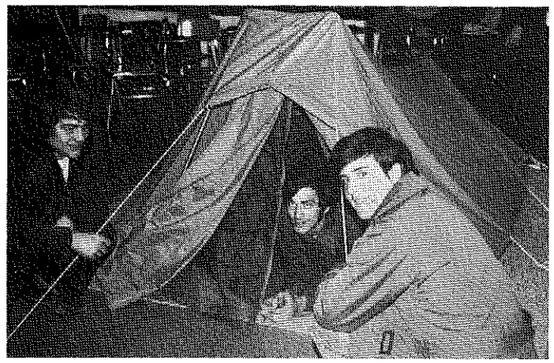
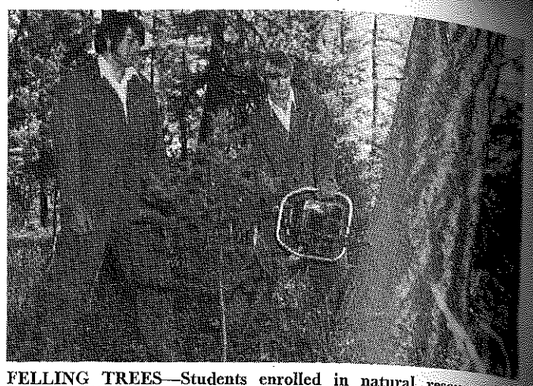
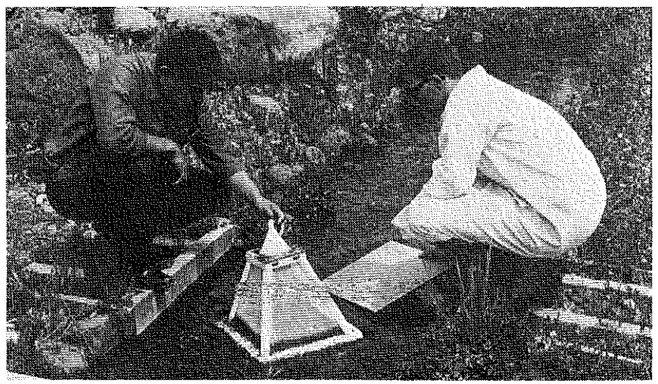


STUDYING TENTS—Setting up a light-weight tent, in this case in the classroom, is a first step in studying camping tents for vocational or avocational purposes. (Photo by Thomas Marron, Coventry, Rhode Island)

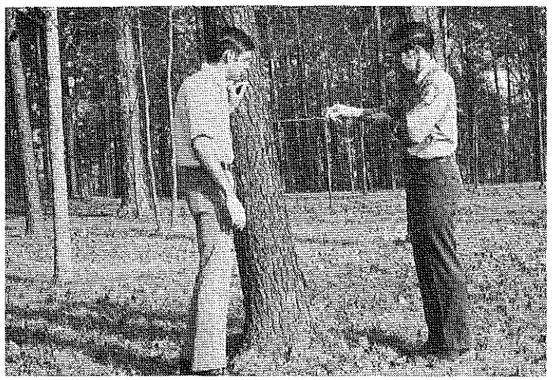


FELLING TREES—Students enrolled in natural resources learn how to fell trees. These students have a forestry laboratory area near their school. (Photo from Max Amberson, Montana State University)

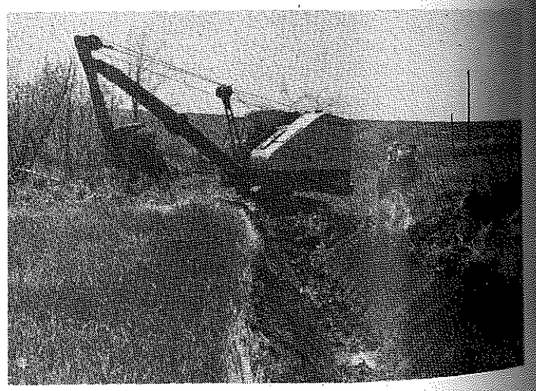


STUDYING WATER—The area of natural resources includes maintaining and improving water supplies. Here technicians conduct tests at a tree farm in Washington. (Photo from Rodney Tulloch, University of Kentucky, and courtesy of the Weyerhaeuser Company)

Stories in Pictures by Jasper S. Lee



USING INCREMENT BORER—Glen Kile of the U.S. Forest Service demonstrates the use of an increment borer in determining the age of a tree to Lee Wilmot, agriculture teacher at McCreary County (Kentucky) High School. (Photo from Rodney Tulloch, University of Kentucky, and by Lass and Ladd Studio, Whitley City, Kentucky)



DITCHING—Improving and maintaining the soil is an integral part of the instruction in natural resources. Here a ditcher is observed operating on the E. V. King Ranch, Silverton, Oregon. (Photo from Rodney Tulloch, University of Kentucky, and U. S. Department of Agriculture)

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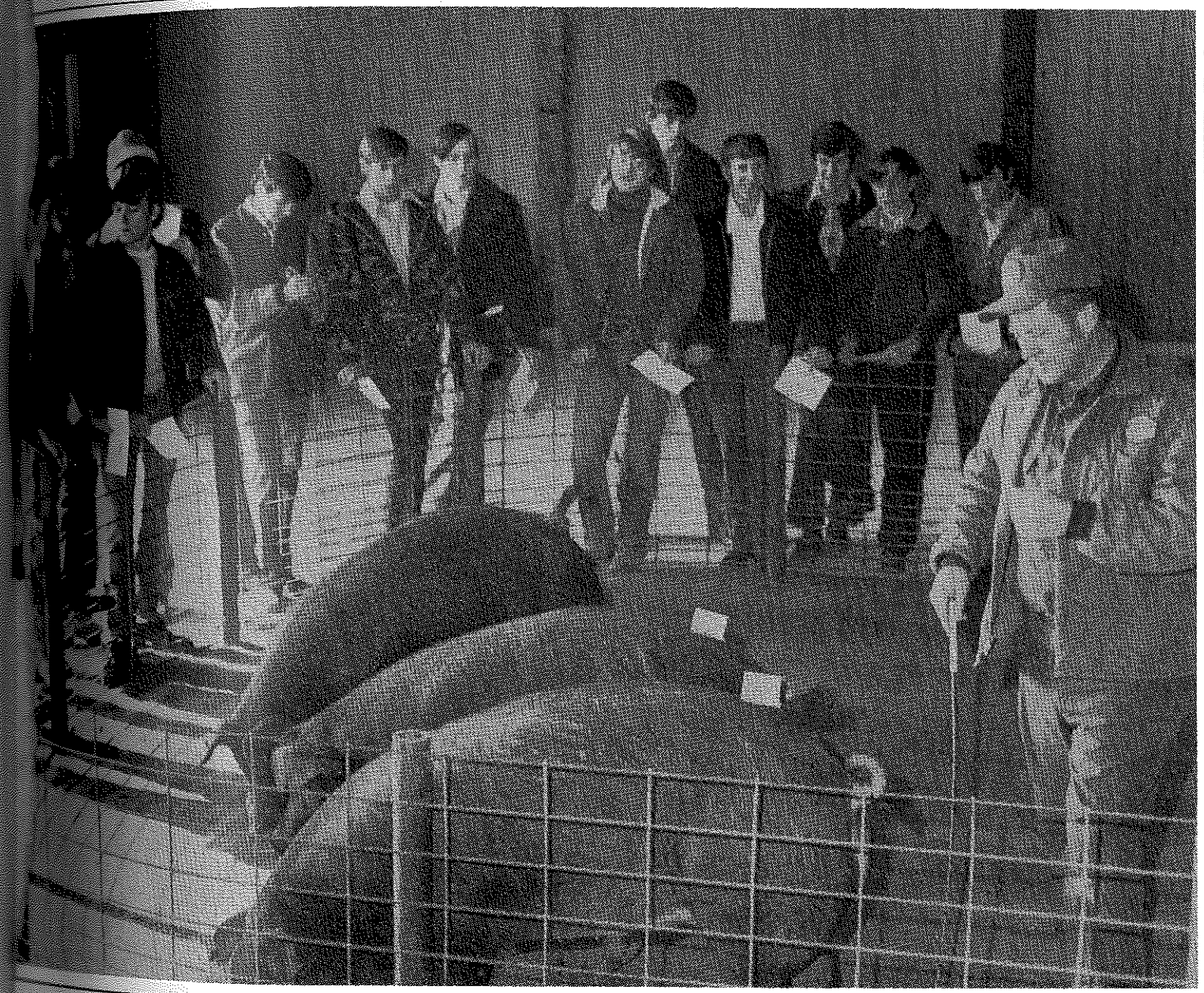

Theme—UTILIZING RESOURCES IN TEACHING

The
Agricultural Education
Magazine

EDPRESS Vol. 47 March 1975 No. 9

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THEME—UTILIZING RESOURCES IN TEACHING

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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Send articles and pictures to the Editor or to the appropriate Special Editor.

COVER PHOTO:

Instruction involves using community resources at the North Shelby (Missouri) High School, Vocational Agriculture Department. Here students are studying hogs at Perry Duroc Farms, only a short distance from the school. This farm has also furnished swine for the National FFA Livstock Judging Contest. (Photo from James A. Bailey, Missouri State Department of Education)

Editorials

From Your Editor . . . *USE ENROLLED RESOURCE PERSONS*


Martin B. McMillion

Often some of the best resource persons are enrollees in our own classrooms, especially in classes for adults The teacher who does not recognize and make use of this resident expertise is asking for trouble. Teacher ability to discover what an enrollee already knows about a subject and make use of enrollee knowledge, skills, and experiences is essential for successful teaching.

The most common way to discover what students already know is to ask them in the classroom. "How many of you have used sod planting?" "Who in the class has seen a Simmental?" "How familiar are you with that breed of beef cattle?"

Not all enrollees will volunteer information in a group situation. Visitation by the teacher to the home farm of the enrollee before the course begins historically has been a common practice in vocational agriculture. Visitation to the home, farm, or other workplace of enrollees prior to the beginning of a course helps the teacher to learn many things about the student that will improve the teaching-learning situation.

Pre-tests, although not normally used with adults, are useful in determining what students already know.

The teacher who ignores or neglects to discover the knowledge, skill, and feelings of enrollees encourages student contempt, but the teacher who recognizes and allows enrollees to contribute will gain esteem in the eyes of his students. Discover what students already know and how they feel about controversial issues, then you can proceed more wisely.

A teacher's knowledge of human needs and the Law of Effect are sufficient to convince him or her of the necessity of having enrollees participate and relate their knowledge and experiences. An example I heard in a graduate adult education class at the University of Illinois illustrates the point. When a young farmer returned home from his adult education class his wife asked, "How did you like the class?" He answered, "Real well; I talked."

Enrolled resource persons can contribute in the following ways:

1) Provide an actual problem situation for the whole class to help solve.
2) Assist other class members with skills development and other learning activities.
3) Relate their own experiences in a regular class or on panels, symposiums, and through other group techniques.

(Concluded on next page)

Guest Editorial . . .

COMMUNITY RESOURCES CAN BE TEACHER HELPERS

David L. Williams, Associate Professor
Department of Agricultural Education
Iowa State University


David Williams

Vocational agriculture teachers in the 70's have more responsibilities and greater challenges than at anytime in the history of vocational agriculture. Teachers are expected to develop new programs, to plan a variety of learning activities, and to use innovative teaching techniques to serve students with diversified backgrounds and interests. To carry out these responsibilities the vocational agriculture teacher needs help. Teacher helpers can be found in every community in the form of community resources. However, the teacher must exercise leadership to identify and activate community resources for teaching.

Types of Community Resources

In recent years the concept of "community" has expanded to a larger area. When identifying resources for use in teaching, a county, state, or group of states may be the appropriate geographic reference for "community." Community resources may be grouped as natural, human, and physical.

Natural Resources. Renewable natural resources include soil, water, forest, and wildlife. The teacher should capitalize on the ready-made learning environments and teaching specimens provided by natural resources. Most young people are curious about nature and enjoy working and studying out-of-doors. Some examples of learning activities that utilize natural resources are:

1. Plan for FFA members to inventory community water resources and provide water conservation information to community groups.
2. Direct a class or small group in a study of forest enemies, types of damage they cause, and recommended control or prevention.

Human Resources. "I would be happy to help. This is the first time I've been asked." This is the response frequently received by vocational agriculture teachers when they request assistance from people in the community. Most people are willing to share their occupational know-how and experiences. People in the community can provide expertise in specialized areas to complement that of the teacher. They can be utilized at the place of on-going

(Concluded on next page)

Editorial . . .

4) Give demonstrations to fellow class members in the classroom.
5) Give demonstrations of recommended practices on the home farm or place of business to convince people of the whole community to adopt recommended practices.
6) Identify other resource persons and places where field trips can be taken.
7) Sponsor educational activities through the FFA or the YFA.
8) Serve as members of course committees for adult classes to help determine the content of the course and help secure enrollment.
9) Be their own teacher through independent learning with or without self-instructional learning materials. The independent learning can result in reports to fellow class members. The student who makes a study of a breed of cattle or an occupation becomes a resource person.

> Discover what students already know and how they feel about controversial issues, then you can proceed more wisely. .

If you have not thought of your students as enrolled resource persons, try doing so. Discover what enrollees have to contribute and help them to make the contribution. You will teach better; the students will learn better; both will enjoy it more.

—MBM

Guest Editorial . . . Community Resources Can Be Teacher Helpers

(Williams—from previous page)

occupational activity or transported to other learning environments. Here are two examples of learning activities that utilize human community resources:

1. Have a cattle buyer explain the grades of slaughter cattle during a field trip to a local livestock auction.
2. Schedule some older students to explain the production practices they use in their supervised farming programs during a tour of their farms by FFA greenhands.

Physical Resources. A vocational agriculture department with the most modern facilities, the latest equipment, and the most up-to-date references can not duplicate the realism offered by farms and agricultural businesses and agencies. Community physical resources provide sites for supervised occupational experience, field trips, and independent study. Agricultural businesses and agencies as well as farms and ranches in the community are potential cooperative occupational experience training stations. These resources are also sources of specimens, products, and materials that can be brought into the classroom or laboratory to provide "chunks of reality" for in-school instruction. The following are examples of learning activities that utilize community physical resources:

1. Develop an experience plan and place a student in an implement dealership for occupational experience.
2. Have students borrow products and materials from local agribusinesses and set up a display to provide a prop for classroom instruction.

Activating Community Resources

An advisory committee (another way to utilize community human resources) can help the teacher identify community resources for teaching and open doors to obtaining them. However, it is the role of the teacher to channel community resources into the instructional program to bring about desired occupational outcomes in students. Teachers who use community resources in teaching do not find their jobs easier as a result; however, they do find teacher helpers than can be utilized to provide relevant learning activities.

Today vocational agriculture teachers are challenged to consider community resources in planning learning activities just as they would consider a film, class projects, supervised study, or a demonstration. However, because of the additional variables involved, the utilization of community resources in teaching requires careful planning. ◆◆◆

Themes For Future Issues

April —	Informing the Public
May —	Teaching the Disadvantaged and Handicapped
June —	Women in Agricultural Education
July —	The FFA
August —	Serving Out-of-School Groups
September —	Guidance, Counseling and Placement
October —	International Agricultural Education
November —	Cooperative Education in Agriculture
December —	Agricultural Mechanics

Resource Persons -- Opportunity and Challenge

Maynard J. Iverson
Teacher Education
University of Kentucky

M. J. Iverson

What can a Vocational Agriculture teacher do to improve the impact of his teaching in highly technical areas? Who is available to provide assistance in teaching new agricultural technology? What use is presently being made of specialists?

These questions spurred the combined state staff in Agricultural Education to initiate the following series of activities aimed at improving the utilization of agricultural resource personnel in Kentucky:

1. A study[1] was conducted to determine the use Vocational teachers make of resource personnel in their classes. The results were encouraging, but indicated areas of needed improvement. Eight out of ten teachers used guest speakers in their classes for an average of five each year. Teachers of young farmers used the most, an average of seven resource people annually. Most teachers used people from agribusiness firms, ag-related governmental agencies and the professions, primarily from the local area. Teachers located resource people primarily through personal contacts, and time in arranging for the guest was the major problem reported. Performance of resource people was rated good to excellent by most teachers. Teachers expressed need for additional help in a number of highly technical areas of agriculture.
2. In-service education meetings stressing proper utilization of resource people were conducted in all regions of the state. Materials were developed so that meetings held concurrently covered the same aspects. A planning meeting was held by the combined staff to coordinate these efforts.
3. A statewide directory of resource people was developed and distributed to all departments. Personnel from 15 federal and state agencies were listed, along with their area(s) of expertise and recommended procedures in securing their services. A coordinating organization, the Kentucky Development Committee, was instrumental in securing listings from the various member agencies. Additional listings on a district basis were made of resource people the teachers had found to be useful in local departments.
4. A follow-up study was conducted which revealed that the efforts to improve use of resource people were well received by the teachers. The presentations were rated good to very good. By the end of the year, two-thirds of the respondents had improved their local files of resource people, while nearly one-half indicated better management and follow-up techniques had been utilized.

[1]Maynard J. Iverson, "Use of Resource People by Teachers of Vocational Agriculture in Kentucky," Research Report of a Staff Study. Department of Vocational Education, University of Kentucky, 1973.

A Needed Emphasis

Today's teacher of Vocational Agriculture is beset on the one hand by a need to provide the greatest diversity of subjects in our history, and on the other hand by pressure to provide in-depth expertise which can only come from specialization. In order to overcome this situation, it is imperative that outside specialists ("resource people") be involved in the program. This utilization can be accomplished in a number of ways—on-site (through tours or field trips), through audio- or video-taped interviews, or even via television,—but often the most practical means is to bring the person into the classroom setting.

Although Vocational Agriculture teachers generally exceed other teachers in utilization of community resources, more extensive and intensive use of resource people can and should be accomplished. Teachers should inventory their communities for potential class consultants. Parents of class members, farmers, businessmen, governmental workers, and many others are potential resources. The teacher's challenge is to seek them out and use them effectively in the instructional program.

Keeping Adequate Records

After locating potential assistance, an important task is to catalog the individuals so that they may be readily identified when needed. A card file or notebook, arranged alphabetically by topic, is a handy means to keep this information at one's fingertips. Notations can be made on the form which will guide future utilization of the person.

Teachers organized on a district or regional basis can

Magazine Inventory to be Destroyed

Old copies of the *Ag. Ed. Magazine* from 1929 to 1965 will be destroyed if not purchased before July 1, 1975. On July 1 each year the eleven-year old volume will be destroyed unless our policy is changed. Most of the magazines are available. No inventory will be made; therefore, you must request the magazines to find out whether or not they are available. The price is $.50 per copy.

(Iverson—from previous page)

help their own programs and also serve teachers who are new to the area by compiling and distributing lists of available educational resources in the region. Such listings can be an important means of coordination between the department, local and district administrators, other teachers, county extension agents and other agricultural and educational groups. Whether kept on a departmental or district basis, resource personnel files or lists should be updated at least annually.

Securing Quality Performance

Properly oriented and managed, resource people can make outstanding contributions to the total Vocational Agriculture program—including both high school and adult classes. Vocational Agriculture teachers in Kentucky who have successfully utilized community resources reported[2] that they emphasized preliminary care in selection, used personal contacts to orient resource people on procedures and content, managed the class during the presentation, and used follow-up as a means of securing good results with the visitors. The key word appears to be "coordination." The following procedure is a means to control quality of performance:

1. *Prepare for the resource person in advance.*
   The teacher should look ahead to determine class needs. When teaching a particular unit, questions should be raised as to when outside specialists would be most useful, what aspects would need to be presented by these people, and which topics need only added emphasis. Timing—getting a specialist at the time of the greatest interest or to revive lagging interests—is a key ingredient. To be prepared to benefit from the visitor, the class should have a voice in selecting and securing the person. This is especially important with adults who may have had previous experiences with the resource person which may affect the choice. It is also a good idea to formulate questions or to outline, with the class, problem areas to be dealt with by the visitor. High school groups should be cautioned about protocol to follow during the appearance. Class duties such as taking notes, assisting with setting up, and helping with the presentation can also be outlined.
2. *Contact the potential visitor.*
   Contacts with speakers should be as far in advance as possible; two weeks is a minimum in the case of most businessmen and professionals. Initially, a personal visit to the prospective resource person is best, but a telephone call may be used. It is important to outline clearly what is desired in topic and time limits. Kentucky teachers reported that keeping resource persons on the topic was a major problem.[3] Explicit limitation of the speaker's topic and time can avert that problem. This is also a good time to find out if any special equipment is needed that should be provided by the school (projectors, screens, display tables, etc.).
   About one week in advance of the event, a short note should be sent to the resource person to confirm the date, time, place, and topic. Exact directions should be given along with any special instructions on what to bring, where to park, etc.
3. *Introduce the speaker and moderate the presentation.*
   A short, concise introduction can help the group and the speaker relate to each other. For instance, a class of adult farmers about to hear an extension dairy specialist could benefit from the knowledge that the individual grew up on a dairy farm and manages the university dairy herd. Similarly, it usually helps the speaker to have the teacher serve as a go-between with an audience with whom the person is unfamiliar. In the above example, the teacher might mention that the farmers are all on DHIA testing programs, or "The man with the question is Frank Ernest, who operates a 200 cow, grade-A operation south of town."
   By serving in a moderator's role, the teacher can guide the questions to bring out major queries raised during previous classes, he can focus on areas of need in the community, and he can keep the group within time limitations. It is important to keep in mind that the class is the responsibility of the *teacher* and it should not, therefore, be "turned over" entirely to resource people.
4. *Carry out appropriate follow-up activities.*
   If maximum benefit is to be received from the time and effort expended in securing and using resource people, planned follow-up is necessary. Such activities as helping the speaker to meet informally with the group after class, sending a note of appreciation, getting pictures and a news article in the local newspaper, and completing an account of the event in the resource file, all contribute to an effective conclusion to the presentation. When such follow-up is done, securing the speaker for similar

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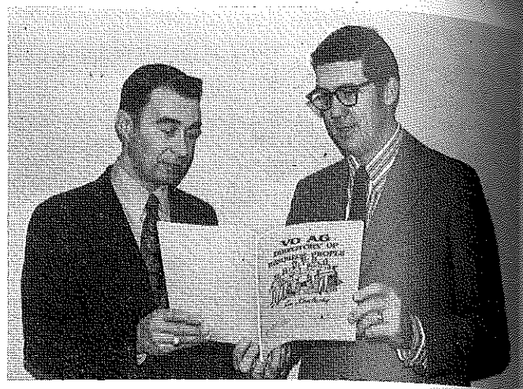


Jim Judge, (left) Kentucky Bureau of Vocational Education, and Maynard Iverson, University of Kentucky, examine a copy of the state directory of resource people which they developed. The publication provides Kentucky's 300 Vocational Agriculture teachers with names, addresses, specialities and contact procedures for personnel from 15 statewide agencies and a number of individuals and firms within regions of the State. The document was part of a concerted effort to improve the quality and quantity of community resource utilization in the Commonwealth.

[2]Ibid.
[3]Ibid.

SELECTING TEACHING METHODS AND MATERIALS

Arthur L. Berkey
Teacher Education
Cornell University

A. L. Berkey

Optimal utilization of teaching resources involves two steps. First, the selection of the best teaching method(s) and material(s) for the teaching situation; and then employing the methods and materials selected to structure learning experiences such that students do achieve the desired instructional objectives. Both of these steps are important as the ability to perform them effectively is the essence of what makes a professional teacher. However, too often the "selection" step on which this article is focused receives too little emphasis in teaching as compared with the second step of "employing" the methods and materials selected.

Selection of educational resources is essentially a hypothesis (hunch) that a given method or material is best for a given teaching situation. The more often the teacher is correct, the better the teacher. Thus a conscious continuing process of selection-use-evaluation is necessary to assess how well a selection was made. By following this three-step process, teachers can develop their ability to select methods and materials that will provide quality learning experiences to meet the needs of individual students.

Criteria For Selecting Teacher Resources

Four areas are relevant for the selection of resources for teaching: (1) the instructional objectives to be achieved by the student, (2) the teaching resources available for use, (3) the characteristics of students to be taught, and (4) the teacher's abilities and preferences. Although these four criteria are interrelated, there are important elements to consider in each.

Objectives to be achieved by students

Different types of student objectives require different methods. For example, skill (psychomotor) objectives are often taught by a combination of demonstrations and supervised practice in the laboratory. In contrast, knowledge (cognitive) objectives are more adaptable to lecture and class discussion. Other examples are teaching problem-solving skills through the problem-solving method, and using committees and other cooperative group methods to develop interpersonal and leadership abilities.

Assuming the instructional objectives contain the three elements proposed by Mager[1], i.e., statement of terminal behavior, conditions under which the behavior is to take place and the criterion of acceptable performance, these elements typically specify the nature of the instructional materials and evaluation methods to be used. One of the contributions of criterion referenced behavioral objectives is specificity which aids in the selection of teaching methods and materials. For example, if an objective specified that students would make a butt weld with an AC welder capable of withstanding a given amount of stress, then welding equipment and materials and student practice would necessarily follow. In fact, then the writing of behavioral objectives necessarily involves selection of teaching methods and materials. Selection could also be among several materials or methods in situations where more than one of each was available for use.

Instructional Resources Available

The availability of instructional resources has a major influence on the selection of teaching methods and materials—"You can't select what isn't available." However, do we really know what is available? One is really only free to choose when all alternatives are known. An area where teacher knowledge is often limited is community resources.

One important resource to consider is time, both in terms of length of the class period and the total teaching time allotted for students to attain the instructional objectives. For instance, a short class period and lack of nearby community resources would lead to the use of resource persons coming to the school rather than taking field trips. Budget and school policy are other relevant resources to be considered.

Total teaching time for given objectives often dictates the method selected. For example, lecture, oral questioning, and class discussion typically take less time to present information than do methods such as problem solving, independent study, and student reports. Use of handouts can reduce the amount of time necessary for student notetaking. Of course, the methods which take less time may result in less learning and/or a less pleasant learning experience for students. In some cases it may be found that the time allotted for given objectives is insufficient regardless of the methods used. This situation would require adjustments in the teaching calendar.

Also, teacher time available for class preparation needs to be realistically assessed. A teacher with six class preparations will necessarily need to select more group teaching methods than a teacher responsible for fewer classes. Individualized teaching requires adequate teacher preparation time.

Where class size is large and the amount of any one type of equipment, references, or materials is limited, several different types of learning ex-

(Concluded on next page)

[1]Mager, Robert F. *Preparing Instructional Objectives*. Fearon Publishers, Palo Alto, California 94306. 1962.

(Berkey—from page 199)

periences would need to be taking place simultaneously. Because the teacher can be at only one place at a time, this could lead to the use of individual study. Another decision would be to select the use of job sheets that provide step-by-step instructions such that the students in the various groups can proceed in supervised practice with a minimum of teacher attention.

Other resources affecting selection are classroom size and layout which may affect the possibility of using certain visuals and types of student practice. Additional resources to consider include the budget available to purchase equipment and materials, and time of year in terms of weather conditions.

An important point with instructional resources is that the teacher needs to know which resources are available. This knowledge is crucial to the rational selection of both instructional materials and teaching methodology.

Student Characteristics

A third selection criteria is the characteristics of students who are to be taught. The reading level of students is very important. Reading problems limit the extent to which printed materials can be used as references in the classroom and for homework assignments. Also, students with reading limitations usually have difficulty taking class notes. Of course, proficiency in writing and arithmetic skills or other prerequisite abilities can also be a limiting factor in methodology.

The grade level and general maturity of students affects the attention span for any one activity. Thus young and/or immature students will need a series of different activities and will probably be limited in their ability to make use of independent study.

General student ability is also important. Highly motivated and able students often learn in spite of, rather than because of, the teaching resources selected and employed. Prior related courses taken by the student can significantly cut down teaching time.

Class size can make the use of some methods impractical. Large classes can, for example, limit use of individual study and instruction, small group discussions, and laboratory time per student. Student learning styles also need to be considered. Students who learn by doing will need considerable supervised practice and extensive use of visuals for stimulation of both sight and touch.

Often students have special interests and abilities that can be used as resources in the classroom. When students have supervised farming programs or off-farm work experience programs, these can serve as an important resource for teaching. For example, the teacher can use student abilities and experiences as examples or in small group instruction.

Other responsibilities of students should also be considered. When a majority of students are engaged in employment or sports after school, this may limit the meaningful use of homework and other responsibilities assigned outside the classroom.

Last, and by no means least, is the self-concept held by the student. Self-concepts can be improved by non-competitive methods and realistic student objectives. Methods such as individual reports and independent study will be of limited value with students holding low self-concepts.

Teacher Abilities and Preferences

A fourth criteria is the nature of the teacher as a person—abilities, preferences, and philosophy. These affect the teacher's expertise in applying the various teaching methods and materials. Teachers vary in their ability to use pedagogy. One teacher may be able to motivate students through lecture and another be particularly effective in working with small groups. While all teachers can reasonably be expected to possess a minimum proficiency in all methodology, individual teachers have special abilities and preferences for particular methodology which should be considered in the "selection" decision.

Summary

Rational selection of educational resources is a necessary step to effective teaching. Four criteria to consider in selection are the instructional objectives to be achieved by students, the resources available for use, the characteristics of students to be taught, and the teacher's abilities and preferences. The continuing process of selection-use-evaluation of methods and materials is necessary if rational selection skills for educational resources are to be developed. ◆◆◆

(Iverson—from page 198)

future assignments is made easier. Some teachers involve the students in evaluating guest presentations. This has the double benefit of re-emphasizing major points and making students feel that the program is theirs.

Recommendations

Greater utilization of resource personnel in Vocational Agriculture classes appears to be necessary if we are to provide the high-quality program demanded by the times. This means not only using more specialists for both the high school and adult portions of our program, but also placing greater emphasis on quality performance by the guest speakers. This can be at least partially guaranteed by systematic identification, recording and dissemination of potential resources, and subsequent emphasis on preparation for and management of presentations by outside specialists. Teachers and state staff alike must be concerned with securing good results from resource people. Pre-service and in-service education, coordinated distribution of listings, and readily available instructional and planning aids are means that should be used to bring this about. In addition, ideas for securing more effective educational contributions from outside specialists should be a regular feature of conferences in Agricultural Education. ◆◆◆

Utilizing New Audiovisual Resources

Glen Miller
Vocational Agriculture Instructor
Mayer, Arizona

Glen Miller

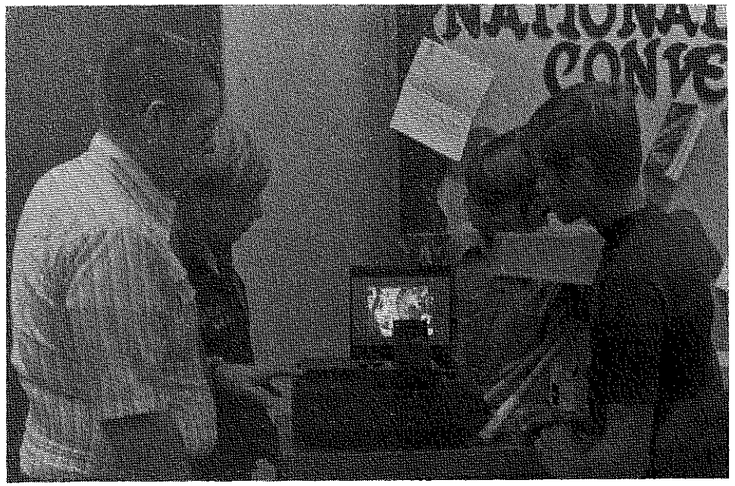
Today, we agricultural teachers have more resources available to us than ever before. Among some of the most innovative are the new audiovisual resources.

This year at Mayer High School we experimented with two new audiovisual aids in the course of instruction in small gasoline engines. We have been using a theory trainer purchased from Technical Systems Inc. The trainers contain all the basic tools necessary to disassemble, measure, and reassemble the enclosed 3 HP Briggs and Stratton engine. Additional equipment is provided in Roving tool kits and a 20 HP dynomometer.

It had become apparent, due to the necessity of students to repeat, that some supplement to live demonstration would be helpful. Dr. Clinton O. Jacobs, Professor of Agricultural Education from the University of Arizona developed an experimental set of film cassettes to help vitalize the student activity manual he had written.

I was pleased to find that these film loops are of a new breed. These cassettes are super 8mm and have a pre-recorded sound tract. They are matched to the resource units and student activity manuals currently available from Technical Systems Inc. Each film relates to a specific step in the assembly, measurement, and reassembly of the Briggs and Stratton engine.

These films provided the opportunity for students to review a demonstration several times if necessary. They provided a rapidly progressing demonstration that not only pointed out the steps in operation but also conveyed concepts clearly. They provided a focus on the demonstration which was not possible with live demonstrations.



Glen Miller, vocational agriculture teacher at Mayer, Arizona, reviews a video tape cassette demonstration with his students.

The use of cassettes provided me with a time advantage in short-period situations and they enabled the student who was absent to review missed steps and demonstrations.

We also spent time experimenting with our video tape system in our small gasoline engine unit. To further emphasize important points in operation of various test equipment, I pre-recorded demonstrations using students.

Students who observed other students performed their own tasks with increased motivation. Video taping the entire class gave students a feeling of accomplishment and pride in a job well done. I saved these video tapes for presentation at open house and a school board meeting. The public relations results were very good.

I feel that when compared on the basis of investment to educational value, the film cassette is the most promising system. For a comparatively small investment, extremely high quality films can be produced.

The limits of the subject matter are fewer with 8mm than with video tapes. Video tape equipment is too light sensitive for recording arc welding demonstrations.

The film cassette is compact in size and stores easily. The reproduction cost of these films is competitive with film strips and slides.

In summary, both media are excellent audiovisual aids to instruction. Each system is capable of improving the instructional process for motor skill development. ◆◆◆

A Little Forethought Is Needed

J. C. Atherton
Teacher Education, Louisiana

J. C. Atherton

Planning is a frequent topic of conversation at meetings of educators, but many fail to do nearly as much about it as they should. Many shortcomings in the program of vocational education can be traced directly to poor planning or no planning.

If one has no goal, any road will lead the individual to his destination. The results at best will be mediocre. However, to achieve a desired end, the teacher devises a course of action that has been thought through and organized. Some of the questions to be answered will include the what, when, where, how and who.

It has been said that if one desires strongly enough to have a quality program he will willingly put forth the effort and use the time required to assure a degree of success. One could easily begin by reviewing the work of the past year. Achievements attained could be noted. Areas where improvements are needed could be listed for possible emphasis. Plans can be devised and put into motion to achieve these unreached goals. If one plans very little, he can expect to achieve very little. (This may be so obvious that it sounds trite, but it is a profound truth that bears remembering.)

The teacher is emulated by a number of his students; therefore, it behooves him to set an example worthy of being used as a guide by others.

Care should be exercised in setting up the program for the coming year. It is easy to come up with a "monster" which is so large and unwieldy that following through with the plan becomes an impossibility. Too many projects lead to confusion and frustration. They may bring about a lot of haphazard actions which fail to produce much in the way of meaningful results.

Real-life situations should be the focal point of the instruction. Needs of those being served are the foundation of the instructional planning.

The teacher has a challenging as well as a rewarding responsibility in leading youth and adults to grow educationally and in the development of improved programs in agriculture, on the farm or in a related business. This should result in shared experiences in which the input of the student as well as that of others who are concerned is sought and utilized.

When selecting activities to include in the annual program of work, consideration should be given to how the activity should assist the students. Real-life situations should be the focal point of the instruction. Needs of those being served are the foundation of the instructional planning. Plans for follow-through or putting things taught into action become a vital part of the overall program of work. This involves much more than the routine class presentation.

Value is gained from sharing the planning. Those affected by a policy appreciate the opportunity to have a hand directly or indirectly in the formulation of that policy. Then, the activity becomes theirs rather than something imposed from the outside. The teacher has a two-fold responsibility of assiting students to grow into good participating citizens as well as developing skills in the vast field of agriculture. Cooperative planning and implementation are essential in fulfilling both of these responsibilities. This is a means of developing a climate of mutual interest and mutual understanding.

Through prior planning, it is possible to arrange for and use real-life situations in the interpretation of technical facts. Attention may be given to the problems which confront the class and possible ways of handling them. Much better utilization may be made of the resources of the community including teaching facilities.

Deciding what to teach and the methods to use with each teaching unit should be outcomes of planning. Securing adequate teaching resources would be enhanced immeasurably. Follow-up of instruction or taking it through the doing level can be made a regular part of teaching. Students need to grow and mature in their relationship with one another and with their families. An understanding of their responsibilities within the home, the school, and the community is desirable. These needs are found among adults too, although the methods or techniques of solving them may vary somewhat.

Prior to program presentation, the instructor needs a clear grasp of his responsibilities, aims, capabilities, resources, and limitations. A knowledge of the groups to be taught will assist the teacher in personalizing instruction. Without this information, one can merely guess concerning individual and group needs.

To a marked degree, the entire educational program in agriculture fails or succeeds depending upon the depth, quality, and extent of program planning.

One business has the following motto posted in the lounge for its executives

(Concluded on page 204)

Using the Total Agricultural Resources of the Community in Teaching

Harold Binkley, Teacher Education,
University of Kentucky

Harold Binkley

During most of the past 50 years, teachers of agriculture have "tied" their instructional programs to the home farms of their students as a means of "training present and prospective farmers for proficiency in farming." In using this technique they have done a superior job of farmer training.

Future Training

The history of vocational agriculture has been great, but how about the future? As the profession in agricultural education moves to prepare people for gainful employment in occupations in the broad field of agriculture, what is the big challenge?

In the past, teachers studied the home farms of their students. These home farms were the laboratories for students to learn farming, through experience programs called *farming programs*. The challenge in agribusiness education for the decade ahead is clear. There will be a need for specialized programs for training students in agricultural mechanics, ornamental horticulture, forestry, service and supplies, and other specialized areas. And, there will be a great need for training programs which will provide instruction and supervised experience in a diversity of agricultural occupations in a community. This will be especially true in those communities where there are not enough training stations in a given area for a specialized program.

There seems to be two distinct challenges: 1) How to organize and manage the *total agricultural resources* of the community in support of a training program in agribusiness education, and 2) How to use individualized instruction to meet the diverse training needs of the students that may be provided through the *total agricultural resources* at the local level.

Organizing and Managing the Total Agricultural Resources

The teacher must first *identify the agricultural resources* in the community. A local survey can identify such helpful facts as names of businesses, products sold or services rendered, number of employees (full-time and part-time), source of trained personnel, part-time or seasonal help needed, employee replacements during the past five years, projected number of employees needed for the next five years, training program needed for employees, and opportunities for placing one or more students for an occupational experience program (based on employers having a good understanding of the potential training program).

Second, the teacher must decide from the results of the survey how he will *organize to manage the total agricultural resources*. In fact, the tabulated results of the survey should tell him in a true sense *what the instructional program should be*.

The teacher becomes a different kind of a teacher of agriculture; he moves to become an educational MANAGER. The MAN in manager is the key, and this man is the teacher! The students reside in the local community, so training possibilities, in a true sense, determine the training program that can be provided. 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 and industries in the community—*the agricultural resources*. A local advisory group can be of significant help to the teacher in deciding on the program and to secure the support of the community for the program. If there are enough training stations to support a program in ornamental horticulture, he should "go horticulture;" if there are enough training stations to support service and supplies, he should "go service and supplies;" if there are enough training stations to support agricultural mechanics, he should "go agricultural mechanics." But if the possibilities for training stations are diversified, *he must not give up*.

There are literally thousands of school districts where the *agricultural resources in the community* (training station possibilities) will dictate a diversified training program in agribusiness education. After all, the farming programs of the students enrolled in vocational agriculture have been diversified over the years, without causing undue problems to the teacher. The progressive department of vocational agriculture of the future must continue to include training in and for farming for those who are to farm; to deal with larger and more complex farming operations. However, at the same time the teacher must move on with the job of providing a greater diversity of training in agriculture by capitalizing on and *using many of the agricultural resources* available to him.

(Concluded on next page)

(Binkley—from previous page)

The Course of Study and Individualized Instruction

Once the resources (training station possibilities) have been determined, the teacher should have the basic information needed to determine his course of study. If the training stations are diverse, the teacher will want to design his class instruction to meet a wide range of training needs. The classroom instruction should be made up of two major parts: 1) group instruction and 2) individualized instruction. For a typical high school at the junior and senior levels *the group instruction* might very well include such instructional units or modules as:

1. Orientation to agribusiness occupations
2. Selecting and making arrangements for experience programs in agribusiness occupations
3. Carrying out experience programs in agribusiness occupations
4. Keeping records on experience programs in agribusiness occupations
5. Summarizing and evaluating experience programs in agribusiness occupations
6. Organization and operation of agricultural businesses and industries
7. Agricultural mathematics
8. Human relations and personality development
9. Store skills
10. Salesmanship and selling

By dealing with these units through group instruction, the teacher should be able to secure those learnings needed by most students, regardless of the types of agricultural occupations the students will be training for.

A part of the class time should be devoted to individual study (or individualized instruction), during which time each individual student should study to *develop the knowledges and understandings* he will need to *perform the jobs and carry out the responsibilities* which he will have at his training station. Where does the teacher go to get help for his students for this individual study, diverse as it may be? A few teachers have developed their own individual-student study-guides, based on local needs. Several states have made a start in developing individual student study materials. Among those states are Texas and Kentucky.

Teachers of agriculture must organize and use the total agricultural resources of the community.

Individual Study

The teacher will need to think through how he will organize his class for individualized study and carefully orient the students to the procedures to be followed. The students and the teacher (together) must develop "a know how" and "an enthusiastic spirit" for individual study.

The Summary Challenge

Programs in agribusiness education in the decade ahead must break with the past in which they were limited to the resources of the home farm. Teachers of agriculture must move to organize, to capitalize, and to use the total agricultural resources of the community. The teacher of agriculture must develop his skill in organizing and managing these resources to support his local program, and he must develop his skill in organizing and managing individualized instruction to meet the diversity of the training needs 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. ◆◆◆

(Atherton—from page 202)

—"Plan your work and then work your plan!" Another business placed this squib on its bulletin board—"Prepare for the unexpected. It is bound to happen." Both of these admonitions are concerned with planning and following through with decisions.

Much of one's program will be based upon the work of the previous year and on the practices of others. One should constantly be looking for new and better ways of doing things. One should be aware of his limitations and recognize that the task is too large for the teacher(s) to attempt to carry the ball alone. One must be able to determine and then set priorities so that the essential is not neglected for items that are largely window dressing. Some responsibilities can be and should be shared with the various elements of the community. It is unwise for the instructor to attempt to be the "whole show."

As a teacher, one has the task of developing competency among the citizens of the community. People participation is the primary means for accomplishing this. This requires the sharing with others of certain privileges and responsibilities. They could be led to see that these new responsibilities are in reality opportunities for personal growth and a means of providing community service. It is a marvelous way, too, of improving effectiveness of the educational program in agriculture.

Attempting to do it all by oneself can lead to frustration. The stress and strain of constant pressures to get things done robs one of the energy needed for daily activities. Tensions are created by the work left undone and the residents of the area are not developed as they could be. This leaves all parties short-changed.

It is recognized that one may find it hard to delegate activity. Holding on to responsibility seems to be a human trait. But, if one knows those he is working with and has confidence in their reliability, the risks incurred by sharing are outweighed many times by the potential gains. Confidence in the people one works with comes through knowing them. This involves communicating (a two-way road) with them.

In preparing for the new year one needs to determine where he is going and then set priorities that will enhance a successful journey. Concern must be given to the balancing of quantity with quality. Consideration should be given to the means available to reach the overall objective. Not the least of these is the local human resource. Results are the natural outcome of good planning that is carried to the doing stage. ◆◆

THE LIBRARY -- AN AG TEACHING RESOURCE

Linda Phillips, Librarian
Agricultural Technical Institute
Wooster, Ohio

Something different in the way of library services in going on at the Agricultural Technical Institute (ATI), a unit of the Ohio State University's College of Agriculture, located in Wooster, Ohio. The unique patronage of the ATI Library Learning Resources Center is responsible for its somewhat unconventional development. While many libraries serving two-year institutions emphasize building strong book collections in the arts and sciences, and many technical institutes purchase a large number of vocational texts, ATI has departed from the traditional to pioneer an approach to a subject that is as old as man.

This fledgling discipline is called agricultural technical education and its faculty and students are getting into the subject in the classroom and out—in the field, in the lumberyard, in the greenhouse, in the nursery, in the barn, on the track, on the turf, and in the laboratory—essentially, in the industry. As patrons seek answers to "why" as well as "how," they want a special type of information. It must be practical. It must be current. It must include a wide selection of materials, both trade and technical, in agriculture and related areas.

Because of the relative youth of agricultural technical education, there is a shortage of textbooks specifically oriented to ATI's technical programs. Frequent use of the Library Learning Resources Center (LLRC) reflects faculty and student needs for supplementary classroom materials. The ATI faculty encourages students to read the leading journals and newspapers in their fields. Questions like, "Is the *Wall Street Journal* in yet?" and "Where is this month's issue of *Drover's Journal?*" are as regular as requests for the most current *Sports Illustrated*.

Another innovative feature of the LLRC is ATI's commitment to developmental education. Students who need or want to improve their reading and study skills enroll in the Guided Studies Lab where they receive individual attention from a Guided Studies Specialist.

Finally, through its orientation and instruction in the availability and use of materials, the LLRC contributes to the beginning of a career. In two short years most students will be entering the agricultural industry as technicians. They will have with them some practical information and experience and the challenge to keep current in their fields. The LLRC faculty encourages students to note informational sources for future use, to get on catalog and pamphlet mailing lists and to develop the communication skills necessary for acquiring and synthesizing new ideas.

To make the collection practical, current and broadly agricultural, materials are being added in many formats. Periodicals represent a large portion of the resources. Their scope is technical, trade and general. Scientific research journals are purchased only if regular use is anticipated. This approach reflects that of the curriculum: students search for information on specific topics; they do not get involved in complicated research studies. While some assignments require synthesis of several sources of information to reach conclusions, the sources required are not scientific research journals. Several periodical indexes are on hand to facilitate subject searching.

For the times when students or faculty desire further information, a listing of the Ohio Agricultural Research and Development Center Library journals is available. Their collection, located at the Research Center just across the field from ATI, is comprehensive for agricultural research. ATI current issues of magazines are arranged in the periodicals lounge according to broad subject areas—agronomy, horticulture, wood, animal science, and general. Older issues are shelved in alphabetical order in the stacks. Most journals begin with 1972 issues (the year the school opened). The decision must still be made as to how long they will be useful to the patrons.

The book collection emphasizes technical, general and basic subjects. Active in book selection are the faculty, each having a particular area of specialization. The LLRC selection policy states that materials purchased will support the curriculum, contribute to the overall development of the person, and represent varying reading and technical levels. As the study of agriculture touches so many fields, one may expect to find books on communications, biology, botany, chemistry, business, psychology, math, sociology, and economics as well as those in the agricultural technical subjects.

A relatively new approach to learning is represented by the media collection which is rapidly growing in content and approval. In many cases the materials, such as slides and filmstrips help the users visualize concepts which they have read about or heard in class. Others, like the cartridge films may be used to present a lab experiment in review. Some programs give students a chance to look at weed or other plant specimens for aid in identification. Some social science programs present an issue in a total package, like *The Puritan Ethic*. Faculty place media items on reserve, along with their books.

(Concluded on page 208)

Virgil Telfer's Career Benefits Three Generations

Three generations of farm families have benefited from the knowledge and talents of Virgil Telfer, Martinsville High School vocational agriculture teacher.

High school students for the last 46 years and adults in evening classes for the past 37 years have learned the latest in agriculture developments and practices under Telfer's guidance.

Telfer retires this year at 67, two years past the standard retirement age. Yearly requests by the school board and his own enjoyment of teaching kept him in an active role in the school's ag program.

"They asked me to stay on for a third year," Telfer voiced, "but I just felt that I would have to leave sometime and I finally made the decision that had to be made sooner or later."

Telfer's classes over the years have mirrored the change from straight vocational agriculture instruction to vocational agribusiness.

"Not every ag student can or wants to farm but many want to stay in an ag-related business," Telfer emphasized.

Under his guidance, class enrollment is 134. Not included in this total are two large adult evening classes.

He believes that for a strong program, students need an active Future Farmers of America (FFA) chapter. And the Martinsville chapter and its members have received just about every state award possible plus several national honors.

In order for the ag program to succeed he has developed: a strong supervised practice farming program, a strong FFA leadership training program, a strong adult and young farmer program, and many good community service activities.

Students currently farm 50 acres of school-owned property to gain practical knowledge. From crop money a tractor is leased and varieties of feed, fertilizer and chemicals are purchased for crop production.

TEACHING CAREER ENDS—Virgil Telfer and his wife, Mary, have many fond teaching memories. This motorcycle dates back to almost the beginning of his teaching career, when Virgil used it to make his visits to students' agriculture projects. He still rides it.

Having graduated from high school in 1924 and from Purdue four years later, he taught vo-ag for seven years at Orleans before moving to Martinsville.

Telfer feels that today's students are in general not quite as considerate but thinks that the change simply reflects changes in the parents' and peers' attitudes.

"I don't mean this in a negative way at all," he emphasized, "I am proud of all my students and their efforts."

Trophies, plaques, citations, and other awards at home and displayed in the modern class and shop area attest to the fine program and students at Martinsville.

He and his wife, Mary, have three grown children: Marylin, Virgil, Jr., and Michael and 9 grandchildren.

Mrs. Telfer was awarded the honorary chapter degree by the Martinsville FFA chapter two years ago. She was the first woman to receive such an honor in the local chapter.

Plans after retirement are indefinite but possibly more time will be devoted to his hobbies of landscaping, fishing, boating, water skiing, gardening, bowling and music.

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August 1974

SINGLE-CONCEPT SOUND FILMS REINFORCE LEARNING SKILLS

Professor Clinton Jacobs
Department of Agricultural Education
The University of Arizona

We are using single-concept, sound super 8 films at the University of Arizona to prepare future teachers of vocational agriculture with agricultural mechanics skills they will need in their profession.

These skills cover a lot of ground, ranging from how to light and adjust an oxyacetylene torch to how to finish and cure cement. Simple reasoning makes it necessary for the teacher to know how to demonstrate the skills if he is to be effective.

However, practicality makes it nearly impossible for vocational agriculture teachers to be able to demonstrate all of these skills. And even when an instructor can give a proper demonstration of a psychomotor skill, he is limited in the number of times he can be expected to repeat it for the slower learner or the student who was absent the first time.

It seemed to me and my colleagues that the best answer was to use some form of audiovisual instruction to demonstrate these skills. Our experience has been that students can best grasp what they can visualize.

We considered and rejected several alternatives. The first was the use of slides and audiotape. While that medium works well for teaching many things, we felt that we needed some way to depict motion for demonstrating psychomotor skills. We also looked into the possibility of using commercially available movies to fill the gap. The problem was that there weren't too many films which could be specifically oriented to the curriculum.

Some consideration was also given to using the videotape equipment that our department had acquired for use in evaluating the performances of student teachers. We chose videotape for that application because we felt that the instant playback feature would be important.

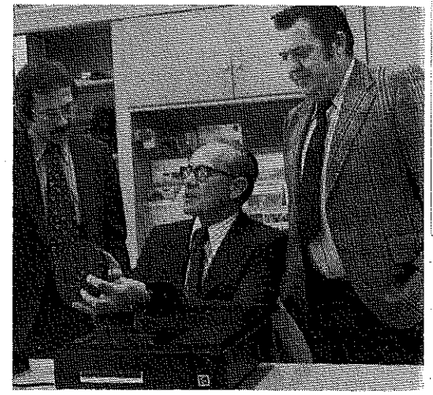
However, we soon decided that videotape had several drawbacks for teaching psychomotor skills. For one, the equipment for both recording and editing was costly and difficult to use. Also, we have black-and-white equipment, and we felt that color was essential for us.

Then, late in 1971, we investigated, producing our own single-concept sound super 8 films. By single concept, I mean that each short film focuses on just one skill.

Before proceeding, we researched the mechanism of producting super 8 film. We wanted to learn all of the variables before committing ourselves. One of the things which kept us from investing in more extensive videotape equipment, for example, was its lack of standardization. We didn't want to buy anything which could be obsolete in a few years. Nor did we want to invest in equipment for producing software which we couldn't share with other universities and schools.

There were no such problems apparent with super 8 film. While there are several types of projection cassettes for easy-loading projectors, the same film format is standard all over the world. In fact, we learned that sound super 8 films can even be transmitted through closed-circuit television.

Encouraged and supported by Professor Floyd McCormick, head of our department, we began experimenting with the production of single-concept films. We decided to focus on the two-year-core curriculum used by an estimated 80 percent of the Arizona high schools teaching vocational agriculture. The College of Agriculture in cooperation with teachers in our state made that curriculum available to high schools a year earlier. The initial films



Professor Clinton Jacobs, center, discusses presentation techniques with Professor Floyd McCormick, right, head of the department of agricultural education, and Don Henderson, a sales and engineering representative from Eastman Kodak Company. Cassette-loading projectors, like the Kodak Supermatic 60 sound projector seen in this picture, are easily operated by teachers and students, Prof Jacobs reports.

that we produced were designed for eventual integration into that curriculum.

I consulted with Don Henderson, an Eastman Kodak Company sales and engineering representative, on production techniques and I relied primarily on what worked best for us. In this regard, I was often able to secure important help from various graduate students interested in filmaking.

The department purchased a super 8 camera, which we used for originating the films. The film work generally is done in several stages. First, a demonstration, such as the lighting and adjustment of an oxyacetylene torch was set up and rehearsed. Then, we prepared an outline of the information that was to be put on film.

(Concluded on next page)

(Jacobs—from page 207)

Although the camera is light and can be hand-held, for the best quality, we use a steady tripod. Indoors, we use a quartz light to obtain color balance. Then we record the demonstration from start to finish using Kodachrome II film. Afterwards, we repeat some of the key operations so additional film can be exposed close up. Finally, we film titles, subtitles and credits by using slides prepared by the university's photography department, and also ceramic letters exposed against a dark, cloth background.

The film is sent to a commercial laboratory for processing. Afterwards, a small hand editor is used to splice the various scenes into sequential order. Next comes the all-important task of adding a sound narration to the film. I say all-important because this provides the uniformity of the information presented to students.

It is next to impossible for every teacher to stay current on all of the skills needed today in vocational agriculture. However, the sound film makes certain that students will learn uniform terminology, as well as technique.

After editing the film, it is sent to Kodak for Sonotrack coating. What they do is add a magnetic track for sound recording onto the edge of the film.

When the film is returned, I write a narration, and then record it on the film using a sound projector. This is a fairly easy practice that practically anyone can master. You simply record your narration on the film, as you view it. It is just like using a tape recorder. If you don't like the way something sounds, you just backtrack and re-record it.

I found that, with everything considered, it takes approximately 10 to 15 man-hours to originate a single-concept sound film with a running time of five to 10 minutes (which is between 50 and 100 feet of film). The cost for doing this ranges between $9 and $18.

There was no doubt in my mind that our investment was returned many times over in instructional time saved and the enhancement of learning. A graduate student, Mr. William Funkhouser, presently teacher of Vocational Agriculture, Parker, Arizona, was interested in testing the value of our films to develop psychomotor skills.

We had the full cooperation of teachers of vocational agriculture at six Arizona high schools who were using our core curriculum. These teachers randomly placed the students in one of their classes into three groups. There were 35 students in each cumulative grouping.

The students in the first group had their instructors' demonstration of lighting and adjustment of the oxyacetylene torch. Group two saw the same demonstration, but they were also shown the single-concept film on the subject. The third group only saw the film.

Afterwards, Mr. Funkhouser tested the skills of the students in each group. He found that those in the first and third groups were able to perform at about the same level. However, the students in the second group performed at a significantly higher skill level than all of the others when compared at the .05 level of confidence.

To solve the problem of having both teacher and student handle film by threading a projector, we proposed the cartridge loaded film. However, when we looked into that, we decided the use of closed-loop cartridges could be a real drawback. Even film in a cartridge picks up some dirt and dust during operation. It has to be cleaned periodically—which is difficult in a closed-loop cartridge.

That led us to the use of the Kodak cassette. This combines the feature of pop-in projector loading with easy accessibility of the film for preventive maintenance. Furthermore, a number of other projector manufacturers have adopted this format.

After considering a number of machines, we chose the Kodak Supermatic 60 sound projector for use primarily because it is especially adapted to group presentation and for individual student use.

For classroom presentations, the projector is used to throw a large image on a wall screen in a darkened room.

We also use the same equipment for individualized instruction. Any student or small group can use the projector to review or make up any class using the built-in projector screen that provides a bright, sharp image in ordinary room light. This means that students can work with the films, in a quiet corner while the rest of the class is going on.

Currently, one of my graduate students is building a special study carrel for in-class use. This carrel will hold the projector, our films and other visual resource material for individualized and self-paced instruction.

During the spring semester of 1974, we provided duplicate copies of a set of sixteen films and a Kodak Supermatic 60 projector to seasoned vocational agriculture instructors at two Arizona high schools: Charles Turpin at Kofa High School, Yuma, and Marvin Busby at St. David High School, St. David.

When they complete their evaluation of the films, we believe the facts will speak for themselves. If our previous experience means anything, the instructors are going to find that they have saved a great deal of time, which can be applied more positively than preparing for demonstrations. More importantly, they will have applied an important Law of Learning—the Law of Primacy—by having seen and heard how to do the operation correctly in the beginning.

The result, we hope, is that we will be able to provide all or many of the vocational agriculture departments in the state with films coordinated to the core curriculum. ◆◆◆

(Phillips—from page 205)

The LLRC's Guided Studies Laboratory contains a collection of reading and study programs which range in difficulty from grade seven to advanced speed reading. The Guided Studies Specialist helps interested students identify their weaknesses, and together they design an improvement plan. Some of the work is individual, while other sessions may be group study on a common problem. Also available through the Lab is peer tutoring.

In summary, the LLRC is an instructional unit of the Agricultural Technical Institute which helps students prepare for technical careers by providing current, immediately useful information in agricultural and related subjects. With the Learning Center faculty as teachers, students are exposed to a variety of materials, methods for their use, and techniques for acquiring information beyond graduation. The LLRC is different and it doesn't have a model to follow, but it is responding to its active agricultural patrons. ◆◆◆

NATURAL RESOURCES IN VO-AG

Lee Coumbs
Ag Teacher
Centralia, Washington

Lee Coumbs

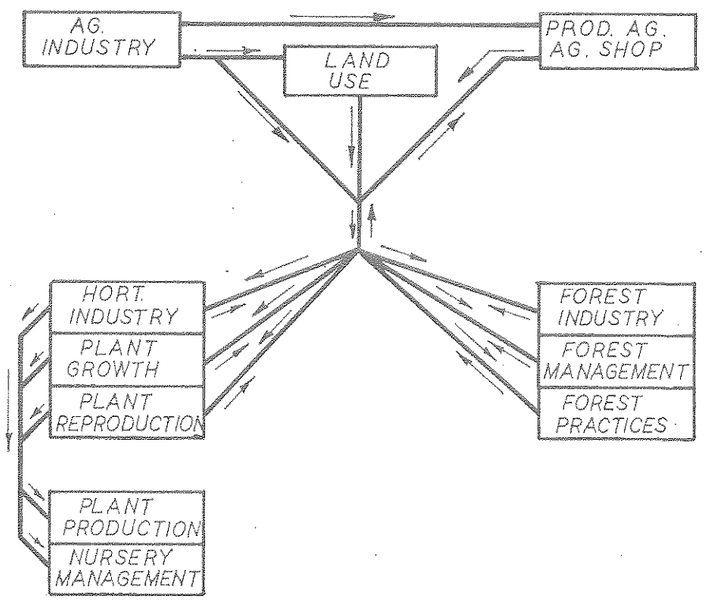
The basic assumption of vocational education is that programs based on employment criteria which are achievable within our school systems are desirable. To promote this concept we establish advisory committees and seek statistics on labor trends, and follow-up information on graduates to support our programs. In program evaluation, however, do we truthfully consider our basic natural resource, the present student? It is not necessarily true that labor needs, advisory recommendations and student needs correspond.

Ag programs are like crops, they either grow or die and most require weeding. Any production unit must maintain a high level of productivity and quality, schools are no exception. Businesses that are dependent upon one resource take precautions to insure its protection and supply. Students, being our main resource, deserve this same respect.

I believe that people and land are our primary natural resources. These, combined into livelihoods, create our environment. The whole program is based upon people and their interrelationships. How do agriculture people make a living? What are they producing under present practices? Who do they depend upon? What affect do they have on our economy?

By stressing natural resources and environmental concepts that key on people, economics, and science, (Vo-Ag all the way) we have created a situation that attracts students and gains support from our community.

Our program stresses economics as it applies to the student's life while at the same time surveying their occupational opportunities. It includes the scientific concepts on a how-to-basis in the production classes. Natural resources and environment are key points in the use and management classes. Care is taken in each unit to indicate that people are the main ingredient in our ecology and their standard of living must be considered. This approach means that instruction must be personalized, not packaged or programmed.



Flow Chart of Centralia, Washington Vocational Agriculture

The most important aspect of our program is that each student selects the amount and kind of instruction. Operating under tri-mester scheduling, students advance rapidly to advanced classes, skip units and go back to select others as they perceive their need. Although we encourage students to follow a pattern of course development it is not required.

The 9th grade boy with a home garden, the 12th grade boy and girl employed at the local nursery, the logger's son and the truck farmer's daughter may be enrolled in Plant Growth or Land Use at the same time. This we find desirable for students bring community examples, practices, and uses of scientific knowledge to the classroom.

This type of program and student orientation does pose problems such as:

(Concluded on page 211)

The Concept of Technical Education in Agriculture

Harland Hasslen
Chairman, Academic Divisions
University of Minnesota—Waseca

Harlan Hasslen

An important educational innovation has been emerging since a 1964 National Seminar on Agricultural Education at Ohio State called attention to the concept and need for the development of "relevant" technical programs to prepare students for both farm and off-farm occupations in Agriculture. The concept incorporates "why" and "how" for the purpose of preparing students to perform at mid-management, semi-professional or para-professional competency levels. It was obvious to those who attended the seminar that modern educational goals are in a state of constant change and adjustment. The need for everyone to reach for advanced educational degrees at the B.S., M.S. or Ph.D. level of attainment was becoming less important in the minds of students as well as those in charge of hiring suitable performing personnel.

Proponents of agricultural technical education feel that our concerns are students and not long standing doctrines and disciplines. They feel that we ought to be able to recognize the need for agricultural education at every level from our secondary schools right on up through our post-secondary institutions. Agricultural educators, like their counterparts in other disciplines, have begun to realize that we can no longer tolerate any educational system that: 1) ignores the world of work 2) defines occupational studies as inferior to general studies 3) provides for only the academically endowed. Such attitudes can only lead to a vast wasteland of disadvantaged youth who are untrained and therefore unwanted. Workers hired for mid-management and semi-professional skill can be as important to business and industry as the highly trained professional who operates in high management positions.

THE AGRICULTURAL TECHNICAL COLLEGE

The University of Minnesota, recognized these emerging needs in agricultural education, and established two technical colleges for agriculture; one at Crookston and the other at Waseca, Minnesota. The coordinate campus at Waseca, Minnesota was established in 1971 as a single mission college for the purpose of preparing students for mid-management, semi-professional positions in broad fields of agriculture. The primary objective of the College has been to develop technical competence for employment at the end of an associate degree program of two or more, but less than four years.

It has been highly important to the success of the college that the objectives of technical education are clearly understood and meaningful for our students, our faculty, the community of people who support us and legislators who need to know why they ought to fund this type of education. There seems to be substantial evidence that every type of education must establish a philosophy, a goal and teaching-learning implications for its successful implementation. Instructors at UMW were made aware of the characteristics of technical education that set it apart from whatever background of education that each of them may have had. They have been constantly reminded that the formation and presentation of course material must deviate from conventional types of instruction to fit the goals and objectives of technical education.

WHAT IS AN AGRICULTURAL TECHNICIAN?

Instructors at the college are oriented to the realization that an agricultural technician is a worker located between the skilled worker and the professional in the job classification structure, in his work performance and his educational attainment. He possesses the skills and ability, working independently or with minimum supervision from a professional; to analyze and interpret information, diagnose problems, make decisions and make practical applications of theoretical knowledge in performing specific skills in a specialized field in the production, processing, distribution or marketing of goods and services in agriculture. He must exercise cognitive skills primarily, but also must be able to supervise and perform manipulative skills.

The objectives in programs for agricultural technicians have provided for a training program according to this definition. Technical curriculums must be offered in institutions which have as their objectives and legal bases the right to technical education. The immediate availability of laboratories both in broad and narrow interpretations is mandatory for this type of education to

(Concluded on next page)

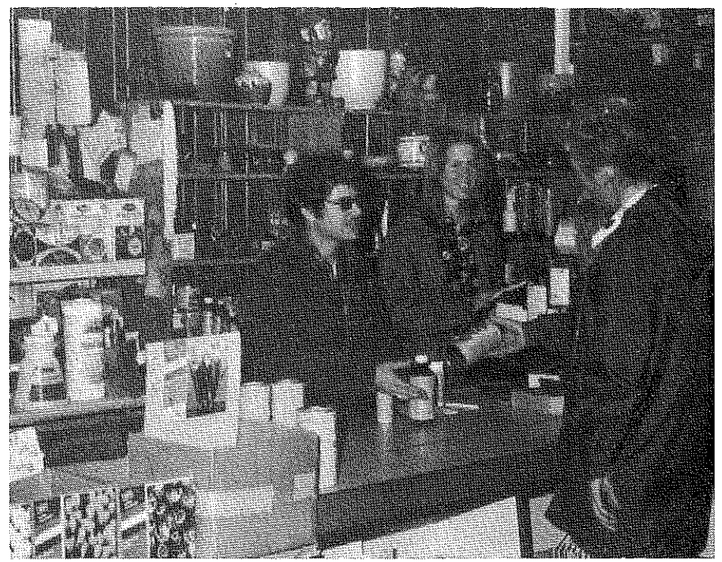
(Coumbs—from page 209)

continuity in enrollment to carry on production home projects; maintaining a progressive FFA chapter; qualifying for vocational funding, and keeping follow-up information on graduates. More students are continually entering and leaving with a greater variety of interest and abilities. We do not feel that this is a failure of the program, but rather one of its major strengths.

Four years ago Centralia High School was in the position of dropping Vo-Ag or creating a viable program that encouraged student enrollment and met our communities need. We feel that by stressing environmental and natural resources in conjunction with the practicality and activity long associated with Vo-Ag programs, we are meeting these objectives. The agriculture enrollment from a school of 1150 has increased from 30 students to over 200 in four years, requiring the addition of another instructor.

Our science and industrial arts departments are looking closely at combining our programs so that students have a greater flexibility in designing their education and in meeting graduation requirements. We have plans for the Biology Department to provide the plant reproduction and the industrial arts to provide a small engine unit. Our goal is someday to have vocational students instead of vocational classes. Does it really matter why a student is enrolled or where he receives the knowledge and skill as long as we are producing a quality product capable of entering the labor market? This approach not only strengthens our Vo-Ag program, but also makes it an intregal part of the total school for all students.

By careful weeding of our program, we have created time and space for additional staff and students, thereby reaching more students. Students are our greatest natural resource, what they do with the earth will create the environment we all must live in. Let's reach all we can! ◆◆◆



Two Centralia students, Gary Robertson and Sue Riley, working at Pioneer Plant Patio.

(Hasslen—from previous page)

succeed. Variable devices used in presenting our course content within an agricultural technical curriculum have ranged from a selection and arrangement of standard collegiate level courses to an arrangement of learning principles. These include a skillful blending of theory with the confined in-house laboratory technique, field trips — both observational and hands on, field demonstrations and supervised work experiences in barns, fields, plots and designated specialized outdoor laboratories which are immediately adjacent to total college facilities.

OBJECTIVES FOR TRAINING AGRICULTURAL TECHNICIANS

The objectives at Waseca have been to design curriculums as primarily occupation-centered and planned toward occupational competency for our graduates. Lay personnel in agricultural businesses and industries have been involved in the development of objectives for agricultural technicians through wise and judicious use of advisory committees. However, clearly defined and realistic objectives for the training programs have been developed under the guidance of professional educators. A major objective of the training programs has been to prepare the student for immediate and productive employment in the technical occupations for which training is provided.

A characteristic of technical education must include the practice of having a student work in his or her chosen field in an actual employment setting. The University of Minnesota—Waseca has provided for this experience by including an internship program in its curriculum. It has been a highly successful program wherein students have gained an excellent basis for determining their suitability, both to the occupational specialty they have chosen and to the prospective employer seeking competent personnel.

It is time that we acknowledge the variable needs of all students who seek careers or satisfaction in an agricultural occupation. The concept of agricultural technical education must be as meaningful as for any other type of technical education. Hopefully, those who engage in this type of training recognize the need to cultivate a feeling and philosophy for it and then develop positive convictions concerning its merits and values. ◆◆◆

James Shill

ADDITIONAL COMPETENCY DEVELOPMENT: A CHALLENGE FOR TEACHER EDUCATION

James F. Shill and Herbert M. Handley
Mississippi State University

H. M. Handley

Indications are that many competencies needed by teachers are not being developed within the university setting. Some competencies, due to their nature, must be developed on the "firing line" within the community itself.

Placing student teachers or interns in local school systems does not by itself assure that needed competencies will be developed. In far too many instances the interns are as "isolated" within the school system itself as they were within the university setting; thus, they are unable to develop competencies requiring intensive involvement in the community.

Many young teachers after completion of pre-service teacher education programs, enter their first teaching job assuming they have sufficient competencies to perform all tasks necessary for conducting an effective vocational agriculture program because of their experiences at the university and during practice teaching. However, after this first year of teaching, many of these teachers ask "Were the competencies developed in the pre-service programs actually those that were essential to my effectiveness in carrying out a program?" This question over the years has become increasingly more important to teachers, supervisors, and teacher educators in agriculture.

The recent increased emphasis on developing competency-based teacher education programs has altered many persons' concepts of both pre-service and in-service activities. While competency-based models are being explored by many teacher education institutions and state departments of education, and are still considered by many to be experimental, they have already brought about changes in many teacher education programs. Many educators, as well as lay citizens, believe that more emphasis should be placed upon performance-task development rather than on courses in teacher education programs.

To gain insights into the effectiveness of the pre-service teacher education programs, a joint research project was developed by the Research and Curriculum Unit, and the Bureau of Educational Research at Mississippi State University. While the project examined all service areas in vocational-technical education in Mississippi, only those insights concerning the agricultural service area will be presented in this article.

In reference to vocational agriculture, the specific problem in the research was to answer the question: How effective are present pre-service programs in vocational agriculture for preparing beginning teachers to perform specific employment-related tasks? The ultimate objective was to provide data which could be utilized by teacher educators and administrators for planning programs to improve teacher performance in tasks related to the cognitive and psychomotor domains.

Methodology

In the research, vocational agriculture teachers with one to three years' teaching experience in Mississippi related their recent experiences in pre-service education programs to their employment performance demands. In addition, local administrators, state level administrators, and teacher educators made judgments concerning the competencies possessed by the teachers upon completion of pre-service education programs and initial performance in their teaching positions.

Previous performance requirements research efforts by Cotrell and others[1,2,3] at Ohio State University were utilized in the development of an assessment instrument, the *Preservice Teacher Education Questionnaire*. The instrument which was developed and field tested contained 94 tasks which were divided into nine performance areas required in vocational agriculture teacher employment. These areas evolved around: (1) tasks required in planning of instruction; (2) tasks required in execution of instruction; (3) tasks required in evaluation of instruction; (4) tasks required in student guidance; (5) tasks required in program and/or course management; (6) tasks required in public and human relations; (7) tasks required in the professional role; (8) tasks required in student vocational organizations; and (9) tasks required in program coordination.

Data from the research were used to analyze information concerning characteristics of vocational agriculture personnel, appraise overall performance tasks, and determine group perceptions of pre-service performance tasks development. Differences in performance levels were predicted by the analysis of variance model and a post hoc measure (Duncan's) was made on each of the criteria showing significant F ratios. In the analysis of variance model, the mean ratings given by pre-service teachers for preparation on the 94 separate tasks were also compared to the mean ratings given by the group of administrators and teacher educators.

Findings

In general, no significant differences were found between the mean ratings of beginning teachers and the mean ratings of other educators (administrators and teacher educators). These results indicated that beginning teachers included in the study were apparently realistic in evaluating their performance levels.

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To aid the reader in interpretation of information presented on the performance level of competency development, the rating scale developed was defined as follows:

Level 5: *Competent Performance*—Able to demonstrate desired task performance INDEPENDENT of direction or assistance of others.

Level 4: *Capable Performance*—Able to demonstrate desired task performance when provided SOME direction or assistance.

Level 3: *Adequate Performance*—Able to demonstrate desired task performance when provided CONSIDERABLE direction or assistance.

Level 2: *Acceptable Performance*—Able to demonstrate desired task performance when provided CONSTANT direction or assistance.

Level 1: *Inadequate Performance*—UNABLE to demonstrate the desired task at the most elementary level even when provided CONSTANT direction or assistance.

The group of performance tasks relating to planning of instruction was approaching the capable level of the development in pre-service teacher education programs. Performance development in this group was at its lowest level for those tasks requiring activities "outside" the normal school setting in such tasks as: (a) determining out-of-school learning experiences, and (b) organizing and working with advisory councils.

Most performance tasks relating to the execution of instruction were above or approaching the capable level of development through pre-service education programs. However, the performance tasks of using various media in presenting a lesson and conducting visits to students' homes for instructional purposes were being developed at below the adequate levels.

All of the performance tasks relating to the evaluation of instruction except one were approaching or at the capable levels of development through experiences gained in pre-service education programs. The one exception was the performance task of evaluating standardized test results which was being developed at the adequate level.

Many of the guidance-related performance tasks were being developed midway between the adequate and capable levels. The lowest development level of tasks in this group was for the tasks concerning developing criteria for selection of students, and for interpreting student cumulative records.

Performance tasks relating to classroom and program management were being developed at the highest level in such tasks as maintaining tools and equipment, and developing safety procedures. Lowest levels of performance development for the group of tasks were in the areas of maintaining placement and follow-up records, and preparing and submitting local and state reports.

The highest level of performance on tasks in the group relating to public and human relations was on those dealing with developing and maintaining professional working relationships with other teachers and administrators. Lowest performance levels of development in this group of tasks were in those concerned with keeping the community informed about program activities.

In the group of tasks relating to student vocational organizations most were being developed at a point midway between the adequate and capable levels of performance. The task being performed at the highest level of the group was that of developing a yearly program of work for the organization. Lowest performance levels were in tasks which stimulated participation in meetings and contests, evaluating the organizational program, and establishing policies and procedures for the organizations.

Only one group of performance tasks was being performed below the adequate level. These were the tasks relating to program coordination. Such tasks as conducting a community survey, maintaining files of jobs and employers, selecting training stations, and establishing policies and procedures were being performed at low levels after completion of pre-service programs.

The 94 performance tasks assessed in the research were divided into the nine specific groups according to their relationship. The task groups assessment as ranked according to highest performance levels were: (1) Public and Human Relations; (2) Planning of Instruction; (3) Evaluation of Instruction; (4) Execution of Instruction; (5) Program and/or Course Management; (6) Student Vocational Organizations; (7) Guidance; (8) Professional Roles; and (9) Program Coordination.

Implications

The information gained through this research aided in providing insights to persons planning pre-service and in-service teacher education programs in agriculture. Evidence collected for this study yielded the following implications:

1. Increased experiences should be provided in pre-service education programs for participants to work under supervision in "actual" school situations, and with adults and the community. Indications are that increased experiences are needed in working with people (students, adults, and other school personnel).
2. Increased experiences should be provided in the diagnosis of individual student learning patterns and selection of proper teaching methods/techniques for maximum student achievement. Implications are that closer supervision needs to be provided in this area when beginning teachers enter their first years of employment.
3. Additional experiences should be provided in the area of student supervision and guidance with special emphasis being placed on methods of providing "correct" disciplinary actions for student.
4. Additional experiences should be provided through the use of newspapers, radio, and TV for keeping the community informed about the vocational agriculture program.
5. Additional experiences need to be provided in establishing policy and procedures, evaluating, and stimulating participation in meetings and contests in the FFA organization.
6. Increased experiences should be provided in conducting community services, establishing policy and procedures for on-the-job-training, supervising student-learners' performance, and maintaining files on available jobs and employers.

Information gained through the research tends to emphasize the need for pre-service educational experiences in the "field" rather than on university campuses. Competency levels apparently are lowest in those areas requiring the actual working with students and adults.

(Concluded on page 214)

SUMMER PROGRAMS

Herbert Schumann
Assistant Professor
Sam Houston State University

H. Schumann

How do your school administrators feel about your summer program? How can the summer program of vocational agriculture contribute to more harmonious relationships between teachers and their administrators? What guidelines should the teacher follow to ensure the success of his summer activities? It is imperative that teachers answer these and other questions as they plan summer programs of vocational agriculture. Too often poorly planned and implemented summer activities are the source of considerable conflict between teachers and administrators.

Local school administrators are charged with the responsibility for ensuring that tax dollars are utilized so as to achieve the best possible educational program for the school district. They are, therefore, justifiably concerned regarding the performance of the vocational agriculture teacher during the summer. Summer employment offers the vocational agriculture teacher the unique opportunity to attain excellence in his program. In order to achieve this goal and to enhance relationships with their administrators, there are several general guidelines teachers should follow:

1. The administrative office should be regularly informed regarding the activities and location of the vocational agriculture teacher. If possible, the teacher should check by the administrative office at least once each day. When someone calls for Mr. Vocational Agriculture Teacher, it is embarrassing when the administrator must say, "I don't know where he is."

When the teacher leaves the community to participate in a professional workshop, short courses, or conferences, he should inform the administration regarding the nature of the meeting and where he may be contacted.

2. Most administrators are keenly aware of the importance of public relations in securing community support for the local school district. Consequently, they react favorably when the teacher conducts activities which provide for community visibility. Regular news releases should be disseminated to the local media for publication during the summer.

During the summer when he does not have the pressure of classroom preparations the teacher should expand his work with community groups such as young farmers and adult farmers. Short courses can nurture community support for the educational program. Leadership training schools can be a valuable tool in preparing the officers for the coming year. At least one summer meeting or activity should be held for all the members of the FFA Chapter.

3. Most administrators feel that the instructional program, both in the classroom and in the shop, is the most important aspect of vocational agriculture. The teacher should carefully review and evaluate his lesson plans and make the appropriate revisions. Arrangements should be made to secure the required media and other resources necessary for the instructional program. Tools should be systematically inventoried, and additional equipment secured and organized in a manner to enhance the instructional program.

4. Teachers should strive to conduct a regular program of project supervision during the summer. Often during the summer, in a relaxed and informal atmosphere, the student may be more receptive to the suggestions of the teacher. Many students will require assistance in selecting and securing projects. A special effort should be made to visit the homes of prospective students and their parents. For teachers having programs in off-farm agricultural occupations, the summer offers an excellent opportunity to select and evaluate new training stations.

5. Vocational agriculture teachers who are employed during the summer have the opportunity to engage in professional growth activities. The teacher should avail himself of every chance to participate in short courses, conferences, and other meetings in order to keep abreast of changing developments in agriculture and education. Administrators are often heard to comment that vocational agriculture teachers remain quite knowledgeable concerning agricultural technology, but fail to keep current regarding evolving concepts and philosophies in education.

Summer employment offers the unique opportunity to develop an outstanding program of vocational agriculture. Most administrators feel that the efforts of their teachers are directed toward this goal. Well-planned and implemented programs of vocational agriculture can indeed enhance harmonious relationships between teachers of vocational agriculture and their administrators. ◆◆◆

(Shill—from page 213)

This is especially true when the activity is "outside" the normal school facilities. It appears that in far too many cases, pre-service experiences designed to develop competencies are limited mainly to "controlled" environments or simulated conditions. It is essential that those persons planning and conducting pre-service education programs in agriculture utilize the resources of various communities more in allowing students to develop competencies under realistic conditions.

1. C. J. Cotrell, J. G. Bennett, W. A. Cameron, S. A. Chase, M. J. Molnar and R. J. Wilson, *Performance Requirements for Teachers* (Columbus, Ohio: The Center for Vocational and Technical Education, Ohio State University, December, 1971).
2. C. J. Cotrell, W. A. Cameron S. A. Chase, G. R. Doty, A. M. Gorman, and M. J. Molnar, *Performance Requirements for Teacher-Coordinators* (Columbus, Ohio: The Center for Vocational and Technical Education, Ohio State University, March, 1972).
3. C. J. Cotrell, S. A. Chase, and M. J. Molnar, *A Foundation for Performance-Based Instruction* (Columbus, Ohio: The Center for Vocational and Technical Education, Ohio State University, August, 1972).

BOOK REVIEWS

EDUCATORS GUIDE TO FREE FILMS, edited by Mary Foley Horkheimer and John C. Diffor. Randolph, Wisconsin: Educators Progress Service, Inc., 1974, thirty-fourth Edition, 830 pages. $12.75

The 1974 Guide continues its excellent reputation through the 34th Edition by systematically and exclusively listing all free films available throughout the United States generally. There are 4,916 titles in this edition which include 996 new listings. The new listings are starred (*) for easy identification. The following information is used in describing each film listed: title, description of contents, date of release, size, whether sound or silent, running time, names and addresses of distributors and their branch offices, and limitations on distribution.

The Guide is well organized for efficient use by busy educators. Film titles may be located in at least three different ways, i.e., by using the broad subject area classification in the table of contents, the alphabetized title index or the alphabetized subject index. The source and availability index lists 476 organizations and addresses to which film requests may be made. Also included are availability indexes for Australia and Canada. The indexes and the other important parts of the Guide are color coded for quick reference.

All of the materials listed in this Guide are to be ordered directly from the organization listed in the source index. Suggestions are given on how to request films as well as a sample request letter.

The Horkheimers, Arthur and Mary, publish other useful Guides of instructional materials. The quality and consistency of publications have earned them numerous public awards. Educational consultants on this Guide include Drs. Glen Eye, Lanore Netzer, and Robert Krey of the University of Wisconsin System.

The Educators Guide to Free Films is a useful reference for religious as well as secular educational institutions. The Guide should find regular usage in large comprehensive elementary, middle and high schools and/or county or system curriculum materials centers as well as area vocational schools, community colleges and colleges and university libraries and resource centers.

David G. Craig
University of Tennessee
Knoxville

AGRICULTURE WASTE MANAGEMENT: PROBLEMS, PROCESSES, AND APPROACHES, by Raymond C. Loehr. Ithaca, New York: Academic Press, Inc., 1974. 576 pp. $39.50

The author, a member of the Department of Agricultural Engineering at Cornell University, defines agricultural wastes as "the excesses and residues from the growing and first processing of raw agricultural products . . ."

Pollution and the part that agricultural wastes play are very important and timely subjects. This text is divided into three areas: Defining the Problem, Fundamentals and Processes, and Management Approaches. Much detail is presented concerning the nature of pollution and the importance of the alternatives in handling wastes. Many charts and tables are included for the reader who is looking for details in a particular problem area. At the end of each chapter, an extensive list of references is presented for persons interested in more information on the studies presented.

Among the many topics covered are: pond and lagoons, utilization of animal wastes, land disposal of wastes, legal problems, methods of physical treatment, and composting.

This book would prove valuable for anyone interested in knowing about waste management. It would be best utilized in high schools as a reference book due to the technical nature of the material. The book is directed to the college and technical school level.

Virgil Koppes
Buckeye Vo-Ag Department
Medina, Ohio

DAIRY CATTLE BREEDS, by Raymond B. Becker. Gainesville, Florida: University of Florida Press, 1973, 554 pp., $17.50

The contents of the book cover the origin of dairy cattle as far back as recorded history reveals any evidence of cattle. The thoroughness which the author covered the material in the book is without question as complete as anyone could have done.

The author's background indicates that he is a man with great interest in dairy cattle. His whole life was spent working with, improving, and studying dairy cattle. His travels and studies around the world would make him well qualified to write this book on dairy cattle. Much time and money was spent while writing this book, and the contents are a valuable source of information for those who plan to enter dairy enterprises.

The author intended to write this book for all students studying dairy cattle. In my opinion, the book is more nearly directed toward college students, those in the dairy profession, and teachers as a reference book. High school students, unless they are really interested in dairy cattle, will not cover the book in its entirety. There are some parts of the book that high school students might take the time to read. Usually high school students do not read with a concept in mind that is comprehensive enough to take the time to read a book as thorough as this one. It is very interesting as personal reading, and I am proud to have it as a reference for classroom work.

John Turpin
McCormick High School
McCormick, South Carolina

From the Book Review Editor's Desk . . .

BOOKS TO BE REVIEWED

FUNDAMENTALS OF SERVICE: FASTENERS
John Deere & Company (1974)

FUNDAMENTALS OF SERVICE: FIBER GLASS/PLASTICS
John Deere & Company (1974)

PHYSICAL EDAPHOLOGY
By Sterling A. Taylor
W. H. Freeman and Company (1973)

SWINE PRODUCTION IN TEMPER AND TROPICAL ENVIRONMENTS
By Wilson G. Pond and Jerome H. Maner
W. H. Freeman and Company (1974)

OPEN SEA MARICULTURE
Edited by Joe A. Hanson
Dowden, Hutchinson & Ross, Inc. (1974)

GREEN REVOLUTION
By M. S. Randhawa
Halsted Press (1974)

THE MEAT WE EAT
By John Romans and Thomas Ziegler
Interstate Printers & Publishers, Inc. (1974)

ION TRANSPORT AND CELL STRUCTURE IN PLANTS
By David Clarkson
Halsted Press (1974)

THE FFA AND YOU: Your Guide to Learning
By Ralph Bender and Robert Taylor
Interstate Printers & Publishers, Inc. (1974)

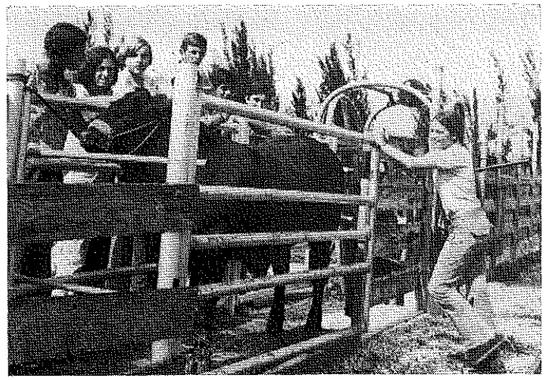
If you feel qualified to review one of these books and desire to do so, write the Book Review Editor and he will send the book for review. Once reviewed, the book becomes the property of the reviewer.—James P. Key, Book Review Editor, Agricultural Education Department, Oklahoma State University, Stillwater, Oklahoma 74074.

Dates and Events

AIC
Education Institute
Michigan State University
July 28-31, 1975

Agricultural Education

Volume 47 April 1975 Number 10



USING RESOURCES IN A SCHOOL LABORATORY—Students enrolled at Miami (Florida) Agricultural School are shown receiving practical experience in handling livestock. (Photo from H. Quentin Duff, Miami Agricultural School)

USING RESOURCES OF BUSINESS—Agriculture students at Linn (Missouri) High School observe Mrs. Linda Jost demonstrating the microfilm procedure used with records by Three Rivers Electric Cooperative. (Photo from James A. Bailey, Missouri State Department of Education)

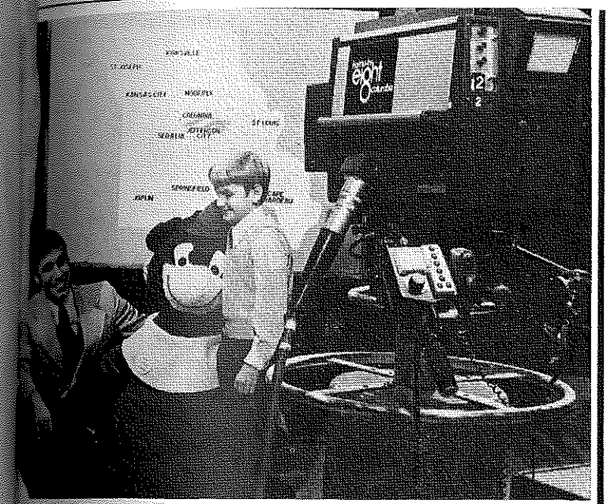
Stories in Pictures

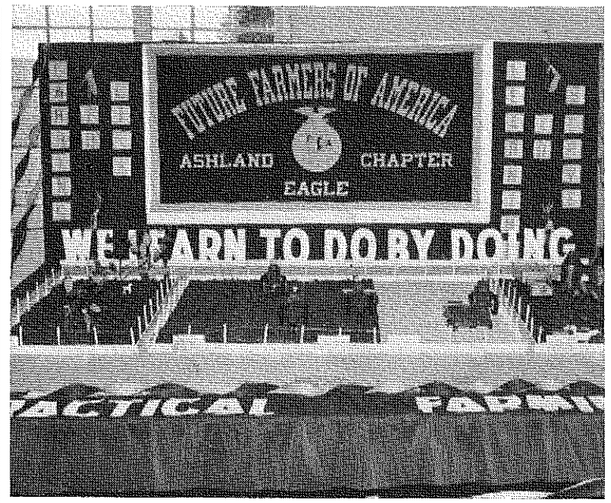
by Jasper S. Lee

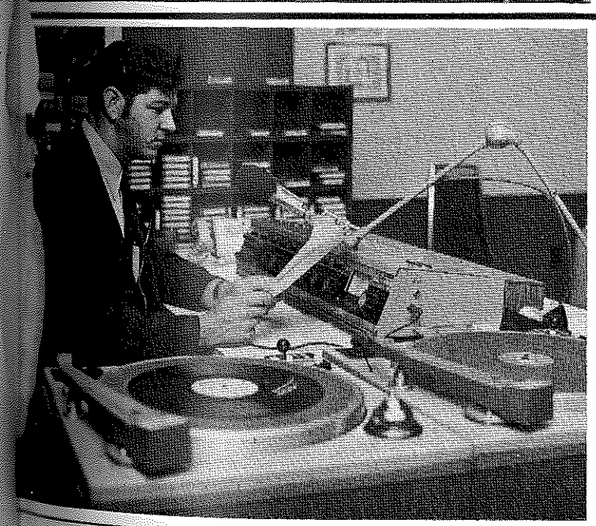
USING RESOURCES OF HIGHER EDUCATION—Universities have facilities and personnel helpful to Agricultural Education. Here personnel in the Animal Science Department, University of Georgia, assist in setting up and conducting the State FFA Meats Judging Contest. (Photo from Georgia State Department of Education)

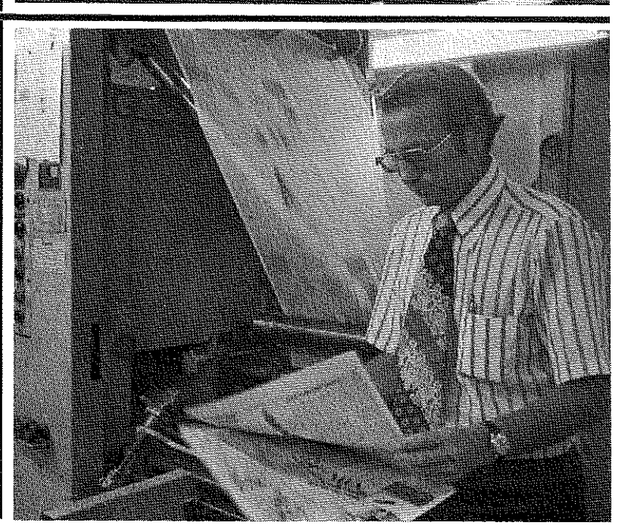
USING NATIONAL SUPPORT—Ray Tomberlin of Merck and Company, Inc., is shown presenting a check for $10,000 to Alpha Trivette, National FFA President. The contribution was made to sponsor the development and distribution of a new "FFA Advisor's Handbook." Looking on are Vanik Eaddy, Auburn University, Don Erickson, North Dakota, and James P. Clouse, Virginia Polytechnic Institute and State University. (Photo from Dan Reuwee, National FFA Center)

USING LOCAL DEALER EQUIPMENT—Students at North Shelby (Missouri) learn the adjustment and operation of farm machinery on equipment made available by the local implement dealers. (Photo from James A. Bailey, Missouri State Department of Education)









Theme—INFORMING THE PUBLIC