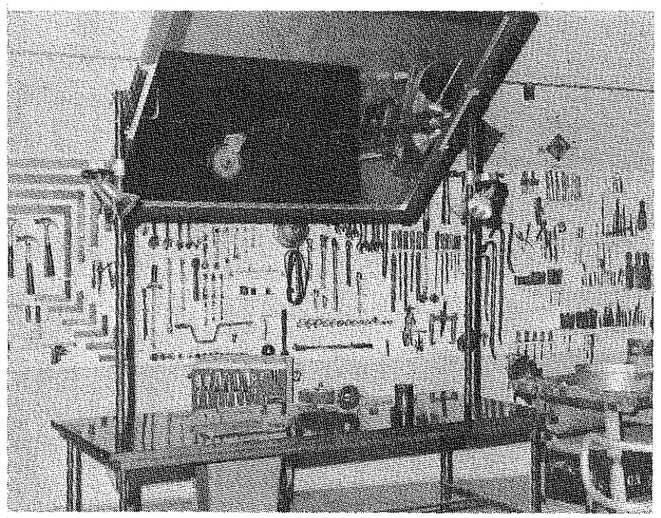
Harold Johnson, at left, District Manager of Pfizer, Inc. at Spokane, Washington, rewarded three Agriculture Teachers with $500 cash at the AVA in Portland, Oregon. Pfizer makes this cash award to the Advisors of the National FFA Foundation winners. Left to right are: Ed Fisher, Hilmar, California —Region I, Dairy farming; Roy Reno, Riverton, Wyoming—Region II, Livestock farming; Jerry Sherwin, Cuba City, Wisconsin—Region III, Poultry farming. (Photo by Peter Corvallis, Portland, Oregon).



Stories in Pictures

by Richard Douglass

A large adjustable mirror over the demonstration table gives students a bird's eye view. This table is also equipped with four floodlights. If your students can see, they should get the most out of your demonstrations. (Photo by Richard Douglass, University of Nebraska)

"You Really Have To Know Your Stuff To Explain It To 4th Graders."
Donald G. Barber, Owatonna, Minnesota, Vo-Ag Instructor, uses this unique teaching method. His FFA members conduct informative sessions for elementary students on corn harvesting, land tillage and grain quality as part of their career orientation project. Bradley Ahrens, a recent Regional Star farmer, and David Janke show 4th graders how a corn combine removes the grain from the cobs. (Photo supplied by Donald G. Barber, Owatonna, Minnesota).

Agricultural Education

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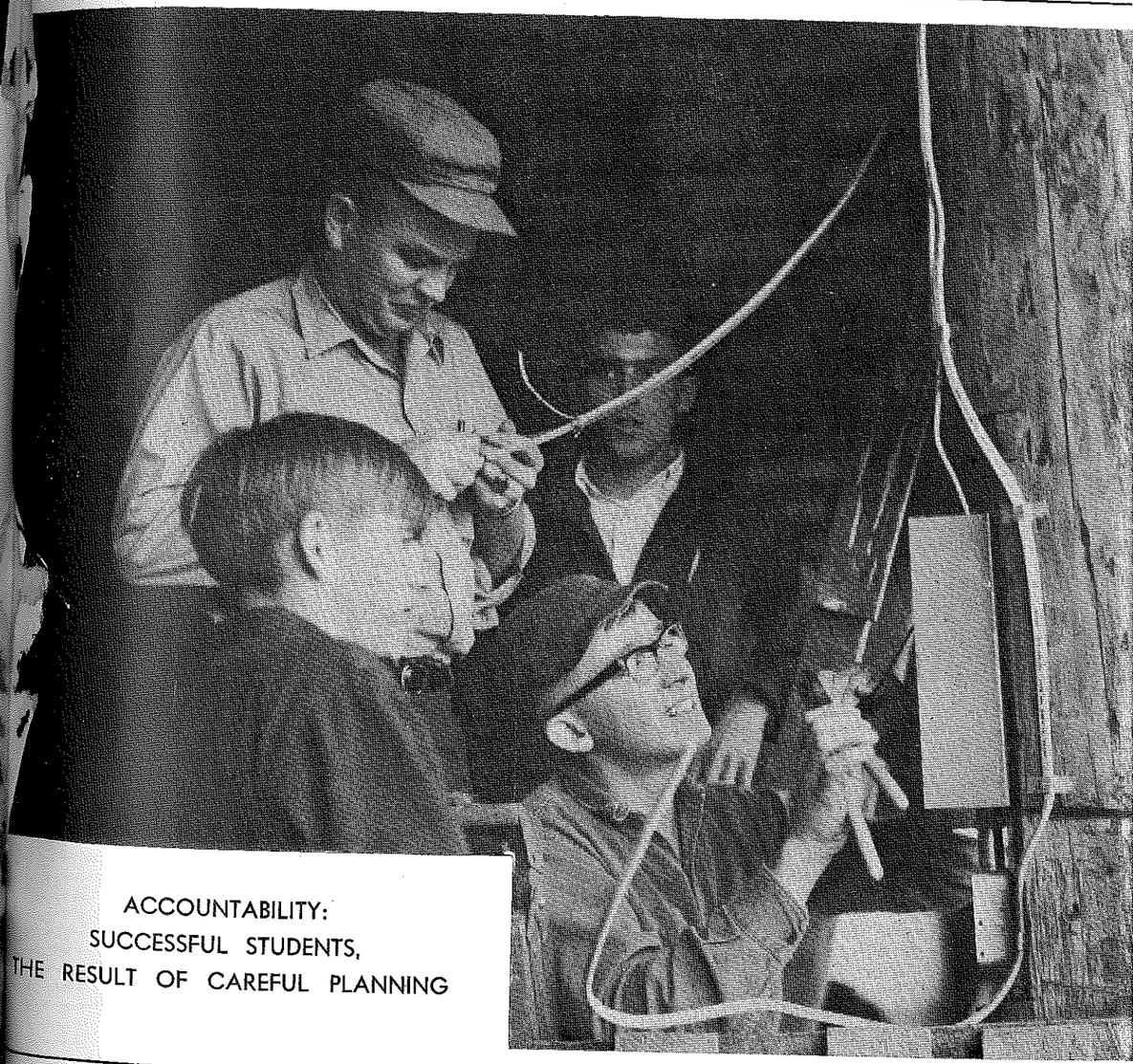

ACCOUNTABILITY:
SUCCESSFUL STUDENTS,
THE RESULT OF CAREFUL PLANNING

Theme— PLANNING THE STATE AND LOCAL PROGRAM

The
Agricultural Education
Magazine

EDPRESS Vol. 45 July 1972 No. 1

TABLE OF CONTENTS

This publication is the monthly professional journal of agricultural education. The journal is published by THE AGRICULTURAL EDUCATION MAGAZINE, INC., and is printed at the Lawhead Press, Inc., 900 East State Street, Athens, Ohio 45701.

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COVER PHOTO

Mr. Cecil Goode, District Engineer with T.V.A., demonstrates how to connect a main switch box to vocational agriculture students of Franklin-Simpson High School, Franklin, Kentucky. An example of the wise use of resource people. (Picture by D. E. Bayless, Kentucky State Department of Education).

Editorials

From Your Editor . . . WHO DECIDES WHAT IS TO BE TAUGHT IN YOUR PROGRAM?

Roy D. Dillon

How much time have you devoted during the past year to writing new courses of study or revising existing ones? Do you involve an advisory committee in reviewing possible courses, and to what extent do you involve laymen and students in making curriculum decisions?

We must remember that it is the citizens' school, and that hard earned tax funds are being used to support a local or area school budget which probably has from one-half to three-fourths devoted to professional salaries. This is an indication that the citizen taxpayer is placing considerable dollar trust in you as the professional educator to know how to give every student and taxpayer his money's worth.

The citizen has the right and the responsibility to be heard in the decision-making process of determining which clientele groups should be served and what subject matter each shall be taught.

You as the local professional agricultural educator, are the person who must take the steps to recommend citizen involvement in planning the local vocational program. If you do not do so, the layman will be content to "let the teacher decide" what to teach.

Most State Plans require that local advisory committees be utilized when developing local plans of vocational education. Even though the School Board is held responsible for submitting the local plan, you as the professional agricultural educator should be familiar with procedure for writing a local plan, and be prepared to actively assist in its development.

Unless you are willing to provide leadership in preparing a local plan for vocational education, and to involve laymen and students in the decision process, you risk serious criticism if your curriculum decisions are wrong. In addition, if laymen and students are involved in the planning process, they will view the vocational program as "our program," and the positive support you should receive will influence every aspect of the instructional program.—RDD

Guest Editorial . . . TWO ENDS OF A RUT

Harold Shoaf
Supervisor, Agricultural Education
State Department of Education, Kansas

Harold Shoaf

Are we in agricultural education victims of circumstance? Do we sometimes find ourselves in a rut in which we neither look forward not backward, but simply accomplish the tasks at present? The comfort of such a rut is often deceptive, because without making future plans or reflecting on past achievements we accomplish little.

The founder of Farmland Industries, suppliers of the Farm Coop and tremendous supporters of agricultural education, wanted to assure that his company never fell into this type of rut. Today, on the wall of the director's room in the Kansas City headquarters, a word of wisdom is seen by all. It reads, "Make no little plans, they have not the power to stir men's souls." This warning to today's leaders simply states that a small goal, no matter how fully achieved, simply cannot keep their great corporation expanding and meeting the needs of today's agriculture.

Approximately fifty years ago agricultural education leaders put together a plan called vocational agriculture, with a youth program called the FFA (Future Farmers of America), that stirred men's souls nationwide. The wisdom and farsightedness of these great leaders was tremendous in developing a program that has met the test through the years.

Progress has been made at a number of national conferences with the objective of a new relevant, flexible, and far-reaching program that might be acceptable to all involved. Agreement on such a plan has been difficult because of varied needs in agriculture in different states. If it is not possible to have a complete meeting of the minds on the national level, is it possible that state and local agriculture leaders can agree on a challenging plan that will stir men's souls in each state? If it is possible for agricultural education leaders to reach an agreement on the state and local level, then perhaps in the future a great many states will be able to agree on a united program.

The question which I feel is most important today is not should there be a change, but what specific changes should be made and what planned procedure and guidelines should be followed. I am sure that each state has the leadership to

(Continued on next page)

Today we must develop a new plan using those areas that are still relevant, but with a flexible plan that will again stir men's souls at least nationwide.

adopt an acceptable program in agricultural education that is relevant, flexible, and acceptable.

There is danger in mapping out a new program that has not been tried. May I illustrate my point with a story. A surgeon had amputated a patient's leg, but unfortunately he made a mistake. The surgeon told his patient that he had good news and bad news for him. He gave the bad news first. "I have amputated the wrong leg." But now for the good news. "The bad leg will get well."

Every individual who is involved in agricultural education has ideas which should be considered. It is difficult, however, to take a large group and come out with a specific plan. To accomplish this, a few selected people should be assigned this responsibility. After an identifiable proposal has been reached, it should then be presented to agricultural education people for their acceptance, rejection, or change.

The following points should be given careful consideration in mapping out a plan to achieve new horizons in agricultural education: The **first significant area** sounds simple, but gets more complicated as you try to identify each segment. What job opportunities will be afforded our graduate? In most states accurate data on agribusiness jobs has not been adequate for program planning. This lack of information has been a hindrance in attempting to expand and develop new programs in agricultural education. It has been difficult to plan an expanded program without the knowledge of what jobs are available at local, state, and regional levels. A limited amount of information is available and from this source we can build a foundation. Minnesota vocational agriculture instructors, with the assistance of the Division of Vocational Education teacher educators, have solved this number one challenge by surveying the agribusiness industries in their state and identifying the jobs available.

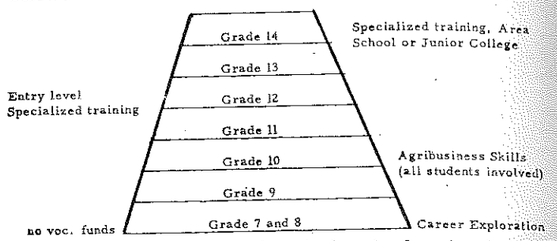
The **second challenge** involves knowing which of the seven taxonomies the participants prefer. A survey of vocational agriculture students was made in Indiana and proved successful in determining the desires of the individuals enrolling in the classes. This step will assure the program of sufficient interest in training for the jobs which exist.

After the study of job opportunities and the survey of students' interests have been completed, the **third** step is to initiate the program to be offered by giving preference to those areas with highest priorities.

The future success of our efforts will depend on the instructor and the teaching material available to him. The philosophy that every instructor should be a master of all areas in agriculture with little or no assistance from outside sources leaves much to be desired. Pertinent lesson plans are essential to effective teaching.

Some states have had money to develop curriculum, while others have suffered because of this lack of funds. In each state there are individuals who have skills and knowledge in specific areas. Mini-grants should be made to those individuals with expertise to produce the kind of material that will be needed by the instructor. Mr. Jim Dougan, Assistant Director of Vocational Education at the State Department of Education, Columbus, Ohio, states that program planning is the number one priority of the states. With the dollars getting tighter in each state, we must get more bang from the buck.

The new suggested agribusiness program is outlined below:



To serve the needs of agricultural education best, at least two instructors will be needed in each department. For example, it is extremely difficult for one man to do a good job in cooperative agriculture and production agriculture. Agriculture education leaders need to develop a plan which can be offered in a school with 150 students or less. This is probably the most challenging and difficult plan to develop.

An evaluated criteria will need to be known and used by local and state personnel. A suggested criteria should include the following:

1. Does the program meet the needs of the agribusiness field?
2. Do students have options for possible employment in the agribusiness field?
3. Is the program relevant to education? (adds meaning to education).
4. Is the program flexible to bend, but not break?
5. Is there a minimum of fifty percent placement on the secondary level and seventy-five percent placement on the post-secondary level?

Evil Kneivel was asked what was in his mind just before he jumps his motorcycle over thirteen cars. It is reported that the reply was "Go, man, go!"

Likewise, young people of today who will want to be enrolled in this new program are saying to agricultural education leaders — "Go, man go!" ◆◆◆

Themes For Future Issues

October — In-Service Education
November — Agricultural Education in Transition
December — Post-Secondary Education
January — Career Education: Elementary Programs
February — Career Education: Junior High Programs
March — Career Education: Secondary Program Vision
April — Career Education: Youth Organizations as an Instructional Tool
May — Career Education: Supervised Agricultural Experience Programs
June — Career Education: The School's Responsibility For Placement and Followup

PLANNING LOCAL PROGRAMS OF AGRICULTURAL EDUCATION

Keith Fiscus
Teacher Educator
Agricultural Education
Washington State University
Pullman, Washington


Keith Fiscus

Sound and effective planning is paramount to good programs of agricultural education. Planning provides direction to programs. However, a prerequisite for a good annual and long-time program plan is adequate policies for agricultural education.

It is important to distinguish between policies and the program of agricultural education. Policies are general principles of operation. They are designed to be applicable over a long period of time, and should be developed by lay citizens aided by the advisement of professional educators. The program is the means of carrying out the policies. The program contains the procedures, the ways and means. It is developed by the professional staff with the aid of citizen advice. Sound policies establish the framework for agricultural education and allow considerable freedom for the school administrators and the teachers of agriculture to design methods for accomplishing and fulfilling these policies.

Basically, the development of a program plan indicates a process. The plan should be based on the community needs for the program. Program objectives should be established and procedures for reaching these objectives should be determined. Methods of evaluating program outcomes should be stated.

Problems in Program Planning

Several problems or difficulties are listed. Recent social, economic and political trends have aggravated many of the items mentioned.

Policies of the School and Community

1. Often the school policies pertaining to agricultural education are unwritten and implied.
2. Policies may have been developed without full expression and review of lay citizens.
3. Policies may not be up to date. They may need revision.
4. There may not be any established policies at all.

Needs to be Met

1. The groups of people to be served are increasing. The program may not reflect the broader scope of need.
2. The manpower needs are changing. Many established occupations and jobs are declining. New occupations and careers are emerging.
3. Agricultural education may very well serve as a vehicle to meet other personal and social needs. Examples are programs for the disadvantaged, handicapped, and other groups that are physically, culturally and socially different.

Current Population Trends

1. *Mobility.* People are moving around. Twenty percent of our population are changing addresses each year. Three percent move to another state.
2. *Redistribution.* The population are continuing their movement from rural areas to urban centers, from the central and southern sections to the West, and from the inner city to the suburbs.
3. *Women.* They are working now in greater numbers than ever before. They want to work. They need employment education.
4. *Nature of employment.* There are fewer unskilled jobs. The availability of jobs in agricultural production is limited. The opportunities for jobs for the highly skilled and technical workers in agricultural occupations is expanding.

Policies should be developed by lay citizens aided by the advisement of professional educators.

Changing Trends in Political and Educational Emphasis About School Programs

Some of these trends are listed below:

1. Programs are more people-oriented. The instruction is more individualized, diversified, and outcome-oriented. The teacher must become an educational experience manager.
2. Programs are directing students to college or the world of work. Other school exit alternatives are not acceptable.
3. Programs are being developed as "community laboratory" learning centers. Community businesses are being utilized for career exploration and observation, meaningful laboratories, and job experience centers.
4. Programs are becoming "evaluation" and "accountability" conscious. Many programs are being tested, at the local level, politically, socially, educationally, and financially.
5. Programs are continuing their involvement with students, which includes job placement and a reasonable follow-up. Graduation is no longer an acceptable disengagement with students.

(Continued on next page)

The agricultural teacher is responsible for providing a program that will meet the agricultural education needs of all the people in the community.

A written plan will help the teacher "Prioritize" activities in the program.

Who is Responsible for Program Planning?

A program of agricultural education should be planned and developed by all persons that are affected by it. The agricultural teacher is certainly a central figure, but the plan should not be developed only by the teacher. The school administration, other vocational and academic teachers, advisory councils, and key persons of the community should be utilized.

Why Develop a Plan?

The agricultural teacher is responsible for providing a program that will meet the agricultural education needs of all the people in the community. The teacher must also allocate his time, talents and resources to the various activities in the program. A written plan will help the teacher to "Prioritize" the activities in the program. The following are some advantages that usually result from long-time planning for the agricultural education program.

1. Helps the teacher to assess the needs to be met in the community. It helps him "find his place" in the community.
2. Defines the job of the teacher.
3. Assists the teacher in prioritizing the things to be done. It enables the teacher to concentrate on the more important tasks. It helps him to put first things first.
4. Provides continuity of the program even with a change of teachers. It insures that important objectives will not be abandoned before they are achieved. Emphasis in the department will not shift from year to year without good reason.
5. Makes it easier to sell the program.
6. Leads to better community support.
7. Encourages community involvement. It helps develop the concept of "our" program rather than "my" program.
8. Places the program on a business-like basis.
9. Permits easier evaluation of the program's accomplishments.

How to Proceed with Program Planning?

An effective program plan will provide the answers to three basic questions.

1. Where are we going?
2. How do we get there?
3. How will we know when we have arrived?

It is much simpler to indicate what will provide the answers than what the answers will be. School policies will tell where we are going. The program objectives and procedures will provide the answers to the question, "How do we get there?" Program evaluation will provide the answer as to the basic accomplishment of the policies for agricultural education.

What Might a Teacher do to Develop Long-time Program Planning?

The following procedures will surely assist the teacher in long-time planning.

1. Establish an agricultural education advisory council. With all the current and emerging changes confronting the teacher of agricultural education, this first procedure is strongly recommended.

2. Secure all the help that you can to determine the needs for the program. Utilize fully the advisory council, school personnel, public agencies, business community, as well as members of the groups to be served. Often needs change quickly. The study of program needs should be continuous.

3. Develop written programs. The policies, program objectives and evaluation should be written and stated in objective terms.

4. The program plan should receive the approval of the school administration, the board of education, and the agricultural education advisory council. The finalized program plan must receive the full consideration and study by representatives of the school and community before it can be effectively implemented.

Long-time and annual planning for agricultural education programs is very important and necessary to the development of the program itself. It is a process that enables, and requires the teacher to study school policies; develop a complete and continuous assessment of program needs; develop challenging, attainable, comprehensive program objectives; establish effective and workable procedures, and evaluating criteria that will adequately measure program progress and accomplishments. It may very well be this process that is so vitally important to programs of agricultural education. ◆◆◆

Evans, Rupert N., "How Do They Exit From Your Program?" School Shop, Vol. 29, No. 10, June 1970. pp. 23-25.

Hamlin, H. H., Public School Education in Agriculture. *Danville, Illinois: The Interstate Printers and Publishers, Inc., 1962. pp. 63-81.*

Love, Gene M., "An Agricultural Educator Looks at the Changing Role of Teachers," Amer. Voc. Journ., *Vol. 46, No. 8, November 1971, pp. 58-60.*

Phipps, Lloyd J., Handbook on Agricultural Education in Public Schools, *Danville, Illinois: The Interstate Printers and Publishers, Inc., 1966, pp. 49-78.*

Woodin, Ralph, "Planning Your Vo-Ag Program for the Seventies," Ag. Ed. Mag., *Vol. 44, No. 4, October, 1971, p. 88.*

BOOK REVIEW

THE STOCKMAN'S HANDBOOK by M. E. Ensminger. Danville, Illinois: The Interstate Printers and Publishers, Inc., 1970, 4th Edition, 957 pp., $14.95.

This fourth edition is just as timely, authoritative, practical, easy to read, concise in wording, comprehensive in coverage, and wide-spread in applicability as the previous editions. It contains under one cover much of the down-to-earth information that livestock producers, teachers, high school students, and college students need to have at their fingertips in their work. As such, it should be valuable to teachers and students in vocational agriculture at either the high school or post-secondary level.

The content reflects the changes in agriculture that have occurred in recent years. Previous material has been updated on breeding, feeding, pastures, hay, silage, farm and ranch business and management, buildings and equipment, animal health, selecting and judging, fitting and showing, marketing, meat, wool and mohair classes and grades, law, breed registry associations, breed magazines and sources of information helpful to livestock producers.

For the first time, material has been included on methods of measuring energy with emphasis on the calorie system. Feed composition tables have been revised reflecting National Research Council nomenclature. Balancing rations using the computer is explained. The management area has been expanded to include livestock futures trading, analysis of the livestock business, examination of capital needs, credit, and the role of the manager. Confinement feeding, rest-rotation grazing, and hormonal control of heat are discussed. Also included is a complete listing of the metric system with the appropriate conversions.

Dr. M. E. Ensminger, formerly Chairman, Department of Animal Science, Washington State University, called upon more than 200 reviewers to check the technical accuracy of material presented in the book. Semi-retired, Dr. Ensminger still serves as a consultant in the livestock industry both here and abroad, has been a collaborator on recent USDA publications, and has been named "Distinguished Professor" at Wisconsin State University, River Falls, Wisconsin.

James E. Christiansen
Texas A & M University

COMMUNITY ORIENTED CURRICULAR REVISION

Richard C. Sawyer
Vocational Agriculture Instructor
Westwood High School
Mesa, Arizona

Richard C. Sawyer

The traditional four-year production oriented program of vocational agriculture no longer meets the needs of the students and the community at Westwood High School. The surrounding community has doubled in size to 60,000 people in the last ten years and is expected to double once again in the present decade. This drastic change places the vocational agriculture department in a growing urban community.

There is still some productive farmland in the school district. Citrus production is quite heavily concentrated in the area and the growing urbanization of the community has led to a great increase in horticultural businesses in the community.

Thought had been given to the changing needs of the community with the selection of new and replacement teaching personnel for the vocational agriculture department. Each of the three teachers now composing the vocational agriculture department at Westwood has a different teaching specialty. One teacher is a specialist in agricultural mechanics, one in animal science, and the other in ornamental horticulture.

With these facts in mind, the vocational agriculture teachers, Leo C. Peterson, J. Richard Howard, and Richard C. Sawyer, undertook the task of revising the curriculum of the agriculture department so that it might more nearly meet the needs of the students and the community. A comprehensive survey of the agricultural businesses and agencies in the community was conducted to determine the present and future occupational opportunities in agriculture and to provide insight relative to the knowledges and skills necessary for entry into these occupations. Based on this survey curricular changes could be made to more fully develop and round out the offerings of the vocational agriculture department. Secondary objectives of this survey were to evaluate training station possibilities for occupational experience to determine if there were sufficient training stations where students could be placed.

A map of the school district was secured in order to determine the exact boundaries of the district and to guard against overlooking any geographic area in the district. Using the school district map and the local telephone directory, a master list of all agricultural producers, businesses, and agencies was developed. Further development and revision of the master list was accomplished through the use of local tax rolls of the school district, the Agricultural Extension Office, the Chamber of Commerce, and personal contacts with local businesses and agricultural producers.

An attempt was made by telephone to contact each agricultural business to set up an appointment before the personal interview was held. It was explained to each person interviewed that the information received on each firm would be kept in strictest confidence, and that the only figures cited would be combined with all other surveys.

The first survey instrument was used to identify the types of employment of persons engaged in the particular agricultural business being surveyed, by identifying existing and anticipated job titles, and specified the number of full-time and part-time employees in each. Numbers of employees in each job title five years ago and at present from the survey were also recorded. Utilizing these figures, the trend of agricultural occupations in the area was identified and the curriculum of the vocational agriculture department was updated to meet this trend.

The second form used in the survey identified the knowledges and skills (competencies) in agriculture necessary for a person to enter and progress in a particular agricultural job title. From the summary of the second survey forms, insight was provided as to the content of the courses to be offered in the vocational agriculture department.

After summarizing the results of the survey, the vocational agriculture teachers met with their local advisory committee to discuss the results of the survey and to set guidelines for the re-organization of the curriculum in vocational agriculture. It was found that there had been a great decrease in jobs in the community which required skills in the animal sciences, so the vocational agriculture curriculum was to offer only one course in animal science each year. On the other hand, jobs which required competencies in agriculture mechanics and ornamental horticulture were found to be on the increase. Thus, increased emphasis was shifted to the agricultural mechanics phase of the program and a new course in ornamental horticulture was added. Also added to the curricular offerings was a course in agricultural cooperative education designed to give emphasis to job readiness for students of the vocational agriculture department.

All courses were designed and oriented toward career education in agriculture with guidance being given by the vocational agriculture teachers at all levels of instruction within the department. In addition, the objectives for each course were developed in behavioral terms so that student progress could more adequately be measured and evaluated.

The vocational agriculture teachers at Westwood High school feel satisfied that they are providing curricular offerings which are tuned to the agricultural pulse of the community and that they are meeting the needs of the students and the community they serve.

PLANNING THE STATE AND LOCAL PROGRAMS

E. W. Gustafson
State Supervisor
Agricultural Education
Pierre, South Dakota

E. W. Gustafson

Whenever an individual or an organization has a job, trip, or activity, some planning is carried out. It is a necessary part of our society that we plan for anything that is to be done. In the implementing of programs, whether they are local in nature, or intended for a more expansive organization, they must be carefully selected and thought through.

"Career Education" in agribusiness is broadly defined as "an organized instructional program involving the combination of the agricultural production and management operation and associated services." When setting goals and objectives for programs, it is necessary that a study of local and state needs be made. Collecting data for agricultural occupations has been neglected, and as yet is not adequate to provide definitive data.

Plans, to be effective and realistic, must be based on student needs and job opportunities. The fact that farms are getting larger and fewer must be accepted; also that more people are being employed in the service area has been well documented. In the midwest the Association of State Departments of Agriculture 1971 edition of "Midwest Agribusiness" provides statistics that are most revealing. For example, the report indicated South Dakota has a total employment of 263,000 persons. Of these, 66,000 are family and hired farm workers, and 99,000 are non-farm agribusiness workers. These facts are broad, but they provide information that is helpful in program planning. Of the 66,000 farm employees, 58,000 are farm family workers, and 8,000 are hired. With a work force of this dimension in production agriculture, it is evident that strong, viable, and up-to-date instructional programs are needed.

The non-farm agribusiness employment needs are not so well defined, but one can draw some conclusions that are helpful. The numbers of establishments that provide sales and services are given. As examples, there are 337 farm equipment dealers, 182 garden and retail sales establishments, numerous other retail wholesale and manufacturing establishments for which statistics are available. It is interesting to note that our state has over 650,000 principal machines on farms, and it is estimated there is a 10 per cent replacement of these each year. This information can be found for each of the midwest states that cooperated in this report.

In 1969 a study of "Off-Farm Occupational Opportunities and Training Needs" for South Dakota by Dr. H. W. Gadda and James Pollmann was published. Included in the report are: major employment needs, characteristics of firms, future opportunities, and qualifications for entry and advancement.

The types of information provided through the two above-mentioned publications provide a basis for realistic program planning. Interpretations of the statistics must be made by the individual who has the responsibility for program planning at the local or state level.

There is a continual need for substantive information that will provide data which will give "substance to the selection and priorities of the program goals and objectives."

For local program planning, there are many questions that must be answered. There is no pattern that fits all communities. The population patterns of the midwest states, as an example, show such diversity from one end of the state to the other that the local instructor will find it essential that he make a local survey of the job opportunities and manpower needs. With the various studies as to average age of the farmer in the area or county which are or have been conducted by the Extension Service, planning for production agriculture needs of the community can be realistic.

Planning for non-farm agribusiness programs will also necessitate a survey of the local businesses. In listing the job opportunities, proper coding within the taxonomy of Agricultural Occupations will assist in planning programs of instruction which will meet the needs of the community and pupils.

With all of the planning that is needed for classroom instruction, no mention has been made of the FFA. As the student enters a Vocational Agriculture curriculum, he should be made aware of the opportunities that are available through the incentive awards, contests, etc. that will enrich and enhance his instructional activities. The FFA is a viable and integral part of the total instructional program and will provide opportunities to develop leadership and citizenship qualities as well as provide an outlet for individual interests.

Program planning must be continuous, current, and flexible if the needs of students in the Vocational Agriculture Courses are to be met. It is a challenge for all planning personnel to meet the present needs of agribusiness.

"A PLANNING TOOL FOR LOCAL TEACHERS"

Kenney E. Gray
Assistant to Director
The Center for Vocational and Technical Education and Assistant Professor of Agricultural Education
The Ohio State University

The DELPHI Technique can provide explicit information for planning purposes as well as widescale involvement of clientele groups and educational leadership.

Kenney E. Gray

One of the toughest jobs facing local teachers is that of conducting accurate and rational planning for the development of a local vocational education program. This job is difficult because it involves obtaining and using information from multiple agencies and sources as a basis for establishing needs, and providing education for a wide range of present and emerging occupations for entry-level employment or for further education. All this must be accomplished with limited resources.

— The DELPHI Technique —

A relatively new planning tool which can be valuable to teachers in gaining opinions of clientele groups, employment trends, and other useful data is the DELPHI Technique. This technique may be defined as *a means of securing expert convergent opinion without bringing the experts together in face-to-face confrontation.* This convergent opinion of experts is usually gained through the use of successive questionnaires and feedback, with each round of questions being designed to produce more carefully considered group opinions. The **DELPHI Technique** in its simplest form "Eliminates committee activity among the experts altogether and replaces it with a carefully designed program of individual interrogations (usually best conducted by a questionnaire) interspersed with information input and opinion feedback."[1]

The power of the **DELPHI method** "seems to lie in the fact that it creates some of the most important elements of an ideal debate. It provides an impersonal anonymous setting where opinions can be expressed in clear terms and considered before the voicing of criticisms and counter-opinions—a setting in which the ideas can be modified on the basis of reason rather than prestige and/or a desire to climb on the bandwagon."[2]

The **DELPHI Technique** may be useful in accomplishing a host of planning activities in which group opinions are needed, including: establishing goals or needs to be served; gaining a prediction of trends in various occupations within an employment area; and establishing priorities to be served by the instructional program. Typically, the Technique involves administering two to four questionnaires in succession, with each being an outgrowth of the previous questionnaire, and summarizing the data for conclusions and decision-making needs.

— An Example —

Following is an example of how the **DELPHI Technique** may be used to establish goals for a local vocational education program based on opinions of clientele and other groups.[3]

The **first step** is to identify the groups and individuals from whom opinions are sought. Those selected as respondents in the survey may include representatives from the school board, farm and agricultural organizations, firms with agricultural related positions, the high school faculty, the faculty of post-secondary institutions offering vocational and technical education programs, the division of vocational education within the state department of education, departments of vocational teacher education, and the state vocational research coordination unit. Members of the latter three groups could be particularly helpful in identifying groups and selecting the sample for the study.

The first questionnaire to be developed should be relatively open ended with only sub-categories identified under which respondents may list goals. It may be necessary to define a goal statement and/or give one or two examples under each category. Definitions and examples should be clearly and carefully written because these will strongly influence the responses. Teachers using the **DELPHI Technique** for the first time would do well to enlist the assistance of state research coordination unit personnel to review the format and content of the questionnaire. Participants in the study should be assured that their responses will be kept confidential, and they should be told the approximate number of successive questionnaires with feedback that will be required.

After the questionnaires have been returned, the vocational teacher should sort the goal statements, eliminating duplicate and closely similar statements, and compile a single composite list of goals within each category of the questionnaire.

Questionnaire 2 should include this categorical, composite list of goals with a rating scale designed to solicit the opinions of respondents as to the importance of each goal statement. Any one of several rating scales may be used including a two-point scale of 2, *important* and 1, *unimportant;* or a four-point scale of 4, *essential;* 3, *important;* 2, *useful;* and 1, *unimportant.* Also in questionnaire 2, respondents should be asked to list any additional goals that are not in the composite list.

Questionnaire 3 should consist of the composite list of goals rated in questionnaire 2, a summary of the respondents' ratings of each goal statement, an indication of the majority opinion (if any), and a notation of each respondent's rating of each goal statement. Questionnaires will have to be customized for each respondent to

(Concluded on next page)

Even well established programs require continuous planning to assess employment trends, and to evaluate the success of graduates as a basis for revising and improving the instructional programs.

show his rating within the summary ratings. This may be accomplished by placing an indicator (such as a check mark) above the interval on the rating scale where the response was placed in the previous questionnaire.

Each respondent should be asked to reconsider his rating of each goal statement with respect to whether he would like to revise any ratings after considering the majority opinion of other respondents. If the rating (whether revised or unchanged) remains outside the majority opinion, each respondent should be asked to specify his reasons for remaining outside the majority of opinion.

Questionnaire 4 should provide feedback from questionnaire 3 including the composite list of goal statements, a summary of the group rating of each goal statement, an indication of the majority opinion (if any), a notation to each respondent as to his rating of each goal statement in questionnaire 3, and the minority opinions expressed by respondents who rated goal statements outside the majority opinion. The specific arguments of those in the minority group as to why they remained outside the majority opinion should be passed along to the entire group of respondents. This in effect will accomplish group discussion without face-to-face confrontation where vocal discussants may persuade others on the basis of personality rather than on actual facts as could be expressed in the written opinions.

When questionnaire 4 is returned, the list of goal statements should be analyzed by respondent groups and overall by computing the mean rating of each competency statement and the percentage of respondents which were in the majority opinion for each goal statement. Goal statements that receive highest percentages and unanimity of opinion may be considered priority goals.

It should be pointed out that the number of successive questionnaires and feedback depends on how early in the process that a majority opinion is established. In many cases majority opinion may be achieved with two or three questionnaires.

Are documented opinions and information obtained and utilized in your planning activities? The **DELPHI** Technique can provide explicit information for planning purposes as well as wide-scale involvement of clientele groups and educational leadership. If local planning calls for more information than is available through current sources, try the **DELPHI** Technique. It may be the "tool" needed for your planning job. ◆◆◆

[1]*Olaf Helmer, "The DELPHI Technique and Education Innovation," in* Inventing Education for the Future, *ed. by Werner Z. Hirsch and colleagues (San Francisco: Chandler Publishing Company, 1967), p. 76.*

[2]*John Pfeiffer,* New Look at Education: Systems Analysis in our Schools and Colleges *(New York City: The Odyssey Press, 1968), pp. 521-153.*

[3]*Example based on the author's use of DELPHI Technique in research titled "Competencies Needed by Personnel Engaged in Program Planning in State Divisions of Vocational-Technical Education" (unpublished dissertation, The Ohio State University, 1970).*

BOOK REVIEWS

PUMPS by Perry O. Black. Theodore Audel and Company, a Division of Howard W. Sams and Co., Inc., Indianapolis, Indiana, 1970, second edition, 464 pp., $5.95.

The text begins with the basic principles of physics as it relates to fluids. The second chapter deals with the principles of hydraulics. Both chapters are well illustrated and contain problems and examples along with lead questions and answers.

A chapter is devoted to each of the various types of pumps such as centrifugal, rotary, reciprocating and special service pumps for chemical sewage. Other chapters are directed to such things as hydraulic accumulators, power transmission, hydraulic fluids, and fluid lines and fittings.

This text should give engineers, installation and maintenance technicians, shop mechanics, and the casual reader a complete understanding of the fundamentals and operating principles of pumps, controls and hydraulics. The text is well illustrated throughout for simplicity, but very comprehensive. Yet it is an easily understood guide to every kind of pump of the past to modern complex types of today.

The text is suitable as a high school, vocational school, student, teacher, or personal reading reference.

Curtis R. Weston
University of Missouri-Columbia

CAREERS IN AGRIBUSINESS AND INDUSTRY by Archie A. Stone. The Interstate Printers and Publishers, 1970, Second Edition, 352pp. $5.95.

The second edition of *Careers in Agribusiness and Industry* has been updated from its original printing in 1965. Chapters concerning farm cooperatives, rural electrification, and women in agribusiness have been added. Pictures included are well selected and current.

The author has done an exceptional job in explaining the global importance of agribusiness and the general overview of careers and opportunities in the agribusiness industry. The various agribusiness industries are also treated in turn.

This in not a book about farming, rather it explains the agribusiness careers related to processing farm products, services and professions involved in agribusiness, as well as the distribution of agricultural products.

This book would be desirable for a seminar class of seniors in high school who are looking for the answer to the question, "What am I going to do when I finish college?" The chapters entitled, "How to Prepare for a Career in Agribusiness" and "Agribusiness and You" strongly emphasizes the need for a college education in agribusiness occupations.

Hollie Thomas
University of Illinois

PROGRESS AND CHANGE IN THE AGRICULTURAL INDUSTRY by Gerald W. Thomas, Dean of Agriculture, Texas Tech University, Lubbock, Texas, Wm. C. Brown Book Co., Dubuque, Iowa, 1969.

This book provides a very good overview of the Agricultural industry both past and present with a look toward the future. A look at the world agricultural situation as well as american agriculture is taken. Much recent and relevant data and information is provided which can provide an agriculturalist with material for presentations.

The topics cover a wide range of topics including: The Characteristics of the Modern Agricultural Industry, Progress in the Production of Farm and Ranch Products, Consumer Benefits as a Measure of Progress, A Brief History of American Agriculture, Patterns and Characteristics of Population Growth, The World Food and Fiber Problem as a Challenge to Agriculture, World Land Resources, Water Resources and Climate, Major Keys to Progress in the Agricultural Industry, International Agricultural Development, Major Agricultural Agencies and Services, Agriculture and Natural Resources in the University Environment and Career Opportunities in the Modern Agricultural Industry.

The overview of the Agricultural industry will provide a very good reference book for agriculture teachers and other agriculturalists who need good basic information and pertinent data.

Robert T. Benson
Clemson University

ONE MAN'S EXPERIENCES... —IN A FOUR MAN AGRICULTURE DEPARTMENT

Dale Butcher
Vocational Agriculture Teacher
Benton Central Jr.-Sr. High School
Oxford, Indiana

Dale Butcher

Everyone is familiar with the old adage, "two heads are better than one." No one has ever expanded that about three or four heads; but, it is assumed that there should be an increased advantage. In vocational agriculture we still have many one man departments, and in Indiana several of them are still quite successful. But, the trend in today's school is toward larger student populations and therefore, larger agriculture departments. I have had four years experience in a one man department and I am now teaching in a four man department at Benton Central Jr.-Sr. High School. Believe me, it's different!

Our biggest problems seem to be in organization and operation. The FFA Chapter membership, for example, is bigger than the student population of one of the schools which some of the students formerly attended. A large and extremely active chapter creates problems in bookkeeping and reporting of activities. It seems that when you increase your size by five times, your problems increase by twenty times.

Another problem is the lack of personal contact with a small portion of our students. In a small department of thirty-five it was possible to know every boy's parents, his home situation, and his vocational goals. Even the boy who was shy or a loner could be given enough special attention to discover his problems. In a larger school, even with more teachers, it is possible for a boy to lose himself in the crowd of students, making it difficult for the Vo-Ag teacher to be aware of his personal situation. To combat this difficulty we include all of our students in as many activities as possible. We also attempt to reach them through our

A larger department can offer a wider range of curriculum choices, and therefore, a better chance to meet student needs.

curriculum, which offers a wide range of courses from which the student may choose. I feel that with the assistance of the other members of the vocational staff and with our acclimation to the school situation this problem can be completely overcome.

Size is also a disadvantage when, as in Indiana, the state FFA Association has not provided for equal representation for larger chapters by re-apportioning the delegates to the state FFA convention along lines similar to the national FFA Association.

One of the major advantages of multiple teacher departments is the close association with other agriculture occupations instructors, which gives a feeling of comradeship and a sense of responsibility. I know from my own experience that it is easy to become discouraged when confronted by a problem and you must face it with little or no help or understanding. But with the assistance of another teacher with similar training and experiences, the situation is more easily resolved.

A second advantage is the large number of agriculture occupations students with varying talents and interests. Everyone desires participation in as many activities as possible by as many students as possible. Small departments can't manage to have different contestants in each of the approximately fifty contests held each year in Indiana.

Finally, a larger department offers a wider range of curriculum choices, therefore, a better chance to meet student needs and providing an opportunity for teacher, as well as student, specialization. Today's student wants and deserves more than the traditional Agriculture I, II, III, and IV. Only an up-to-date, flexible curriculum can meet those needs.

At Benton Central our objective is to help people. We specialize to provide the required quality of aid. Our goal is to serve any person in the community who has a problem related to agriculture, and we use our facilities, experience, equipment, time, and energy to achieve that end. Our course offerings are conceived and designed with the guidance of the Agriculture Occupations Advisory Committee, composed of local, interested residents. We also cooperate with other local agriculture agencies when common areas of interest exist.

One member of the department serves as departmental spokesman and production specialist. Another acts as agriculture mechanics specialist, while the third and fourth are horticulture and agriculture business management specialists. Two of the instructors are FFA advisors, while one is the Young Farmer Chapter leader. The department also employs specialists in areas such as adult class welding and mechanics.

Our continuing education program consists of several courses in agriculture mechanics. The Young Farmer Chapter is composed of married couples meeting monthly in the homes of members and is well received by those participating. A series of ten production agriculture classes is offered annually. The Advisory Committee determines the course content and specialists are obtained to speak in most areas to provide the expertise demanded by the class members. Eight percent of our FFA membership is composed of out-of-school or alumni members.

With the advantages I have mentioned and the use of our own and other specialists, we at Benton Central have been able to more nearly meet the agriculture education needs of the people of Benton County. ◆◆◆

EXPANDING AGRIBUSINESS PROGRAMS IN WISCONSIN

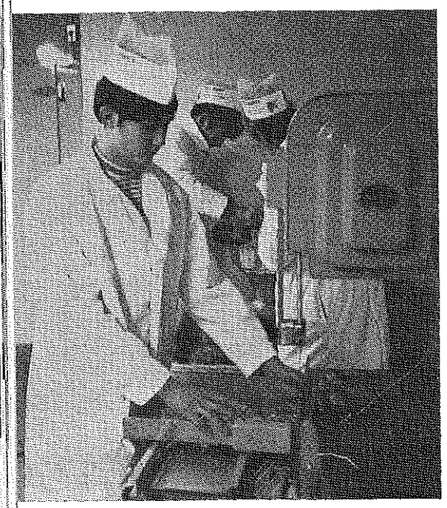
F. J. Doering
Consultant, Agriculture Education
Wisconsin Department of Public Instruction

F. J. Doering

It was apparent to us that an increasing emphasis be placed on instruction for both boys and girls, farm and non-farm, who were interested in non-farm agricultural occupations.

In October, 1967, the Wisconsin Department of Public Instruction appointed a pilot program committee[1] in vocational agriculture composed of personnel representing vocational agriculture instructors, the Department of Public Instruction, and the University of Wisconsin at Madison, Platteville, and River Falls. This committee was charged with the responsibility of drafting guidelines, initiating proposals from local high schools, and selecting programs which test a new idea in a realistic setting. Schools were encouraged to be innovative and imaginative in their proposals.

Though we consider basic production agriculture to be the foundation of our program, we are very cognizant of the fact that "agriculture is more than farming." Agri-business is an industry offering unlimited opportunities for gainful employment and advancement in the business of collecting, processing, and marketing the products of the farmer.



Meat Industry students in the inter-school program at Whitehall work in the meats laboratory.

More than thirty schools responded with proposals for pilot programs in early 1968. From these thirty proposals, the pilot program committee selected nine programs involving twelve high schools, to operate as a pilot program for a period of three years. A very brief description of each program is as follows:

1. **Waterloo**—Ornamental Horticulture
2. **Verona**—Agriculture Metals Fabrication
3. **Cameron** — Agricultural Supply, Sales, and Service Occupations
4. **Rosholt**—Agri-Industry in Meats[2]
5. **Oshkosh**—Agri-business in a large city high school
6. **Plymouth** — Cooperative Inter-School Vocational Agriculture Program. Would involve Oostburg and Cedar Grove Schools which had no agriculture program.
7. **Barron** — Feed Mill Operators Course
8. **Janesville Craig and Parker**[3] — Agri-business in a city school system
9. **Jefferson** — Independent Study Program in Agri-business

All pilot schools were visited by the Pilot Program Committee during the second semester of their first year in operation. Visits were made to the schools to discuss problems they are encountering, to serve as a sounding board for any new ideas, and in general to note the progress (or lack of it) in the program. The committee carefully refrained from dictating policy to the schools making it very clear that this pilot program was **THEIR** program.

Flushed with the initial program successes, the Committee plunged onward seeking additional proposals for 1969. Again, we were successful in interesting a number of schools in such proposals from which the Committee selected five programs involving nine high schools.

1. **Bloomer** — Field Conservation — senior course
2. **Green Bay East** — Agribusiness in a City School — no farm students enrolled in the high school
3. **Sauk-Prairie** — Cooperative Education Program in Agri-business for Educationally Disadvantaged Students
4. **Southern Door**[4] — Natural Resources and Recreation
5. **Whitehall, Independence, Arcadia, Blair, and Taylor**[5] — Meats and Meat Industry Inter-School Program

At this juncture the pilot programs were experiencing varying degrees of success with the majority doing very well. Only two seemed to be heading into extreme difficulties with one of those being our multiple school program. Our evaluation indicated we should explore other areas and in 1970 we again appealed to local schools for proposals in agriculture with special emphasis on the disadvantaged. The Committee approved eight new programs in eight high schools:

1. **Denmark and Reedsville** — Two Similar Cooperative Education Programs in Feed, Seed, Fertilizer and Agri-business area. (Disadvantaged)
2. **Lake Geneva** — Special course in agriculture for students with reading problems.
3. **Oregon** — New opportunities in a Rural-Urban Community (NORUC). Cooperative Education for Disadvantaged Students.
4. **Waupaca** — Horticulture program for low ability students
5. **Wabeno** — Cooperative Education Program for Disadvantaged in Forestry.
6. **Antigo** — Agriculture Mechanics Program — Hydraulics
7. **Delavan-Darien** — Industrialized Learning Program Related to Agriculture Sales and Service

New Pilot Programs added in 1971 included the following:

1. **Franklin** — Ornamental Horticulture in a city system. No previous agriculture program in the school
2. **Middleton** — Agriculture program reactivated after a three year lapse — emphasis in Horticulture-Conservation
3. **Waupun** — Food Processing-Canning Industry
4. **Bowler** — Forestry Occupations Program (Disadvantaged)
5. **Pulaski and Seymour** — Agri-Business Cooperative Education Cluster (Disadvantaged)
6. **Gale-Ettrick** — Eight Week Summer Program for Disadvantaged Students in Forestry-Conservation

Space prevents us from giving anything more than a very brief statement of each of the pilot programs. As indicated above, those programs are experiencing varying degrees of success. It was obvious to the Committee from the very beginning that not all programs would be successful and that some would indeed point out how programs should **NOT** be conducted. It would appear at this time that only two have been outright failures with perhaps one or two more on the borderline. One of these programs was an inter-school program and points to some interesting observations:

1. The cooperating schools in an inter-school program must have one person charged with responsibility for the program. This person should probably be the local vocational coordinator.
2. School calendars must be alike.
3. Transportation problems must be carefully worked out.
4. Guidance people must be involved. Absolutely vital if one or more of the schools offer no agriculture in the school itself.
5. Administration and Boards of Education must totally support the inter-school program.
6. The agriculture instructor must be given adequate time to conduct and establish the program. Fifteen of our pilot schools became multiple teacher departments.
7. Administrative duties, such as Principal, and agriculture duties by the same person are not compatible and will result in the failure of the agriculture program.
8. Our observations indicate that a certified vocational agriculture instructor be employed to conduct a pilot program. This is true even in such areas of instruction as conservation and forestry.
9. While experience is undoubtedly preferred, new teachers can be very successful in new and innovative programs. Perhaps this is because they have not learned all the reasons why something might fail.

Dr. John Thompson, Associate Professor, Department of Agriculture and Life Sciences, University of Wisconsin-Madison, and his graduate assistants have researched the pilot programs in each year of operation.[6] Some very interesting observations have been made to this point:

1. While our regular vocational agriculture programs in Wisconsin attract about 20% non-farm students, the pilot programs have attracted from 65-70% non-farm.
2. Students enrolled in the pilot programs on an elective basis and for exploratory reasons. Only one student in three had a definite career commitment.
3. Pilot programs have generally been added in schools which showed vocational agriculture enrollments stronger than the growth of the male population of the school.
4. Students without previous occupational experience tended to enroll for exploratory reasons while students with occupational experience had a more definite career objective.
5. Girl enrollment in the pilot programs has increased from 4 to 11 per cent.
6. Farm students make higher grades in the pilot programs than do non-farm students.

It is the feeling of the Pilot Program Committee that the Wisconsin programs are indeed pointing the way for the future of vocational agriculture in this state. There is still much to be learned as we seek additional proposals for the school year 1972-73. Our emphasis this year will be on programs involving team teaching, intra-disciplinary programs, relating agriculture to the career education model, additional inter-school programs, cooperative education programs in production agriculture, individualized instruction, disadvantaged and handicapped, and any other new or innovative programs a local school may wish to conduct.

The pilot programs have been new and exciting. We look forward to the continuation of this program. Our research now must concentrate on determining the effect of pilot programs on the total program of vocational agriculture in Wisconsin. ◆◆◆

Bloomer students in their pilot program in Field Conservation spend 90 per cent of their time in the outdoor classroom.

1. The Agriculture Pilot Program Committee consists of:
   Dr. John Thompson, Chairman — University of Wisconsin, Madison
   Dr. Gerald Matteson — University of Wisconsin, River Falls
   Dr. Robert Campbell — University of Wisconsin, Platteville
   Donald Triebensee, Instructor in Agriculture, Rice Lake
   Floyd J. Doering, Department of Public Instruction, Madison
2. Romundson, William T., Pilot Program in Agricultural Products For High School Students. *Agricultural Education Magazine*, February 1970.
3. Staller, Bernard, Integrating Curriculum With Industry Needs. *Agricultural Education Magazine*, November, 1971.
4. Hilbert, Al, Will We Develop More Multiple Teacher Departments. *Agricultural Education Magazine*, December, 1971.
5. Mikunda, Gerald and Peterson, David E., Meat Industries — Agribusiness Pilot Program. *Agricultural Education Magazine*, October, 1971.
6. Thompson, John F., Pilot Programs in Vocational Agriculture, An Analysis of Student Characteristics No. 1-4., Department of Agricultural and Extension Education, University of Wisconsin, Madison.

Waupaca students participate in a special needs Horticulture program.

A GUIDE FOR PLANNING ADULT EDUCATION PROGRAMS FOR ONE-TEACHER DEPARTMENTS

Harry E. Frank
Assistant Professor
Department of Vocational and Adult Education
Auburn University
Auburn, Alabama

Harry E. Frank

Vocational Agriculture teachers have often wondered about what is "enough" in terms of adult education programs. Many times they have heard about the good jobs being done in other places where all persons interested in production agriculture or agriculturally related businesses have been "tearing down the door" to get into the adult learning activities. Or they have heard of the tremendous numbers enrolled in other places and have felt as if they should be "backing up to get their pay check" because they had been working with a small group of agriculturalists. **Expectations should be based upon the existing conditions in a particular situation rather than upon what others are doing.** It is high time that some guidelines be developed to help the teacher determine what "ought to be" done in the adult education component of the total vocational agriculture or vocational agribusiness program.

When we ask the question "What Should One-Teacher Departments Do about Adult Education?" we may need to use some type of criteria rating sheet to enable us to see the many facets of the situation which may influence what would be appropriate adult programs. We have been using this approach with our land judging and other contests for years in vocational agriculture.

Adult education activities now vary from little or no activities to extended, effective programs. Many programs are conducted on a regularly scheduled basis. Other activities may be of concern only when technological advances are necessary for meeting the challenges of a competitive business. Instruction often is individualized and not highly structured. Some adult education programs have used the mass media—radio, television, magazines, and newspapers as a way to aid their learners. All of these procedures may be effective in getting the job done in providing adequate adult education. Several combinations or types of instruction will often be needed to provide what "ought to be," depending upon local conditions.

Several conditions should be investigated as a basis for determining the extent and type of adult programs for a particular situation. These factors interact to determine the appropriateness of adult education that should be provided through local vocational agriculture or agri-business departments. The interaction of positive and negative influences such as time for adult education, physical resources, administrative support, etc., combine to provide a unique local situation. Although there are other major factors involved, commitment, resources and teacher competency will be used here since they have been identified as being related to effective adult programs through research.

It is suggested that each vocational agriculture or agribusiness teacher take an inventory of his local situation in terms of positive or negative strengths of these conditions periodically to help verify his opinion of what his adult program "ought to be."

Adult Education Competency of Teacher

	Negative	Positive
Experience in planning and teaching adult education	/_____/	
Credit courses in adult education	/_____/	
Perception of teacher's role in adult education	/_____/	
In-service training in adult education	/_____/	
Utilization of advisory group	/_____/	

INVENTORY OF CONDITIONS RELATING TO VOCATIONAL AGRICULTURE ADULT PROGRAMS

Commitment or Legitimacy

	Negative	Positive
Federal Support	/_____/	
State Support	/_____/	
Local Support	/_____/	
Teacher Commitment	/_____/	
Support from other adult education programs	/_____/	

These conditions as determined by the teacher will indicate the type of programs most suitable for local departments. The programs recommended to fit the situation and the extent to which the programs should be implemented may be indicated on a form such as the following.

RECOMMENDED ADULT EDUCATION ACTIVITIES FOR THE VOCATIONAL AGRICULTURE DEPARTMENT

Type of Program	*Extent of Emphasis*
A. Enterprise Series (regular meetings on livestock, dairy, crop production, product displays, etc.)	NONE LITTLE MODERATE MUCH
B. Current Interest Series (regular meetings on items of immediate interest—income tax, disease control, current market conditions, etc.)	NONE LITTLE MODERATE MUCH
C. Individual Consultive Services (consultive activities in visits and conferences with producers, processors, distributors, etc.)	NONE LITTLE MODERATE MUCH
D. Occupational Seminars with Special Groups (cattlemen, crop producers, dairy, distributor groups, etc.)	NONE LITTLE MODERATE MUCH
E. Special Skill Development Groups (farm shop skills—welding, painting, electrical work, etc.)	NONE LITTLE MODERATE MUCH
F. Television and Mass Media Based Instruction (learning experiences centered around mass media, television observation and program discussion, self study series, articles in magazines, papers, etc.)	NONE LITTLE MODERATE MUCH

(Concluded on page 21)

MANAGING THE TOTAL AGRICULTURAL RESOURCES

Harold R. Binkley
Teacher Education
University of Kentucky

Harold R. Binkley

In the past teachers studied the production farming of the home farms of their students — these home farms were the laboratories for students to learn farming, through experience programs called *farming programs*. How can the teacher organize and use (manage) the total agricultural resources of the community to support his new training program in agri-business and natural resources education?

First, the teacher must identify all of the agricultural and natural resource businesses, industries, agencies, and organizations in his community. A comprehensive local survey can include such items as name of business, products sold or services rendered, number of employes (full-time and part-time), source of trained personnel and part-time or seasonal help, replacements during the past five years, projected number of employes for the next five years, what is needed in training program for employes, and opportunity for placing one or more students for an occupational experience program (based on employer having a good understanding of the potential training program).

Second, the teacher must decide from the results of his survey how he will organize to manage — to use the total agricultural resources to support his local instructional program. In fact, the survey results should tell him in a true sense what his instruction program should be. Here is where the teacher becomes a different kind of a teacher — here is where he becomes a MANAGER. And, the MAN in manager is the key and this man is the teacher. The students reside in the local community, so training possibilities at the local level determine in a true sense the training program. After the students are trained they may move to where the job opportunities are.

The teacher must have the support of the owners and operators of the agricultural businesses, industries, agencies, and organizations in the community. This is where his local advisory group can be used, to help him decide on the program, and secure the total support of the people in community for the program, in all of its aspects. If there are enough training stations to support a program in ornamental horticulture — go horticulture; if there are enough training stations to support sales and service — go sales and service; if there are enough training stations to support agricultural mechanics — go agricultural mechanics. But, if the training stations possibilities are diversified *don't give up*.

The Course of Study

Once the training station possibilities have been determined, the teacher is prepared to determine his course of study. If the training stations are diverse then the teacher will want to design his class instruction to meet the diversity of training to be provided. The class instruction should be made of two major parts: 1) Group instruction and 2) individual (or individualized instruction. For a typical high school at the junior and senior level, the group instruction might include such instructional units or modules as:

1. Opportunities in Agri-business and Natural Resources (advance level)
2. Orientation to the Training Program in Agri-business
3. Selecting and Arranging for Experience Programs
4. Keeping Records on Experience Programs
5. Organization and Operation of Agricultural Businesses and Industries
6. Agricultural Mathematics
7. Human Relations and Personality Traits

By dealing with these units with the entire class, the teacher should secure those learnings *needed by all students*, regardless of the type of agricultural occupations the students would be training for. Perhaps the teacher might devote 50 to 60 percent of the total instructional class time during the year dealing with the *group* instructional units. And, these should be dealt with at the appropriate time during the year.

The remaining 40 to 50 percent of the class time should be devoted to *individual study*, during which time each student should study to develop the knowledges and understandings he will need to perform the jobs and carry out the responsibilities he will have in carrying out his experience program at his training station. Where does the teacher go to get help for his students for this individual study — diverse as they may be — to develop the knowledges and understandings for the many different training stations where the students will have their experience programs? Many teachers have developed their own individual-student study-guides, based on local needs. Several states have made a start in developing individual study guides. Among these states are Kentucky and Texas. Kentucky has 26 such guides that are being tried by teachers on a pilot basis. Reports from 15 teachers in five states is encouraging.

Individual-Study

Teachers of agriculture, as a whole, have not been successful with individual student study. And have, for the most part, resorted to group instruction. This is not saying that individualized instruction can not be effective. It is saying (in a sense) that teachers must have materials for the individual use of students in the classroom based on the jobs and responsibilities each student will have at his training station, diverse as this may be. The teacher will need to think through how he will organize his class for individualized study, and carefully orient the students to the organization and procedure to follow. And, the students and the teacher must develop "a know how" and "an enthusiastic spirit" for the individual study. Experienced teachers who have used individual study guides report that a ten-day block of time for individualized study is about the maximum the teacher should use before re-

(Concluded on page 17)

Much of the success of students of agriculture in the years ahead will be dependent upon their ability to identify and solve problems individually.

Howard C. "Duke" Fetterolf

Pioneers in Agricultural Education:

HOWARD C. FETTEROLF

H. C. Fetterolf, pioneer in agricultural education in Pennsylvania and long-time leader in vocational agriculture in the United States, retired September 6, 1957 as Chief of Agricultural Education in the Pennsylvania Department of Public Instruction. His retirement, sixteen days after his seventieth birthday, closed almost half a century of service to education.

"Duke" Fetterolf, as he was known to his host of acquaintances throughout the U.S.A., was reared on a farm at Mifflinville, Columbia County, and was educated in the public school system to which he later dedicated his life's work. He was a graduate of Mifflinville High School, Bloomsburg State Teachers College, and Pennsylvania State College where he received B.S. and M.S. degrees in Agricultural Education.

His career in agricultural education began in the fall of 1914, when he organized the first vocational school in Pennsylvania. This was at Elders Ridge, Indiana County, and offered three courses: agriculture, home economics and college preparatory. He was the school's director and because of his success at Elders Ridge, was invited to enter the Department of Public Instruction to become Pennsylvania's first state supervisor of vocational agriculture.

As part of the program of vocational agriculture, Mr. Fetterolf in 1929 directed the organization of FFA chapters in the vo-ag departments of Pennsylvania's high schools. He served as the FFA's State Adviser until his retirement. During this period the state reached a peak of 289 high school vo-ag departments with 289 FFA chapters. Of the 12,000 vo-ag pupils enrolled at that time, 11,000 held membership in FFA. Mr. Fetterolf had a resolute devotion to the FFA organization. This was much in evidence in his unswerving determination to elevate rural life through the FFA movement. He felt also that **FFA must be a necessary part of systematic instruction in agricultural education.** To this end he originated and developed leadership training schools for FFA Officers and Vo Ag Teachers in every geographic area of Pennsylvania. This effort has been continued and expanded by his successors.

Mr. Fetterolf believed that Agricultural Education people should be originators of ideas, and equally well developers of the same. To see this man in action was to know that he had mastered the art. He further believed that Agricultural Education must constantly address itself to instruction which resulted in a practical application for the learner. **He was impatient with efforts which looked like "excuses for the real thing."** There grew out of this philosophy the establishment of 12 in-service teacher education centers on a calendar year operational basis. These were located strategically throughout the state to the extent that "the opportunity to up-date one's self was available somewhere to every teacher of Vocational Agriculture."

Other lasting marks of this man's contribution in Agricultural Education were his kind, strong, fatherly advice in times when it was needed, his encouraging analysis of problems in times of discouragement, and his total development of the student project program method to include a system of supervised Occupational Work Experience.

Following World War II, Mr. Fetterolf organized young farmer classes for persons beyond high school age. These classes contained many returned GI's enrolled under the veterans training program, but between 30 and 40 per cent of the enrollment consisted of former vo-ag students who were not veterans but wished to continue instruction they had found helpful in their high school days.

Mr. Fetterolf served in many capacities. For 14 years he was a member of the Pennsylvania State Farm Show Commission, for 17 years a member of the Farm Security Administration State Committee, for five years a member of the State Rural Electrification Committee, and for three years a member of the National Advisory Council of the Future Farmers of America.

For many years he was a prominent member of the American Vocational Association. He was AVA vice president, representing Agricultural Education for three years, and was the national president of AVA in 1950-51. He served as chairman of the AVA Committee on Institutional On-Farm Training for Veterans, was a member of the AVA Committee on Universal Military Training, the AVA Committee to Administer the Sears-Roebuck Agricultural Foundation Fund, and for 12 years a member of the National Committee on Judging Contests.

He also was a member of the National Education Association, the Pennsylvania State Education Association, and the Pennsylvania Vocational Association. He was elected to Kappa Phi Kappa Honorary Education Fraternity, and Alpha Tau Alpha Honorary Agricultural Education Fraterni-

(Continued on next page)

James C. Fink is State Supervisor of Agricultural Education, Bureau of Vocational, Technical and Continuing Education, Department of Education, Harrisburg, Pa.

James C. Fink

ty. He was a member of the Masonic Fraternity, the Consistory, and the Shrine of North America. For 36 years he was a member of the Camp Hill, Pennsylvania Presbyterian Church on whose board of trustees he served for six years. He also was a member of the West Shore Country Club for nine years.

Uncle Sam in both World Wars enlisted his knowledge of Agriculture Education and farming in Pennsylvania. In World War I he assisted in organizing the Pennsylvania Division of the United States Boy's Working Reserve which trained 5,000 city lads and put them on farms to help supply farm labor, living either with a farm family or in labor camps from which they went to work by the day as needed.

In World War II, the federal government named him Director of the Food Production War Training Program. In the five years he served in that capacity, this program gave special instruction to 17,000 Pennsylvania farmers — one of every ten farmers in the state. For farm machinery repairs alone, 582 evening classes were organized to help keep in operation precious farm equipment, irreplacable because of wartime scarcities. Several hundred classes in food production also were organized to increase production from the same acreage.

During the war Mr. Fetterolf also served as the Department of Public Instruction's representative on the State Victory Garden Committee and was a member of the Sears-Roebuck Foundation's Committee to Stimulate Food Production.

Probably one of "Duke's" most outstanding achievements in vocational education was the successful administration of the **"institutional on-farm training program"** conducted in Pennsylvania. He was instrumental in initiating this program which resulted in the rehabilitation and training of approximately 10,000 GI's who had entered the occupation of farming. The pattern set up in Pennsylvania for this program was adopted in 41 other states.

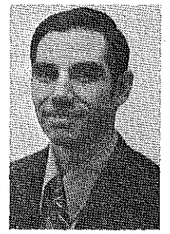
On October 12, 1952 the American Forestry Association presented Mr. Fetterolf with a bronze plaque and life membership in the Association, for his outstanding state programs in reforestation and conservation.

Familiar with his meritorious record in these wartime assignments, Uncle Sam called upon him again in the reconstruction period following the end of hostilities. Representing Agricultural Education, he was a member of the American Education Mission to Korea in 1948, where under the auspices of the U. S. Department of the Army the Mission conducted two eight-week institutes in teacher training for 625 Korean teachers. In 1949 the Department of the Army sent him to Germany as a consultant in Agricultural Education.

These assignments gave Mr. Fetterolf many experiences of unusual interest. He was invited to return both to Korea and to Germany. He declined, however, so that he could retire on September 6, 1957 to his 160 acre farm at Mifflinville which he owned and managed for 40 years.

While Mr. Fetterolf has been deceased for six years, the writer in this instance feels that he would like us to remember his often used statement, "Remember boys the latch string at Creekwood Farm will always be out . . ." ◆◆◆

NEW BOOK REVIEW EDITOR



James P. Key

Dr. James P. Key, Assistant Professor of Agricultural Education at Oklahoma State University, has accepted the position as Book Review Editor for the *Agricultural Education Magazine*. He holds a B.S. Degree from the University of Tennessee, an M.Ed. from Virginia Polytechnic Institute, and an Ed.D. from North Carolina State University in Occupational Education. He taught vocational agriculture at Shenandoah County High School in Virginia, was Graduate Teaching Assistant while at VPI and NCSU, and served as a Pilot and Training Officer for five years in the USAF.

Dr. Key's professional publications include manuscripts on "Occupational Choice," "Career Development," "Orientation and Occupational Theory." He served as Chairman of a major committee which participated in the Institute on "New Vocational Education Concepts and Programs in Metropolitan Areas," held at Colorado State University in February, 1970. ◆◆◆

(Binkley — from page 15)

turning the class for a period of group instruction.

Productive individual study is a challenge in itself. And if met, will make a significant contribution to the future success of students as adults in any vocation. If teachers can develop in students the ability to identify significant problems for study related to their occupational experience programs and then to solve them individually, they will be making a major contribution to their being able to adjust to the changes in agricultural occupations and their employment in the years ahead. Much of the success of students of agriculture in the years ahead will be dependent upon their ability to identify and solve problems individually.

Training Plans

Each student should have a training plan developed cooperatively by the student, the teacher, and the cooperating employer, which states the terms of the training employment and spells out the jobs the student will perform and the responsibilities he will have in his experience program. As stated earlier, the individual study (at school) for each student should focus on developing the knowledges and understandings needed to perform the jobs and responsibilities which the student is to have at the training station.

The Summary Challenge

Programs in agri-business and natural resources education in the next half century must break with the past — the resources of the home farm and be organized to capitalize and use the total agricultural resources of the community. The break through must be accomplished during the decade of the 70's. The teacher of agriculture must develop his skill in organizing and managing the total resources to support his local programs. And, he must develop his skill in organizing and managing individualized instruction to meet the diversity of the training of his students. This poem summarizes the challenge:

There is still to man a new frontier,
Let none believe there is no virgin soil
For venturing, no land for pioneer
To prove with plow or harrow. Fruit of toil
Beyond the dream of harvesters remains. ◆◆◆

TRAINING NEEDS FOR AND OPPORTUNITIES AVAILABLE IN THE NON-PRODUCTION AGRICULTURAL OCCUPATIONS

Don Liebelt

Don Liebelt
Instructor, Agribusiness and Natural Resources
Green Bay East High School
Greenbay, Wisconsin

Gerald R. Matteson
Associate Professor
Department of Agricultural Education
Wisconsin State University
River Falls, Wisconsin

Gerald Matteson

In the dynamic field of agriculture continual change is inevitable. This is a fact which high school vocational agriculture teachers and teacher educators in agriculture have had to face for years. The problem is even greater today as the agricultural occupations become more numerous and the high school vocational agriculture teacher concerns himself with the training of persons for the non-production agricultural occupations in the areas of service, processing and marketing.

If the high school vocational agriculture program is to meet the vocational needs of its enrollees it becomes obvious that the answer to two questions must be ascertained; **first,** what are the occupational opportunities available to youth entering the world of work and **second,** what training is necessary for persons desiring employment in these occupational areas. In an attempt to obtain this kind of information a study was conducted for the metropolitan Green Bay area in an attempt to identify occupational opportunities and training needs for off-farm agricultural occupations. It was hoped that information from this study might be used in the evaluation and possible modification of the vocational agriculture program at Green Bay East where presently 135 students are enrolled in vocational agriculture, of which none live on the farm.

Information was obtained by personal interviews with employers of 86 off-farm agricultural businesses, industries and services in the Green Bay metropolitan area. The study revealed the following:

1. The 86 agriculturally related firms surveyed in the Green Bay area employed a total of 2,905 workers of which 2,187 were required to have competencies in agriculture. The livestock and poultry occupational cluster contained 23 percent of the firms involved. A total of 256 job titles were identified in the firms surveyed and the livestock and poultry cluster had the largest number with 90. There is expected to be a 5 percent increase in workers needing agricultural competencies and a 10 percent increase in job titles in the next five years.
2. There was a high demand for employees with agricultural competencies, with the highest number of employees needing competencies in animal science, followed by plant science, agricultural mechanics and automation, and agricultural business management and marketing. The greatest number of jobs available overall were in the skilled and semi-skilled levels. There will also be a substantial number of workers needed in the professional, managerial, sales and technical levels. There will be **little to no opportunity** available in the unskilled job area.
3. Employees were generally paid in direct relation to their background of training and experience. The professional level paid the highest monthly beginning and maximum salaries, and the ornamental horticulture cluster paid the lowest beginning salaries. Employers stated that 86 percent of their employees needed at least a high school education and 16 percent needed a college education to qualify for their positions. On-the-job training and firm or industry schools were the two methods most largely used to upgrade employees' skills and competencies.
4. Employers indicated that they had no preference as far as residential background for 66 percent of their employees, while they did prefer 30 percent of their employees to have a farm background.
5. There was a wide range of present ages of employees in all occupational clusters, while the average minimum age for entry into most job levels in all clusters was approximately 20 to 25 years of age. The major limitation to job entry was the minimum and maximum entry age. An employee over 55 years or under 20 years of age will frequently have difficulty attaining a job. The only limitation for job entry other than age was that employees must qualify for and pass a civil service entrance examination to gain employment in state or federal government occupations.
6. Fifty-four of the 86 employers indicated that they would be willing to cooperate with area high schools in cooperative work experience programs for the students in vocational agriculture classes. The most often mentioned reason for not cooperating in such programs was that insurance companies would not

(Concluded on page 21)

Since job experience is desired, the cooperative method in education must become more prevalent in our vocational agriculture programs.

Employees were paid in direct relation to their background of training and experience.

"OUTDOOR RECREATION AND APPLIED ECOLOGY" DEMONSTRATION SCHOOL CENTERS

Travis E. Hendren
Consultant, Occupational Programs
N.C. Department of Public Instruction
Raleigh, North Carolina

Travis E. Hendren

In studying our Agricultural Education curriculum needs in North Carolina last year, we decided there was a definite need for a course offering in the area of ecology or environment. It was also indicated there were a great number of job opportunities in the area of Outdoor Recreation.

With this in mind, during the past summer we brought in seven teachers of agriculture, secured the services of Dr. Douglas Bryant, teacher trainer at N. C. State University as Coordinator, and developed a curriculum guide. The teachers suggested combining the two areas we had considered, so we came up with the course title, "Outdoor Recreation and Applied Ecology." A limited number of curriculum guides were printed and three four-day workshops were held for teachers who were planning to offer the course this year. As a result, we have the program being offered in 39 schools with a pupil enrollment of 1,122.

In working with these and other teachers who are interested in offering the course, we have come up with a proposal for establishing "Demonstration School Centers."

PURPOSE

The purpose of this new project is to select eight "Demonstration Schools," one in each educational district in the state, and set up a three-year model program to teach students skills in the areas of outdoor recreation and applied ecology.

North Carolina with it's "Variety Vacation Land" theme, coupled with increased industrialization which promised shorter working hours, cannot help but give emphasis to new developments in the areas of natural resources in the state for recreational purposes. Such a trend is expected to increase job opportunities in the areas of "Outdoor Recreation and Applied Ecology."

This plan, when implemented, should result in one school in each of the eight educational districts having in operation a program in "Outdoor Recreation and Applied Ecology" with the necessary learning stations developed, including materials, supplies, and equipment needed in the program. Also, the teacher should be competent in handling the learning activities included in the course, knewledgeable about the jobs available in this area, and informed concerning schools and community resources in a geographical region. The teacher in such a program can serve an important in-service role with other teachers in the district who are starting similar programs.

OBJECTIVES

Each demonstration center, at the end of three years, should be able to identify and demonstrate:

—types of learning activities appropriate to the geographical area.
—kinds of equipment and supplies needed to support given learning activities.
—kinds of teaching materials needed in teaching at various learning stations.
—types of facilities needed to teach at given learning stations.
—kinds of related work experience opportunities that exist in the geographical area.

In order to accomplish the above major objective the following strategies are proposed:

(1) Provide in-service education which will enable teachers to plan a local program and become competent in coordinating the program in a local school.

(2) Assist LEA personnel in a data collection effort which will provide information on available resources for instructional purposes and placement opportunities.

(3) Provide continuous consultant assistance to the eight centers relative to (a) identifying instructional areas, (b) selecting instructional supplies, equipment and materials, (c) utilizing of school and community resources in the program.

(4) Obtaining articulation of program with K through post secondary institutions, including Community Colleges, Technical Institutes, Colleges, and Universities.

ARTICULATION

Articulation of this program of "Outdoor Recreation and Applied Ecology" with K through the post secondary institutions will be a strong feature of this proposal. The plan for such articulation will be as follows: (1) Coordination and cooperation plus in-service training for teachers of grades K through 6 so they may be able to make their students aware of such programs in the world of work. This would include visitation to "Demonstration Centers." (2) Coordination and cooperation plus in-service training for middle school teachers so they may handle orientation, exploration, and introduction aspects of the program. (3) Articulation between the Community Colleges and/or Technical Institutes will be developed whereby appropriate courses and curriculum will be planned and offered to students to continue their post secondary training for jobs and occupations in the areas of "Outdoor Recreation and Applied Ecology." This proposal suggests that the "Demonstration School" in each Educational District coordinate and cooperate with a designated Community College or Technical Institute in that district for the purpose of this articulation process. (4) Coordinate with colleges and universities for students to enroll and continue professional training in appropriate allied occupational areas. This is another example of what we in North Carolina are planning and doing to make our agricultural education courses more relevant and meaningful in meeting student and community needs. ◆

THE COMPETENCY GAP

Donald E. Elson
Assistant Professor
College of Education
Virginia Polytechnic Institute

Donald E. Elson

VOCATIONAL AND TECHNICAL PROGRAMS WILL BE ABLE TO PROVIDE A GREATER SERVICE TO THE LANDSCAPE AND INDUSTRY ONCE THE GENERAL COMPETENCIES OF THE INDUSTRY HAVE BEEN ESTABLISHED.

Landscape and nursery businesses make up a relatively new industry. Vocational and technical programs, both at the secondary and post-secondary level, are being developed and/or expanded in an attempt to provide trained personnel for this fast growing industry.

The competencies perceived to be needed by employees in the landscape and nursery industry may constitute a "competency gap." Until the competency gap between employees and employers becomes essentially non-existent, the competency gap between the landscape and nursery industry and the educators will continue.

One of the objectives of a recent study concerned the importance of fifty-five competencies to the landscape and nursery industry.* The study, conducted as an evaluation of the Landscape and Nursery Technician Program, Institute of Agricultural Technology, Michigan State University, exposed a competency gap between employees and their employers. The former students of the two-year technical program were asked to rate the importance of fifty-five general competencies to the satisfactory performance of their present jobs. The employers of the former students were to indicate the importance of each of the fifty-five competencies to the present jobs of their employees.

Forty-six of the former students responding to the study were classified as persistent former students — students presently employed in the landscape and nursery industry. Thirty employers of these former students also responded to the study. The respondents rated the fifty-five competencies using four levels of ratings: not required = 0; slight importance = 1; considerable importance = 2; and critical importance = 3. The ratings of the competencies were summarized on the basis of the responses in each rating category, by the mean rating for each competency, and by subject areas.

Most Important Competencies

Two competencies were rated as being of critical importance by forty per cent or more of the former students as well as forty per cent or more of the employers. The two competencies were (1) maintenance of effective working relationships between employer and employee, and (2) maintenance of effective working relationships with fellow workers. Sixty per cent or more of both the former students and the employers rated six of the competencies as not being required for the satisfactory performance of the present job of the former students. The six competencies included (1) growing and care of sod in the sod producing nursery, (2) propagation of landscape plants, (3) planning a purchasing program for securing agricultural chemicals, (4) performing field experiments to develop methods of using agricultural chemicals, (5) taking and testing soil samples and interpreting soil tests, (6) and planning and determining cost of a soil fertility program.

Ten of the fifty-five competencies were perceived by the former students and/or the employees to be of considerable importance to the present job of the former students. The two competencies, previously mentioned concerning the working relationship between the employee and his employer and between the employees themselves, are included among the ten competencies. The remaining eight competencies are: (1) organizing and supervising work crews, (2) understanding the regulations pertaining to the hired labor, (3) understanding and using effective communication skills, (4) understanding principles of effective customer relations, (5) advising customers on desirable varieties of landscape plants and their costs, (6) identification and cultural requirements of landscape plants, (7) pruning landscape plants, and (8) planting and removal of landscape plantings.

Importance of Subject Areas

The fifty-five competencies were grouped into eleven subject areas. The mean ratings for the competencies were summed according to the eleven subject areas and the mean for each subject area was determined. As shown in Table 1, the former students and their employers agree that the subject area, "working with people," is the most important of the eleven areas. The mean ratings of 2.33 by former students and 2.21 by employers place this subject area within the rating of "considerable importance." Former students and their employers also indicate that "supplying nutrients" is the subject area of least importance. Both rate it on the importance scale somewhat below the rating of "slightly important;" thus indicating this area of skills has little use to the former students in satisfactorily performing the requirements of their present jobs.

Employers also indicated that competencies in accounts and records, chemicals, and soils were of little value to the former students in their employ. But former students did not agree with their employers. Former students rated

(Continued on next page)

A competency gap exists when employees perceive one set of competencies, employers perceive another set, and the educators perceive yet a third set of competencies as being required of an employee to satisfactorily perform his job.

TABLE 1
IMPORTANCE OF SUBJECT AREAS

Subject Areas	Means	
	Former Students	Employers
Working With People	2.33	2.21
Regulations	1.93	1.43
Advising and Selling to Customers	1.74	1.42
Insects	1.65	1.54
Accounts and Records	1.55	0.95
Landscape Design	1.47	1.50
Chemicals	1.32	0.90
Mechanics	1.30	1.23
Plants	1.23	1.25
Soils	1.12	0.86
Supplying Nutrients (fertilizers)	0.89	0.87

these competencies within the range between "slightly important" and "considerable importance."

Former students and employers registered considerable disagreement on the importance of the subject areas related to advising and selling to customers, and regulations. The two groups of respondents agreed closely concerning the importance of the areas related to plants, insects, landscape design, and mechanics. These subject areas were rated as being of slight importance.

A Gap Exists

One of the hypotheses of the study stated that there are significant differences in the ratings of persistent former students and their employers regarding the importance of selected competencies needed by persons in supervisory or technician level positions. To test for significance, the alternate or null form of this hypothesis was stated.

Data for this analysis were obtained from former students and their matched employers. To be included in the analysis, the former student must have been employed in the landscape and nursery industry, returned a completed or nearly completed questionnaire, and his employer must have returned a completed or nearly completed questionnaire. Working within these conditions it was possible to include twenty-six pairs of former students and their matched employers in this analysis.

By use of a computer program and the *F* test for significance it was determined that seventeen pairs of former students and their employers had significant differences at the .05 level between their ratings of importance on the fifty-five competencies. The remaining nine pairs exhibited no significant differences at the .05 level.

Also of interest in the study was the degree of linear association between importance ratings by the persistent former students and their employers. By use of the Pearson product-moment correlation it was determined that two of the twenty-six pairs of respondents had positive correlations of $r = .74$. Four pairs were below $r = .30$.

Conclusion

As shown by the study, a competency gap does exist between a majority of the pairs of former students and their employers. This writer is inclined to believe that the competency gap existing between these former students and employers is not an isolated situation.

Further study is needed to determine the reasons for the lack of agreement between the employees and employers on the competencies required to satisfactorily perform the present job of the employee. It is important to determine these reasons and to determine ways of bringing closer agreement between these two groups. Research directed to this problem by educators should result in reducing the competency gap within the industry. Vocational and technical programs will be able to provide a greater service to the landscape and nursery industry once the general competencies of the industry have been established. ◆ ◆ ◆

**Donald E. Elson, "An Evaluation of the Landscape and Nursery Technician Program at Michigan State University" (unpublished Ph.D dissertation. Michigan State University, East Lansing, 1971.)*

(Frank — from page 14)

Resources

	Negative	Positive
Time available to prepare and carry out adult work	/_____/	
Facilities for adult use	/_____/	
Resources available for AE	/_____/	
Teacher compensation	/_____/	
Adult enrollee interest and needs	/_____/	

A study of existing conditions should provide the basis for determining the extent to which various types of adult learning activities should be emphasized and also give some hints for changes in future programs.

Vocational agriculture administrators have allowed teachers a great deal of flexibility in determining what should be the type and extent of the local adult and young farmer activities, because these leaders were aware that conditions differ and that change occurs within the same community from year to year. The teacher is primarily responsible for making a study of conditions periodically and then, with the aid of other interested personnel, determine the appropriate adult programs to develop or continue for the near future.

These rating and recommendation sheets should be revised and supplemented by the teachers to meet local needs. If this guide is diligently used, it will provide guidance in helping the individual teacher to determine the extent and type of adult programs that "ought to be" in their department. ◆ ◆ ◆

(Liebelt & Matteson — from page 18)

cover persons under 18 years of age.

If one were to capsulize the findings of this study it could be said that there are many opportunities for employment in off-farm agricultural occupations and the opportunity in the future looks bright; there will be less opportunity for the unskilled worker; less than one-fifth of the employees will need a college degree; age will probably become even more of a limitation to obtaining initial employment and continuing employment (a person will be working fewer years of his life); and that since on-the-job experience is desired the cooperative method in education must become more prevalent in our vocational agriculture programs. ◆ ◆

THE INVERTED SCHEDULE

Keith Carlson
Agribusiness Instructor
Belmond, Iowa

We believe we have provided a more vocational approach to teaching crops and soil science.

Keith Carlson

The normal school year from September through May is a nightmare for a class in crop production. The course starts at harvest and ends with planting. To make matters worse, 60-70 per cent of the typical school year in the midwest occurs when the ground is frozen. Not exactly ideal conditions for field trips, experiments, and individual application of classroom practices to the student's occupational experience program.

Whatever is educationally sound should be administratively possible—so a fresh look was given to the crops and soils class at Belmond, Iowa. Why start in the fall? Why end in the spring? Why teach root worm control and corn borer identification in the winter? Why, why, why—they came so fast it seemed like there was no end to them.

There was an end however, in fact it appeared almost too easy. Two years ago the course schedule was restructured. Rather than start the class in the fall, it was started in the spring. Enrollment was completed by March and the course was begun.

No daily class periods for spring classes were scheduled. Spring class meetings were held prior to the school day, or after school. Two evening meetings were scheduled at which parents were invited to attend. Each student was encouraged to rent land for a corn, soybean, or other crop project.

The two schedules are illustrated below:

Old Schedule

Sept.	20 hours*
Oct.	20 hours*
Nov.	20 hours
Dec.	20 hours
Jan.	20 hours
Feb.	20 hours
March	20 hours
April	20 hours
May	20 hours*

New Schedule (Emphasis Area)

March	5 hours (Planning)
April	15 hours (Preparation)
May*	20 hours (Planting)
June*	30 hours (Weed Control)
July*	30 hours (Insect Control)
Aug.*	25 hours (Machinery)
Sept.*	20 hours (Harvest)
Oct.*	20 hours (Soils)
Nov.	5 hours (Marketing)
Dec.	5 hours (Marketing)

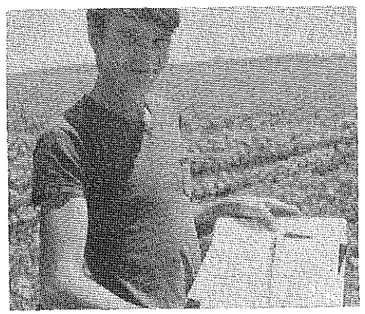
Notice the months during the growing season.* Obviously the new schedule is much superior for teaching crops and soils. The old schedule was inverted and weak on application.

Specific advantages are as follows:

1. Crop teaching is during the growing season.
2. Easy to teach in the field.
3. Coordination with student projects is a snap.
4. Justifys summer contract.
5. Easier to motivate students.
6. Easy to visit field days, trials, etc. . .
7. Equalize teaching load during adult school classes.
8. A natural to involve dads in student's program.

Coordination is very important when you invert your schedule. Collect the following information and develop your program accordingly.

1. Summer Classes—Drivers Training
2. Summer Jobs
3. Vacations
4. Transportation



Students were encouraged to keep a field notebook on their activities, class activities and handout materials.

Practical class activities were carried out, such as population counts on this soybean field.

A minimum of conflicts resulted since we held several twi-light meetings. By starting about 4:00 p.m. we were able to meet until 9:00 p.m. on several summer evenings. We also held all-day meetings to reduce the number of classes requiring travel arrangements. The class spent little time in the classroom. All of the summer meetings were held on the student's farms, at seed corn farms, or at chemical plots.

Grading of the students was based on a point schedule, so that the students were not graded on a curve. The following schedule was followed:

Field Notebook	**20 points**
Machinery Operation	**20 points**
Records of plot	**20 points**
Attendance	**15 points**
Independent Study	**25 points**
Insect Collections	
Plant Collections	
Weed counts	
Setting Machinery	
A—80-100 points	
B—65-80 points	
C—50-65 points	
Inc.-50 points or less	

Parents have been lavish with their praise of the revised schedule. Their sons receive closer supervision during the summer and it reduced the number of students that would normally have taken 5 subjects during the entire year. (All students were enrolled in this class as a 5th subject.)

Should you change your course timing? If you find that very many of the previously mentioned advantages would fit your school it certainly should be worth discussing with your administration. Each school should develop a program that fits their needs — but don't be locked in by the traditional way of teaching and organizing your courses. We at Belmond are very happy with the way our schedule has benefited our students in providing a more vocational approach to crops and soil science. ◆◆◆

Forms are available for teachers and others upon request by writing Keith Carlson, Agribusiness Instructor, Belmond, Iowa 50421

WHAT ARE YOU DOING THIS SUMMER?

Arnold Mokma
Vocational Agriculture Instructor
Sparta, Michigan

Next to learning by doing, we have found that on-the-scene observation is the best way to learn new practices and ideas.

Arnold Mokma

"What are you doing this summer?" is a question asked of vocational agriculture teachers by other teachers, friends, community leaders and administrators. Administrators? Yes, in recent years, as teacher salaries have gone up and school budgets have become tighter, administrators have become concerned about the summer activities of their vocational agriculture teacher. In Michigan, we have experienced pressure to reduce the summer employment of vocational agriculture teachers. Along with this pressure, we've experienced crowded conditions in our schools resulting in limited shop facilities for vocational agriculture.

These pressures have resulted in four schools offering organized instructional activities during the summer months. The agricultural mechanics programs offered, utilize the available shop facilities in their respective schools. These programs have many similarities but also have many differences to meet local needs. Each program served 12-15 students and offered one semester of credit upon completion of the requirements. Students could also take the class for enrichment with no credit earned. The meeting times varied, three hours every morning for six weeks, five hours per day for nine days, or three hours for two evenings for ten weeks.

At Sparta High School, we have tried to take advantage of the outstanding agricultural businesses in our area that are too distant to visit during the school year. With many students employed in agricultural businesses, it was decided to add field trips to their on-the-job experiences. We visit a wide range of agricultural businesses from researchers, suppliers, and producers, to processors and marketers.

We take a three-hour field trip each week to one of these businesses as a supplement to the student's employment. Each tour is scheduled early in the morning so the students can be on the job by mid-morning, thereby satisfying their employer's need for their services. We have served 15-20 students each year for the four years it has been offered. For three years this class was for Sparta vocational agriculture students only. In 1970, it was decided to invite students from a neighboring school to join us. This brought eight students from Cedar Springs High School.

In addition to the thirty hours of "classroom" instruction, each student completes a minimum of 200 hours at his place of employment. Each student submits a report of his employment experience and his observations on each field trip to receive one semester credit. Each year we have had many students who choose only certain tours because of their special interest and not enrolling in the class for credit.

It is hard to imagine high school students, especially boys, to be anxious about attending school during the summer months. However, when a program of their interest is planned, the battle is won. Each spring the vocational agriculture classes are surveyed for interest and for suggestions of possible field trips. A list of suggestions is compiled and submitted to the interested students for their vote of preference. This vote result is used to contact the businesses and schedule a visit. Upon completion of the schedule, it is posted where all vocational agriculture students can view and make plans to go on tours of their interest.

The administration has expressed pleasure in these activities and hope for expanded programs in the future.

"I don't have the time," may be your reaction to these programs. But have you ever evaluated your usual schedules of student visits, summer school, vocational agriculture teacher conference, and other activities? Does your present summer schedule give your administration cause for concern?

Maybe through better organization of your summer activities, you can organize a class and still have time to accomplish the other summer duties. Maybe you will have to evaluate present activities and delete part of them in order to have a summer class. ◆◆◆

BOOK REVIEW

ORGANIZATION AND COMPETITION IN THE MIDWEST DAIRY INDUSTRIES. Sheldon W. Williams, David A. Vose, Charles E. French, Hugh L. Cook and Alden C. Manchester. Ames, Iowa: Iowa State University Press, 1970, 339pp., $12.50.

This book grew out of a regional research project, NCM-26, "Changing Market Structure of Midwest Dairy Industries," and gives an infra-structure of Midwest dairy economics which should allow a reader a much better vehicle for judgment about these industries than was ever before available. It examines and evaluates dairy marketing development of the past two decades, with particular attention given to changes in, and emerging characteristics of, industry structure, conduct, and performance. Six dairy marketing industries were selected for intensive study: fluid milk, ice cream, creamery butter, nonfat dry milk, and evaporated milk.

The data were drawn primarily from published reports of previous studies, but additional sources used included special tabulations of census, federal order, dairy manufacturing plant data, and interviews with industry personnel.

The greatest emphasis is on the processing or manufacturing level and the intermediate level of the markets, although attention is given to procurement markets and retail distribution.

This publication is a comprehensive work directed primarily to fellow marketing specialists and others close to the field. It is quite technical and presumes a command of marketing terminology on the part of the reader. Excellent reference material is provided and it will be a useful source book for teachers. As a student reference or text it is best suited for a senior college level course in dairy marketing.

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Stories in Pictures

by Richard Douglass

Shown above is part of the group of Vo-Ag teachers in Region V NVATA who attended the leadership training school held in Athens, Georgia. This photo was taken at Engineering Center of the (AAVIM) American Association for Vocational Instructional Materials after the leaders of Alabama, Georgia, Florida, Mississippi, North Carolina, South Carolina and Tennessee had learned how their teaching materials are assembled. (Photo courtesy of D.P. Whitten, Region V Vice-President).

1971-72 NVATA EXECUTIVE COMMITTEE, (Back Row — Left to Right — Vice Presidents) Luther Lalum, Region I — Kalispell, Montana; Bill Harrison, Region II — Leedey, Oklahoma; Francis Murphy, Region III — Madison, South Dakota; Odell Miller, Region IV — Raymond, Ohio; D. P. Whitten, Region V — Centre, Alabama; James Shadle, Region VI — Hegins, Pennsylvania. (Front Row — Left to Right) Sam Stanzel, Treasurer, Colby, Kansas; Glen McDowell, Past President, Pikeville, Kentucky; Howard Teal, President, Boonville, New York; James Wall, Executive Secretary, Lincoln, Nebraska. (Photo by Peter Corvallis, Portland, Oregon)

Antonia Garcia, Student of the Vocational Agricultural School of La Union-Narino, receiving the trophy he won in the speech contest at the Third National Convention, Future Farmers of Colombia. (Photo from Mr. Lennie H. Gamage, Manager, International Programs, Future Farmers Association).

General Assembly of the Japanese Future Farmer National Convention. Their association will be 22 years old in 1972. (Photo supplied by Hajime Kenjyo, Principal, Tokyo Horticultural High School, Tokyo, Japan.)

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WHO DO YOU INVOLVE IN EVALUATING AND UPDATING YOUR PROGRAM?

Theme— EVALUATION