Keeping	20
Natural Resource Management	20
Soil and Water Conservation	15
Fundamentals of Leadership	20
Introduction to the Agriculture Industry (*Coverage of the plant, animal, agribusiness components)*	35
Fundamentals of Agricultural Mechanics	15
Applied Technology in Agriculture	10
Agricultural Relationships to the Society	15
Total	180

Selected semesterized courses utilized to provide students with alternatives to gain in-depth knowledge in horticulture, production agriculture, and agribusiness marketing and management could be scheduled for possible enrollment after the completion of Year 1. Actual course descriptions and the recommended scope and sequence of all semester courses are contained in Appendix D.

Examples of possible course selection strategies for a student interested in various agricultural career areas are provided for illustrative purposes here. However, it should be noted that local school districts should evaluate the appropriateness of these recommendations for their specific school setting and feel free to cooperative plan sequential course offerings and develop appropriate semester course offering that best meet the needs of their students and community.

Sample Course Selection
For Students With Interest In:

Production Agriculture

	First Semester	Second Semester
Year 1	Introduction to the Food and Fiber Industry (all year)	
Year 2	Animal Science	Livestock Production
Year 3	Plant/Soil Science	Crop Production
Year 4	Farm Management	Employment in Agriculture

Possible Electives:
Leadership and Personal Development
Agricultural Mechanics (selected courses)
Entrepreneurship in Agriculture
Natural Resource Management Courses

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Sample Course Selection
For Students With Interest In:

Agribusiness Marketing and Management

	First Semester	Second Semester
Year 1	Introduction to the Food and Fiber Industry (all year)	
Year 2	Leadership/Personal Devel	Nat. Resources Management
Year 3	Entrepreneurship in Agri	Food Science/Processing
Year 4	Horticulture	Employment in Agriculture

Possible Electives:
Agricultural Mechanics (selected courses)
Additional Natural Resource courses
Additional Horticulture

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Sample Course Selection
For Students With Interest In:

Horticulture

	First Semester	Second Semester
Year 1	Introduction to the Food and Fiber Industry (all year)	
Year 2	Intro to Horticulture	Leadership/Personal Development
Year 3	Nursery and Landscape Design	Entrepreneurship in Agriculture
Year 4	Floriculture/Greenhouse Mgt	Employment in Agriculture

Possible Electives: Agricultural Mechanics (selected courses)
Natural Resource Management Courses
Food Science/Processing

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Sample Course Selection
For Students With Interest In:

Natural Resource Management

	First Semester	Second Semester
Year 1	Introduction to the Food and Fiber Industry (all year)	
Year 2	Environmental Agriculture	Leadership/Personal Development
Year 3	Natural Resource Management	Entrepreneurship in Agriculture
Year 4	Wildlife Conservation	Employment in Agriculture

Possible Electives: Agricultural Mechanics (selected courses)
Food Science/Processing

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Other Curriculum Design Considerations

Innovation and creativity should be maintained in determining both the content and delivery of agricultural education program components. The following are only examples of the various possibilities that could be implemented in an effort to improve the secondary program.

Nine Week Courses: Selected topics may lend themselves to intensive concentration of study in the form of nine week offerings. Currently, one Nebraska agricultural education program offers quarter courses in leadership, electricity, small engine technology, and record keeping and analysis. The advantage is the easy entry and exit from the program, the specificity of the content, and the self-directedness of the students enrolling in the course. The plan is to rotate through specific courses as demand from students is expressed.

Cross Program Team (or Substitute) Teaching: Some content within the agricultural education curriculum may be best taught by teachers in the school system other than the agricultural education instructor. For example, the units on sales and salesmanship may be taught by the marketing education teacher. The units on developing interviewing and employment gaining skills may best be taught by the guidance counselor. On the other hand, the agricultural education instructor may provide insights into the applications of biotechnology into the biology classes or agricultural marketing applications for the economics class.

Team teaching of related concepts is also a definite possibility to increase the effectiveness of the total program. Care must be taken to utilize the expertise of the entire faculty in the overall effort to provide the best possible education for students.

Required Nonagricultural Courses For Agricultural Students: At times students concentrating in specific areas of concentration within the agricultural education program should be required to enroll and complete courses in other curricular departments in the school system. For example, students wishing to emphasize "production agriculture" should be required to take biology in the science department. students who emphasize "agribusiness management" should be required to enroll in economic courses as well.

Leadership and Personal Development

Leadership and personal development are important components of the total agricultural education curriculum. Coverage of these topics will likely be a part of the structured curriculum as well as being provided through activities of the local FFA Chapter. Leadership content provided within the curriculum may be in the form of a semesterized course (*See Appendix D*), or as topics covered within a more comprehensive agricultural education program (*Sequential Program Model*).

Leadership topics may include:

Leadership theory and organizational management
The role of leaders in an organization
Characteristics of effective management
Communications for effective leadership
Conflict resolution and team building strategies
Ethical considerations in leadership behavior
Principles and practices in motivation
Providing incentives to members of the organization
Goal setting for individuals and organizations
Managing time and resources
Prioritizing techniques for maximizing effectiveness
Delegation of authority
Use of power and influence in organizations
Comparison of power and leadership characteristics
Stages of power in an organization
Strategic planning principles - visioning the future
Strategic planning techniques for organizations
Turning vision to reality
Participative management
Gaining input from others
Recognizing contributions from others
Conducting effective and efficient meetings
Creating change in the organization
Risk management processes
Coping with risks
Using creativity in organizational management

It should be noted that instruction in leadership and personal development should not be limited only to students in agricultural education classes, but should be offered to students throughout the secondary school system. Agricultural education instructors offering a semesterized course in Leadership and Personal development should consider opening enrollment to all students.

The local FFA chapter will continue to provide an avenue where leadership and personal development skills may be actually practiced and acquired through cooperative community and leadership activities. A wide array of contests, awards programs, and incentives are available to motivate FFA members to practice those traits that develop both leadership and personal development. Agricultural instructors and administrators may wish to review the chapter on *Leadership Development Education* to refresh their outlook on opportunities for personal development within the FFA Organization.

Supervised Agricultural Experience Programs

Complementing the secondary instructional program in providing educational development opportunities for secondary age youth, in addition to the FFA Chapter, is the Supervised Agricultural Experience program. For students wishing to gain additional hands-on experience in agriculture, an approved SAE program may be very appropriate. A systematic plan for developing skills in areas of interest (*occupational, career, or even avocational*) can be developed to represent an individualized instructional program for a student. The primary benefits of such a plan are:

1. Relates information and experience learned in class to the real world.
2. Offers students a chance to explore agricultural career areas.
3. Allows students additional opportunities to develop career-related skills.
4. Provides students an opportunity to earn money through investment or employment experience.
5. Allows students to learn how to manage an enterprise and assume responsibilities.
6. SAE programs are conducted under the supervision and instruction of the instructor, parents, or employers in the community.
7. SAE brings the community into the program, therefore expanding the classroom into the community.
8. And the list could go on.....

The agricultural instructor and administrators should review the chapter on Supervised Agricultural Experience to freshen their outlook on effective SAE programs and their contribution to the total secondary agriculture program.

Summary

The secondary agricultural education program offers students many opportunities to gain the kind of knowledge and skills to allow them to progress in an agricultural occupation or to further their education at a postsecondary educational institution. The curriculum offers insights into the technological skills needed to be successful in the agricultural industry, and it offers students more information about the relationship of agriculture and society. In the future, the number of opportunities in production agriculture (*farming and ranching*) will continue to dwindle. However, the opportunities in agribusiness and related industries will be growing at a constant and somewhat alarming rate. According to USDA information, the number of agriculturally educated workers needed for employment in the agricultural industry will not even come close to meeting the needs.

Agricultural education in the secondary education system can and will continue to contribute to the basic applied academic needs of all students. Applied mathematics, science, communication, etc. will always be a part of the agricultural education curriculum. Leadership and personal development activities will remain an integral part of the curriculum as well. The future of agricultural education in Nebraska continues to filled with challenges and opportunities for all students.

CHAPTER 6:

ADULT AND CONTINUING EDUCATION IN AGRICULTURE

Rationale For Adult Education In Agriculture

The rationale for including adult education as part of the comprehensive agricultural education program is fairly easy to establish. A truly effective adult agricultural education program is perhaps the most important short-term benefit the public school district can provide to the community. Immediately after students complete an adult education course, they are better prepared to work in their community, develop their careers and occupational skills, enhance their personal and professional communication skills and abilities, etc. The application of instruction is immediate. The increasing complexity and rapid changes taking place in the agricultural industry make it necessary for agriculturalists to keep up-to-date on new trends and technologies.

Financial management, product marketing, alternate cropping systems, and soil conservation are just a few of the adult course offerings that could be addressed in the production agriculture arena. For adults engaged in the agribusiness sector, the offerings may include the development of entrepreneurial skills, employer-employee relationships, labor relations, marketing and merchandising, etc. The agricultural adult education program must remain flexible enough to meet the changing needs of the agricultural community.

Adults in the community have a need for continued education beyond high school or college. Eighty percent of the adult workers who will be in the work force in the year 2000 are in the work force now! That means that if the work place changes and jobs are redefined, it is those now employed in agriculture who will fill those new jobs and positions. Adult students in any local Nebraska community certainly have both a financial as well as educational interest in the public school system. It is primarily through property tax dollars that the school system is able to provide educational preparation to students of all ages. With the decline in K-12 enrollment, more and more adults without school-aged children are asked to carry an ever increasing load of responsibility to finance education. Perhaps it is time for the public school system to redefine their educational mission to make use of its resources, facilities and faculty to meet the educational needs of the entire community.

The FFA Alumni, and commodity or product associations can provide social outlets for agriculturalists or promote specific commercial interests. However, for educational programs to address the specific educational and social needs of the adult learner, an organized and structured adult education program is essential within the public school system.

Benefits Of Adult Education

A well planned and organized adult education program in agriculture can have a variety of benefits to the local community. Additional technical information reflecting current technology and industry requirements help adults reinforce and strengthen information learned earlier in their educational preparation. The development of interpersonal skills improves the human relations qualities needed in the work place and to live in harmony with family and neighbors. Benefits to the community include more economic stability and more civic leadership being infused into its citizens and trustees. For the school, benefits include more in-school instruction with a broader audience, stronger public support for the school's programs and help in fulfilling the goals of educating the community. For the adults, occupational and personal skill development is enhanced to create a better standard of living and a higher quality of life.

Delivery Models For Adult Education In Agriculture

There are several different delivery models which can be used to provide adult and continuing education in agriculture. They include:

1. In-depth instruction,
2. Seminars and workshops,
3. Year round programs, and
4. Financial management and record analysis programs.

A closer look at possible delivery systems will help distinguish the advantages and disadvantages of each.

In-depth Instruction: In-depth instruction is a specialized look at an agricultural topic or concept designed for the adult student to receive special, in-depth knowledge that would lead to the development of specific competencies needed in their work or personal life. The key is that the material is delivered to not only provide awareness, but to develop actual competency. Occupations and careers are many times changed or improved because of the in-depth curriculum of this type of offering. Instruction may last from a few weeks to a full semester depending on the frequency of classes and amount of material to be covered. Obviously, to accomplish in-depth instruction, time on task is required. Many such program are taught for three hours per session on a weekly basis until the class is completed.

Some adults employed in the agricultural industry are least busy during the winter months and are more willing to commit time to educational programs at that time than during the other seasons of the year. During the winter months, in-depth instruction may last ten to twelve weeks with meetings of approximately three hours per week. An Instructor may consider conducting meetings in the afternoon during the winter months. An example of a in-depth winter adult program can be found in Appendix F.

Other examples of in-depth instruction include, but are not limited to: artificial insemination, agricultural law, international marketing, employee management, sales and marketing techniques, feed and nutrition, soil and water management, interpersonal skills and leadership development, etc.

Seminars and Workshops: Seminars and workshops differ from in-depth instruction in the number of times the class meets and in the depth of instruction provided. Seminars and workshops usually last only one meeting time which may run from one hour to one day. This meeting is designed for either a very broad topic or a very specific topic in which the adults have some current background. If the scope of the topic is narrow, the result may be competence in the area. However, many seminars or workshops strive to make the adult student more aware of a topic rather than aim at developing actual competency.

Examples of seminars or workshop topics include: parasite control, weed control, field calibration of planting equipment, depreciation methods, income tax updates, etc. Advantages of a short term seminar or workshop are that they require less time commitment for the adult student and instructor. However, they normally do not allow for the in-depth learning and mastery of an topic.

Year Round Programs: Year round programs are designed to help adult agriculture students address their needs throughout the entire year through classes which meets monthly or even bimonthly. The students are better able to discuss current and changing trends and technology in agriculture and to directly address problems associated with the management of their businesses at the time that instruction is most relevant. A year long program format may include study of specific topics at the most appropriate season of the year, as well as monthly special interest issues.

Other educational or social activities might be:

(a) Tours and trips
(b) Special clinics, seminars and workshops
(c) Individualized instruction
(d) Small group discussions
(e) Recreation events
(f) Banquets or dinners with family or spouse

Some activities may be better attended that others, but it will be because the meetings are arranged around specific problems and needs of the adult learners. Only those adult students who are specifically interested in a nutrition clinic will attend that particular meeting, however, a meeting to discuss changing tax laws and their impact on agricultural businesses may be attended by a much larger audience. The meeting by meeting attendance figures will fluctuate more with this type of program arrangement than with any other. This may simply be indicating specific needs of the comprehensive clientele groups are being met.

Examples for possible kinds of program topics to include in a year round adult program may include: marketing, government farm programs, international analysis of agriculture, beef herd management, stress management, estate planning, tax law changes, computer technology applications, rural crime prevention, etc. An example of a year-round program is given in Appendix E.

The primary advantage to this kind of program is that updating of information and technologies can happen quicker than when relying on information provided only during the winter months or in a once per year in-depth session. The adult students usually have a greater amount of input and direction into the year round program.

Financial Management Education And Record Analysis Program: Perhaps the greatest single need in any community over the past ten years has been in the area of financial management, record keeping, and analysis. The turbulent years of the late 1970's and early 1980's was disastrous for the Nebraska agricultural system. Nebraska led the nation is the number of farm bankruptcies, agribusiness closures, and bank forfeitures. These are not envious records to possess.

Such economic problems underscored the need for fiscal responsibility, not only on the farms, but in mainstreet businesses that support agriculture. Nebraska also leads the nation with the highest proportion of occupations directly related to the agricultural production industry *(over 40 percent)*. Economic survival and financial management has become a priority program for secondary and postsecondary adult programs in Nebraska.

These programs usually provide instruction to a small, specialized group of adults for a longer period of time *(1 or more years)*. Instruction can include monthly meetings in a more formal environment and home visitations to individualize the instruction and provide consultative services. Class content may include information on cash flows, record keeping, depreciation, liquidity, loan acquisition and repayment, budgeting, balance statements, etc. Overall, the program can be very rewarding for the instructor, provide immediate "survival level instruction" to the adult learner, and provide more long term economic stability for the individual and the community.

This type of adult education program does have some very distinct disadvantages. A vast amount of time and expertise is required by the instructor, there is usually little variation in the program from year to year, complex financial problems are hard to fix if they are past the point of improvement, and both adult students and the instructor are locked in to the program for a long period of time.

Several of the above programs can be used together if the instructor has the time or if another adult instructor is hired to fill this need in the community. The ideal situation would include several or all of these programs being integrated into one "year round" adult education program designed to meet the comprehensive adult needs of the community. A qualified instructor should be employed full-time to coordinate these activities and programs, if such an effort is to be made.

Funding Models For Adult And Continuing Education In Agriculture

The Nebraska Department of Education provides guidelines for conducting adult education programs in Nebraska. A budget which includes salary costs, operating expenses, supplies, and related travel expenses may be submitted for partial reimbursement. Due to the changing nature of state and federal legislation, the adult agricultural instructor or public school administrator is encouraged to make preliminary contact with the Nebraska Department of Education officials prior to development of an adult education program to receive the most current funding information.

Instructor salary and responsibility for adult classes are generally agreed upon through an agreement/arrangement between the educational institution and the instructor. The reimbursement claim is a legal document requesting reimbursement for monies expended during the course of the adult program. It is strongly recommended that the adult class be a part of the regular instructional contract and the instructor be paid accordingly. Since adult education is a local, state, and federal responsibility, the local institution is expected to participate in supporting the instructor's adult education salary that is not reimbursed with federal or state funds. In addition to the state and federal monies, a small registration fee could be assessed to participants of seminars, workshops, or classes to offset the cost of adult education programs.

Corporate sponsorship for some classes could be sought. Many communities have private or business sponsorships that could be obtained for the class. For example, many banks and lending institutions provide both financial support and technical expertise to financial management and record analysis classes. The importance of community knowledge and support for the adult agriculture classes are essential to the success of the program.

Administering Adult Agricultural Education Programs

Administering the adult education program will usually be the responsibility of the secondary agricultural education instructor, local school administration and the agriculture department advisory committee, at least as the structure currently exists in Nebraska. Since the program will function within the rules and regulations of the local school district, approval of program content, organization, and financing by the public school administration is necessary.

To begin the process, an assessment of educational needs of the adults in the community will need to be completed. This can be accomplished through surveys, personal visitations to farmers and agribusiness managers, and through input from an advisory committee. Specific information on the advisory committee is explained later.

Once the needs of the adult clientele in the community are identified, the agricultural advisory committee may wish to consider which of the identified problems or issues might be most effectively addressed with the resources and expertise available from the adult agricultural education program. Program topics should be selected based on the potential for having an immediate and lasting impact on adults in the community.

The school administration should be included in the process of planning and developing an adult education program. Questions concerning available time, costs, program content, and anticipated outcomes of the program should be addressed. Once completed, provide the administration with the detailed program, and, if approved, keep the administration informed of the progress of the program and involved in the planning.

The adult students involved will be expected to follow the policies and regulations of the school district and to take care of school facilities just as other students would. It is ultimately the responsibility of the instructor or advisory committee to make sure the rules are followed and that the classes are administered properly.

Utilizing Advisory Committees For Adult Education

Every adult program should have a committee of supporters and participants to help develop ideas, determine community needs, and generate support for adult education programs. The committee should be made up of local agribusiness persons, a school administrator, local agriculturalists, and the agricultural education instructor. Additional members may include faculty from area or community colleges, extension agents, or other professionals who offer educational opportunities for adults.

The committee should meet monthly throughout the year, and perhaps more often during their planning time. Their purpose should include:

1. Assist in conducting community surveys and analyzing data,
2. Provide assistance in deciding types of programs needed and to set priorities,
3. Locate resource persons, equipment or supplies to use in class presentations and programs,
4. Bridge the gap between industry needs, educational resources and adult programs,
5. Validate the purpose of the program to school administrators and the public,
6. Help recruit and select adults to participate in the program,
7. Assist the instructor in decisions or problem areas of the program,
8. Provide continuity after a teacher change, and
9. Assist in the continual evaluation and improvement of the adult education program.

Attendance at all advisory committee functions needs to be strongly encouraged. Each committee member's opinion should be highly respected and considered regarding the overall administration and organization of adult program activities. After all, advisory committee members are intended to represent the clientele whom the program is striving to serve. Their input is vital to the success of the adult agricultural education program.

Role Of The Young Farmer and Rancher Education Association

The role of the Young Farmers and Ranchers Educational Association *(YFREA)* should not be confused with that of the formal adult and continuing education programs explained in this chapter. The YFREA is an educational and leadership development organization for adult students, much like the FFA is the leadership component of the secondary agricultural education program.

The Nebraska YFREA is a statewide, nonprofit, non-political organization made up of, by and for young farmers, ranchers and other agribusiness persons. Young Farmer programs provide an opportunity for members to participate in leadership, cooperative community improvement, social, and recreational activities. The association exists for young adults primarily employed in agriculture and fosters contacts with peers, businesses and the community.

Local adults can form a Young Farmer Chapter, elect officers, appoint committees and request the help of the local agricultural instructor for assistance in developing educational and personal development activities that will benefit their group. Specific purposes of the YFREA includes:

1. Developing competent, forward thinking, agricultural leaders,
2. Organizing activities for sharing ideas and experiences, addressing problems, and developing camaraderie,
3. Providing leadership opportunities and experiences,
4. Increasing cooperation between agricultural business, farm organizations, consumers, and farmers/ranchers, and
5. Providing recognition and award programs for members and supporters of agricultural education.

The Young Farmer and Rancher Education Association should be well organized and their purpose and mission well publicized. Membership options should be flexible enough to allow participation by a variety of adults to ensure the ability to take care of individual needs as well as the group as a whole. Since community leadership is developed through civic involvement, members should be encouraged to participate in community organizations and develop or enhance skills such as parliamentary procedure, public speaking, group dynamics, and interpersonal communications.

Characteristics And Needs Of Adults In Agriculture

The characteristics and needs of adult students in agriculture are, in many ways, vastly different from the characteristics and needs of secondary students. The adult student will participate in educational programs or classes only if their needs are being addressed. Otherwise, the program will be considered a waste of time and resources.

For an adult, there are two basic types of needs - the felt need and the unfelt need. The felt need is expressed as a need that reflects an actual problem or situation that is causing an immediate concern or impact on the adult student. The student allows themselves to enter a learning situations in order to satisfy an immediate need they are experiencing. For example, a person who has experienced problems obtaining credit or operating loans may enroll in a financial management and record analysis class to help address the need for more complete and accurate financial information acceptable to a lender. Felt needs may be job-related, personal, or a combination of both. Job needs are usually tangible and specific in nature, but personal needs are often less clear and complicated.

An unfelt need may be associated with a subject or topic new to the learner and may be of little noticeable importance to the learner at the time. For example, international cropping or livestock production systems may be of passing interest, however the actual impact on a specific occupational situation or one's personal life may be less obvious. The adult educator may need to be a bit more aggressive

about bringing unfelt needs to the attention of the learner. More specific needs for adult learners follow.

1. Adults need to see the relevance of the instruction as it affects:
   - Personal development and growth in relation to their work or family.
   - Financial returns and profitability.
   - Improvement in efficiency and effectiveness of an existing practice.
   - Introduction of new technology that increases profit, efficiency, effectiveness, etc.
2. Adults need immediate results and feedback.
3. Adults need to be actively involved in the learning process.
4. Adults need to be aware of the benefits of instruction prior to committing time and effort to attend.
5. Adults need to be assured that their time and efforts are not being wasted.
6. Adult need to see the practical application of class content.
7. Adults need to have time to integrate concepts into their own business or personal situations.
8. Adults evaluate the effectiveness of the instructional program, both in delivery and content quickly. They vote on their acceptance with their continued attendance at adult education meetings.

There are also several characteristics that distinguish the adult learner from high school age youth. They include:

1. Adults are more rigid in thinking and less likely to adapt to new ways due to years of set patterns of behavior or ideas.
2. Adults require a longer time to learn and perform some tasks due to slower reaction time and less efficiency of senses. However, adults usually compensate by being more accurate. They make fewer trial-and-error mistakes.
3. Adults are more impatient in pursuit of objectives because time is more valuable and in higher demand.
4. Adults are more distracted by external temperature changes.
5. Adults have greater difficulty remembering isolated facts. Facts must be linked to current or past knowledge.
6. Adults suffer more from being deprived of success. They value usefulness of material over praise.
7. Adults have compelling responsibilities competing with educational offerings for time. These include: family, work, health, community involvement, etc.
8. Adults have high quality experiences from life to draw upon and use as examples and illustrations in class.
9. Class participation is a momentous voluntary decision because of time and personal commitments. Therefore, adults expect to be treated like mature learners and not have their time wasted.
10. Clarity of teacher's speech is required for adults to stay actively involved and contributing members of the class.

In addition to the above list, adult learners tend to prefer single-concept, single-theory courses that have relevant applications to current problems. Fast-paced or complex learning tasks interfere with concepts adults are trying to learn, so they should be avoided.

Coordination Of Community And Adult Education Offerings

The coordination of community Adult and Continuing Education (ACE) offerings can be the responsibility of the area school district, the local community college or other organization. The specific offerings can be taught by qualified instructors from the various educational institutions available in the community or from those qualified from the school of "hard knocks." The presence of university or college instructors in a class may be good at times, but in many of the rural communities of Nebraska this is not geographically or financially possible. The responsibility to provide both effective and efficient adult educators may rest back on the local secondary school district to help coordinate and offer adult educational programs.

Adult classes can be taught by half-time or full-time teachers from the district, usually with a stipend or adjusted salary depending on the already prescribed teaching load of the instructor. Classes can be taught in the teacher's individual areas of expertise and supplemented by individual resource persons from the community. The ability to mobilize the necessary resources to offer an effective adult education program is usually well within the abilities of the local school system once they make adult education a part of their instructional responsibilities for the community at large.

Because of the uncertainty of federal and state support dollars for adult education,it is strongly recommended that local school districts develop a working relationship and a line of communication with the community college and area vocational technical school. By developing this relationship, a local district may have the opportunity to have access to the resources of the community colleges and area schools. A model plan for delivery of locally sponsored adult agricultural education programs through community colleges will be available in mid 1990.

Role Of The Secondary Agricultural Instructor

The role of the agricultural instructor in developing adult education opportunities in the community is to help with and be involved in the organizing, conducting, and evaluating of the adult education classes and programs. Duties may include:

1. Approach the administration with an adult education proposal and secure permission to conduct classes.

2. Develop working relations with the adult education coordinator in area community colleges.

3. Conduct an assessment of the educational needs of the community.

4. Develop or consult with the advisory committee about the need for an adult education program.

5. Help advisory committee set priorities for classes.

6. Develop a written program plan which includes objectives, means of achieving objectives, topic, dates, methods and techniques, and evaluation procedures.

7. Announce topics and class offerings through radio spots, newspapers, and newsletters, and begin getting people enrolled in the classes.

8. Send reminders to those signed up and run notices in the newspaper.

9. Complete a teaching plan.

10. Review instructional plan with your administrator.

11. Conduct class and evaluate activities.

12. Include your administrator and advisory committee in the evaluation.

13. Provide news releases for activities.

14. Conduct follow-ups for participants and modify future class plans based on recommendations from the committee and class evaluations.

15. Document and submit reports to administration and interested public.

In many instances, the agricultural instructor is highly dependent upon the availability of quality resource persons who have the time, expertise and desire to provide adult education opportunities to the agricultural students in the community. At those times, the role of the teacher may be more that of facilitator than classroom instructor.

Resources in Adult Education

Resources for conducting adult education programs can be gotten from a variety of sources. A special program guide entitled"Adult Education In Agriculture: A Handbook for Nebraska Agriculture Teachers" was developed by the Department of Agricultural Education at the University of Nebraska-Lincoln through a funded project from the Nebraska Department of Education (1986). The guide was distributed to all secondary and postsecondary agricultural education programs in Nebraska and is available upon request. In addition, the faculty of that department stand ready to assist with the organization and planning of adult education programs.

All community colleges and area vocational technical schools have resource persons knowledgeable in adult and continuing education. This resource persons would be pleased to assist in the development and delivery of adult education programs in agriculture.

Consultants within the Agricultural Education Division of the Nebraska Department of Education have expertise in adult education and are knowledgeable of current funding and support policies.

CHAPTER 7:

MEETING BASIC NEEDS OF STUDENTS

The Nebraska agricultural education program is designed to provide instruction to students at the K-12 and adult level. The industry of agriculture provides the foundation for the planning, organizing and instruction surrounding the technical portion of the curriculuim. However, agricultural educators realize that they don't teach the technical side of agriculture for the sake of the industry. They teach students who can benefit from agricultural education instruction. In other words, we teach students about agriculture.

Because of this interest in being student centered rather than subject centered, teachers of agriculture subscribe to the principle that they have to take the student from where he/she is and take them to the level where their capabilities will allow. That means that teachers of agriculture *(or any teacher for that matter)* should be interested in meeting all the educational needs of the student. In recent years, several trends in wholistic education have evolved. Today, teachers are asked to meet the following needs of students, no matter what subject is being taught. Some of these areas are:

A. Basic skills in math and sciences
B. Basic skills in language arts
    - Reading
    - Writing
    - Listening
    - Speaking
C. Problem solving and decision making skills
D. Critical thinking skills
E. Decision making skills
F. Leadership and interpersonal development
G. Ethical considerations and decision making
H. Development of an international perspective, etc.

The primary emphasis in integrating these concepts are to allow the student to use their full intellectual and ethical capabilities to live and work in a society that is marked by rapid changes and inconsistencies.

In order to meet the occupational as well as the educational needs of the student, the terms "infusion" and "integration" need to be defined. Infusion is the act of adding a curricular area into the existing program. For example, if students are identified as needing a greater awareness of international relationships in agriculture, perhaps a three week unit on international agriculture could be included *(or infused)* as an additional unit of instruction.

On the other hand, if international agricultural concepts are deemed appropriate for agricultural education program, perhaps selected content could be integrated into the curriculum when other related topics are taught. For example, "world cropping systems" could be integrated with the instructional unit on "selecting a cropping system". Perhaps "world trade and marketing" could be integrated into the unit on "marketing and distributing agricultural products."

The following provides a more in-depth look at the concept in need of strengthening and the role that agricultural education can provide in the delivery of those skills.

Applied Math and Science Skills

The world of agriculture is changing at a pace more rapid than ever before. The cause of the ever increasing speed and complexity of change is primarily due to the scientific and technical nature of the agricultural industry. Computerization and the technology associated with it demands that students understand the basics in education. The basics in technology lie in the mathematical and scientific principles that govern life itself. An understanding of science and math allows students to see relationships as well as possibilities. Scientific principles and relationships are the building blocks of technological change. The following are only a few of the many examples of scientific and mathematical principles contained in the agricultural curriculum:

Applied science principles: Subject matter content in agricultural education centers around "applied biology/chemistry sciences". A few examples of science principles in agriculture are:

- plant physiology and growth
- chemical applications for plant growth and pest control
- arc and oxy-fuel welding and cutting
- applied genetics and reproduction
- food science and processing
- soil conservation and preservation
- tissue testing analysis
- etc.

Applied mathematics principles: Mathematic principles can be found and applied with regularity in agricultural education classrooms . Some of the agricultural concepts dependent on a knowledge of mathematics are:

- livestock feed ration calculations and formulations
- agricultural product merchandising and pricing
- marketing agricultural products
- building and/or project construction
- calculating soil test recommendations

- calculating bill of materials and price of construction
- computer applications for solving agricultural problems
- etc.

Where better can students see the real life applications of science principles? Teachers of agriculture integrate math and science education into the majority of the subjects being taught. They are able to show meaningful application of the academic subjects in such a manner that students see the value in learning. A great deal of vocational education research point to this relevancy as a means of reducing the rate of student drop out from secondary programs.

Applied Communication Skills

Language arts skills are integrated through "applied communications and are regarded as those expressive areas of speaking and writing, and the more receptive areas of reading and listening. Teachers of agricultural education recognize the need for students to develop their language arts skills. Such skills are every bit as important to successful employment as the so-called technical skills. As a result teachers constantly reinforce those skills through integration into lessons and by the instructional delivery strategies used.

Some of the ways that applied communication skills are developed are:

Reading:

- using a variety of up-to-date resource materials
- using reference books and technical manuals
- using agricultural magazines and periodicals
- using university bulletins and pamphlets
- completing assignments that require reading and comprehension

Writing:

- increasing the writing requirement for their students
- maintaining a class or agricultural program notebook
- preparing reports and speeches
- completing assignments in cooperation with the English composition teacher
- writing projects on realistic applications of agricultural content
- grading of English grammar and spelling in assignments

Speaking:

- in-school and out-of-school speaking activities through the FFA
- participating in oral classroom reports and exercises
- participating in competitive contests
- presenting civic organization talks
- completing speech and drama assignments in conjunction with the speech instructor.

In all, the methods used in applying agricultural concepts in the classroom and the real world enable students to develop and enhance language arts skills as well. Some are specifically included in the curriculum itself. Others are integrated through instructional methodology. Both delivery strategies are effective methods of developing language arts skills.

Problem-Solving and Decision Making

Agricultural education students are constantly asked to apply information and knowledge learned in the classroom to real world problem solving. This isn't unusual, since the very foundation of the agricultural education movement in the early 1900's was based on a learning by doing orientation. Students participate in problem solving by conducting Supervised Agricultural Experience programs where students make the production and marketing decisions and bear the responsibilities of profit and/or loss.

Problem solving and decision making are enhanced by the use of real life problems on which to base instruction and participation in individualized supervised occupational experience programs. Students are taught how to solve problems and make decisions. The decision making process uses critical thinking and application skills that every student needs to possess.

Critical Thinking Skills

Complementing the need for problem solving and decision making skills, is the need for critical thinking abilities. Students need to be able to discriminate and evaluate solutions to problems they will encounter in real life. The agricultural education curriculum provides ample opportunity to use critical thinking skills.

One way to measure the level of thinking skills being performed by students is to use Bloom's Taxonomy of the Cognitive Domain. The levels are:

1. Knowledge *(or recall)*
2. Comprehension
3. Application
4. Analysis
5. Synthesis
6. Evaluation

Teachers of agriculture encourage students to develop their thinking skills at levels above the knowledge level. Teachers realize that students do not retain isolated memorized facts, but do retain understandings, concepts, applications, and generalizations. Teaching to all levels of the Cognitive Domain assists students to use their minds and develop critical thinking skills.

Ethical Decision Making

Students in agricultural education are given opportunity to evaluate the motives and attitudes that shape their value system. Students are allowed to question and form their own opinions. Students are encouraged to look at the ethical implications for decision making as well as the purely "bottom line" on profit or loss.

Areas of the curriculum where ethical decision making is encouraged are:

- role of agriculture in the environment
- role of the US in feeding the world's hungry
- role of agricultural research in altering genetic structure

- role of US technology in raising living standards in developing countries
- responsibility to make the right decisions in agriculture
- etc.

International Perspectives in Agriculture

Students in agricultural education are encouraged to see the broad applications and implications of doing business in a worldwide society. Teachers integrate international concepts into the curriculum in almost every area. World debt is discussed in agricultural economics units. World food production and distribution is contained in agronomy classes. The role of Nebraska agriculture and its contribution to trade and international balance of payments is discussed to make students aware of the interdependencies of agriculture on a global basis.

Leadership and Personal Development

Leadership skills are introduced to the agriculture students both through the curriculum and through participation in the FFA chapter. The FFA has a rich history of leadership and personal development. However, it would be remiss if it wasn't pointed out that leadership skills and knowledge has been in the curriculum for decades.

Today's agricultural education program has leadership development as a basic function. Therefore, course work and inclusion of leadership and personal development concepts are integrated into the agriculture and agribusiness curriculum at every possible opportunity.

Summary

As one can see, the agricultural teacher has the responsibility to teach students many things through the agricultural education curriculum. Agriculture is important, however what a student does with the technical agricultural knowledge is dependent upon their ability to express themselves clearly and effectively, to understand basic mathematical and scientific principles, to think logically, to solve problems and make decisions, and to see the problem is a wholistic frame of reference. In agricultural education programs across Nebraska, the priority is on teaching students not only how to make a living, but to live a life.

CHAPTER 8:

LEADERSHIP DEVELOPMENT EDUCATION

What is Leadership?

There really isn't such a person as a "born leader". Rather, people develop leadership skills through study and through experiences that require them to assume leadership roles. Leadership isn't a mystical trait that one individual has and another person doesn't. Leadership is a learned behavior that can be improved by study and application of leadership theories and activities. Leadership is the ability to guide and influence others to work toward a meaningful goal. Having some degree of leadership is fairly common. Being an effective leader with the knowledge and skill to truly motivate others to action is much less common.

If development of leadership skills in young people is a truly important function of the public school system, then leadership education and activities must to integrated into the total public school curriculum. In this sense, the term curriculum is meant to include the sum total of all experiences, in class or out of class, that will help students achieve their educational goals.

Why should leadership education be taught within the public school system? The basic mission of the educational system is to provide an opportunity for students to exercise personal leadership through both discovery and development of personal talents and their application in real life situations. Leadership education prepares students for professional and technical leadership as well as it prepares young people for adult and family living. The best way to learn leadership is to lead when given the opportunity. However, there are times when such activities are limited, and unfortunately people are never really given to opportunity to effectively use their leadership skills.

How does leadership education fit into the public school agricultural education program? With a basic understanding of the agricultural education system, it is easy to see that leadership instruction fits well within the agricultural education program. The components of leadership education are at least partially provided through the programs and activities associated with the National FFA Organization and the National Young Farmers Organization. However, leadership education should be taken several steps further. Too often leadership development has been provided only through individual opportunities in student organizations and clubs. Students may excel as an officer within an organization, as an athlete on a team, or through extracurricular activities within the school setting. The system is set up to provide an individual student with an opportunity to become a leader if he/she takes advantage of it.

However, leadership and personal development is too important to allow it to take place only in individual settings and club activities. Leadership development must be a part of the total curriculum in order to provide the best possible educational opportunities to all students. The competitive environments that are provided in almost every club activity are great to practice the skills and knowledge, however basic knowledge of leadership and human relations should be provided in standardized courses of instruction. To date, there simply has not been the focus on leadership education as an important course of study.

The leadership skills that are developed through serving an organization are priceless. However, there are other key aspects to becoming a leader, such as, developing the interpersonal skills needed to effectively conduct group meetings, planning and organizing activities in a given situation, communicating on a personal level, developing and following an improvement plan, setting goals, managing time, etc. These are areas of leadership and personal development that can and should be provided for the student in a classroom setting.

How Does Agricultural Education Provide Leadership Education?

To answer this question let us first look at the various organizations that are an integral part of the comprehensive agricultural education program.

National FFA Organization

The National FFA Organization was established for students enrolled in secondary agricultural education programs in public schools. Currently, there are over 400,000 members throughout the nation. The major emphasis of the organization is on leadership and personal development. Leadership development opportunities are provided through the National FFA Organization in a variety of activities.

A few of the higher visibility leadership development programs are:

The Washington Conference Program - This national leadership development conference in open to all FFA members through application to the National FFA Center. Nationally known leaders from business and education provide extensive leadership development activities. The focus is on developing the leadership skills needed to direct the activities of the local and state FFA organizations and impart leadership and personal development information to others.

State Officer Leadership Conferences - Regional leadership development and training conferences are held each summer to assist newly elected state association officers to effectively carry out the duties and functions in their respective states. Again, it is assumed that these leaders will train other members in their states and the leadership education opportunities will be enhanced.

National FFA Convention and Competitive Events - Approximately 23,000 FFA members from around the country travel to Kansas City each year to attend the National FFA Convention. The Convention includes leadership seminars and workshops, many of which are conducted by nationally known speakers from business and industry. The National competitive events are conducted at the same Convention, in which hundreds of FFA members use the leadership and technical agriculture skills to earn recognition for their chapters and schools.

The National FFA Organization is given adult leadership from the United States Department of Education, agricultural businesses, and the National FFA Foundation which raises over 3 million dollars each year to support the organization through a substantial awards and member incentive program.

The FFA Organization is designed as an intra-curricular activity of agricultural education, designed to complement and enhance the classroom instruction program. The activities that take place within the Organization are an outgrowth of the curriculum and classroom instruction. Through formal course work in agriculture, Supervised Agricultural Experience *(SAE)* programs, and the FFA, students are provided a chance to improve their personal and agricultural skills while in secondary school. Leadership, employer/employee relations, communication skills, human relations, and group dynamics are all areas developed by FFA that have been identified by business and industry representatives as being extremely important for success in the world of work.

Team and individual competition in activities such as parliamentary procedure and public speaking encourages students to sharpen their leadership and communication skills. Individual agricultural proficiency awards motivate students to improve their agriculture skills and competencies and to learn from their experience programs.

Leadership traits such as teamwork, cooperation, and group dynamics are developed through the FFA awards programs. The Building Our American Communities program allows students to develop pride in their communities through active participation in community development programs and projects. Students learn to work with school officials, as well as local, county, state, and federal officials and agencies in improving their home communities.

The *Official FFA Manual* states -- "FFA members believe in leadership, citizenship, and patriotism. They believe in free enterprise, in freedom under the law, in making their homes, schools, and communities better places in which to live and work." Membership in the National FFA Organization is accomplished when students enroll in agricultural education classes, apply for membership, and make payment of local, state, and national membership fees.

Nebraska FFA Association

The Nebraska FFA Association is composed of 125 local chapters, which are preparing young people for hundreds of careers in agriculture, agribusiness, and agricultural related occupations. Of the over 4400 students enrolled in secondary agricultural education programs in Nebraska, the majority are members of the Nebraska FFA Association. Students may maintain membership while in high school and retain membership for about 3 years after high school graduation. This extended membership allows them to utilize the agricultural and leadership skills acquired to become established in their community or at a post-secondary institution while maintaining the benefits of membership.

The Nebraska FFA Association provides opportunities on the state level that encourage students to improve and develop leadership skills through participation in a variety of activities.

A State Leadership Conference is held annually to provide students an opportunity to compete in a number of leadership areas such as public speaking and parliamentary procedure, as well as agriculture competitive events that qualify members for participation in the national activities.

The State Association provides awards and recognition for students who are working to achieve proficiency in areas of agriculture.

The State FFA Association confers the State FFA Degree to qualified members annually. The State FFA Degree is the highest degree that can be conferred on FFA members by the Nebraska FFA Association. It is intended to recognize those members who excel in leadership and agricultural proficiency.

The State Association sponsors numerous leadership conferences that provide excellent leadership development opportunities. **Chapter Officer Leadership Conference *(COLT)*** is a conference that allows students to understand their specific responsibilities as a leader within their own community and chapter. The **Providing Excellence through Agriculture and Knowledge *(PEAK)*** conference allows students of all ages to better understand their role as a leader not just within the organization, but within their school and community.

Nebraska is divided into 12 districts and six areas. This allows for additional district leadership workshops, seminars, and competitive events to further meet the needs of members in local chapters.

The State FFA Association office is located within the Nebraska Department of Education *(NDE)*, Agricultural Education Division, in Lincoln, Nebraska. NDE Consultants serve as the advisors to the State FFA Association and assist in directing the work of the state organization. One NDE Consultant is also recognized as the Executive Director of the organization as well. The mailing address for the Nebraska FFA Association is:

The Nebraska FFA Association
P.O. Box 94987
301 Centennial Mall South
Lincoln, NE. 68509-4987

Local FFA Chapters

Local FFA Chapters allow for the students and advisors to conduct a comprehensive set of activities aimed at meeting the specific needs of the individual members, the school, and community. Activities may include community service programs, natural resources conservation activities, safety education workshops, as well as activities aimed at personal development of the students. The types of activities that occur locally are geared toward the needs of the community. The types of developmental activities varies from community to community and is what makes the FFA truly a grass roots organization. The FFA activities on the local level are geared to improve the abilities of the student as well allow them the opportunity to be competitive in earning individual and team recognition on the local, district, state, and national levels.

Because of the leadership and personal development opportunities that are built into the FFA program it is easy to see how agricultural education can be designed for the leadership development of secondary school youth.

The National Young Farmer/Rancher Education Association

The National Young Farmer Educational Association, Inc., is the leadership and personal development student organization for those adults enrolled in agricultural education classes. This Association provides a systematic approach and access to adult education in agriculture and provides young farmers and ranchers with the means to secure information on the latest technological advancements so knowledgeable decisions can be made related to their own enterprises. This is accomplished by participating in activities that meet the objectives and purposes of the Young Farmer/Rancher Association.

Briefly these purposes include:

1) to assist young people in agriculture to remain or become established in farming, ranching, and agribusiness;
2) to assist in developing the natural, human, and physical resources needed to be productively involved in agriculture;
3) to cooperate with other organizations for the improvement of economic, educational and social conditions;
4) to assist in developing leadership and communication skills;
5) to provide group identity and unity;
6) to promote NYF/REA as a part of the instructional programs in agriculture education offered by Departments of Education, and
7) to improve rural-urban relations.

These purposes and objectives have been identified as being important to the future of agriculture and agribusiness in America. As changes in society and the agriculture economy are considered these objective become even more important to everyone in agriculture - - everyone in society. The well being of each person in agriculture is affected by decisions made at all levels, including international and global issues. The NYF/REA provides the forum for this discussion of the issues to take place.

The Nebraska Young Farmer/Rancher Education Association

The Nebraska Young Farmers/Ranchers Educational Association *(NYF/REA)* is a statewide, nonprofit, non-political organization established for educational purposes with particular emphasis on agricultural education. It is an integral part of the adult agricultural education program offered by public school agricultural education departments through the Nebraska Department of Education. Participants enroll in educational classes conducted by the high school agricultural department and become eligible for activities of the local, district, and state association. It is an association of, by, and for young farmers and agribusiness persons. The programs provide an opportunity for members to continue their education in and about agriculture, to participate in leadership development activities, to participate in cooperative community improvement activities as well as social and recreational activities. The NYF/REA exists because of a demonstrated desire on the part of young adults to have a state organization where they can enjoy the fellowship of one another while discussing and solving their own problems.

The NYF/REA was organized in 1962 and held its first state convention in 1965. The strength of the state association is based upon active, well conducted educational programs at the local level.

The adminstrative headquarters of the Nebraska Young Farmers/Ranchers is:

Nebraska Department of Education
Nebraska State Office Building
Agricultural Education Section
P.O. Box 94987, 301 Centennial Mall South
Lincoln, Nebraska 68509-4987.

Leadership Education Organizations and Agencies

Leadership education is becoming an increasingly important issue throughout the United States, and within Nebraska. The need for and the commitment to leadership development is evident through programs such as LEAD - Leadership Education/Action Development; the newly established Center for Leadership Development; the Nebraska Leadership Council; the continuing commitment of business and industry to develop leadership skills and abilities within their corporations, the commitment of local communities to promote leadership within their business and civic organizations, and the ever present agricultural education/FFA and Young Farmer education programs.

Levels of Leadership Development in Agricultural Education

Leadership and personal development can be integrated into all components of the comprehensive agricultural education program.

Elementary Education -- This level provides students an opportunity for personal growth and development by understanding the world around them. It provides basic opportunities to explore group activities and learning, understand one's own abilities, as well as develop a personal understanding of others. Several activities should be stressed through this level. Activities that enhance cooperation,

self-awareness, and personal skills could become a part of the curriculum and serve the student as they develop.

Junior High -- At this level instruction about citizenship in the community, nation, and world can be provided in a noncompetitive environment. The cooperative efforts and community service activities instill a basic understanding of their role within the community and its future. This is also a time when students develop basic understanding of their own personal development within leadership roles and responsibilities. Areas within personal and community awareness provide the student with lifelong basic awareness of the world around them. Activities that are exploratory in nature serve as a useful tool in accomplishing leadership development.

Senior High -- This level builds on the previous leadership developments, but also provides a competitive, goal oriented environment to achieve continued leadership development. The cooperative activities are strengthened and continued, but emphasis is placed upon the personal development of the student as a leader. Leadership and interpersonal skills are developed and refined through several experiential activities in which the student may maintain involvement through out the program. The activities stressed within this leadership education at this level may include: public speaking, group dynamics, personal development and goal setting, as well as interpersonal skills development. A semester course entitled Leadership and Human Resource Development is provided in Appendix D.

Adult Education -- Leadership development at this level utilizes all of the experiences that have been developed throughout the years and focuses on the interpersonal skills, group skills, and role playing areas of leadership that are most meaningful in maintaining employment, a business, and strong family relationships. There may be opportunities for competitive leadership activities, however the cooperative team effort for the community and organization may provide a better basis for learning and developing leadership.

Summary

Leadership education should not be limited to only those students interested in agricultural education. The agricultural education instructor, because of their instructional and community resources and training may be an excellent choice to teach a non-agricultural education class on leadership and human resource development for other students within the school system.

The basic pattern of leadership education and activities throughout agricultural education is evident. There are certain leadership skills and competencies that are better developed at certain maturity levels of the student. One thing that should be taken into consideration when looking at encouraging leadership development is to encourage participation within several different types of leadership organizations. Students at all levels should seek out opportunities to be good leaders and good followers. The best way to improve one's leadership abilities is to lead.

CHAPTER 9:

SUPERVISED EXPERIENCE PROGRAMS IN AGRICULTURE

Definition of Supervised Agricultural Experience

Supervised Agricultural Experience (*SAE*) is the terminology used to describe the actual "hands on" application of concepts and principles taught in the agricultural education classroom to an occupational setting. The Handbook, Supervised Occupational Experience (*1982*) is a source of basic information used in describing the rationale for local SAE programs. The Nebraska SAE Handbook (*1989*) printed to accompany this program planning guide will provide more specific applications on SAE programs for agricultural education programs in this state.

A Supervised Agricultural Experience program consists of planned agricultural activities conducted outside of scheduled class time in which the student develops and applies agricultural knowledge and skills learned in the classroom and laboratory. Students in SAE are supervised by teachers, parents, employers or other adults who assist them in achieving their educational objectives. The competencies to be developed should be determined cooperatively by the student, teacher, parents, and employer.

Supervised Agricultural Experience is planned application and development of agricultural competencies in a learning environment as closely related to the real conditions of the occupation as can be provided. The total of the student's Supervised Agricultural Experiences comprise a program. Year-round, long-range Supervised Agricultural Experience programs represent critical educational components in the development of entry level skills needed in the agricultural industry.

Supervised Agricultural Experiences are an integral part of agricultural education. A close relationship must exist between the classroom and laboratory instruction and the agricultural experiences gained by students in order to assist them in "bridging the gap" between school and successful occupational entry.

Sometimes SAE and SAE program are used interchangeably. However, they are not the same. SAE is a teaching method used in agricultural education whereby community resources are utilized. A SAE program is the specific set of learning experiences, or program planned and conducted by an individual student enrolled in agricultural education.

SAE programs may involve agricultural experiences, agricultural employment, entrepreneurship or a combination thereof. The experience of assuming management and financial responsibility in these areas help students develop competencies needed for entering employment in agriculture, agribusiness, and natural resources occupations as well as non-agricultural related industries.

Supervised agricultural experience programs are designed to meet the needs of the individual student. Every student in a class may not have the resources (*capital, location, age, etc.*) to be involved in an entrepreneurship program or be employed in an agricultural industry. In helping students select SAE programs it is necessary to take into account the resources and needs of the student.

Types of SAE Programs

Supervised Agricultural Experience is provided through three basic types of programs: *agricultural experiences, agricultural employment, and entrepreneurship* activities. An SAE program should be of sufficient duration and scope to include a complete learning experience cycle and to provide the opportunity to gain a variety of agricultural competencies associated with the agricultural industry. Financial rewards, while important, should be secondary to the educational benefits.

Agricultural Experiences allow students to design a program in an area of agricultural interest that is not available through entrepreneurship activities and/or agricultural employment programs. The student may identify an area of career interest and with the help of the agricultural instructor and parents develop a comprehensive list of agricultural skills to be acquired by the student. Agricultural experiences may be obtained at the school (*outside of school hours*), the home, community, farm/ranch, agribusinesses, and/or post-secondary institutions. The advantage of participating in an agricultural experience program is that it allows the student to be creative in designing their SAE program, and allows students to explore career opportunities that may not be available in the community or in the agricultural education instructional program.

Agricultural Employment programs employ students on farms/ranches, in agribusinesses, in school laboratories or in community facilities. The purpose is for students to gain practical experience needed to enter and advance in their chosen agricultural career through actual placement in business and industry. The students utilize the facilities and human resources provided by employers, schools or community organizations to develop essential employment competencies. The students may work toward the achievement of a list of specific agricultural skills. They do not own the facility or area in which they are employed but are generally paid a wage for their work and keep complete and accurate records.

Entrepreneurship programs allow students to develop competencies needed to own, manage, and assume the ownership risks of an economic venture in production agriculture or agribusiness enterprises. Students with entrepreneurship programs personally own the materials or other inputs required for the enterprise. They must keep complete and accurate records and assume the profit or loss of the enterprise. Entrepreneurship programs may be developed on a farm or ranch or in an agribusiness. School or community facilities can be used for entrepreneurship, provided the student owns the materials used in the enterprise. For example, a student may rent school greenhouse space to produce bedding plants or be provided with a community facility to raise livestock, or use land provided by others to produce crops. Several examples of SAE experience plans are provided in the Nebraska SAE Handbook (*1989*).

The Role of SAE in a Comprehensive Agricultural Education Program

The Supervised Agricultural Experience (*SAE*) is a component of the agricultural education program and should reflect the classroom instruction. A student enrolled in agricultural education program may be involved with a SAE starting in junior high and extending through their participation in adult education activities. Each phase of the program (*junior high, secondary, and adult*) should address the educational, physiological and sociological needs of the students. This section will describe the role of junior high, secondary and adult supervised experiences within the agricultural education program.

Junior High Programs

An SAE at the junior high level should be exploratory in nature, allowing students the opportunity to become familiar with the agricultural industry and the diversity of careers present in agriculture. Junior high students are experiencing a transition period in which maturity and physical appearance are of great concern. They are undergoing tremendous sociological, psychological, and educational problems, and need help to address their concerns. Students can benefit from assuming the the responsibility of a SAE program as a way to improve their maturity and work ethics. For a variety of reasons, (*especially age*) it is recommended that junior high school students be involved primarily in exploratory agricultural experiences that are cooperative in nature, and are a natural outgrowth of the curriculum. Primarily, the SAE site or facilities will likely be provided by the school. Junior high SAE may or may not require record keeping or be conducted as an individualized SAE program.

Secondary Programs

Supervised Agricultural Experience in secondary schools should includes a detailed plan of activities that show continual growth in both quality and quantity of activities throughout a student's high school career. A student's SAE may include entrepreneurship, agricultural employment, or agricultural skills or any combination thereof. The purpose of the SAE at the secondary level is for students to gain responsibility, develop agricultural competencies, manage resources, develop entrepreneur skills, maintain records, and gain insights into the agricultural industry. Depending on the SAE area and economic conditions, a student's SAE could be a money making enterprise that could help fund college education or

provide a firm base for employment after high school, or provide access to owning and operating a personal business in agriculture.

Adult and Continuing Education Programs

The application of SAE to adult learners may not be as structured or as formal as those programs found at the junior high and secondary levels. Adult education students can, and do, immediately apply information, skills, and knowledge received in adult and continuing education classes in their daily occupations. It is much easier for adults to infuse agricultural education experiences and competencies because of the availability of resources and facilities associated with their existing occupation. However, instructors still need to follow-up instruction with adult students on the farm or in the business, that is make visits and provide instruction on site.

There is a formalized program for recognizing adult students' SAE accomplishments and that is through the Nebraska Young Farmer Rancher Education Association award programs. However, most adult students will attempt to integrate new skills because of the potential for increased profit and or efficiency. Their pay back is more immediate. Therefore, it is still essential for adult students to plan for completion of new and innovative agricultural experiences derived from adult education instructional programs.

Teacher Responsibility

Agricultural educators play a critical role in helping students attain their career goals. They must guide each student as they select, plan, and develop experience programs in agriculture. Instructors must help students understand their strengths and weaknesses as future employees and owners-operators of agricultural businesses.

Systematic supervision of SAE programs at the site of the employment or agricultural experience is an important responsibility of the agricultural education instructor throughout the school year. It is a part of the summer responsibilities of an instructor and should be emphasized in a year-round agricultural education program. The major SAE responsibilities of instructors include:

*Personal and career counseling
*Assistance in selecting SAE programs
*Assistance in planning SAE programs
*Supervision of individual SAE programs
*Evaluation of individual SAE programs
*Coordination between students, parents, and employers

SAE supervision responsibilities of the instructor should be taken very seriously. Home and agricultural placement visitations enable teachers to assess the actual working environment and assist the student in establishing the student's own personal individual SAE program. It is this unique program that makes this portion of the total agricultural education program meaningful as a method of instruction. Program visitations should be made as often as necessary to students with SAE programs. Students with a quality program may require as many as three or four instructional visitations per year. Students with less SAE activity may require fewer visitations and/or individual instructional contacts.

Student Recognition

Students like to be recognized for achievement, and are many times motivated and challenged by recognition given to others. A well organized plan for recognizing students efforts and achievements in SAE related activities may cause a significant improvement in SAE programs within the school and community.

Examples of activities used by successful teachers to recognize growth and development of SAE programs include:

*Announcing in class the initial selection and/or additions to student SAE programs.
*Posting bulletin board listings of each student's SAE program.
*Allocating points in the grading system for quality SAE achievement.
*Showing slides or films of student SAE programs at the FFA parent/member recognition banquet.
*Encouraging students to display livestock, crops, flowers, and other SAE program related items at fairs and shows.
*Recognizing outstanding SAE programs at banquets, parent's night and/or other public gatherings.
*Encouraging students to enter official FFA competitive events, pursue degrees and complete award applications that recognize SAE achievements.

Some of those award programs include:

1. FFA Membership Degree Programs (*Greenhand, Chapter, State, and American*)
2. Agricultural and Leadership Proficiency Awards
3. Educational and Leadership Scholarships

Summary

Students enrolled in agricultural education at the junior high or high school levels are strongly encouraged to take advantage of SAE opportunities. Junior high school students should use the opportunity to gain greater awareness of the agricultural industry and the wide variety of occupations available. They should also learn how to accept responsibility for the management of a project, but more importantly for their own actions

Students at the secondary level should use their SAE opportunity to develop their occupational skills that would allow them to participate in an agriculturally related occupation, either in a business of their own or for a salary-paying position in agribusiness. Students who are successful in SAE also tend to be successful in other facets of their development. Should they go on to higher education, students with outstanding SAE have, not only the experience in the field in which they will study, but monetary resources accumulated to allow them to attend college.

Should agricultural education students decide to maintain ownership of a production or agribusiness enterprise, they have their SAE program on which to build or as a source of income to invest. At the very least, students who have successfully participated in SAE will have a better attitude about management of resources, a better work ethic, and a greater knowledge of what it takes to succeed in the world of work.

There are SAE opportunities for any students who has the ambition and abilities to set goals and plan for their achievement.

CHAPTER 10:

EQUITY IN AGRICULTURAL EDUCATION

The term equity describes the environment in which individuals consider options and make choices based on their abilities and talents, not on the basis of stereotypes and biased expectations. It brings about freedom from favoritism based on predetermined expectations and opinions. The achievement of equity enables both women and men of all races and ethic backgrounds to develop skills needed in the home and in the paid work force, skills which are best suited to an individuals interests and abilities. It opens economic, social, and political opportunities for all people. It fosters mutual trust because people can work in unrestricted occupational settings and maximize their potential in their work roles.

Historical Background

During the last 20 years, efforts have been made to increase educational opportunity and eliminate discrimination. There is recognition of the deep-rooted and enduring social and economic changes that have occurred during this period. These changes require vocational educators to broaden their perception of the educational needs of male and female students of all races and various mental and physical abilities so that these students are better prepared to survive and thrive in a society characterized by changing conditions and expectations.

Educational equity as a specialized field of knowledge is in its infancy in terms of methodology and practice. Federal and state governments have seen the need for legislation to expand educational opportunities and to improve economic self-sufficiency for all people through changes in the educational system. The focus of early equity efforts centered on removing the overt barriers to equal access, special treatment, and educational opportunity.

While compliance with nondiscrimination laws and removal of overt barriers to all courses of study and to all occupations are necessary, they are not sufficient in themselves to create an environment promoting educational equity. Role stereotyping, bias, and lack of information about the impact of large social and economic trends perpetuate old ways of thinking, feeling, behaving, and preparing for the future.

Gender Equity in Agricultural Education

Traditionally, agricultural education has been linked to teaching the skills used in production agriculture and agribusiness occupations. These jobs currently and historically are dominated by males. As a result, agricultural education courses are perceived by females and males as predominantly a male domain.

Statistics reflect that, overall, agricultural education enrollment is Nebraska secondary programs is 86 percent male and 14 percent female. These enrollment figures reflect, as well as perpetuate, gender stereotyping associated with agriculture and agribusiness occupations and segregation on the basis of sex in our current work force. Enrollment trends which indicate 80 percent or more enrollment by one sex are considered an indication of sex-role stereotyping, bias, or possible discrimination. These statistics may indicate that females either see little value in learning skills taught in agriculture education, or they are not aware of what is being taught and how it might benefit them in the future. Reducing enrollment segregation and occupational stereotyping should be one of the goals of agricultural educators.

Achieving Equity Through The Curriculum

In order for agricultural educators to develop a curriculum free of discrimination, they must be able to recognize bias and stereotyping in curriculum materials and in the classroom. Agricultural educators must devote consistent and informed attention to the goals of equity and know how those goals can be achieved through the teaching process, the learning environment, teacher-student interaction patterns, and the curriculum. The charts and checklists at the end of this section will provide agricultural educators with the basic resources to plan and develop an equitable curriculum.

Strategies for achieving equity through the curriculum have evolved over the last ten years. In the 1970's, the "checklist approach" was designed to address the goal of nondiscrimination. Currently, more sophisticated strategies are needed to weave equity into the fiber of agricultural education course work. The idea of student equity-related competencies as an integral part of curriculum objectives is new. Still, at the present time, all strategies are needed to achieve equity in agricultural education. All educators must take active steps to include equity-related concepts and skills in the curriculum at each stage of its development.

There are at least four stages that educators must consider when attempting to ensure that a particular curriculum supports the goals of educational equity.

Stage One: Complying With The Letter Of The Law.

In this stage, the policies and practices of the entire school district and each staff member must be reviewed. Federal and state laws prohibit discrimination in admission to any course or activity and prohibits separate courses for students on the basis of gender, race, or handicapping condition. Course descriptions, counselor practices, the effect of prerequisites on enrollments, how the master schedule stifles or encourages non-traditional exploration, and many other access-related issues should be investigated and changed as needed.

Stage Two: Neutralizing Stereotypes And Bias In Existing Instructional Materials

In stage 2, educators must review instructional materials, language usage, course objectives and activities, and leadership activities to determine if they are based on, rely on, or communicate stereotypes or traditional biases that attribute behaviors, abilities, interests, values, and roles to a person or group of persons on the basis of gender, race, or handicapping condition.

Stage Three: Revising An Existing Curriculum And Seeking To Attract And Meet The Needs Of Both Male And Female Students.

At this stage, educators should revise or supplement curriculum to identify and meet the interest and needs of students who traditionally have not enrolled in a particular course. In the case of agriculture education courses, the groups in question are almost always females and minorities.

In reaching out to the non-traditional student, a troublesome paradox occurs. In order to attract a non-traditional student, educators need to appeal to the students' interests, which are frequently based on stereotypes and biases. This could reinforce and perpetuate the very stereotype and biases that should be neutralized. For example, enrollment patterns show certain courses are perceived as more interesting for females, such as ornamental horticulture or animal science. Female participation in only a few agriculture courses, while encouraging from an equity point of view, may perpetuate old stereotypes and assumptions that other courses or skills are less interesting or less important and valuable, or "just for boys."

Specific strategies educators can use in this phase include the following:

- using recruitment strategies aimed specifically at females, minorities, or handicapped students who might increase their knowledge of agriculture and related occupations, opportunities, and skills;
- providing a diverse set of role models in a variety of agriculture and agribusiness related occupations from entry level to advanced occupational positions;
- reviewing and changing the classroom environment to eliminate "male-only" images and promote messages that encourage female participation;
- supplementing the curriculum by addressing the changing roles in agriculture and agribusiness; and
- examining and neutralizing all forms of bias, especially communications/linguistics bias, by both teachers and students.

Stage Four: Reconstructing The Curriculum To Develop New Knowledge And Skills Based On Changing Roles, Responsibilities, And Conditions.

This stage represents a conceptual shift or re-definition of each course, accomplished by including new instructional objectives and activities that embrace equity concepts and goals for all students. Equity ideas and issues must be central to the reconstruction of the agriculture education curriculum described in this guide. While some courses outlined in this guide lend themselves more directly to

discussing equity ideas, the entire program and curriculum must embrace and support new equity-related knowledge and skills.

Research on gender differences and similarities, on minority issues, handicapped and disadvantaged students, on changing roles, and on equity has been conducted in the last 15 years. There is a growing body of literature on women and minorities as business leaders, entrepreneurs, and in non-traditional jobs and careers. Students can benefit from exposure to and critical thinking about emerging agriculture issues created by changing social and economic conditions. These issues include:

- the effects of stereotyping, bias, and discrimination individuals and on agriculture and agribusiness;
- changing roles of females, males, and minorities in the world of work;
- comparable worth or value and wage equity or inequity associated with different jobs;
- emerging employee job benefits, such as employer-sponsored child care, child bearing and child.rearing leave for males as well as females, and company transfer policies for two-wage-earner families;
- flex-time and job-sharing possibilities;
- the need for and results of affirmative action programs; and
- the impact of technology on various jobs and work procedures.

There are no actual models of such a reconstructed curriculum proposed here on which to draw. Each agricultural educator will need to carefully examine the underlying assumptions of the current and projected curriculum. Some of the questions educators need to be concerned with include the following:

- Has the new body of knowledge on changing roles and stereotyping been incorporated into the agriculture education curriculum?
- Will the curriculum give students skills for the future, or will it further reinforce outdated stereotypic expectations and occupational roles and responsibilities of a bygone era?
- Do instructional objectives facilitate critical thinking about the effect of major social and economic changes on the individual, the family, and agriculture/agribusiness?
- Will all students truly be prepared for the dual roles of working in the family and working in the paid labor force?
- Will all students have a greater respect for traditional "women and minority work" roles?
- Can trust be built between Caucasians, minorities, and both sexes that will lead to greater teamwork and productivity?
- Will the new curriculum lead to greater understanding and appreciation of all students' experiences, needs, perspectives, values, and futures in the rapidly changing world of work?

Student Equity-Related Competencies For Economic Self-Sufficiency And Equal Employment Opportunity

Student equity-related competencies are critical for the curriculum reconstruction described in the fourth stage of equity implementation. Such competencies are consistent with program improvement initiatives in agricultural

education. Agricultural educators should review the equity-related competencies and consider how one or more might be included in courses and programs.

General

- -- Students will define and identify strategies to overcome role stereotyping, bias, and discrimination on the basis of race, sex, and handicapping conditions.
- -- Students will be able to define and give examples of "ethnic or gender discrimination."
- -- Students will identify and analyze societal attitudes about men and women, gender.role stereotypes and bias, and forms of gender discrimination.
- -- Students will be able to recognize and neutralize role stereotyping and bias in educational materials.
- -- Students will demonstrate the use of non-biased inclusive language in the curriculum.
- -- Students will develop a positive attitude about the abilities of both sexes, all racial and ethnic groups, and the handicapped.

Work And family

- -- Students will identify the responsibilities associated with dual work roles--paid work and work in the home and family.
- -- Both male and female students will identify changes in family structure and responsibilities and the need to develop family-related skills.

Labor Force Facts

- -- Students will demonstrate knowledge of historical changes in the labor force due to participation of a diverse work force.
- -- Students will identify historical barriers to equal employment opportunity.
- -- Students will demonstrate knowledge that both men and women of all ethic background work for pay, in great numbers, for a long time, and out of economic necessity.
- -- Students will identify how role stereotyping, bias, and discrimination have contributed to occupational segregation in the U.S. labor market.
- -- Students will demonstrate knowledge of how traditional women's and minority work has been traditionally undervalued and underpaid.

Non-Traditional Occupations

- -- Students will be able to define "non-traditional occupations" and will identify positive and negative aspects of employment in non-traditional careers.
- -- Students will identify non-traditional jobs for males and females of all ethnic background and the skills needed for those jobs.
- -- Students will identify issues that arise when people work in non-traditional jobs.
- -- Students will identify coping strategies to survive and thrive in non-traditional jobs.

Career Development

- Students will identify how stereotyping and bias may limit opportunities in planning their own future.
- Minority students will demonstrate awareness of the total range of career and occupational choices.
- Male and female students will demonstrate awareness of the total range of career and occupational choices.
- Students will formulate career development plans based on informed choice, labor market information, assessment of interests and skills, occupational exploration, and work experience, rather than on factors related to occupational stereotyping on the basis of gender, race, or handicapping conditions.
- All students will identify how emerging technology is influencing jobs of the future.
- All students will demonstrate experience in preparing for, adapting to, and influencing change in the work world.
- Students will identify reasons why both males and females or all ethnic backgrounds should acquire mathematics, science, computer, and technology skills.
- Students will identify how stereotyping, bias, and discrimination may affect career planning, occupational exploration and preparation, employability and job seeking, job retention and advancement, job benefits and professional development, earnings, financial planning and management, and entrepreneurship.
- Students will identify and discuss employment skills that both males and females of all ethnic backgrounds will need to survive and thrive in the future economy, including skills in participative management, oral and written communication, assertiveness, teamwork, networking, cooperation, negotiation, flexibility, adapting, human relations, interpersonal relations, leadership, changing careers, coping with frequent and rapid change, and technological literacy.

The information and the checklists that follow are designed to help agricultural educators continue this task of examining curriculum, adjusting teaching practices, and achieving equity goals.

Forms Of Bias In Curricular Materials And Classrooms

Six forms of bias are likely to be prevalent in curriculum materials, the classroom environment, and interactions.

Invisibility - Certain groups have been underrepresented in curriculum materials. The significant omission of women and minorities implies that they are of less value, importance, and significance in society. Females have formed "quiet" behavior patterns compared to the "active" role of males in the classroom. Teachers interact far more frequently with males; they reward males for academic work, punish them, talk to them, question them, and remember them in later years far more often than females. This invisibility has been underscored by discussion topics and by bulletin boards and displays that frequently omit skills of women and minorities.

Stereotyping - By assigning traditional and rigid roles or attributes to a group, instructional materials stereotype and limit the abilities and potential of that group. Stereotyping denies students knowledge of the diversity, complexity, and variation of any group of individuals.

Students who see themselves portrayed stereotypically may internalize these stereotypes and fail to develop their own unique abilities, interests, and full potential. Often, teachers have assumed that males share one set of abilities, interests, values, and roles, and females share a different set of these characteristics. These stereotyped expectations ignore individual differences, affect the teacher's behavior, and limit the full development of female and male students. Teachers often reward only males or active, assertive, dependable, and considerate behavior. When these stereotyped teacher expectations are reinforced by stereotyped models, pictures, and other displays, students receive additional messages of "appropriate" gender-role behavior. As a result, many students learn to limit their careers and capabilities in order to fit these stereotyped roles.

Imbalance/Selectivity - Textbooks perpetuate bias by presenting only one interpretation of an issue, situation, or group of people. An imbalanced account restricts students' knowledge of the varied perspectives that may apply to a situation.

Through selective presentations of materials, textbooks distort reality and ignore complex and differing viewpoints. As a result, millions of students may be presented limited perspectives on the contributions, struggles, and participation of females and minorities in our society.

The educational system has reflected an imbalance in compensatory educational programs. Special education programs have alleviated learning problems that tend to affect males but have generally ignored those that hamper females. Although there are special education programs for reading and emotional learning problems, there are few special programs in spatial relations and mathematics. Compensatory education programs have reflected a bias in selecting the types of learning problems to be recognized and remedied, and this imbalance has worked to the disadvantage of females and minorities.

Unreality - Frequently, textbooks present an unrealistic portrayal of history and contemporary life. They gloss over controversial topics and avoid discussions of discrimination and prejudice. Unrealistic coverage denies students the information needed to recognize, understand, and perhaps eliminate the problems that plague society. In spite of the many sources of gender bias in classroom interaction, most teachers and teacher educators are unaware of their roles in promoting educational inequality. To overcome this bias, educators need to be aware of their own patterns as they provide response opportunities, offer feedback, and interact on an informal level with personal regard or all others.

Fragmentation/Isolation - By separating issues related to minorities and women from the main body of the text, instructional materials imply that these issues are less important and not a part of the cultural mainstream. By arbitrarily separating females and males in classroom procedures--such as lining up, forming work groups, and organizing recreational activities--teachers promote the fragmentation and artificial isolation of the sexes. Purposeless separation is a divisive influence and works against the goal of student equality. When represented in the physical environment of the classroom, on bulletin boards, and in other

displays, the roles and contributions of women and minorities have been presented separately and secondly as though their role is only a corollary to the mainstream of human experience.

Linguistic Bias - Curriculum materials often reflect the discriminatory nature of the language. Masculine terms and pronouns ranging from "our forefathers" to the generic "he" deny women's participation in our society. Occupations are given masculine labels, such as "mailman," denying the presence of women workers in these fields. Imbalance of word order and lack of parallel terms referring to females and males are also forms of linguistic bias. The same forms of language bias present in instructional materials may also emerge in the language of the classroom. Sex-biased words, such as "mankind" and "salesman," and the constant reliance on the male pronoun "he" to refer to both males and females are examples of sexist language patterns that belittle the role and importance of females. As in the other cases of bias, physical displays in the classroom may also reflect biased language.

Summary

Equity issues in agricultural education must be taken seriously. Efforts must be exerted to maintain an environment in which students from all backgrounds and with differing personal characteristics (*gender, ethic, color, age, or handicapping condition*) are free to pursue the type of educational opportunities that are right for them. The agricultural industry is the largest in the nation and certainly the largest in Nebraska. There is a need for people with many different skills and backgrounds to work in agriculture.

The classroom and instructional activities are places where the most can be accomplished in eliminating sterotyping conditions. Agricultural education programs have traditionally served a predominantly white, male student clientele. However, the agricultural workers of the future will not be like those of the past. Continued changes in the nature of the work to be done in agriculture will open the field to workers of both genders, and to people of all ethnic and racial backgrounds.

The agricultural educator must be a part of the continued efforts to neutralize the equity problems that have surfaced in the past, and insure that the agricultural education program remains open to all students who may need it and can benefit from a study of agriculture.

For further information about how to make your agricultural education program a more equitable environment for students, please contact:

Vocational Education Equity Coordinator
Division of Vocational Education
Nebraska Department of Education
301 Centennial Mall South
Lincoln, Nebraska 68509-4987

CHAPTER 11:

FOCUSING ON THE FUTURE OF AGRICULTURAL EDUCATION

Agricultural education in Nebraska has had as bright and productive record of accomplishment and achievement from its beginnings in 1917. Much of that success lay in the nature of agriculture itself in Nebraska. Being predominantly a farming and ranching state, instruction in and about agriculture was and is thought to be extremely important. For the first fifty to sixty years of the program, all the teacher of agriculture had to do was teach young people (*especially boys*) how grow crops and raise livestock. Certainly a large portion of the agricultural program graduates would return to the farms and ranches.

Now things have changed. The agricultural education programs of tomorrow will have to be different than those of yesterday and today. The agricultural education profession is ready to step forward to assume its place in helping to fulfill the total educational mission of the public school system. The following trends and issues will be address by the agricultural education program of the future.

Technology in Agriculture -- Computer technology and integrated circuitry is rapidly becoming the tools of professionals in the agricultural industry. Persons associated with agriculture in the future will have an in-depth knowledge and appreciation for the role of technology and computer applications to all facets of agriculture. Programs of agriculture will continue to initiate curriculum changes and integrate instructional offerings that will enhance students skills in using technology.

It is estimated that at least 80 percent of all agriculturally related occupations use computer technology in some phase of their work. Modern machinery and equipment can only be operated if the operator has a basic knowledge of computer assisted controls, monitors, and sensing devices. For example, grain is only marketed through computer assisted information networks, so that current prices can be locked in and transactions are instantaneous. To market grain, one has to be knowledgeable of the technology as well.

Biotechnology in agriculture has become more than a buzz word as new crop and livestock improvements come about through genetic engineering and gene splicing. Students in agricultural education need to understand basic science and mathematics concepts that serve as the foundation knowledge that allows them to

work in an industry that is based on applied biological sciences. Programs of agricultural education will infuse and integrate information about the applied biology/chemistry and mathematics components of the agricultural industry as students prepare for the biotechnology era ahead.

Change and the Necessity of Change Must be Addressed -- Students enrolled in agricultural education will see more change in their lifetime than has been observed from the beginning of mankind to this point. Students will develop an awareness of change and the change process. They will develop the skills to critically and creatively think and evaluate alternatives. They will not only know where to find information, and how to effectively evaluate information and the sources of information. Students will use technology to gather information and solve problems. They must have an open mind to effective assimilate information, yet be able to come to a decision when the time is right.

Agricultural education programs have been built on a problem solving orientation since its inception. It will continue to provide students with the skills, knowledge, and attitudes necessary to live in a world characterized by changing conditions.

Comprehensive Agricultural Education Programs Must Be Developed-- The agricultural education program of the future will meet the instructional needs of the entire agricultural education clientele in the community, rather than just those of the high school student. Agricultural *literacy*, or "knowing about agriculture" will continue to be as important as learning how to be successfully employed in agriculture.

The U.S. will continue to be dependent on relatively few individuals to produce the food and fiber for every citizen in the nation, and for a growing number of others in other countries. Therefore, it is essential to have a citizen who is knowledgeable about agriculture and the inter-relationships of agriculture with the rest of society, the environment, and other nations. It will be these educated persons who will make the decisions which will protect the safe and abundant food supplies needed in the future.

Elementary age students will learn basic information about agriculture as it is applied in their normal curriculum (*science, social studies, mathematics, reading, etc.*).

Junior high school students will learn about the inter-relationships or agriculture with society and the rest of the world through an agricultural enrichment program. They will gain knowledge about the career opportunities and contributions made by those employed in the agricultural industry.

Senior high school students are learning both about agriculture (*literacy*) as well as gaining the skills and knowledges needed to either gain employment in an agriculturally related occupation or to enroll in postsecondary educational programs in agricultural areas.

Adult students will continue to gain valuable new skills and knowledge that relate directly to their own occupational area. Agriculturally related occupations in business and in the production occupations will continue to be in dire need of upgrading and improvement. Adult students need to know how to improve and

what new innovations are around the corner that will have an impact on their working conditions, profit picture, and standard of living.

It is estimated that 80 percent of the US work force which will be in place in 2020 is already in the work force today! That means that new technologies and innovations in the agricultural industry will be implemented primarily by those persons already employed there. The need for adult education has never been greater.

Employability Skills Should Be Taught -- Teaching students the skills needed to be productive employees and citizens of a community is essential. Students not only have to have the technical skills, but also the leadership, communications, human relations skills, and proper attitude to be a valued employee or citizen of a community. Agricultural education in Nebraska will continue to provide students opportunities to develop technical and personal skills.

Advisory Groups Should Be Utilized -- Because agricultural education is a community based program, input from the community served and the clientele will continue to be sought out and used. Community input should be used in program planning, instructional offerings, needs assessment, public relations, program evaluation, facility improvement, etc.

Programs Should Meet the Needs of the Diverse Student Populations -- Agricultural education will be offered to all students who are in need of and can benefit from instruction in agriculture. Males and females, students from all ethnic or racial background, students of all ages or with handicapping conditions are welcome in agricultural education programs. The agricultural industry is extremely large and has a place for anyone with an interest and desire to work hard and achieve success.

Local Program Needs Should Be Addressed -- Even though a suggested scope and sequence of instruction is provided to agricultural education instructors in Nebraska, the local agricultural curriculum should always be based on the needs of the local community. The agriculture and the agricultural clientele groups who are affected by the program should receive top priority in planning a comprehensive educational program in agriculture. However, teachers and administrators should also be aware of the mobility of graduates, trends and issues in the society at large, and the need for preparing students to not only earn a living, but to have a complete and balanced lifestyle.

Agricultural Education Should Contribute To The Overall Mission Of The School System -- Just as local school districts address the state goals for education, so the agricultural education program will continue to address the district goals for education of local students. Agricultural education programs contribute to the overall mission of the school district in many ways. It provides integration and infusion of applied basic skills in science, math, social studies, communications, etc.

The program addresses the leadership and human relations development of the student body at a time when students need direction and guidance most -- the transition to adulthood. The agricultural education program must maintain its basic role of being one unique program among many in a school system, but maintain its commitment to contribute to the overall mission to provide the best, most comprehensive education a student may receive.

Curriculum Content And Methodology Are In Continual Need Of Assessment -- Teachers and administrators of agricultural education programs are now aware of the rapidity and vastness of the changes occurring both in agriculture and in education technology. Ongoing assessment of curriculum needs and designs are essential for all instructional programs within the comprehensive school system.

Professional Improvement And Development Of Faculty Are Most Important Than Ever Before -- Teachers of agriculture will have to take every advantage to continually upgrade their technical agriculture knowledge as well as their professional teaching competencies. This may mean striving for advanced academic or graduate degrees in their respective fields of expertise, attendance of inservice workshops and activities, and developing the initiative to become a Master Teach of Agricultural Education.

Resources Available For Teacher Improvement And Effectiveness Training

Becoming a Master Teacher doesn't come easy. Besides the commitment and dedication from both the agricultural instructor and the school district in which he/she is employed, specific resources have to be made available. Consulting services are available from many sources available to your specific school district. In addition, the following agencies work directly with the Nebraska agricultural education system and are available for assistance upon request.

Department of Agricultural Education
University of Nebraska-Lincoln
300 Agriculture Hall
Lincoln, Nebraska 68683-0709

Nebraska Department of Education
Attn: Agricultural Education Division
301 Centennial Mall South
P.O. Box 94987
Lincoln, Nebraska 68509-4987

For group activities designed to develop instructional effectiveness or for programs in instilling educational leadership, please contact:

Center for Leadership Development
300 Agriculture Hall
University of Nebraska-Lincoln
Lincoln, Nebraska 68583-0709

Summary

Agricultural education in Nebraska has been at a crossroads, but has now made the right turn. The time to focus on the future is now. It has accepted the challenge to be as good a program as it can be in the face of changing conditions and environments. With dedicated teachers and administrators committed to making significant program revision and improvement in Nebraska, the agricultural education will continue meet the needs of the citizens of the state.

APPENDIX A:

DEVELOPMENTAL NEEDS OF JUNIOR HIGH SCHOOL STUDENTS

Developmental Needs Of Junior High School Age Students

In determining curriculum and instructional activities, it is important to consider learner needs in the development of curriculum objectives. Since an educational objective is comprised of both a behavioral change and subject matter content, it is necessary to assess learner's needs in order to determine behavioral changes that should be emphasized in curriculum development. Project 2000 *(Iowa State University, 1978)*, divided childhood and adolescent stages into four groups. They were: middle childhood *(5-9 years of age)*; late childhood, *(9-12 years of age)*; early adolescence *(12-18 years of age);* and late adolescence *(18-21 years of age)*.

Junior High school age students need to be provided opportunities to address the developmental needs evident in the Late Childhood and Early Adolescence stages. The following is a classification of sociological, psychological and educational needs for late childhood and early adolescence groups. It is noted that basic needs exist throughout our lifetime, but become more complex as the age of the learner increases.

LATE CHILDHOOD

Sociological Needs

A. To accept differences among age-mates.
B. To recognize interdependencies with age-mates .
C. For democratic beliefs.
D. To respect others.
E. For awareness of the relationship of occupational roles to oneself.
F. To interact in a social atmosphere.
    1. For human relations skills.
G. For the concept of social/geographic relationships.
    1. Community, state, nation, world.

Psychological Needs

A. For a self image in relation to others.
B. For awareness of the similarities and differences in masculine and feminine sex roles.
C. For refinement of an ethical code.
    1. For a set of values.
D. For greater independence involving personal interactions.
E. For evaluation of models.
    1. For evaluation of attitudes gained from models.
    2. For evaluation of characteristics gained form models.
    3. For attitudes about social groups and institutions.
F. For appreciation of consequences resulting from actions taken.

Educational Needs

A. For improved fundamental life skills.
    1. Reading.
    2. Writing.
    3. Calculating.
    4. Speaking.
B. For reasoning abilities.
    1. For ability to solve problems.
    2. For ability to make decisions.
    3. For judgmental abilities.
C. For career accommodation.
    1. For career awareness.
    2. For awareness of the world-of-work.
    3. For awareness of relationships between the world-of-work and self perception.
D. For satisfaction of curiosity.
    1. For sex education.
    2. For information concerning sex roles in a changing society.
E. For self-directed activities.

EARLY ADOLESCENCE

Sociological Needs

A. For mature relationships with age-mates.
B. For recognition of one's behavior in relation to a shifting peer code.
C. For a sense of citizenship.
    1. For acceptable political attitudes.
D. For cooperation with others in reaching a common goal.
    1. For being receptive of others' points of view.
    2. For understanding of family relationships.
E. For assurance of economic independence.
F. For human relations and communicative skills.
G. For an acceptable social behavior.
    1. To understand ethnic and cultural differences in others.

Psychological Needs

A. For self-concept during transition to adulthood.
    1. For acceptance of one's own physique.
    2. For acceptance of oneself as a worthwhile person.
    3. For acceptance of one's own ability.
    4. For self-confidence.
B. For interaction with age-mates.
    1. For acceptance of developmental variations between age-mates of the same sex.
    2. For social interaction with the opposite sex.
C. For an ethical system to guide behavior.
    1. For a set of values to guide behavior.

D. For emotional independence from adults.
    1. For independence from parents while maintaining affection.
    2. For a positive attitude toward family life.
    3. For independence from adults while maintaining respect.
    4. To cope with emotions.
    5. For parental support, understanding, and guidance.
E. For adult models.
F. For acceptance of consequences resulting from actions taken.

Educational Needs

A. To use fundamental life skills for self expression.
B. For abstract thinking.
    1. For complex problem solving techniques.
    2. To apply general principles to particular situations.
C. To establish educational and/or career goals.
    1. For guidance and counseling about continuing education and/or careers.
    2. For career exploration.
    3. For career preparation.
D. For experiences to provide information.
    1. For information about civic responsibilities.
    2. For information about home management and child rearing.
    3. For information about self-improvement techniques.
    4. For information about careers and/or specific occupations.
E. For leadership skills.
    1. To participate in the planning of one's own activities.

APPENDIX B:

JUNIOR HIGH SCHOOL CURRICULUM OUTLINES FOR AGRICULTURAL EDUCATION

* 7th GRADE ENRICHMENT

* 8TH GRADE EXPLORATORY

SEMESTER COURSE OUTLINE
7TH GRADE AGRICULTURAL EDUCATION

I. Efficiency of agricultural mechanization in agricultural production.

A. Changes in agricultural mechanization since 1940.
B. Increases in agricultural production since 1940.
C. Migration of farm people to urban areas.
D. Types of machinery available in agricultural production and processing.
E. Design of machinery in the future.

Suggested learning activities

1. Interview a farmer or machinery dealer and discuss the machinery requirement for farms of 300 acres or less; and farms of 500 or more acres in size. Visit with the dealer to obtain the prices a farmer might pay for each piece of machinery.

2. Visit a farmer and discuss how increased machinery size has reduced his labor requirements.

3. Using small group discussion, prepare an outline and an oral presentation comparing milk processing in 1900 to the present method.

4. Make a teleconference call or recorded call to an agricultural engineer and question about future trends in farm machinery design. Prepare questions in advance.

II. Agricultural industries compared to the nonagricultural industries.

A. Number of people employed in agricultural and nonagricultural industries.
B. Amount of personal income derived from agricultural and nonagricultural industries.
C. Value of Nebraska gross income received from agricultural and nonagricultural production and processing.
D. Value of capital investment in agricultural production and processing versus nonagricultural production and processing.

Suggested learning activities

1. Prepare a pie graph comparing the number of people employed in farming, non-farming agricultural industries, and nonagricultural industries during the past year in Nebraska. Identify the members of the class that represent the proportions obtained.

2. Prepare a bar graph comparing the amount of personal income in the US derived form agricultural versus nonagricultural industries.

3. Organize the class into small discussion groups. Assign each group a product to analyze, based on the various agricultural and nonagricultural processes needed to produce the item. Report your findings to the class.

4. Visit a bank in the community or invite a banker to visit class to discuss what role agricultural industries play in the local economy as well as the economy to the state, nation and world.

5. Make a list of all the agricultural items utilized or consumed during a typical day by each student.

III. Agricultural production.

A. Adaptability of particular crops.
B. Relationships of crop yields with population.
C. Energy requirements needed for producing food.
D. Relationships of cultural and religious beliefs to a country's capability for food production.
E. Level of agricultural technology in areas of food shortages.
F. Availability of production inputs in areas of food shortages.

Suggested learning activities

1. Interview a person who has visited a developing country or a foreign exchange student. Inquire about the procedures farmers use in obtaining necessary inputs of fertilizer, equipment, capital, and other services.

2. Form small groups and allow each group to select a country to study. Each student selects a single aspect of their country (e.g. politics, crop yields, population, consumption, technology, etc.) and determine its effect on agricultural production.

3. Compare the types and quantities of crops grown in Brazil today with those of 25 years ago. Prepare a written report which discusses how soybeans have been adapted to Brazil and what effect they have had on the people of Brazil and the agricultural economy.

4. Identify five developed and five underdeveloped countries in the world and prepare a graph for three crops common to all countries (e.g., corn, rice, wheat, etc.) to illustrate the amount of the commodity produced per year. Also prepare a population graph for the country.

5. Invite a former Peace Corps worker who has worked in a developing country to class to discuss the role human labor plays as an energy source in agricultural production in that country.

IV. Agricultural technology.

A. Countries in the world that have abundant agricultural production.
B. Types of crops grown.
C. Types of livestock produced.
D. Methods used for raising livestock.
E. Types of farm equipment used for crop and livestock production.
F. Common practices used in crop production (e.g., fertilizer, chemicals, etc.).

Suggested learning activities

1. Identify the countries that export large amounts of staple foods (e.g., corn, wheat, beans, meat, etc.) on a large world map. Draw conclusions about similarities among these countries that might explain their productivity.

2. Each class member should select a country to investigate. Conduct a project with your classmates to find out what types of crops and livestock are raised in those countries. Plot the results on a bulletin board display.

3. Write a letter of inquiry to the embassy of a foreign country to learn about the types of farm equipment used for crop and livestock production in that country.

4. Prepare a collage from pictures representing scenes of abundant agricultural harvests. Display this artwork in a highly traveled area of the school.

5. Prepare a radio or TV program with small groups of class members responsible for a five-minute presentation. Have each group discuss one technological development in agriculture and comment on the effect it has had on food production (e.g., use of fertilizers, pesticides, large-scale machinery, hybrid seed, animal breeding, etc.).

V. Food delivery systems.

A. The role of various countries' governments in the delivery of food.
B. Purchasing of food.
C. Storing and processing of food.
D. Transporting of food.
E. Distributing of food.

Suggested learning activities

1. Identify areas in the United States where food shortages and poverty may be a problem. Contact several organizations that are active in helping these areas meet their food needs and describe the processes involved in distribution of foods (e.g., Red Cross, church missions, Vista, etc.).

2. Using a wall map of a country of your choice, circle in red the areas lacking food supplies. Circle in blue, areas of abundant food production. Using small groups, discuss a feasible method of transporting food into the shortage areas. Report your findings to the class.

3. On a large world map, trace the route that food exported from a Nebraska community might take when being exported to an underdeveloped country of your choice. List all of the methods of transportation that are likely to be used.

4. Invite a local grocery store manager to speak to your class and describe his steps in buying agricultural products for resale.

5. Conduct a teleconference with the manager of a trucking firm that hauls meat, milk, produce, or other perishable food products. Have students prepare questions concerning proper storage conditions and care in handling procedures.

VI. Importance of agricultural products to various segments of society.

A. Livestock and grain products used for food.
B. Fiber products used for clothing and shelter (e.g., wool, cotton, etc.).
C. Animal by-products used for medicines and antibiotics.
D. Animal research for diagnosing and testing of human illness or disease.

Suggested learning activities

1. Obtain a menu from a local pizza establishment. Discuss the ingredients of a pizza, what animal or crop they originated from, where they were probably produced, and what effect a shortage of these ingredients would have on the pizza business.

2. Make a list of products that you use in one 24-hour period that are derived from agricultural products.

3. Interview a medical doctor and a veterinarian to discuss the relationship of animal research to human health and uses of agricultural by-products in medicines.

4. Prepare a notebook of two weeks' newspaper articles concerning agriculture. Categorize articles according to topics and meet in small groups to discuss your findings and share notebooks.

5. Design a bulletin board showing pictures of raw agricultural products and the uses that are made of them in construction of various types of human shelters in the past (e.g., wood, sod, straw, etc.).

VII. Agricultural products and services provided by non agricultural industries.

A. Products used in livestock production (e.g., hormones, antibiotics, feed additives, pesticides, etc.).
B. Products used in crop production (e.g. chemicals, pesticides, fertilizers, etc.).
C. Products used in machinery and building construction (e.g., steel, concrete, building materials, fuel, lubricants, etc.).
D. Utilities used for agricultural production (e.g., electricity, natural gas, water, fuels, etc.).

Suggested learning activities

1. Select an agricultural product (e.g., beef, sweet corn, cotton, shirts, etc.) and discuss, in class, the nonagricultural products and services needed to produce the item.

2. Interview three farmers to determine what types of utilities they use for their farming operations, where they obtain these utilities, and the amount of utilities used. Prepare a graph to show the amount used and write a report to explain your findings.

3. Interview the managers of three agribusinesses to determine what types of utilities they use in their business operation, where they obtain these utilities, and the amount of utilities used. Pre- pare a graph to show the amount used and write a report to explain your findings.

4. Develop a display showing the uses of petroleum products in the agricultural industry, including products other than fuels and lubricants. Include an introductory paragraph discussing the importance of petroleum to agriculture.

5. Develop a class magazine featuring agricultural chemicals and their role in increasing crop production in the world. Working in teams of three, select a specific type of Chemical (e.g., fertilizer, herbicide, insecticide, etc.) and discuss its application, safety precautions, use and limitations.

VIII. Agricultural products and services used in nonagricultural industries.

A. Natural fibers for use in textile manufacturing.
B. Food-related businesses (e.g. restaurant, grocery, etc.).
C. Crop by-products used in the cosmetics industry.
D. Animal by-products used in clothing (leather) and medicines.
E. Forestry products used in the housing construction industry.
F. Crop products used in the liquor industry.
G. Horticultural products used in the floral and the food industries.

Suggested learning activities

1. Write the public relations director of a textile manufacturing company. Ask for information about the use of natural fibers and present it to the class.

2. As a small group activity, interview the manager of a selected fast-food restaurant and develop a list of products used by the restaurant which are provided by the agricultural industry.

3. After completing research in the cosmetics industry, write an article about the use of crop by-products for your paper.

4. Write to a brewery or distillery for information on their process of making alcoholic beverages. On a map of the United States, indicate the major areas that produce the crops used in making various alcoholic beverages.

5. Invite a florist, nurseryman, or greenhouse manager to class to discuss their products and the services they provide. Ask them to compare the industry ten years ago with today.

IX. Marketing and processing techniques.

A. Plastic packaging of foods.
B. Handling food products.
C. Advertising.
D. Transportation and distribution
E. Processing plant and animal products.
F. Individual consumer needs (variations of the same product in size or form).
G. Preparation of foods for marketing.

Suggested learning activities

1. Tour a meat packing plant, a locker, or the meat department in a supermarket where the meat is handled and packaged. Write a brief report on the methods used.

2. Visit a grocery store and ask the manager to explain how they display items. Also ask how consumer demands affect this marketing procedure.

3. Interview the manager of a fast-food restaurant, a local cafe, and a supper club about how they process and prepare their vegetables to help meet their customers' demands. Write a magazine article which compares the methods used.

4. Assume you are the manager of a trucking firm. Plan the most economical route to distribute fresh fruits from Salinas, California to your local community. Use a map of the US to plot the alternative routes and figure the number of miles in each. Assuming the truck will travel 50 miles per hour, determine how long it will take for the vegetables to reach your community.

5. As a class, prepare a special notebook containing information about popular fresh fruits and vegetables. Each member of the class selects a type of supermarket produce and investigate the background for each of the following areas: major area of production, stage of maturity at harvest, time of harvest, method of harvest, transportation requirements, storage requirements, and alternative uses for those products.

6. Collect and study agricultural product advertisements from various sources. Using these as examples, select a product and prepare an advertisement for a newspaper, magazine, radio or television that will capture the interest of consumers and make them want to try the product.

X. Agricultural events and developments that enhance the standard of living.

A. Increased level of productivity from agricultural workers.
B. Inexpensive foods in abundant supply.
C. Machinery development and mechanical technology.
D. Development of hybrids.
E. Research to solve agricultural problems and improve or increase agricultural production.
F. Development of medical vaccines and treatments that control disease and parasites in crops and livestock.
G. Increased levels of educational attainment by rural and urban people.
H. Genetic research for improvement of livestock production.

Suggested learning activities

1. Using agricultural resources, chart the average yield of corn for the past 50 years at 5 year intervals. Discuss what has contributed to the rise in yield and what effects this has had on the US standard of living. Also estimate how a continued increase in corn yield might affect the US and world standard of living in the future.

2. Prepare a notebook of recent newspaper clippings of agricultural research. Write a summary and include a comment on how it may affect our standard of living and life-style.

3. Using the world almanac, chart the average level of education of rural and urban people for the last 40 years. Analyze the chart and list the benefits to our society that have occurred because of more education.

4. Visit a veterinarian's office and ask them to describe how and when major medicines were developed. Also ask them to explain how prevention and control of diseases in animals may help the standard of living.

5. Visit a local machinery dealer. Compare the newest machinery to that of 10 and 20 years ago. Ask the dealer to explain what major innovations may develop to deal with the energy crisis in the future.

6. Construct a graph illustrating how the amount of production per agricultural worker has increased. Graph the number of people one agricultural worker could feed at ten year intervals from 1900 to the present.

XI. The agriculture industry since 1900.

A. Agricultural conditions in 1900 (e.g. size of farms, power sources, cultural practices, living conditions, etc.).
B. Changes in agriculture from 1900-1930 (e.g., mechanization, emphasis of public education in agriculture, etc.).
C. Changes in agriculture from 1930-1950 (e.g. introduction and use of hybrids, improvement in marketing, processing, distribution techniques, improved efficiency, etc.).
D. Changes in agriculture from 1950 to present (e.g. use of fertilizers, insecticides, herbicides, feed additives, increased machinery size and mechanization, emphasis on scientific and technological advances in agriculture, etc.).

Suggested learning activities

1. As a class activity, research the agricultural conditions that existed in Nebraska in 1900. Divide the class into committees to conduct research (suggested committees - farming practices, living conditions, type and size of livestock production, etc.). After conducting the research, give a report describing a typical Nebraska farm of 1900.

2. Design a "then and now" bulletin board which deals with the introduction and use of hybrid seeds. Collect information which indicates grain yields obtained when not using hybrid seed and grain yields obtained when using hybrid seeds. Also, indicate the years in which hybrid seeds were developed and marketing of hybrid seeds began.

3. Obtain available resource material from the library, extension service, or other government agencies relating to the improved efficiency of the American farmer. Select three efficiency factors (e.g., average size of farm, bushels of corn produced per acre, amount of food supplied by one farmer, etc.) and locate the desired information for each decade since 1900. Plot this information on a graph for each efficiency factor.

4. Scan through copies of farm magazines from this year, 10 years ago, and 20 years ago looking for the various herbicides advertised during those years. Prepare a list for each year which indicates which weeds could be controlled according to the advertiser's claims.

5. Take a field trip to a local farm and local agribusiness. Ask them to explain how marketing, processing, and distribution of agricultural products have changed since they started their business. Also, ask them to predict changes that they see in the future.

XII. Agricultural industry's effect on the environment.

A. Use of pesticides and its effect on air, soil, and water pollution.
B. Tillage methods and their effects on air, soil, and water pollution.
C. Fertilizer and chemical pollution.
D. Odor pollution.
E. Ground water pollution.
F. Destruction of natural habitat for plants and animals.
G. Intensive farming methods on soil properties and texture.
H. Governmental policies that encourage production and their effect on the natural plant and animal habitat.

Suggested learning activities

1. During one week, read and clip-out any newspaper articles, editorials, or magazine articles dealing with agricultural pesticides and their effect upon the environment. Place these articles in a class scrapbook and give an oral presentation on one article.

2. Take a field trip to a local farm during early spring with an extension agent to observe tillage methods being used. Discuss how these tillage methods may contribute to air and water pollution. After observing the various tillage methods and visiting with the farmers, write a report about the effect of the various tillage methods on pollution.

3. On a class field trip, collect samples of water from tile outlets of various fields. With the assistance of the high school chemistry teacher, city water department official, or a water conditioning service person, test the water samples for pollution from agricultural chemicals.

4. Prepare a collage which illustrates how carelessness in the use of agricultural chemicals (e.g., fertilizers, pesticides, defoliants, etc.) affects our environment.

5. Write a letter to the Department of Environmental Quality. Ask them to supply information about the successes of pollution control methods. Give an oral report of your findings.

XIII. Long-range impact of current agricultural practices on the environment.

A. Increased losses of soil due to increased cultivation on a world-scale.
B. Increased loss of plant and wildlife habitat through air and water pollution.
C. Greater water pollution with increased use of chemicals.
D. Contamination of foods through unwise selection and use of chemical preservation.

Suggested learning activities

1. Invite your district soil conservationist to class to explain why soil conservation is so important. Ask for a description of long-range effects of intensive cultivation throughout the world.

2. Develop a display showing the different types of soil erosion and some methods to control these basic soil erosion problems. Exhibit this display in high-traffic areas in the community.

3. Invite the high school home economics instructor to attend class and explain the pros and cons of using various preservatives for processing and storing foods. Develop a bulletin board display to illustrate the information presented. Give an explanation of the long-range impact of continued use of preservatives compared to restricted use of preservatives.

4. Obtain a copy of this country's most endangered wildlife species list. Select one of the animals of interest. Prepare a summary of how the species became endangered and what efforts are being made to preserve it.

COURSE OUTLINE
8TH GRADE CAREER EXPLORATORY

I. Social value of working in agricultural occupations.

A. Reasons for work.
B. Social rewards of work.
C. Interdependence of society and agricultural work.
D. Social integration through work roles.

Suggested learning activities

1. Visit with people in your community with agricultural occupations. In small groups, select at least five different reasons for work. Elect a reporter to share them with the other students. Construct a bulletin board listing reasons people work.

2. Interview three people in different types of agricultural occupations and determine where they met their friends (e.g., work, church, clubs, etc.). Also, determine the approximate percentage of their friends they met through various sources. Prepare a circle graph to illustrate your findings.

3. With the aid of informational sources, research an occupation of interest to you. Write a short paper describing the social rewards that occupation would offer.

4. Contact an adult in the community and spend one-half day observing that person performing their occupation. Complete an interview sheet while on-the-job and share your findings with the class.

5. Divide into small groups and discuss what would happen to a person who did not become employed in an occupation; what would happen to a community if no one in the town was employed in an occupation; and what would happen to the country if there was exceptionally large scale unemployment. Report your findings to the class. As a group, draw conclusions about the importance of work to society.

II. Economic importance of work.

A. Economic rewards.
B. Economic benefits to the community.
C. The effects of unemployment on the flow of money in our economy.
D. Differences in salary based on occupational levels and competence.
E. Governmental policies and/or regulations affecting the labor force.

Suggested learning activities

1. Develop a list of 10 occupations which are common in your community. Determine the average wage or salary (net and gross) for each occupation. Post your results on the bulletin board.

2. Ask an agricultural employer what must be withheld from an employee's pay check (social security, workman's compensation, insurance, state taxes, federal taxes, etc.) and write a report outlining the items for which money must be withheld and how these withholding benefit the employee.

3. After reviewing articles in newspapers and collecting pertinent information, prepare a short paper on the impact extreme high unemployment might have on the economy of the country.

4. Survey the major items in your household. Categorize them according to necessities (e.g., cars, beds, cooking utensils, etc.) and extras (e.g., second car, boat, stereo, dishwasher, etc.). After completing the survey, determine the role work played in purchasing or obtaining the "extras".

5. Survey several taxpayers in your community to determine the 5 items on which they preferred their tax money be spent. List the items by priority of the taxpayers.

III. Occupations within segments of the agricultural industry.

A. Classification of occupations according to the Dictionary of Occupational Titles.
B. Entry level skills required for agricultural occupations.
C. Occupations within segments of the agricultural industry.

Suggested learning activities

1. Interview several people employed in agricultural occupations. Have them describe some of the tasks they perform in their occupations and discuss those activities with other students in the class.

2. Look up an occupation that exists in your community using the Dictionary of Occupational Titles. List the skills or tasks described in the job description and make a short oral report to the class.

3. Write a short report comparing "entry level" skills with those skills considered to be "advanced level" skills within an occupation after interviewing an employee in one agricultural occupation.

4. Select an agricultural occupation as identified in the Dictionary of Occupational Titles and list examples of where that occupation may be found in the local community.

5. Invite the owner or manager of an agriculturally related business to speak to your class. Ask them to discuss such topics as: type of jobs performed by employees, and the types of skills needed to perform those jobs, which skills are minimum or entry level and which skills are considered advanced level, etc.

IV. Changing skills and understandings requisite to employment.

A. Changes in job activities performed by agricultural workers in different occupations over the past twenty years.
B. Preparation for employment.
C. Scientific and technological developments affecting employment.
D. Anticipated changes in occupational activities in the future.

Suggested learning activities

1. Invite a recently retired employee of a selected agricultural occupation to discuss the changes in occupational activities they have observed in their occupation over the past 20-25 years.

2. Use available resource material, describe methods of training individuals for agricultural occupations 10-20 years ago. Present a written or oral report of your findings to the rest of the class.

3. Write to or invite a presentation from a major agribusiness firm in your area and ask them about their various occupational training programs. Discuss your findings to the class as a whole or to small groups.

4. Visit a research farm, plot, or agribusiness research laboratory and discuss occupational trends with the agricultural researchers who work there.

5. Invite local agricultural leaders (e.g., coop managers, farm loan officers, Farm Bureau president, etc.) to discuss what changes they see in the future in occupational opportunities for agriculture.

V. Entry level skills requisite to employment.

A. Comparison of tasks of entry level workers and highly skilled workers in particular agricultural occupations.
B. Skills considered to be entry level for occupations for each segment of the agricultural industry.

Suggested learning activities

1. Obtain job descriptions from agribusiness firms and list skills required for various positions.

2. As a class project, develop a slide set depicting people performing various level skills in selected occupations. Students without access to cameras can be in charge of identifying occupations and making arrangements for picture taking sessions.

3. Divide the class into groups based on the taxonomies of agriculture. Through letters, interviews, phone calls, field trips, movies, periodicals, guest speakers, or other means, develop a list of entry level skills for occupations within each segment or area of the agricultural industry.

4. Invite one employee from each of the segments of agriculture found in your county to discuss entry level skills needed in his/her occupation.

5. Prepare a bulletin board display of want ads from newspapers or farm magazines that include statements which identify the skills needed for the occupation being advertised. Use ads from all newspapers and magazines available to the local community.

VI. Establish tentative agricultural occupational goals.

A. Assessment of one's social, economic, cultural, and aesthetic interests
B. Determination of how occupational choice contributes to realizing one's goals.
C. Analysis of activities within a variety of occupations.
D. Relate personal interests with agricultural activities.
E. Selection of groups of occupations of interest in agriculture.

Suggested learning activities

1. Compile a list of goals that you have at this time (social, economic, cultural, aesthetic). Discuss your goals with your teacher or classmates.

2. Clip a picture from a newspaper or magazine depicting a person or persons engaged in some type of agricultural activity. List as many jobs as you can that are directly or indirectly related to the subject in your picture.

3. Review the "help wanted" ads from a major newspaper. Clip out those ads that describe agricultural occupations which appeal to you. Make an oral presentation on the ads you selected.

4. Working with a partner, use the list of goals you have at this time and develop a list of occupational activities that would meet these goals.

5. Using your imagination, describe, on paper, qualities of an agricultural occupation you would like. Develop a list of occupations that might match the qualities you described.

VII. Explore occupational choices.

A. Determination of specific tasks in agricultural occupations.
B. Benefits derived from occupational choices.
C. Preparation for occupational entry.

Suggested learning activities

1. Using the Dictionary of Occupational Titles, develop a job description listing specific occupational tasks for your tentative occupation.

2. Prepare a panel of resource persons from several different agricultural occupations. Have them discuss what they see as occupational benefits and advancement opportunities in their respective businesses.

3. Interview guidance counselors and discuss preparation programs for entry into selected agricultural occupations.

4. Spend a day with people who are involved in your tentative agricultural occupation.

5. Interview employers about what preparations are needed for an occupation of interest to you.

6. Research what requirements are needed to set up your own business in your occupational interest area.

VIII. Distinguish avocational activities from vocational activities.

A. Avocational versus vocational activities.
B. Purposes for avocational and vocational activities.
C. Evaluation of one's goals in determining if activities are vocational or avocational.

Suggested learning activities

1. List agricultural activities which could be avocational. Write a brief description explaining why they are avocational rather than vocational.

2. Bring examples of your avocational activities and present them to the class. Discuss why you selected your avocational activity. Explain area of vocational or occupational activity that might come from your avocational interests.

3. Survey the teachers in your school building about their vocations and avocations. List the common characteristics of vocational and avocational pursuits of those interviewed.

4. List possible avocations that could be related to and accomplished by a person with vocational interest in the floral industry.

5. List possible occupations that could be related to or accomplished by a person with avocational interest in the care of small animals.

IX. Specific outcomes from participation in avocational activities.

A. Relieving anxieties and reducing tensions.
B. The fulfillment of leisure time activities.
C. Aesthetic interest.
D. Economic and social goals.
E. Nature and the environment.

Suggested learning activities

1. As a class activity, discuss the word "aesthetic" and how avocational activities in agriculture can contribute to the fulfillment of one's aesthetic interests. As an individual project, prepare a collage which illustrates how avocational activities in agriculture can contribute to the fulfillment of one's aesthetic interests. Also, include a short written report which explains the collage.

2. Prepare a bulletin board describing the recreational benefits one might expect from occupations related to fish-farming.

3. Survey local community people for the benefits they derive from their avocation (e.g., relieving anxieties or tension, aesthetic pleasure, fill leisure time, extra income, etc.). Write a report categorizing the answers to your survey.

4. Prepare a paper on "Why Have a Hobby?". Relate possible outcomes that might be expected from participation in an avocational area of interest.

5. List several avocational agricultural activities that would provide greater knowledge of nature and the environment. Determine what local opportunities exist for participation in those activities.

X. Basic components of one's life-style.

A. Components of one's life-style (e.g., leisure, ethical, aesthetic, social and economic activities).
B. Interrelatedness of life-style components.
C. Contributions of life-style components to achievement.
D. Social influence on the shaping of one's life-style

Suggested learning activities

1. Keep track of the time spent in broad areas of activities during an entire week. Use categories such as a leisure, economic-related, church-related, hobbies, or aesthetic activities, etc. Rank the activities according to how important these activities are to you and compare the ranking to the amount of time others spent in the same areas.

2. Prepare a collage that represents how life-style components help form a comprehensive life-style for an individual. Clip pictures from magazines representing your specific interests in areas to form the collage.

3. Prepare a written report describing how ones economic activities affect other life-style components.

4. Using small discussion groups identify various aspects of society (e.g., church, community standards or policies, traditions, peer pressure, etc.) that influence an individual life-style components. Prepare a written summary of your findings and have the group reporter present an oral report to the rest of your class.

5. Poll the class to determine what the primary hobby might be for each student. Determine what or who exerted the most influence in the selection of the avocation.

XI. Personal life-style interests.

A. Development of one's personal life-style (placing emphasis on life-style components of value to them).
B. Analysis of life-style patterns.
C. Personal interests and establishment of goals.
D. Alignment of personal interest with personal life-style.
E. Changes in personal goals and their effect on one's life-style.

Suggested learning activities

1. Clip out new articles about individuals of different occupations and summarize the life-style components of each as told in the stories. Prepare a written report about your findings.

2. Write an autobiography describing the kinds of careers you have wanted to enter as you grew up. Include the games and activities you engaged in at the time these different occupations were most appealing.

3. Assume that you now have complete economic security. How would you like to spend your time now, 10 years from now, and 20 years from now? Prepare a short paper describing your feelings.

4. Rank the activities or interests you value most on a scale from one to one-hundred. Select the top three activities and write a report on how you should expand participation in these activities to better align with your goals and interests.

5. Write down your personal, social, and economic goals or objectives that you would like to accomplish in the next 10 years. Prepare a systematic flow chart representing the procedure or activities you would have to follow in order to obtain those goals.

XII. Requirements in avocational agricultural pursuits.

A. Scope of avocational agricultural pursuits.
B. Specific activities required in selected avocational agricultural pursuits.
C. Time required to carry out avocational pursuits and integrating this time with one's total work load.
D. Monetary requirements and budgeting for such activities.

Suggested learning activities

1. Identify three avocational agricultural pursuits (e.g., landscaping, purebred beef, small gasoline engine repair, etc.) and obtain information related to the three. Research the three pursuits and develop a list of tasks which are required to conduct each pursuit.

2. Invite four adults with avocational agricultural pursuits to your class to participate in a panel discussion. Each students should be responsible to ask at least one question. Emphasis of the questions should be placed on the amount of time required to carry out avocational pursuits and integrating this time with one's total work load.

3. Choose a beautiful lawn in your neighborhood and take an inventory of the tools and equipment needed to establish and maintain it.

4. Interview a lawn and garden specialist or a landscape architect and discuss the requirements involved in landscaping as a hobby.

5. Select an avocational activity of interest and prepare on outline describing the steps and key points involved in participating in that activity. Share your outline with others in the class.

XIII. Involvement in avocational agricultural pursuits.

A. Survey available resources and opportunities.
B. Establish personal goals.
C. Steps for establishing avocational agricultural pursuits.
D. Coordination and maintaining activities.

Suggested learning activities

1. Have 4-H or FFA member bring examples of their projects to class and discuss the reasons why they are pursuing these goals.

2. In a written paper, describe what you would like your life to be in fifteen years. Discuss the type of occupations in which you would like to be employed, place you would like to be living, etc. Include a discussion of avocational activities you would like to have to help fulfill your goals.

3. Invite four adults with avocational agricultural pursuits to your class to participate in a panel discussion. Ask them to discuss the steps a person would go through in becoming established in similar pursuits.

4. Make a list of the things you would like to do next summer or the job you would like to have. Write down the steps that could be taken to improve the changes of participation.

5. Divide the class into committees, each selecting one area of production agriculture or one area of the agricultural industry. Prepare an informative brochure describing procedures necessary for avocational involvement in the selected area.

XIV. Identify and investigate agricultural subject areas.

A. Use of libraries to find information of interest.
B. Locating industry sources.
C. Information available from university extension.
D. Use of resource persons in finding information.

Suggested learning activities

1. Invite county extension officials to speak to the class about where to findinformation regarding agricultural activities.

2. Write a letter to an agricultural industry or organization of your choice requesting information about an avocational area of interest. Share your answer with the rest of the class.

3. Identify an area of avocational interest, research possible information sources in the school library and prepare a bibliography of information available on the topic.

4. Locate the section that concerns agriculture in your school or public library. Browse through the books and list and explain five things that you learned while browsing that you did not know about before.

5. Select a university extension publication concerning an avocational agricultural activity. Read and prepare a brief report about the publication.

APPENDIX C:

FOUR YEAR SEQUENTIAL PROGRAM MODEL
NEBRASKA SECONDARY
AGRICULTURAL EDUCATION PROGRAM

Suggested Scope and Sequence
Agricultural Education Program

AGRICULTURAL EDUCATION - YEAR 1

Instructional Topics	Suggested Class Periods
Orientation to Agricultural Education Agricultural education in the secondary program Components of the agriculture program Benefits of receiving an education in agriculture	2
Careers in Agriculture Assessing personal interests/aptitudes Assessing employment criteria Career selection and advancement strategies Career directions for the future Career opportunities in agricultural employment areas	13
Supervised Agricultural Experience Programs (SAE) Role of SAE in career planning Opportunities in SAE Types of SAE Selecting a SAE Planning a SAE Financing a SAE Expanding SAE Evaluating SAE	15
Introduction to Record Keeping Use of Records Need for records Developing record keeping skills Overview of the Nebraska SAE Record Book Setting goals Record keeping procedures Developing a budget Planning enterprise activities Inventory procedures Closing out a record book Determining net worth Enterprise analysis Maintaining a record book	20

Natural Resource Management 20
- Careers in resource management
- Natural resources of Nebraska
- Soil conservation concerns
- Air and water quality control
- Agriculture and the environment
- Wildlife management
- Ecosystems
- Natural resource organizations and agencies

Soil and Water Conservation 15
- Career opportunities in soil and water conservation
- Importance of soil and water management
- Types of soil erosion
- Conservation methods for controlling soil loss
- Agencies providing conservation assistance
- Conservation tillage systems
- Developing a conservation plan

Fundamentals of Leadership 20
- Characteristics of a leader
- Becoming a leader
- Setting goals and objectives
- Planning and decision-making
- The FFA Organization
- Parliamentary procedure
- Public speaking
- Role of officers in an organization
- Role of committees in an organization
- Leadership and incentive programs

Introduction to the Agriculture Industry 35
- Ag Industry contribution: World, US, state, and community
- Components of the agricultural industry
- Food and fiber production (animal, crops, etc.)
- Food processing and technology systems
- Food and fiber marketing and distribution
- Employment in agribusiness
- Consumer education and food security
- Career opportunities in the agricultural industry

Fundamentals of Agricultural Mechanics 15
- Safety and laboratory procedures
- Tool identification and use
- Basic skill development
- Carpentry
- Metals

Applied Technology in Agriculture	**10**
Computer applications in agriculture	
Computer use and operation	
Computers for management and decision making	
Purchasing a computer	
Using agricultural software	
Agricultural Relationships to the Society	**15**
Economics relationships	
Public health and living standards	
Environment and ecology issues	
Social and cultural issues and values	
Political and governmental issues	
TOTAL	**180**

AGRICULTURAL EDUCATION: YEAR 2

Instructional Topics	Suggested Class Periods
Assuming Leadership Roles	20
Public speaking	
Conducting effective meetings	
Using committees	
Leading group discussion	
Role of members in an organization	
Animal Science	
Introduction to the Livestock Industry	20
Careers in the animal science/livestock industry	
Economic impact of the livestock industry in Nebraska	
Economic impact of the livestock industry in the US	
Economic impact of the livestock industry in the world	
World livestock systems	
Types of livestock	
Breeds of livestock	
Livestock Evaluation and Selection	10
Livestock anatomy	
Breed characteristics	
Livestock evaluation	
Rationale for selection	
Livestock improvement through selection	
Evaluating livestock performance records	
Managing Livestock Enterprises	20
Livestock production systems (Commercial, purebred, etc.)	
Management of livestock enterprises (Beef, swine, sheep)	
Care	
Feeding	
Breeding	
Housing, etc.	
Maintaining healthy livestock	
Livestock sanitation programs	
Livestock diseases and parasites	
Speciality animal production (i.e. rabbits, fish, etc.)	
Waste management	

Nutrition and Genetics	**25**
Nutrition defined	
Parts of the digestive tract (ruminant and nonruminant)	
Nutrient requirements	
Nutrient function and characteristics	
Ration formulation	
Genetics	
Reproductive processes	
Care of the newborn	
Forage Management for Livestock	**5**
Pasture management for livestock production	
Range management for livestock production	
Livestock Marketing	**20**
Types of livestock markets	
Market planning	
Using forward contracting	
Using the futures market	
Using commodity options	
Records and Record Keeping - Livestock	**15**
Types of livestock records	
Maintaining livestock inventories	
Depreciation scheduling	
Developing a budget	
Maintaining specialized livestock records	
Breeding	
Feeding, etc.	
Financial analysis	
Raising Companion Animals	**15**
Career opportunities in the companion animal industry	
Selection of companion animals	
Grooming, feeding, housing, etc.	
Breed associations and other agencies	
Health care and disease and parasite control	
Processing Livestock Products	**20**
Livestock products for food and industrial uses	
Wholesale and retail cuts of meat	
Processing beef products	
Processing pork products	
Processing dairy products	
Biotechnology in Agriculture	**10**
Definition	
Science in agriculture	
Example biotechnology projects/programs	
Livestock applications in biotechnology	
Genetic engineering	
Ova transplants	
TOTAL	**180**

ARICULTURAL EDUCATION: YEAR 3

Instructional Topics	Suggested Class Periods
Leadership in Action	**15**
Recognizing leadership styles	
Developing leadership potential	
Developing decision-making skills	
Problem solving strategies	
Public speaking	
Developing interpersonal and communication skills	
Crop and Soil Science	
Introduction to Crop and Soil Science	**5**
Introduction to the crop industry	
Careers in the plant science and crop industry	
Economic impact of the crop industry in Nebraska	
Economic impact of the crop industry in the US	
Economic impact of the crop industry in the world	
Types of cropping enterprises	
Crop products for food and industrial uses	
Sustainable Agriculture	**10**
Defining sustainable agriculture	
Characteristics of a sustainable system	
Sustainable cropping systems (examples)	
No-till	
Biological control	
Natural fertilizers, etc.	
Sustainable agriculture and the environment	
Sustainable agriculture and the economy	
Sustainable agriculture and society	
Crop and Plant Science	**15**
Plant classification systems	
Plant growth and development	
Basic plant processes	
Respiration	
Transportation	
Photosynthesis	
Crop and weed identification	
Plant breeding and genetics	

Crop Management	**15**
Planning cropping systems	
Irrigation scheduling	
Products and processing	
Insects identification and control/IPM	
Biological and cultural control of pests	
Management of Specific Enterprises (i.e. Corn, Soybean, etc.)	**25**
Alternative cropping systems	
Seed selection	
Land preparation (tillage systems)	
Planting	
Pest management	
Chemicals and fertilizers	
Harvesting	
Storage	
Marketing	
Pasture and Forage Management	**10**
Range and wildlife conservation	
Pasture management for forage production	
Identifying range and pasture plants	
Making hay and silage	
Surveying and Field Mapping	**10**
Legal land descriptions	
Types of farm levels	
Using a differential level	
Using a farm map	
Using the soil survey map	
Alternative Crops for Nebraska	**10**
Vegetable cropping systems	
Fruit and nut production	
Marketing strategies for alternative crops	
Sources of information	
Record Keeping	**15**
Maintaining crop records	
Machinery service records	
Depreciation schedules	
Grain inventories	
Grain used as feed	
Grain sales	
Enterprise analysis	
Keeping field history	
Expansion of business enterprises	
Maintaining tax records	
Whole farm planning	

Soil Science	**15**
Importance of soils	
Physical properties of soils	
Soil testing	
Soil fertility and pH	
Soil formation and parent materials	
Soil classification and taxonomy	
Using soil survey maps	
Land evaluation for crop production	
Land evaluation for building sites	
Horticulture	**20**
Career opportunities in horticulture	
Overview of the horticulture industry	
Greenhouse management	
Landscape design	
Lawn and garden care	
Floriculture	
Plant growing structures	
Media type and preparation	
Propagation methods	
Potted plant production	
Cultural practices	
Processing Crop Commodities and Products	**15**
Crop products for food and industrial uses	
Processing cereal products	
Processing feed grains	
TOTAL	**180**

AGRICULTURAL EDUCATION: YEAR 4

Instructional Topics	Suggested Class Periods
Leadership For Business and Organization	**15**
Group dynamics	
Effective planning	
Motivation techniques	
Conflict resolution	
Team building	
Managing time and commitments	
Supervising and managing others	
Agribusiness Management and Marketing	
Marketing Agricultural Products	**15**
Careers in agricultural marketing	
Marketing alternatives for agricultural products	
Law of Supply and Demand	
Effects of government price supports on markets	
Marketing channels for crop products	
Marketing channels for livestock products	
Using futures and options markets	
International competition in marketing	
Computerized Record Analysis	**10**
Commercial accounting programs in agriculture	
What to look for in a computerized accounting package	
Setting up accounts for a farm or business	
Reports available for decision making/credit applications	
Entrepreneurship in Agriculture	**30**
Starting your own business	
Development of ideas and product alternatives	
Business functions	
Planning	
Organizing	
Controlling	
Directing	
Decision making and planning strategies	
Understanding basic economic principles	
Market development strategies	
Using business capital	
Product development	
Packaging	
Advertising	
Business evaluation and analysis	

Agribusiness Management 45

- Introduction to agribusiness
- Careers in agribusiness
- Role of agribusinesses in Nebraska
- Role of agribusinesses in the US
- Types of agribusinesses in the community
- Types of business structures
(i.e. sole proprietorship, partnership, etc.)
- Agribusiness activities (sales, promotion, merchandising)
- Agribusiness Management (continued)
- Sales and salesmanship
- Credit acquisition and management
- Telephone etiquette
- Advertising and promotion strategies
- Display techniques
- Transporting/inventory control
- Calculating salary and fringe benefits
- Employer/ employee relations
- Communications skills needed in business
- Use of business machines
- Common business procedures
- Product marketing strategies
- Taxes
- Specialized business forms
- Sources of business information

Career Planning 10

- Employment skills and career development
- Job application procedures
- Job interview skills
- Developing good work habits and attitudes
- Selecting a postsecondary educational program
- Applying for admission to postsecondary education

Computer Uses in Agriculture 15

- Using commercial computer business software
- Spreadsheet, word processing, data bases
- Using agricultural information networks
- AgriData, DTN

Agricultural Technology 15

- Principles of agricultural technology
- Electrical controls and sensing devices
- Biotechnology applications
- Computer technology for the future
- Agriculture in the future
- Harvesting the oceans
- Farming in space

International Agriculture	**15**
Career opportunities in international agriculture	
Exports and imports of agricultural products - Nebraska	
Exports and imports of agricultural products - US	
International agricultural development agencies	
Issues in international agricultural finance	
Issues in world trade	
Issues in global conservation of resources	
US stake in international trade and development	
Agricultural Law	**10**
Estate planning	
Retirement planning	
Selecting a lawyer	
Legal issues in agriculture	
Bankruptcy and foreclosure laws	
TOTAL	**180**

APPENDIX D:

SEMESTER COURSE OUTLINES FOR NEBRASKA AGRICULTURAL EDUCATION PROGRAMS

POWER AND MACHINERY

A Semester Course

Course Description: An overview of farm power and machinery with emphasis on maintenance, service, and various uses of farm power. Covers materials for those students who are interested in pursuing careers in farm power or as service technicians.

Units and Topics of Instruction	Periods of Instruction
A. Electrical Wiring Practices	**20**
1. Terms and definitions	1
2. Safety practices	1
3. Electrical tools and devices	2
4. Determining proper use of materials	2
5. Circuits	2
6. Electrical schematics	2
7. Electrical wiring practicum	10
B. Electric Motors and Controls	**10**
1. Terms and definitions	1
2. Types of motors	1
3. Advantages and disadvantages of the types of motors	2
4. Basic maintenance	1
5. Changing direction and voltage	1
6. Electrical controls and their functions	4
C. Servicing Small Engines	**5**
1. Terms and definitions	1
2. Using the operators manual	1
3. Tools	1
4. Servicing procedures	2
D. Overhauling Small Engines	**20**
1. Terms and part identification	2
2. Understanding the systems	2
3. Using the operators manual	1
4. Determining specifications	1
5. Using the micrometer	2
6. Principles of operation	2
7. Practicum	10
E. Servicing the Tractor Ignition System	**5**
1. Introduction	1
2. Parts of the ignition system	1
3. General service	2
4. Trouble-shooting	1

F. **Servicing the Tractor Cooling System** 3
1. Introduction 1
2. Coolants and corrosion 1
3. General service 1

G. **Servicing the Tractor Fuel System** 13
1. Introduction 1
2. Components of the system 1
3. Gasoline vs. diesel systems 1
4. Carburetors and their function 2
5. Injection systems 1
6. Diesel fuel systems 1
7. LP fuel systems 1
8. Trouble-shooting 2

H. **Servicing the Tractor Air System** 1
1. General service 1

I. **Servicing Tractor Wheel Bearings** 5
1. The wheel assembly 1
2. Causes of failure 1
3. Types of bearing and lubricants 1
4. General service 2

J. **Servicing the Tractor Lubrication System** 3
1. Purposes of the system 1
2. Lubricants classification 1
3. General service 1

K. **Servicing the Tractor Hydraulic System** 5
1. Terms and definitions 1
2. Hydraulic components 1
3. Causes of system failure 1
4. General service 1
5. Trouble-shooting 1

Total Days:.....90

WOODS AND CONSTRUCTION

A Semester Course

Course Description: An overview of carpentry on the farm and skills related to building construction. Includes areas for students interested in careers in carpentry, plumbing, concrete, and construction.

Units and Topics of Instruction	Periods of Instruction
A. Basic Safety	**11**
1. General safety procedures	2
2. Equipment safety	2
3. Tool identification	2
4. Tool maintenance	5
B. Drawing and Sketching	**10**
1. Introduction	1
2. Types of dimensions	1
3. Drawing procedures	2
4. Symbols	1
5. Practicum	5
C. Bill of Materials	**5**
1. Introduction	1
2. Units of measure and calculations	2
3. Lumber classification	1
4. Producing a bill of materials	1
D. Fasteners	**4**
1. Types of fasteners	1
2. Identification of uses	1
3. Bolts and graded bolts	1
4. Miscellaneous fasteners	1
E. Rafter Framing	**9**
1. Introduction	1
2. Uses of the framing square	3
3. Types of roofs and rafters	1
4. Rafter layout	2
5. Cutting and assembling rafters	2
F. Concrete	**6**
1. Introduction	1
2. Concrete mixes (calculations)	2
3. Proper uses of concrete tools	1
4. Procedures for curing concrete	1
5. Practicum	1

G. Spray Painting 5
1. Introduction 1
2. Procedures 1
3. Identifying common problems 1
4. Clean-up and maintenance 1
5. Practicum 1

H. Plumbing and Pipe Fitting 10
1. Introduction 1
2. Materials and tools 1
3. Advantages and disadvantages of various types of pipes 1
4. Using plastic pipe 1
5. Using copper pipe 1
6. Using steel pipe 1
7. Practicum 4

I. Building Structures 20
1. Introduction 1
2. Planning the farm building 2
3. Door design 1
4. Floor design 1
5. Roof design 1
6. Practicum 14
   A group construction project of a utility building complete with electrical service. Will utilize many of the skills developed to this point.

J. Using the Farm Level 10
1. Introduction 1
2. Uses, types, and equipment 2
3. Reading the rod 1
4. Understanding field notes 1
5. Calculating field notes 2
6. Building layout and leveling 1
7. Surveying exercises 2

Total Days:..... 90

METALS AND WELDING

A Semester Course

Course Description: An overview of metal working and the various types of welding. Skill development will be a large part of this course which is designed for those students wishing to gain expertise in working with metal.

Units and Topics of Instruction	Periods of Instruction
A. Metal Work	**20**
1. Terminology	1
2. Safety	2
3. Tool Identification	2
4. Tool Maintenance	3
5. Types of Metals	1
6. Tool use	11
a. Twist drill	
b. Drill press	
c. Cold chisel	
d. Cut-off saw	
e. Band saw	
f. Hacksaw	
g. Files	
h. Tap and die	
B. Introduction to Oxyacetylene	**5**
1. Terms and definitions	1
2. Safety procedures	1
3. Backfire and backflash	1
4. Set-up and shut-down	1
5. Types of flames	1
C. Oxyacetylene Cutting	**10**
1. Introduction	1
2. Safety rules	1
3. Set-up	1
4. Cutting procedures	1
5. Tip cleaning and selection	1
6. Reasons for poor cuts	1
7. Practicum	4
D. Oxyacetylene Welding	**15**
1. Introduction	1
2. Determining proper tip size	1
3. Braze Welding	2
4. Fusion welding	2
5. Types of welds and positions	4
a. Metal thickness	
b. Lap welds	
c. Corner welds	
d. Tee welds	
6. Common problems	2
7. Practicum	3

E. **Introduction to Arc Welding** 5
1. Terms and definitions 1
2. Safety procedures 1
3. Types of equipment and currents 1
4. Types and uses of electrodes 1
5. The welding process 1

F. **Arc Welding Skills** 25
1. Introduction 1
2. Proper machine adjustment 1
3. Running a bead 2
4. Padding 2
5. Types of welds 6
   a. Butt welds
   b. Lap welds
   c. Tee joints
6. Groove joints 5
7. Position welding 5
8. Small metal project 3

G. **Mig Welding** 10
1. Introduction 1
2. Equipment and shielding gases 1
3. Characteristics of a good weld 1
4. Proper Adjustment 1
5. Practicum 2
6. Small metal project 4

Total Days: 90

ANIMAL SCIENCE

A Semester Course

Course Description: An overview of animal science with emphasis on physiology and anatomy. Covers areas for students wishing to become more aware of animal science and physiology.

Units and Topics of Instruction	Periods of Instruction
A. Livestock Diseases and Parasites	**10**
1. Introduction	1
2. Livestock poisoning	1
3. Controlling internal and external parasites	3
4. Understanding the life cycle	2
5. Diseases and parasites of selected agricultural livestock	3
B. Livestock Nutrition	**17**
1. Introduction	1
2. Anatomy of livestock digestive systems	
a. Non-ruminant	2
b. Ruminant	3
c. poultry	2
3. Classes of nutrients	3
4. Vitamin functions and deficiency symptoms	3
5. Mineral functions and deficiency symptoms	3
C. Common Livestock Anatomy	**6**
1. Beef	1
2. Swine	1
3. Sheep	1
4. Dairy	1
5. Horse	1
6. Poultry	1
D. Farm Animal Reproduction	**25**
1. Introduction	1
2. Principles of genetics	5
3. Breeding systems	3
4. Parts of the male reproductive tract	1
5. Function of the male reproductive organs	1
6. Parts of the female reproductive tract	2
7. Function of the female reproductive tract	2
8. Effects of hormones on reproduction	3
9. Fertility testing	2
10. Anatomy of a sperm cell	1
11. Pregnancy testing	2
12. Embryo transfer	2

Artificial Insemination 11
1. Introduction 1
2. Advantages and Disadvantages of A. I. 2
3. Estrus and signs of estrus 2
4. Conception rates 1
5. Heat synchronization 2
6. Necessary equipment 1
7. Procedures in A. I. 2

F. **Selecting and Breeding Livestock** 15
1. Introduction 1
2. Heritability 1
3. Genetic make-up 3
4. Production testing 3
5. Systems of breeding 2
6. Selection, genetic potential, and pedigree analysis 5

G. **Waste Management (Farm Ecology)** 6
1. Introduction 1
2. Importance of waste control 2
3. Noxious Gases 1
4. Potentially lethal situations 1
5. Types of treatment 1

Total Days: 90

LIVESTOCK PRODUCTION

A Semester Course

Course Description: An overview of livestock production with emphasis in successful livestock management. Covers areas for students wishing to become more aware of the livestock production and supporting industries.

Units and Topics of Instruction	Periods of Instruction
A. Introduction to the Livestock Industry	**5**
1. Basic orientation	1
2. Livestock as a food source	1
3. Careers in the industry	3
B. Maintaining Animal Health	**5**
1. Introduction	1
2. Importance of disease prevention	1
3. Immunity, vaccines, and medicines	2
4. General health regulations	1
C. Feeding Livestock	**30**
1. Introduction	1
2. Identifying the major classifications of feeds	1
3. Determining the major components of feeds	1
4. Characteristics of major cereal feed grains	1
5. Sources of proteins	1
6. Balancing feed rations	5
7. Feeding beef cattle	5
8. Feeding dairy cattle	5
9. Feeding swine	4
10. Feeding sheep	4
11. Feeding poultry	2
D. Beef Cattle Management	**10**
1. Introduction	1
2. Record keeping	1
3. dentification for cattle	1
4. Breeding systems	1
5. Increasing gains for beef cattle	2
6. Handling and handling systems	1
7. Financial management	3

E.	**Dairy Cattle Management**	**10**
	1. Introduction	1
	2. Factors in increasing milk production	2
	3. Housing systems	1
	4. Calf management	1
	5. Heifer and dry cow management	1
	6. Milking parlor arrangements	1
	7. Milking procedures	2
	8. Testing programs	1
F.	**Swine Management**	**10**
	1. Introduction	1
	2. Record keeping	2
	3. Breeding and production programs	1
	4. Market hogs	2
	5. Sow/boar management	2
	6. Handling procedures	1
G.	**Sheep Management**	**10**
	1. Introduction	1
	2. Wool vs. meat type sheep production	1
	3. Lambing systems	2
	4. Disease prevention	1
	5. Improving the economically valuable traits	2
	6. Wool: the second crop	3
H.	**Marketing Livestock and Livestock Products**	**10**
	1. Introduction	1
	2. Marketing cost	1
	3. Shifts in demand	1
	4. Marketing methods	2
	5. Classes and grades of livestock	5
	Total Days:	**90**

SMALL ANIMAL CARE

A Semester Course

Course Description: An overview of the career opportunities and job responsibilities of zoo keepers, lab animal technician, pet shop workers, dog groomers, kennel operators, and veterinary assistant.

Units and Topics of Instruction	Periods of Instruction
A. Animal Care and Management	**5**
1. Introduction	1
2. Career opportunity	4
B. Zoo Keeping	**30**
1. Biological classification	10
a. Characteristics of vertebrates animals	
b. Characteristics of the orders Teleostie, Amphibia, Reptilia, Aves, and Mammalia	
2. Handling and caring for animals	10
a. Animal nutrients	
b. Exercise techniques	
c. Restraining methods	
d. Animal safety	
e. Protective clothing	
3. Shipping and receiving	3
4. Maintaining breeding areas	4
5. Business practices	3
C. Lab Animals	**15**
1. Medical technology and theory	5
2. Daily care of animals	2
3. Medical procedures	3
4. Laboratory techniques	3
5. Business practices	1
6. Animal rights	1
D. Pet Shops	**10**
1. Animal husbandry and care	5
2. Business practices	2
3. Marketing	3
E. Dog Grooming	**10**
1. Breed Identification	2
2. Proper handling techniques	2
3. Clipping patterns	4
4. Using and maintaining grooming equipment	2

F.	**Kennel Operations**	**5**
	1. Nutrition	2
	2. Dog care	2
	3. Sanitation	1
G.	**Veterinary Assistant**	**15**
	1. Office operations	2
	2. Medical technology	3
	3. Surgical equipment and instrument	5
	4. Sanitation and disinfection	1
	5. Dispensing and administering medication	2
	6. Emergency first aid	2
	Total Days:	**.....90**

PLANT AND SOIL SCIENCE

A Semester Course

Course Description: An overview of plant and soil science with emphasis on plant physiology and properties of soils. Covers areas for students wishing to become more aware of soil science and plant physiology.

Units and Topics of Instruction	Periods of Instruction
A. Introduction to Plant Science	**8**
1. Introduction	1
2. Classification of plants	3
3. Technology and crop science	2
4. Environmental factors	1
5. Growing degree days	1
B. Elementary Study of Soils	**11**
1. Introduction	1
2. Importance of soil	1
3. Function of soil	1
4. Soil formation	2
5. Physical properties of soil	2
6. Soil profile	2
7. Acidity and alkalinity	2
8. Land capability classes	1
9. Taxonomy	1
C. Soil Conservation Practices	**10**
1. Introduction	1
2. Effects of erosion	2
3. Controlling erosion	3
4. Conservation tillage	4
D. Basic Plant Processes	**11**
1. Introduction	1
2. Plant processes	1
3. Photosynthesis	3
4. Respiration	2
5. Relationship between photosynthesis and respiration	1
6. Nutrient absorption	1
7. Transpiration	2

E. **Plant Growth and Development** 23
1. Introduction 1
2. Stages of plant growth and development 2
3. Parts of the seed
   a. monocot
   b. dicot
4. Germination 3
5. Parts of a plant 1
6. Function of the parts 3
7. Root systems 3
8. Plant growth 3
9. Plant reproduction 5

F. **Plant Disease Identification and Control** 11
1. Introduction 1
2. Losses caused by disease 1
3. Symptoms of disease 3
4. Understanding the disease 1
5. Infectious pathogens 3
6. Controlling disease 2

G. **Fertilizers** 16
1. Introduction 1
2. Nutrients 2
3. Function of nutrients 2
4. Symptoms of deficiencies 5
5. Sources of nutrients 2
6. Absorption of nutrients 2
7. Soil testing 2

Total Days: 90

CROP PRODUCTION

A Semester Course

Course Description: An overview of crop production and cropping methods. Covers areas for students wishing to become more aware of methods of crop productions.

Units and Topics of Instruction	Periods of Instruction
A. Nebraska Crops	**3**
1. Introduction	1
2. Analysis of Production	1
3. Careers in crop production	1
B. Planning Cropping Systems	**5**
1. Introduction	1
2. Cropping Systems	2
3. Selecting a Cropping System	2
C. Seed Selection	**5**
1. Introduction	1
2. Selecting high quality seeds	2
3. Certifiable seed classes	1
4. Seed treatment and handling	1
D. Land Preparation	**10**
1. Introduction	1
2. Characteristics of a seedbed	2
3. Tillage	1
4. Tillage systems	2
5. Tillage equipment	2
6. Conservation tillage	2
E. Planting	**10**
1. Introduction	1
2. Conditions for germination	1
3. Growth zones	1
4. Functions of planters and grain drills	1
5. Methods of planting	2
6. Parts of planters	1
7. Parts of grain drills	1
8. Planting for maximum yield	2
F. Harvesting	**10**
1. Introduction	1
2. Harvesting equipment	1
3. Combining	2
4. Harvesting specialty crops	2
5. Harvesting silage	2
6. Harvesting hay	2

Note: Some of the following specific crop areas may be reduced or removed in order to spend more time on crops of economic importance to the local area. It is suggested that 4 out of the 8 units that follow be selected for inclusion in the curriculum.

M. **Sorghum Production** 6
1. Introduction 1
2. Climatic and soil requirements 1
3. Selecting a hybrid 1
4. Sorghum management 1
5. Nebraska grain sorghum hybrid test 1
6. Production system 1

N. **Alfalfa Production** 6
1. Introduction 1
2. Uses and parts of alfalfa 1
3. Climatic and soil conditions 1
4. Selecting an alfalfa variety 1
5. Planting alfalfa 1
6. Production systems 1

O. **Small Grain Production** 6
1. Introduction 1
2. Types and uses of small grains 1
3. Stages of growth 1
4. Climate and soil requirements 2
5. Production systems 1

P. **Silage Production** 6
1. Introduction 1
2. Crops used as silage 1
3. Making silage 1
4. Fermentation 1
5. Advantages and disadvantages 1
6. Haylage 1

Q. **Speciality Crop Production** 6
1. Introduction 1
2. Parts of specialty crops 1
3. Climatic and soil conditions 1
4. Planting speciality crops 1
5. Production systems 2

Total Days: 90

HORTICULTURE

A Semester Course

Course Description: An overview of the horticulture industry and the skills needed for employment in the industry. Covers area for students who are interested in the horticultural industry.

Units and Topics of Instruction	Periods of Instruction
A. Overview of the Horticulture Industry	**3**
1. History of the industry	1
2. Types of horticulture	2
B. Careers in Horticulture	**5**
1. Career opportunities	2
2. Horticultural Experience programs	1
3. Getting and keeping a job	2
C. Basic Plant Science	**5**
1. Plant parts and their functions	1
2. Plant growth and development	2
3. Moisture, light, temperature, and air	1
4. Controlling plant growth	1
D. Soil Science	**5**
1. Plant growing media	2
2. Preparing plant growth media	2
3. Functions of plant growth media	1
E. Greenhouse Operations	**5**
1. Types of greenhouses	1
2. Greenhouse layout and design	1
3. Greenhouse equipment and maintenance	1
4. Controls	1
5. Types of greenhouse production	1
F. Pest Management	**5**
1. Identifying horticultural pests and diseases	2
2. Identifying and controlling plant disease	2
3. Safe use of pesticides	1
G. Horticultural Plant Tools and Equipment	**5**
1. Selecting tools and equipment	1
2. Maintaining tools and equipment	2
3. Small engine repair and maintenance	2
H. Lawn Care and Maintenance	**5**
1. Establishing a lawn	1
2. Maintaining a lawn	2
3. Basic landscaping	2

I.	**Gardening**	12
	1. Principles of gardening	3
	2. Garden planning	1
	3. Preparation	1
	4. Planting	1
	5. Pruning and spraying	1
	6. Uses of plant materials	1
	7. Pest management	1
	8. Vegetable gardens	2
	9. Fruit gardens	1
J.	**Floriculture**	5
	1. Flower arranging	2
	2. Establishing and care of potted plants	1
	3. Terrarium making	1
	4. Corsage	1
K.	**Plant Taxonomy**	5
	1. Identifying horticulture plants	3
	2. Identifying landscape plants	2
L.	**Plant Propagation**	10
	1. Seeds	1
	2. Cuttings	1
	3. Separation and division	2
	4. Grafting	2
	5. Budding	2
	6. Layering	2
M.	**House Plants**	5
	1. Care of house plants	1
	2. Identification of house plants	2
	3. Propagation of house plants	2
N.	**Nursery and Bedding Plants**	5
	1. Establishment of nursery and bedding plants	2
	2. Care and maintenance of nursery and bedding plants	3
O.	**Vegetable Production**	10
	1. Identification of vegetable crop	3
	2. Types of vegetable production	2
	3. Production guide lines	2
	4. Harvesting, storage, and marketing	3
	Total Days:	**90**

LANDSCAPING , NURSERY, AND GARDENING

A Semester Course

Course Description: An overview of techniques in landscaping, nursery operations, and gardening with emphasis placed on design, practices, and career opportunity. Covers area for those students wishing to become aware of the landscaping, nursery, and gardening industries.

Units and Topics of Instruction	Periods of Instruction
A. Landscape Design	**10**
1. Basic design principles	2
2. Reading and interpreting plans	2
3. Landscape evaluation	2
4. Landscape design and drawings	4
B. Care and Uses of Ornamental Shrubs (shade trees, evergreens, vines, ground covers, and fruits and vegetables)	**7**
1. Water, soil, and light requirements	3
2. Plant use in a landscape design	2
3. General maintenance	2
C. Nursery Practices	**5**
1. Pruning, thinning, and pest control	2
2. Harvesting stock: bare root, B&B, and true spade	2
3. Storing stock: healing in and cold storage	1
D. Landscape Practices	**14**
1. Plant selection	5
2. Methods of planting trees	2
3. Staking and wrapping trees	2
4. Installing edging and mulches	2
5. Latering landscape plants	1
6. Fertilizing landscape plants	2
E. Turf and Grounds Maintenance	**6**
1. Seeding and sodding	2
2. Renovation and aeration	2
3. Care and maintenance	2
F. Vegetable Gardening	**12**
1. Seeding and transplanting	2
2. Crop rotation, succession, and intercropping	2
3. Garden location and design	2
4. Plant classification and suggested varieties	2
5. Cultivation and weed control	1
6. Insects and disease control	1
7. Harvesting, storing, and marketing vegetables	2

G.	**Fruit Production**	5
	1. Small fruit production	1
	2. Large fruit production	1
	3. Orchard establishment: care and maintenance	3
H.	**Plant identification and Selection**	8
	1. Shade and ornamental trees	2
	2. Deciduous shrubs	1
	3. Evergreen trees and shrubs	1
	4. Vines and ground covers	1
	5. Fruits and vegetables	2
	6. Plant disorders and disease	1
I.	**Nursery, Gardening, and Landscaping Industry**	3
	1. Geographic location, size and scope	1
	2. Occupational opportunities	2
J.	**Plant Science**	5
	1. Plant classification	1
	2. Plant parts	1
	3. Plant growth	3
K.	**Soils and Fertilizers**	7
	1. Soil texture and structure	1
	2. Water holding capacity and aeration	1
	3. Soil management and testing	2
	4. Soil pH, nutrients, and nutrient balance	1
	5. Fertilizers and fertilizer application	1
	6. Artificial soils	1
L.	**Plant Propagation**	4
	1. Sexual propagation	1
	2. Asexual propagation	1
	3. Transplanting and potting	2
M.	**Plant Water/Moisture**	3
	1. Environmental influences	1
	2. Irrigation, drainage, and drought	2
N.	**Growing Structures**	3
	1. Greenhouses, cold frames, and hot beds	2
	2. Sash houses and shade shelters	1

Total Days: 90

FLORICULTURE AND GREENHOUSE MANAGEMENT

A Semester course

Course Description: An overview of the floriculture industry with emphasis on development, design and construction. Covers areas for those students who are interested in careers in floriculture and greenhouse management.

Units and Topics of Instruction	Periods of Instruction
A. The Greenhouse Industry	**5**
1. Geographical locations	1
2. Occupations and opportunities	2
3. Industry size and scope	2
B. Plant Growing Structures	**6**
1. Types of greenhouses and related structures	2
2. Greenhouse equipment	2
3. Environmental controls	2
C. Growing Media	**6**
1. Soil properties and composition	3
2. Artificial soil media	3
D. Cultural Operations	**6**
1. Sanitizing and sterilizing practices	2
2. Pinching and disbudding techniques	1
3. Moving plants	1
4. Harvesting and storing	2
E. Plant Science	**5**
1. External plant parts and their function	3
2. Environmental factors of plant growth	2
F. Plant Nutrients	**6**
1. Elements necessary for plant growth	2
2. Function of plant nutrients	2
3. Watering and fertilizing plants	2
G. Plant Propagation	**4**
1. Sexual propagation	2
2. Asexual propagation	2
H. Potted Plant Production	**5**
1. Azalea, chrysanthemum, poinsettia	1
2. Bedding plants, gloxinia, kalanchoe	1
3. African violet, spring flowering bulbs	1
4. Foliage plants	2

I. **Insect Pests of Plants** 5
1. Identification of common insect pest 2
2. Insect control measures 1
3. Safe application of insecticides 2

J. **Diseases and Weeds** 5
1. Identification of common diseases and weeds 2
2. Disease and weed control measures 2
3. Safe application of herbicides and pesticides 1

K. **Retail Floristry Principles** 7
1. Elements of floral design 3
   Color
   Form
   Line
   Space
   Texture
2. Principles of design 4
   Accent
   Balance
   Composition
   Harmony
   Rhythm
   Scale
   Unity

L. **Floral Plant Identification** 5
1. Cut flower and foliage plants 2
2. Annual flowers and vegetables 1
3. Potted greenhouse crops 1
4. Plant disorders and insects 1

M. **Plant Selection** 5
1. Selection principles 3
2. Selection of cut flowers, potted flowering plants, and potted foliage plants 2

N. **Construction of Floral Design** 20

Note: A four week practicum to encompass the following:

1. Construction equipment
   Foam
   Hot glue gun
   Bowls or containers
   Moss
   Wire
   Knives/cutters
   Silk flowers
   Greenery
   Paddle wire
   Wreathe rebar
   Piks
   Ribbons

2. Floral projects
   Table setting
   Christmas wreathe
   Live or silk flower arrangement
   Corsage
   Boutonnieres
   Bouquets

Total Days:..... 90

NATURAL RESOURCE MANAGEMENT

A Semester Course

Course Description: This course is designed for students interested in natural resources and conservation. Because of the universal uses of the environment this course is designed for every student. Material to be covered includes pollution, wildlife management, conservation, forestry, and energy uses.

Units and Topics of Instruction	Periods of Instruction
A. Natural Resource Management: An Orientation	3
1. Introduction	1
2. Definitions	2
B. Careers in Resource Management	3
C. Resource Awareness	5
1. Local and state resources	2
2. National resources	2
3. International resources	1
D. Modern Topics of Resource Management	25
1. Renewable resources	2
2. Alternate resource uses	2
3. Energy sources	2
4. Energy conservation	2
5. Ethics of resource conservation	3
6. Agriculture production and the environment	3
7. Pesticides and chemicals	2
8. Range ecology	3
9. Waste disposal	3
10. Soil conservation	3
E. Water Conservation	5
1. Water quality control	2
2. Farm pond and lake ecology	3
F. Wildlife Management	8
1. Managing wildlife habitat	2
2. Establishing wildlife habitat	2
3. Wildlife ecology	2
4. Hunting and fishing	2
G. Pollution	4
1. Types of pollution	1
2. Sources of pollution	1
3. Controlling pollution	2

H.	**Forest Resources**	10
	1. Establishing trees	3
	2. Tree care	3
	3. Recreational parks	2
	4. Types of recreational areas	2
I.	**Government and the Environment**	12
	1. Local	3
	2. State	3
	3. Federal	3
	4. International	3
J.	**Practicum**	15
	1. Gaining field experience in natural resource management through the development of a conservation technique or practice.	
	Total Days:	**90**

WILDLIFE MANAGEMENT

A Semester Course

Course Description: An overview of wildlife management designed to examine the importance of wildlife and its affects on Nebraska's economy. Emphasis will be placed on the intelligent use of wildlife and natural resources available within the state as well as an understanding of the importance of wildlife and natural resources.

Units and Topics of Instruction.	Periods of Instruction
A. Importance of Wildlife Management	**5**
1. Ecological benefits	1
2. Economic benefits	2
3. Aesthetic benefits	1
4. Agricultural benefits	1
B. History of Wildlife and Fish Management	**3**
1. Historical aspects of wildlife management	1
2. Historical development	2
C. Policies, Laws, and Administration of Wildlife Managements	**10**
1. State and Federal Conservation Agencies	1
2. Policies affecting wildlife	1
3. State and Federal Laws	1
4. Private groups and clubs	1
5. Threatened and endangered species	1
6. Control and Management	1
7. Hunter Safety	10
D. Ecology	**10**
1. Introduction	1
2. Ecosystems	1
3. Ecosystem failure	1
4. Population ecology	1
5. Carrying capacity	2
6. Food chains and webs	1
7. Succession	1
8. Preservation of the environment	2
E. Wildlife and Fish Species	**10**
1. Non-game animals	2
2. Fur bearers	2
3. Game birds	2
4. Big game	1
5. Game farms	1
6. Fish species	1
7. Exotic game	1

F. **Fish and Wildlife Management..... 20**
1. Water, food, and cover requirements..... 5
2. Habitat protection and development..... 3
3. Determining critical habitat..... 2
4. Management of wildlife populations..... 5
5. Management of fish populations..... 5

G. **Management of Special Wildlife Areas..... 10**
1. Non-game and endangered species..... 3
2. Genetic improvement of wildlife..... 3
3. Commercial game and fish enterprises..... 2
4. Wildlife handling..... 2

H. **Career Opportunities in Wildlife Management..... 2**
1. Career Opportunities..... 2

I. **Leadership Activities related to Fish and Wildlife Management... 5**
1. Leadership activities..... 5

J. **Practicum in Wildlife Management and Conservation..... 15**
1. The development of a management plan or practice to encourage conservation, develop habitat, or the development of public awareness..... 15

Total Days:.....90

ENVIRONMENTAL AGRICULTURE: ENERGY, NATURAL RESOURCES AND THE ENVIRONMENT

A Semester Course

Course Description: An in-depth look at man's dependence upon and interaction with our natural resources. An historical and futuristic perspective of soil and water stewardship and land use will provide insight to the new challenges facing agriculture. Special emphasis will address the new technologies being utilized to meet these challenges and the resultant career opportunities.

Units and Topics of Instruction	Periods of Instruction
A. The Importance and Scope of Natural Resources, Energy, and the Environment	3
1. Types of natural resources	1
2. The impact of natural resources on the agriculture economy	1
3. Geographical distribution of natural resources	1
B. Environmental Policies	4
1. Government's role in environmental policy	1
2. Historical factors affecting natural resources	1
3. Society's role in natural resource policy	1
4. Ecological controls	1
C. Population Demographics in Resource Management	3
1. Supply and demand for natural resources	1
2. Growth and changes of world, nation, and state population and its effect on natural resources	1
3. Resource allocation	1
D. Water Resource Management	18
1. Hydrology and resource management	1
2. Surface and ground water management	3
3. Water needs of society	2
4. Planning and distribution of water	2
5. Legislation concerning water use	2
6. Conservation	2
7. Water rights	3
8. Water pollution	3
E. Urban Water Use	8
1. Uses of water by urban areas	1
2. Water conservation techniques for the home	2
3. Impact of land use on water run-off	2
4. Water quality	3

F. **Agricultural Water Use** 10
1. Introduction 1
2. Types of irrigation 2
3. Water conservation methods used in irrigation 3
4. Water conservation agencies 1
5. Animal water use 1
6. Insuring water quality for agriculture 2

G. **Waste Water Management** 5
1. Types of waste 1
2. Reclaiming waste water 1
3. Reclamation of solid waste 1
4. Management of agricultural waste 2

H. **Uses of Natural Resources for Energy** 10
1. Introduction 1
2. Agricultural products used for energy 3
3. Renewable resources 2
4. Non-renewable resources 2
5. Governmental policies 2

I. **Air Quality** 6
1. Air quality standards 1
2. Agricultural policies 1
3. Sources and effects of air and noise pollution 3
4. Air pollution control programs 2

J. **Soil Erosion** 5
1. Sources and types of erosion 1
2. Harmful effects of erosion 1
3. Liability involved in erosion control 1
4. Methods of erosion control 1
5. Government programs 1

K. **Handling, Storing, Disposal, and Safety of Hazardous Materials** 10
1. Hazardous materials 3
2. Safe handling, storing, and disposal procedures 6
3. Government programs 1

L. **Career Opportunities in Environmental Agriculture** 3
1. Energy related areas 1
2. Environmental areas 2

M. **Leadership Activities** 3
1. Leadership related activities in environmental science 3

N. **Records Related to Environmental Science** 2
1. Maintain and analyze records in environmental science 2

Total Days:.....90

ENTREPRENEURSHIP IN AGRICULTURE

A Semester Course

Course Description: This course is designed to develop entrepreneurship and to identify the characteristics needed to be successful. By design this course will closely simulate actual obstacles faced by entrepreneurs. Covers areas for those students interested in marketing, finance, product development, advertising, and business management.

Course Requirement: Each student will be required to develop a product or service during the course of the semester.

Units and Topics of Instruction	Periods of Instruction
A. Entrepreneurship: Defined	**10**
1. Introduction	1
2. Success stories	2
3. Yourself as an entrepreneur	1
4. Creativity and positive thinking	2
5. Selling your ideas	4
a. Interview techniques	
b. The art of persuasion	
B. Getting Started	**10**
1. Developing your idea	1
2. Organizing your resources	1
3. Business organization	2
a. Sole proprietorship	
b. General partnership	
c. Limited partnership	
d. Corporations	
4. Business functions	2
a. Planning	
b. Organizing	
c. Controlling	
d. Directing	
5. Decision making	2
6. Planning process	2
C. Understanding Basic Economic Principles	**10**
1. Supply and demand	2
2. Determinants of demand	1
3. Changes in supply	1
4. Profit maximization	1
5. Law of diminishing returns	1
6. Costs	2
7. Factors which influence price	2

D.	**Marketing Strategies**	10
	1. Strategy development	2
	2. Developing a specific business goal	2
	3. Setting operational objectives	1
	4. Selecting a target market	2
	5. Selecting a course of action	1
	6. Establishing the basis for a specific marketing program	2
E.	**Business Finance**	10
	1. Sources of capital	2
	2. Types of credit	1
	3. Debt management	1
	4. The small business administration	2
	5. Preparing the loan proposal	2
	6. The loan interview	2
F.	**Product Development**	6
	1. Product differentiation	2
	2. Research and development	2
	3. Consumers wants and needs	2
G.	**Packaging**	5
	1. Jobs performed by packages	3
	2. Package characteristics	2
H.	**Advertising**	5
	1. Why advertise?	1
	2. Principles of advertising	2
	3. Forms of advertising	2
I.	**Record Keeping**	4
	1. Importance of good records	2
	2. Record keeping systems	2
J.	**Sales and Service**	15
	1. The consumer	2
	2. Guarantees and warrantees	3
	3. Business efficiency	1
	4. Practicum: Putting it to work	10
K.	**Business Analysis**	5
	1. Record keeping revisited	2
	2. Analysis of strengths and weaknesses	2
	3. Profit: The end that justifies the means	1
	Total Days:	**90**

EMPLOYMENT IN AGRIBUSINESS

A Semester Course

Course Description: An overview of agribusiness organizations, opportunities, and management. Covers areas for students wishing to become more aware of agricultural business and industry.

Units and Topics of Instruction	Periods of Instruction
A. Agribusiness Orientation	**5**
1. Introduction	1
2. Career opportunities	4
a. Farm supplies and services	
b. Processing .	
c. Distribution and wholesaling .	
d. Retailing and marketing	
B. Processing and Marketing	**15**
1. Standardizing and grading	2
2. Packaging	1
3. Storing	1
4. Transportation	1
5. Market communications	2
6. Financing	2
7. Merchandising	2
8. Risk sharing and hedging	2
9. Advertising	2
C. Agribusiness Organization	**5**
1. Sole proprietorships	1
2. Partnerships	1
3. Corporations	2
4. Cooperatives	1
D. Agribusiness Financing	**15**
1. Equity capital	1
2. Sources of equity capital	3
3. Sources of borrowed capital	3
4. Conserving capital	3
5. Credit extension policies	3
6. Debt management	2
E. Agribusiness Management	**5**
1. Stockholders	1
2. Board of directors	1
3. Business managers	1
4. Employees	2

F. **Labor Management** 15
1. Recruitment and selection 3
2. Job analysis and evaluation 3
3. Compensation and benefits 3
4. Employee relations 3
5. Delegation of power 3

G. **Agribusiness and Government** 15
1. Local laws and regulations 3
2. State legislation 2
3. Federal rules and regulations 3
4. Court ruling of interest 2
5. Taxes 5

H. **Employment in Agribusiness Practicum** 15
1. A three week exercise in putting the principles of this course to work through an internship at an agribusiness.

Total Days.....90

AGRICULTURAL BUSINESS MANAGEMENT

A Semester Course

Course Description: This course is for those students who want in-depth knowledge about managing a production agriculture enterprise. Material to be covered include tax management, record keeping, forecasting, and government programs.

Units and Topics of Instruction	Periods of Instruction
A. **Basics of Management: An Orientation**	1
B. **Careers in Management**	3
1. Production	1
2. Support industries	2
C. **Types of Business arrangements**	14
1. Custom verses ownership	2
2. Determining production levels	2
3. Selection of enterprises	2
4. Evaluation of overhead and costs	2
5. Farmstead layout	2
6. Computers in management	4
D. **Attributes of Successful Managers**	35
1. Developing marketing strategies	2
2. Market Analysis	3
3. Insurance and risk management	3
4. Farm safety	2
5. Current farm accounts	3
6. Labor management	3
7. Using crop yield records	2
8. Soil and water management	3
9. Profitability factors	3
10. Evaluation of the farm business	3
11. Farmstead planning and forecasting	4
12. Estate planning	4
E. **Keeping the Farm Record Book**	27
1. Inventory	2
2. Depreciation scheduling	3
3. Budgeting	3
4. Cash flow analysis	3
5. Financing options	2
6. Credit management	2
7. Analyzing fixed cost	2
8. Networth statements	2
9. Ending inventory	2
10. Income tax management and planning	5

F.	**Government Programs**	**10**
	1. Introduction	1
	2. Agricultural Law	4
	3. Consultants and Specialists	2
	4. Government Agencies	3
	Total Days:	**90**

FOOD SCIENCE

A Semester Course

Course Description: An overview of the food science industry with emphasis placed on production, packaging, processing, and careers. Covers areas for those students who wish to become more aware of the food science industry.

Units and Topics of Instruction	Periods of Instruction
A. The Food Science Industry	**5**
1. Trends in world food consumption	1
2. Trends in food science	1
3. Career opportunities	2
4. Government regulations	1
B. Food Packaging and Labeling	**4**
1. Package integrity and suitability	1
2. Types of packages	2
3. CFR labeling regulation	1
C. Sensory Evaluation of Foods	**4**
1. Requirements for effective and reliable testing	1
2. Trained and untrained panels	1
3. Triangle, preference, and sensitivity test	2
D. Marketing of Food Products	**5**
1. Advertising	1
2. Sales	1
3. Coupons	1
4. Selecting target markets	2
E. Constituents of Food	**6**
1. Carbohydrates, proteins, and fats	2
2. Additives	2
3. Affects of additives on food quality	1
4. GRAS regulations	1
F. Nutritive Aspects of Food Constituents	**5**
1. Calories	1
2. Bio-availability	1
3. Protein quality	1
4. Vitamins, minerals, and fiber	2
G. Operations of the Food Industry	**5**
1. Material handling	2
2. Drying	1
3. Forming	1
4. Processing	1

H. **Food Microbiology** 5
1. Spoilage organisms 2
2. Food poisoning 1
3. Indicator organisms 1
4. Fermentation 1

I. **Food Processing** 5
1. Dehydration 1
2. Concentration 1
3. Intermediate-moisture foods 1
4. Irradiation 1
5. Microwave foods 1

Practicum: Students will research and develop a food service, a food information service *(Diet control, calorie guides, nutrition guides, etc)* or a product for consumption. It is recommended that this practicum encompasses the concepts and practices discussed in the first half of this course. **(10 days)**

J. **Meats, Poultry, and Eggs** 15
1. Consumer attitudes 1
2. Meat and poultry inspection 3
3. Cattle and veal slaughter 1
4. Hog slaughter 1
5. Lamb slaughter 1
6. Poultry processing 1
7. Processed meat products 1
8. Egg grading and packaging 1
9. Meat and poultry evaluation 5

K. **Cereal Grain Foods** 5
1. Value of cereal grains 2
2. Composition and structure of cereal grains 1
3. Processing 2

L. **Dairy Products** 6
1. Composition of milk 1
2. Types and grades of milk 1
3. Processing and distribution 1
4. Evaluation of dairy products 3

M. **Fruits, Vegetables, and Beverages** 5
1. Consumption profile 1
2. Harvesting systems 1
3. Processing vegetables 1
4. Processing fruits 1
5. Beverages 1

N. **Fish** 5
1. Classes of fish and seafood 1
2. Fish processing 1
3. Speciality items 1
4. Quality and inspections 1
5. Aquaculture 1

Total Days:.....90

LEADERSHIP AND HUMAN RESOURCE DEVELOPMENT

A Semester Course

Course Description: A broad view of leadership development through better understanding of.an individual's personal development and group interaction. Covers material for those students wishing to become more aware of leadership and human resource management in agriculture and related industries.

Units and Topics of Instruction	Periods of Instruction
A. Leadership Verses Management: An Orientation	**3**
1. Introduction	1
2. Management	1
3. Leadership	1
B. Leadership in the Community	**10**
1. Roles of officers and committees	3
2. Roles of conferences and conventions	3
3. Group dynamics: Roles and styles	4
C. Leadership Concepts and Applications	**25**
1. Personality tests and types	3
2. Personality implications for leadership	2
3. Time management	3
4. Goal setting	2
5. Value and ethic development	2
6. Identifying strengths and weaknesses	2
7. Personal hygiene, dress, and etiquette	2
8. Self concept and self confidence	2
9. Public speaking	7
D. Characteristics of an Effective Leader	**16**
1. World and national leadership	4
a. Types	
b. Methods	
2. Use of power and influence	3
3. Decision making	2
4. Problem solving	2
5. Ethical decision making	2
6. Communication: Verbal and non-verbal	3

E. **Characteristics of an Effective Manager** 36

1. Stress management 2
2. Risk management 1
3. Motivation and delegation 2
4. Program development and implementation 3
5. Bureaucracy and politics 2
6. Creative and original thinking 2
7. Effective and efficient meetings 1
8. Parliamentary procedure 5
9. Conflict resolution and team building 3
10. Handling anger on the job 1
11. Proper feedback and criticism 2
12. Organizational image and public relations 3
13. Discrimination in the work place 3
14. Program evaluations and revisions 3
15. Recognition and reward systems 3

Total Days: 90

APPENDIX E:

YEAR ROUND ADULT EDUCATION PROGRAM SCHEDULE

SAMPLE

PROPOSED SCHEDULE FOR A YEAR ROUND PROGRAM OF ADULT EDUCATION IN AGRICULTURE

DATE	Topic
July 14	Summer Picnic *(City Park)* Election of Advisory Committee *(Joe's Group in Charge)*
July 22-29-Aug 5 ***(8:30 - 10:30 am)***	Group Meetings by Area Topic: Commodity Futures Marketing
August 11	Advisory Committee Meeting Set up Year's Program
September 8	Combine Calibration and Adjustment Harvest Safety *(Watermelon Feed Following)*
September 27	Employee Benefits and Compensation Labor Relations
October 20	Acquisition of Loans - Problematic Situation Meeting With Ag Lenders
November 8 ***(Sat evening)***	Potluck Supper and Program Topic: Parasite Control in Cattle *(George's Group in Charge)*
November 17	Pollution Control - Problematic Situation
December 8	Income Tax Highlights - Speaker
December 12 (All Day Tuesday)	Field Trip to University Of Nebraska College Of Agriculture *(Joan's Group in Charge)*

January 12-19-26 *(7:00 - 9:30 pm)*	Farm Business Analysis and Management Maintaining Cash Flows, Income Statements, and Balance Sheets
February 16	Rural Crime - Trends and Prevention
February 28 *(Sat evening)*	Dinner out with the Spouses *(Jim's Group in Charge)*
March 8	Minimum and No-Tillage Methods Plans for Group Projects
March 29	Computer Applications in Agriculture
April 19	Herbicide and Pesticide Effectiveness
May -	**No Meeting This Month** (You're Just too Darn Busy!)
June 7	Summer Tour -- Norden Laboratories Inc. *(Tony's Group in Charge)*

ALL MEETINGS ON MONDAY NIGHTS AT 7:30 PM.

BASKETBALL OR VOLLEYBALL RECREATION AFTER MOSTS MEETINGS WITH ADVISORY COMMITTEE IN CHARGE.

APPENDIX F:

SAMPLE:

IN-DEPTH
ADULT EDUCATION
MANAGEMENT COURSE OUTLINE
FOR NEBRASKA
ADULT EDUCATION IN AGRICULTURE PROGRAM

SAMPLE

PROPOSED SCHEDULE FOR AN IN-DEPTH AGRIBISINESS MANAGEMENT CLASS

Introduction to Agribusiness Management

DATE	Topic
1st Class - -	Starting Plans and Permits Financial Options and Loan Acquisition Building Layout and Spacing Needs
2nd Class	Role of a Manger/Owner Leadership Types and Methods Stress and Risk Management
3rd Class	Strategic Organizational Planning Operational Planning
4th Class	Inventory and Supplies Record Keeping and Analysis Money Management
5th Class	Sales and Marketing Techniques Pricing, Credit and Billings
6th Class	Advertising and Promotions Defining Target Market Needs Analysis of Community
7th Class	Employee Management Compensations and Benefits Recruitment and Selection
8th Class	Conflict Resolution, Promotions, and Discharges Absenteeism and Performance Evaluations
9th Class	Competition Strategies and Analysis Community Relations
10th Class	Governmental Regulations and Laws Taxes for Local/State/Federal Review and Evaluations