Closed circuit television is used at the University of Illinois to help prepare teachers of vocational agriculture. Students in agricultural education and their instructor, Paul Hemph, are observing a conference between a farm machinery dealer and a teacher of vocational agriculture.

Stories in Pictures

GILBERT S. GUILER
Ohio State University

Terrariums prepared by vocational agriculture students at Jackson High School, Michigan, as part of their laboratory experience. (Photo by Walter McCurry)

Fertilizer demonstration experiments prove to be an effective teaching technique in Kansas vocational agriculture departments. (Photo by Wisniewski)

The first woman student teacher in agriculture from University of California at Davis instructs a class at Yuba City High School, California.

Featuring —

INSTRUCTIONAL MATERIALS
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EXPRESS

Guest Editorial ...

Instructional Materials and the Teacher

Dr. A. M. Jergenson

Instructional materials is probably one of the oldest and most frequently discussed items in education. The use of instructional materials has probably influenced learning, for good or bad, as much as any facet of education. While instructional materials can make a teacher better, they are not substitutes for teaching or teachers. They can serve to spread the teacher's influence to more students in more areas.

What constitutes instructional material? The best answer may be—anything utilized in teaching. The inclusion of resource material used to assist a teacher in guiding the learning process could probably be classified as instructional materials. Most of us are aware of all new materials, and certainly this is important. Yet, lack of use of those already available or improper use may be the greatest problem. Con-
Guest Editorial

who has to use them in order for them to be effective. Teachers of agriculture have long been surrounded by an array of instructional materials that is the envy of other teachers in the school. The agricultural curriculum shop with its battery of fascinating machines and materials, or the agricultural science room with true-to-life, open doors, ownership experiences readily available to appeal to the natural instincts of students. Contrast this to the situation of the English teacher who has only books with which to work. Have we taken advantage of our materials? Do we improve ourselves in areas where we are untaught so that students can appreciate and respect the technical competence of their teachers? If we give a public demonstration of the principles and materials of their work—are slides right side up? Is our use of materials professional? In other words, do we overlook the obvious in established instructional materials or do we use them poorly?

New materials are always exciting and the temptation to go overboard in their use is ever present. Technical de- velopments could provide teachers with a greater wealth of sophisticated teaching aids. Television, single concept films, dial access teletext, language laboratories, learning centers, computerized instruction, teaching machines, and programmed instruction are not on the horizon-they are here. There is a temptation either to be engulfed by them so that the end never comes, or to fear them so much that we leave them completely alone. Aside from the electronics involved, many of these aids are simply better ways of showing what the students already know and what they are supposed to do and what good teachers are already doing. For example, when a student is given a set of animal breed identification cards and told to go through them checking the key to see if he knows the breeds, he is operating a simple teaching machine and teaching on programmed instruction. More of these materials are expensive, but greater use and new technology will eventually put these items within the reach of all schools and instructors. Even now, the number being installed in home schools is high. It is important to learn about these instructional aids as they become available and to grow with them. There are obvious advantages to, for example, the use of a moving concept film where an agricultural mechanics student who wants to learn to operate a cutting torch can independently observe a pneumatically operated torch as often as he needs to. Agricultural science student who was absent and missed the field trip on pruning can recapture the situation as often as needed. Such films, made by experts, not only give the teacher for other things, but frequently present material more adequately than the local instruction can. Television, concepts seem simple enough for instructional use, will not be here. Imagine an instructor or student teacher capturing his class on film so that at the end of the day he can see it re-enacted in order to upgrade his or the student's performance. As modern teachers of agriculture, we must give students every advantage to learn.

There is little danger of these new aids replacing the teacher in the learning process. There is the possibility of improving instruction and spreading the influence of good teachers far beyond our present imagination.

JRW

Instructional Aids for Ornamental horticulture

PAUL E. HEMP, Teacher Education University of Illinois

In recent years there has been a de- sired increase in the number and kind of curricular materials used for student use. Self-teaching devices, pro- grammed learning kits, laboratory ex- ercises, and student workbooks are gaining in popularity. The focus on instructional aids has shifted somewhat from the teacher to the student. But essentially, the materials prepar- ed for students involve more than seating about a particular area of agri- culture. In using these materials students are often asked to respond to a question, perform an exercise, solve a problem, fill in a blank, or accomplish a job.

Instructional materials developed for teacher use are as necessary and impor- tant as they have been in the past. The teacher is still the "director of learning activities," and in playing this role he must have teaching guides, source units, and teaching plans to plan and supervise appropriate learning activities.

Types of Materials Prepared

At a part of a recent research project in ornamental horticulture, the writer worked with teachers and members of a research staff to develop and refine teaching aids for students and teach- ing aids for teachers. The learning aids included fifty laboratory exercises for students to perform in turf manage- ment, horticultural mechanics, plant propagation, landscape maintenance, plant growth and development, and flowers and house plants. The labora- tory exercises were prepared in such a form that students could perform the exercises with a minimum of teacher supervision. Examples of exercises de- veloped by the research staff were as follows:

mixing potting soils

- fertilizing large trees

- identifying garden tools

- turf species and variety plots

- simple layering

- effects of growth and regulators on plants

Another learning aid developed for students by the research staff was an experience program planning guide that was used to prepare students to assist instructions in the develop- ment and execution of experience pro- grams, as well as special situations for new projects, which could be carried out at home or at school.

A series of seven source units were prepared by the research staff and a group of thirty teachers who attended a summer institute at the University of Illinois in 1966. These units, intended for teacher use, covered turf management, plant propagation, greenhouse management, arboriculture, nursery management, landscaping, and floriculture. Each source unit included information on how to teach as well as typical questions which might be raised by students and techniques suggested to give answers.

Procedures

The procedures followed in developing the curriculum materials were as follows:

- The research staff prepared the student laboratory exercises through a performance program planning guide and record book after consulting with key teachers of horticulture concerning possible exercises to be developed and appropriate content to be included.

- The thirty teachers who attended the summer institute at the University of Illinois were asked to use and evalu- ate the laboratory exercises and the record book during the 1966-67 school year.

- The research staff used sugges- tions made by teachers to revise and refine the laboratory exercises and record book during the 1967-68 school year.

- The procedures used to prepare the seven source units were essentially the same as those used in the labora- tory exercises and record book except that the initial drafts of the source units were prepared by the institute participants.

Feedback from Teachers

During the research project, evaluations of the curriculum materials and the record book were received through personal visits to schools, completion of evaluation forms by teachers, and (Continued on page 247)
A Valuable Instructional Aid

KEITH R. CARLSON
Vocational Agriculture Teacher
Belmond, Iowa

Have you ever wondered where to store some old clippings or magazines? If so, you may have stored them in your crop and soil science laboratory. If you were to take an inventory of your laboratory area, what percentage of the contents are actually used to teach crop and soil science? Many of us would estimate that we could improve our facilities. Without the time to improve our teaching.

Student Demonstrations

Crops and soils may not appeal to students as animal science or mechanics, but this may be only a reflection on our use of facilities. There are many ways to make learning about crops and soils stimulating to a high school student. None is more important than allowing a student to investigate for himself ideas that may arise from textbooks or instructor comments.

If a student reads that planter adjustment is important, he could be encouraged to explore the reasons for proper adjustment by setting up a demonstration of the emergence of seedlings from different depths below the surface of the soil. The student should be given time in class and provided with most of the materials for the demonstration. If the demonstration shows that depth of planting is important we have the student check the planter at home. In some cases it is also appropriate for him to repeat the demonstration at home. We must give each student an opportunity to challenge the material that the teacher has attempted to teach. If we stimulate a student to question the depth that a seed should be placed and then do not provide him a way to explore the possible answers, we are missing one of the best tools of teaching.

Equipment Needed

From time to time I have varying degrees of success in my efforts to encourage students to challenge what they read. Unfortunately, many times lack of success is caused by the equipment and supplies with which the student was asked to work. This is especially true if much of our teaching is forced out of season by the school year. Specifically, the student should have easy access to the following:

- seed of the types grown in the area
- planting medium, pot or sand cups
- fertilizer of various grades
- cake pans of various sizes
- felt pins
- card board for signs

This is not a long or expensive list. You will find a need for additional items as students discover how plants grow.

One of the more elaborate items of equipment I find very useful is a bank of gro-loc fluorescent lamps in a unit designed for home flower production. This unit provides light which will permit a more normal growth pattern. The cost of such a unit is comparable to many of the items in agricultural mechanics such as welders.

Another large item of equipment that we use in our crop and soil science laboratory is a used deep freezer. Plant samples collected during the summer are kept in good condition for student observation during the winter. Insect damage, disease symptoms, and growth patterns can easily be seen. This time needed to collect the samples is not great. These samples can be collected during instructional visits in high school student and adults during the summer.

Teacher Preparation

The teacher must take special effort to prepare himself for this type of teaching. There is no substitue for having the materials available. When a problem emerges that can easily be investigated, the class should immediately set up the demonstration. They cannot be expected to wait two days or two weeks while you find time to secure 2-4-D to apply to a weed.

If possible the teacher should have several basic demonstrations for the class to use. These will give students much of the information needed to set up demonstrations. Once the students become familiar with this type of teaching they will not need as much assistance as may be needed in the beginning.

The student must do more than set up the experiment. He should commit himself to writing about the expected results before they become obvious. Then as the results are available he can report to the class and turn in his written report of observations and applications. The form I use includes the following questions:

- What was the purpose of the demonstration?
- What procedure was used?
- What were your anticipated results from this demonstration?
- What were the results of this demonstration?
- What conclusions and farm applications can you make from this demonstration?

When this technique is used the emphasis is on solving problems, not memorizing facts. Crop and soil instruction becomes a science and as such deserves a laboratory. And the instructor, a teacher, not a teaching machine.

Instructional Aids for Ornomental Horticulture

(Continued from page 245)

In recent discussions conducted at a follow-up meeting of the institute participants, some of the major suggestions made by teachers were as follows:

- Source units should include a section on problems and questions of students. Brief solutions or answers should be included to help the teacher prepare for his class.
- Suggested references and aids should be restricted to a selected group of books and articles which are readily available to teachers. Normally, teachers prefer to use circulars and bulletins prepared by their own land-grant college rather than order such materials from another state. Books and reference materials published by commercial concerns are usually written for a national audience.
- Teachers want source units prepared in such a way that a minimum amount of time will be spent on introduction and summarizing problem areas. The implications of this suggestion is that problem areas should be narrowed in scope and that development of objectives and guides should be planned for broad instructional purposes.

- Teachers like the idea of laboratory exercises for students but the exercises must be practical in terms of equipment and supplies used and in terms of level of difficulty. Laboratory exercises should include important skills that students need to learn in order to prepare themselves for employment.
- An experience program planning guide and record book is needed to help students plan and conduct supplementary experiences at home or at school. Record books should be a source for students who are preparing for post-employment options or students who are involved with farming programs are not very useful to students who are obtaining pre-employment or supplementary work experience at school or at home.

Other Observations

Additional observations and conclusions regarding the development and use of instructional aids made by the writer are as follows:

- Teachers are more likely to use teaching aids if they are involved in the development and use of those aids.
- A teaching aid is no substitute for knowledge and experience in the area to be taught. If a teacher has no experience or instruction in plant propagation, he probably cannot and will not use teaching aids on plant propagation with his class. The pattern of intensive training used in Illinois, Pennsylvania, Oklahoma, and other states where a general training have been held is one of providing instruction in a technical agriculture area followed by the preparation of appropriate curriculum materials.

- If teachers are to reach more people, teach a more diverse group of students, and teach new areas of subject matter they need more and better instructional materials must be made available.

Summary

Curriculum materials in the field of ornamental horticulture were prepared by teachers and a research staff as a part of a project funded by the United States Office of Education. The materials were prepared especially for the midwestern section of the United States. Thirty teachers from the states field tested the materials and made suggestions regarding their value and use. The materials have been reviewed and will be made available to teachers throughout the United States by the summer of 1964.
The study shows... 232 teachers were needed but not available... 60 per cent of those qualified entered teaching... a shortage of teachers in 40 states.

Dr. Ralph J. Woodin at Chairperson of The Professional Personnel Recruitment Committee of the Agricultural Education Association, American Vocational Association.

Ralph J. Woodin

The percentage of agricultural education graduates entering vocational agriculture in the United States from 1963 to 1967 is shown in Table 2. Only about 60 per cent of those qualified entered teaching vocational agriculture in 1967. This is probably due to the wide choice of opportunities available in competing occupations. These competing occupations include graduate school, the armed forces, and others listed in Table 2. Had all of the graduates who were qualified in 1967 entered teaching, there would have been a surplus of teachers for the positions available.

More attractive salaries and better facilities may be a partial answer to the problem of competing from other occupations. One disconcerting trend is the fact that the number of graduates entering the teaching profession during the past three years indicates a downward trend. On the other hand, the number entering graduate school and other technical subjects has risen during this same period.

Trends and Sources of Replacement
Some encouraging and some discouraging aspects of teaching supply and demand are shown in Table 2. It is encouraging to note that during the three-year period the total number of qualified agricultural education graduates entering vocational agriculture teaching has increased from 671 to 742. This was not enough, however, to keep up with the demand. During this period, the number of teachers of vocational agriculture needed per year increased from 1,123 to 1,386.

Another encouraging item is that the total number of qualified agricultural education graduates increased by nearly 200 during the three-year period. Unfortunately, the number of qualified persons entering teaching represented only 56 per cent of the need in 1967. It should be pointed out that the number of teachers of vocational agriculture needed, indicated in Table 2, includes “replacements required” plus “teachers needed but not available.” This shortage was met in several ways which included closing some departments, employing some temporarily certified individuals, and by employing some qualified teachers who re-entered teaching.

Table 1
A Three-Year Comparison of Teaching Positions in Vocational Agriculture in the United States

<table>
<thead>
<tr>
<th>Item</th>
<th>1963</th>
<th>1964</th>
<th>1965</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total positions</td>
<td>10,378</td>
<td>10,525</td>
<td>10,221</td>
</tr>
<tr>
<td>Replacements required during the year</td>
<td>1,003</td>
<td>1,077</td>
<td>1,104</td>
</tr>
<tr>
<td>New positions added during year</td>
<td>265</td>
<td>252</td>
<td>270</td>
</tr>
<tr>
<td>Efforts needed but not available</td>
<td>129</td>
<td>162</td>
<td>232</td>
</tr>
<tr>
<td>Teachers with temporary or emergency certificates</td>
<td>252</td>
<td>242</td>
<td>232</td>
</tr>
<tr>
<td>Estimated number of teaching positions by 1970</td>
<td>12,888</td>
<td>11,257</td>
<td>11,246</td>
</tr>
</tbody>
</table>

Table 2
Percentage of Agricultural Education Graduates Entering Various Occupations

<table>
<thead>
<tr>
<th>Occupation</th>
<th>1965</th>
<th>1966</th>
<th>1967</th>
</tr>
</thead>
<tbody>
<tr>
<td>(per cent)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching vocational agriculture</td>
<td>64.6</td>
<td>61.4</td>
<td>60.2</td>
</tr>
<tr>
<td>Graduate work</td>
<td>9.2</td>
<td>10.0</td>
<td>12.4</td>
</tr>
<tr>
<td>Other work</td>
<td>4.7</td>
<td>8.2</td>
<td>7.2</td>
</tr>
<tr>
<td>Armed Forces</td>
<td>6.0</td>
<td>7.6</td>
<td>5.3</td>
</tr>
<tr>
<td>Teaching other subjects</td>
<td>6.2</td>
<td>5.4</td>
<td>5.1</td>
</tr>
<tr>
<td>Farm sales, service, or supply</td>
<td>5.6</td>
<td>5.4</td>
<td>5.3</td>
</tr>
<tr>
<td>Farming</td>
<td>3.0</td>
<td>2.6</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Table 3
Teaching Positions in Vocational Agriculture Filled by Qualified Graduates of Agricultural Education

<table>
<thead>
<tr>
<th>Item</th>
<th>1965</th>
<th>1966</th>
<th>1967</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of qualified agricultural education graduates</td>
<td>1,123</td>
<td>1,239</td>
<td>1,386</td>
</tr>
<tr>
<td>Number of currently qualified agricultural education graduates entering vocational agriculture teaching</td>
<td>1,098</td>
<td>1,151</td>
<td>1,233</td>
</tr>
<tr>
<td>Percent of needed positions filled by currently qualified agricultural education graduates</td>
<td>671</td>
<td>706</td>
<td>742</td>
</tr>
<tr>
<td>Efforts needed but not available</td>
<td>60.5</td>
<td>57.6</td>
<td>57.5</td>
</tr>
</tbody>
</table>

Summary
This report suggests that the efforts in recruiting new teachers from among agricultural education graduates are not enough. The situation in this study should be used as a guide to recruitment activities. The evidence suggests that even though some efforts have been made in the past three years, carefully planned activities will need to be continued before the problem of the teacher shortage is met.
Improving Instruction with Super 8 Motion Pictures

ROBERT W. WALKER, Teacher Education University of Illinois

Have you tried to demonstrate to a group of students an intricate, manipulative operation such as sharpening a twist drill? How did you do? Did your students learn? If you feel that your demonstration was inadequate, join the throng of others who have had similar experiences attempting to teach a complicated, manipulative procedure. A solution is individual instruction, but implementing that solution is a problem that concerns many good teachers.

A major inadequacy of demonstrating to a group is the inability of the instructor to have all students near the subject or activity. As a matter of fact, students within three feet of the subject or activity may not detect the detailed manipulative performance of the instructor or the action of the object. What is the function of the teacher? What instructional aid can the teacher use to assure that students really see what must be shown to understand fully the manipulative procedure or the reaction to the manipulation?

Super 8 mm. Motion Picture Camera

The new Super 8 camera mounted in a carefully selected position makes it possible for every student viewing the projected film to see exactly what the teacher had demonstrated to be pertinent to the demonstration. Can the teacher who is not a camera bug use the camera and make quality motion pictures? Certainly, and with top results the first time. Actually, one does not stick his neck out very far to make such a statement because the Super 8 camera requires only two major operations: compose the picture and expose the film. First, the composition of the picture is extremely easy because the camera, a single reflex type, permits observation of the subject to be photographed to appear in the viewfinder of the camera exactly as it would appear when projected on the screen. Perhaps you are thinking, what about focus and camera lens setting? Do not be concerned. The answer to this question is built into the camera. Focus is accomplished by an automatic lens. The lens ring is calibrated in feet so that distance can be judged and set manually.

A photographic cell adjusts the aperture of the camera automatically to meter just the right amount of light to assure perfectly exposed pictures. The key to high-quality motion pictures is adequate light. Sunlight is perfect for illustrating subjects to be recorded on color film such as Kodachrome II, daylight type A. The closer the photographer comes to approximating bright daylight, the better his photographic accomplishments. Recent pictures can be made with the assistance of the photo flood lamp or lamp.

What about loading the camera with film? There is nothing to this simple operation except opening a door and popping in a Super 8 cartridge. The Kodak people go so far as to say that the camera can be loaded after jumping from an airplane prior to opening the parachutes.

Subjects to be Photographed

The motion picture camera does not replace the still camera, but it certainly does increase the capability that the still camera does not have. This capability is the ability of the camera to record subjects in motion. Teachers who use motion pictures to aid their instructional programs will be concerned with operations that are sequential and manipulative. The camera can be used to record step-by-step, procedural steps in demonstrating. Each student observes only that which the instructor demonstrates to be relevant to the learning process.

Agricultural occupations instructors seeking better ways of teaching occupational skills should consider using the motion picture camera. For example, the following tasks can be taught easily and effectively when a film loop is made to show the detailed performance of each operation. - castrating pigs - building a peach tree - sharpening a twist drill - soldering copper tubing - cutting, bending, and flaring copper tubing - installing an electrical duplex receptacle

The AGRICULTURAL EDUCATION MAGAZINE

Figure 1: Format Sheet For Planning Film Loop

<table>
<thead>
<tr>
<th>Seconds</th>
<th>Some Description (One minute—this page)</th>
<th>Materials, equipment, lighting, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Film for the Super 8 Camera

Most outdoor and indoor pictures are taken with Kodachrome II, type A film. The film which is contained in a cartridge is fifty feet in length and projected runs for approximately three minutes.

Length of Scenes

One of the first judgments to decide is the length of each scene. When developing instructional films, the "second" becomes the unit of time that is appropriate. As a rule of thumb, make short scenes last three seconds and long scenes last ten seconds. Recently I made a motion picture to record thirty educational exhibits. Each exhibit was photographed for five seconds. The resulting fifty feet of film is a valuable instructional aid for teachers assisting students who are engaged in planning booth exhibits.

Figure 1 illustrates a format sheet that is very helpful when a film loop is made to show the detailed performance of each operation.

The second way to project the film is accomplished with the use of the film loop or closed loop projector. After the film is processed the fifty feet of film plus an additional fifteen feet for titles and printed narration, if desired, may be placed in a special cartridge with the beginning and ending of the film fastened together to make a closed loop. When the cartridge is inserted into the film loop projector the machine is switched on, the film is projected and continues to project over and over until the machine is turned off.

What kind of a future does the closed loop Super 8 movie have? Certainly, a promising one. The closed loop projector and the closed loop movie have advantages over the short film projected with the standard Super 8 projector.

1. The cartridges store very easily and are readily accessible.
2. The educational short movie loop is enclosed in a dust, dirt, and condensation proof container.
3. The projection of the film starts immediately after the cartridge is inserted into the projector.
4. Students or others may use the projector and film to review procedural techniques not fully understood at the first showing.

The Super 8 motion picture does have a bright future. Teachers are making use of an outstanding instructional aid capable of focusing on a manipulative, sequential performance and recording every action. One student or many students are able to observe that which the teacher considers to be relevant to the learning activity.
THE IMAGE OF VOCATIONAL AGRICULTURE

DAVID L. KIMBALL and EDWIN J. KERSTING
University of Connecticut

The image of vocational agriculture is intimately related to and in large part dependent upon the image of agriculture as a whole. And the image of both agriculture and vocational agriculture among the general public today is out-dated and insincere. The time-honored toiler of the soil has paled in contemporary comparison to the silver-suited astronaut.

ANTIQUE IMAGE

No one would think of typifying modern industry as a water-powered grist mill still down by the old mill streams. Yet the public seems not to have kept the same eye on the nation's biggest business—agriculture. And the new, somewhat antiquated image of agriculture is likely to have an unfavorable image of the vocational agriculture program. Too many citizens, parents, and school administrators view vocational agriculture as a "dumping ground" for the slow or troublesome student. Critics leveled at the program accuse it of being meaningless, a waste of money, and a lost opportunity to all but exclude the rustics of modern merchandising and advertising. Agriculture, being one of man's oldest occupations, thus comes in for a large share of Twentieth Century disdain. This is the status of agriculture today, according to the National Cooperative Farm Movement. Yet while few men envies the job of being a farmer, it does not mean the men are that they are still on the table. Furthermore he accepts these commodities with little knowledge that the methods of production have changed markedly in recent years.

Lastly, the Spitzmiller-inspired educational philosophy of the cold-fries helped further the nation's thinking toward technological advancement. Science—physics, electronics, chemistry and space medicine—was touted as the key to national salvation. America had entered the Space Age, and the average American—understandably preoccupied with the machinations of space technology—gave little thought and still lesser notice to simultaneous advances in the field of agriculture.

PUBLIC NEEDS TO HEAR

There is no need to list the remarkable technological and scientific advances in agriculture within the last fifty years in a professional journal such as this one. All of us in the field are aware of them, and it is our business to keep abreast of such developments. It is in the general public that needs to be told agriculture's story. Atomic reactors, super sonic jets, and manned space flights are achievements that dazzle us all because they have never before existed. Man has eaten meats and vegetables for centuries and it does not amuse him that they are still on his table. Furthermore he accepts these commodities with little knowledge that the methods of production have changed markedly in recent years.

There are few potential headliners in the fact that potato, corn, beef, and cotton fiber are available again.

Mr. David L. Kimball is Assistant Publications Editor, College of Agriculture, University of Connecticut, Dr. Edwin J. Kersting is Dean and Director, College of Agriculture, University of Connecticut, Storrs, Connecticut.

"Vocational agriculture has the facilities and background to enhance greatly its own image, as well as the image of all agriculture, through programs tailored for the general public."

The formal vocational agriculture curriculum reaches primarily those with some limited knowledge or no knowledge in agriculture. Those who have the need to see and hear about agriculture will be also those who know the least about it. They are the ones who, through their lack of information, perpetuate the inaccurate and unfavorable stereotype and sometimes pass on legislation affecting agriculture and its programs.

Vocational agriculture has the facilities and background to enhance greatly its own image, as well as that of all agriculture, through programs, displays, lectures, and demonstrations tailored for the general public. Of course, open houses and exhibits of some sort are already integral in high school vocational agriculture programs. But these efforts, if expanded, can reap much greater results.

Public activities that draw only those already committed to agriculture and not those who might beneficially be interested in agriculture (all short of real success. They are in effect agriculture for itself—agriculture talking to those already members of the "family." As the number of programs in vocational agriculture sponsored public programs and told the eye-opening story of modern agriculture, the faster and more beneficially the image of agriculture will change. How many more students become the rallying point for the area garden club?

ENERGETIC LEADERSHIP

Other branches of agriculture can and should participate in this public enlightenment program. Some of them are already doing so. But vocational agriculture with its unique nationwide structure can take the leadership in this endeavor. It stands to gain heavily, not only in the increased esteem level of greater understanding among the public, but in the higher caliber of potential agriculturalists it will attract as the image of modern, dynamic agriculture replaces the prevalent stereotype.

The challenges and opportunities in agriculture have never been greater. Nor has there ever been a greater need for enthusiastic, energetic, and innovative leadership in changing the image of agriculture.
IMPLEMENTING CONCEPTS OF LEARNING IN TEACHING AGRICULTURE

SAMUEL M. CURTIS, Teacher Education
The Pennsylvania State University

CONCEPTS OF LEARNING

Teacher behavior influences classroom learning. "The teacher's classroom personality and behavior influence the behavior of the children taught." Teachers must be cognizant of this premise and attempt by their behaviors to create a classroom climate conducive for learning. Some guidelines for the teacher in creating a learning atmosphere are:

- Take an interest in the individual student. This involves a knowledge of his goals, capabilities, and opportunities.
- Entertain the ideas and contributions of the learner in the classroom, in the shop, and in supervised practice.
- Help the student define and verbalize his problems in a non-threatening atmosphere.
- Value each individual's contributions to the learning situation and commend constructive effort.

The organization or sequencing of lesson material affects learning. Many

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THE AGRICULTURAL EDUCATION MAGAZINE

Making Teaching More Meaningful

RAY RUNDSTRUP
Teacher of Agriculture
Bush High School, London, Kentucky

One of the most challenging problems encountered by teachers of agriculture is motivation of students. I have found that impelling students to have a desire to learn is one of my greatest challenges.

During the summer of 1967, I took a course at the University of Kentucky in selecting teaching materials. Until I had taken this course I did not realize the large number and kind of "instructive" materials there are available for teaching agriculture. I believe that one of the best means to motivate students is the proper use of teaching aide.

A Variety of Aids

There are many aids which teachers of agriculture can use. Have you tried the overhead projector? Have you used the bulletin board to best advantage when teaching a unit? Have you used slides or filmstrips? Have you recently used a "real life" object? If you have not used a variety of aids, I feel you are missing a wonderful opportunity to increase learning.

One of the best teaching aids is the overhead projector. I can present to the students materials which cannot be effectively presented on the chalkboard. It is easy to see the change in concentration of students when you begin to use this teaching aide.

When I use charts and graphs the material becomes very helpful. Charts and graphs permit the teacher to have material ready to be presented rather than taking class time to prepare it or draw it on the chalkboard. It is very interesting to note how properly prepared bulletin boards, planned in connection with teaching units, have aided my teaching. The bulletin board greatly enhances the learning process and helps add meaning to material being presented.

Meaningful Teaching

I have found that a meaningful way to motivate students is the use of pictures. The pictures may be on slides or filmstrips, or they may simply be pictures taken from a publication. I feel it has rightly been said that "a picture is worth a thousand words."

Learning takes on new meaning when a "real life" object is there for pupils to see. Even though it may seem insignificant, the use of an ear of corn or a bollus gun can be very effective in classroom teaching.

The cost of many of these aids is very low. I have found that they can be very helpful in developing more meaning for pupils. The value received is far more than the cost. It is true that students learn when the subject being taught is made meaningful. How meaningful are you making your classes for your pupils? I must admit that I was falling short. By using more and better teaching materials, I feel I have improved my teaching. The learning process seems to have become more vital to my students. Give these ideas a try if you aren't already using them.

The overhead projector is one of the best teaching aids. The overhead projector used to present materials that cannot be presented effectively on the chalkboard.

Themes for Future Issues

June
Evaluation
Agricultural Education in Programs Involving Other Vocational Services

July
Adult Education
Supervision in Agricultural Education

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Agricultural Education for Persons with Special Needs
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The Function Approach for Identifying Curriculum Content: Part I

RAYMOND M. CLARK and O. DONALD MEADERS
Teacher Education
Michigan State University

The decade of the 1960s has been one of transition for agricultural education. The traditional education from training for farming to training for farming and for employment in agricultural business and industry. To say that the transition is complete would obviously be a mistake. It will take much experience and study, as well as a long time, to complete the transition.

As educators attempt to develop suitable training programs for non-farm agricultural business, it becomes clearly apparent that the content of instruction comes from two or more of the traditional educational fields. It is no longer possible, if it ever was, to provide an adequate package of subject matter entirely from one field of vocational education.

The BACKGROUND

Kennedy's early study of curriculum development for non-farm agricultural programs sought to clarify the relationship between farming and certain agricultural occupations other than farming. This study classified the position of work in the classroom and developed techniques that served as a useful guide in determining the agricultural content of instruction. The programs for training workers for nonfarm agricultural occupations. His research helped establish definitional distinctions between agricultural businesses and agricultural occupations.

The following implications drawn by Kennedy provided the background for subsequent research that contributed to the function approach for identifying curriculum content.


Implementing Concepts of Learning (from page 254)

specific terms. Also implied is periodic assessment with learners on their progress toward individual and group goals.

Feedback processes can facilitate learning in the classroom. To quote Lewin, "realistic fact-finding and evaluation techniques serve as an incentive to learning. To some extent feedback is always present. What is needed is greater awareness of feedback which is promoted in an atmosphere conducive to constructive evaluation of the teaching-learning situation. The teacher who encourages feedback will improve motivation and increase learning. In order to do so, he must:

- Be aware of the public reactions in the classroom that reflect classroom climate.
- Use evaluation as a teaching device rather than as a measuring instrument only.
- Structure tests to reflect the purposes of instruction. The use of problem-solving tests, performance of skills, and self-evaluations are examples of this procedure.
- Subject goals to reassessment and change goals as conditions warrant.
- Assist students in the diagnosis of problems and the translation of this evaluation to future activity.

Kennedy also needs to know how they are going to be graded. Grades are important to the vocational agriculture student in high school or technical school although probably to a lesser degree than to the academic student. "Most students are motivated to get passing grades, and thus grades are a powerful motivational tool for teachers. Because grades are important to them, students will learn whatever is necessary to get the grades they want. Generally, it is important that in the process of obtaining a grade the learner secure the kind of learning the teacher wants to take place. Consequently, the teacher is careful to:

- Base all grades upon the overall goals of the course and the specific goals of the teacher. As with emphasis.

(Continued on page 260)
INSTRUCTIONAL MATERIALS ON AGRICULTURAL CREDIT

RAYMOND A. HOLT
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Portland, Tennessee

The Need for Instructional Materials

ROBERT KENNEDY
Hornell College
Salinas, California

The text discusses the importance of instructional materials in agricultural credit. It highlights the need for materials that are relevant and effective in teaching agricultural credit to high school students. The text also mentions the use of the Handbook as a key resource in teaching agricultural credit. The Handbook is described as a comprehensive and useful tool for students and teachers in the field of agricultural education.

In planning for teaching a specific subject, the ideal would be for the teacher to be a specialist in that particular field. This would mean that the teacher has a thorough knowledge of the best texts, references, research, and audiovisuals plus a background of actual experience in the specific area of teaching.

Master Teachers

As high school teachers, most of us have at least one subject specialty but beyond this we are more generalists than specialists. It becomes necessary that we become "masters of learning experiences" — the art and science for which we are granted credentials as a teacher.

 Wouldn't it be much better to be both specialist and master teacher? I propose two ideas that are intended to help teachers be a little more of each. The first suggestion is that teachers need to know what audio-visual and other instructional aids are available. The second suggestion is that teachers must have instructional materials better organized if they are going to use them effectively.

Institutional Materials Available

In my search for audio-visuals for use in vocational agriculture, I was surprised to find many materials available. But on the other hand, I was discouraging that such an organized search was not necessary to locate the instructional materials that are available.

I have just recently cataloged over 700 audio-visuals for agricultural science.

When this article was written, Robert Kennedy was Director of Agriculture, Warnerville High School, Warnerville, California.

Audio Visuals for Agricultural Science
implementing concepts of learning in teaching agriculture

(continued from page 257)

that these goals and the criteria for success in the course be written out and available to the students.10

- Outline the evaluation procedures for the class indicating how classroom, shop, and supervised practice will affect grades.

- Discuss grading procedures for supervised practice in detail. Indicate that the quality of record book and production efficiency factors are important criteria for evaluating productive enterprises. For supervised work experience, indicate that employer’s rating has considerable importance. Knowledge of grades should be relayed to the students as quickly as possible. Binkley’s admonition is appropriate, “the (learner) should see evaluation as a means of determining where he is now with reference to his desired goals. It is possible to evaluate learning in such a way that the students will look upon evaluation as interesting and helpful to them.”11

Admitting this is a difficult assignment among grade conscious students in a public school system where historically grades have been used as a threat.

SUMMARY

“The teacher is the primary ingredient in the learning process.”12 Thus, the teacher has the responsibility to be aware of the conditions conducive to learning. This responsibility includes: awareness of group structures and processes, knowledge that teacher behavior affects the desires of the student to learn, cognizance of the fact that the identification of group and individual goals is an essential step in the learning process, and realization of the teacher’s leadership roles in group awareness, feedback, structuring of subject matter, and goal definition.


12Harold B. Binkley, “A Best for Efffort Teacher” (Department of Agriculture Education, University of Kentucky), p. 175.

11Bopriski, op. cit., p. 685.

AGRICULTURAL CREDIT

(Continued from page 258)

operations has created a demand for agricultural credit instruction. Instruction in agricultural credit should be expanded in the future. An educational program in agricultural credit should be conducted not only in high school classes but also in adult education programs. An educational program of this type should include instruction on credit needs, sources of credit, costs of credit, credit instruments and documents, loan procedures, repayment plans, and case studies with emphasis placed on credit costs and credit instruments.

Continued efforts should be made to upgrade current instructional materials and to provide new instructional materials on agricultural credit. It is recommended that a handbook of student exercises in agricultural credit be developed. Insurance courses and short courses in agricultural credit should be provided for teachers of agriculture. These inservice courses should include instruction in the areas of agricultural credit recommended for high school instruction.

THE AGRICULTURAL EDUCATION MAGAZINE

STAFF OFFICERS FOR 1968: (Left to right) George L. Searcy, University of Kentucky; President; L. T. Fowlkner, Alabama A. & M. University, Director of Agronomy; J. P. Whitaker, New Mexico, Past President; Allen A. Halloway, Chief, Agricultural Education, U. S. Office of Education; (Officers not pictured) Julian T. Carter, Vermont; Secretary-Treasurer; L. L. Turner, President, National Association of Supervisors of Agricultural Education; W. J. Montgomery, Kentucky, President; T. J. Harrington, Washington, President-Elect; W. C. Montgomery, President, Board of Directors; Harrie A. Mitchell, Tennessee, President, Southern Region; held Brown, Washington, Past President.

MAY, 1968
A Contribution of Vocational Agriculture —

The Project Method of Instruction

JOHN F. THOMPSON, Teacher Education
University of Wisconsin

WHAT WOULD HAPPEN IF: Vocational education in agriculture were to lose sight of its primary contribution to American education.

We must first of all formulate the question of what is the primary contribution of agricultural education to the American education scene? There are a variety of education activities and practices that have been introduced to American education through the instructional programs offered in vocational agriculture, and it is possible to promote many of these as the primary contributions that vocational agricultural education has made to American education. But in my opinion, the primary contribution of vocational agricultural education to the American educational scene is the project method of instruction.

I observe also in current literature, in text, in the vocational programs of many schools, in the attitudes of some vocational agriculture teachers and many high level officials who do not have a vocational education background, that this concept—the project method of instruction—is being ignored or has already been dropped. We are even at the point, in some places, of referring to the total vocational agricultural programs of a high school as "academic agriculture." The project method of instruction was formulated in vocational agriculture for a variety of very sound educational reasons. Among these were to motivate students, to provide for transfer of learning, to assure an opportunity for the student to practice techniques and skills, to provide for involvement, to facilitate supervision, to instill in the student the idea of achievement as defined, to contribute to family economic and social growth, to increase the self-concept of the student and to make education relevant to the student's everyday life. It seems to me that the project method of instruction is as educationally sound today as it has ever been. It is imperative that as programs are initiated to implement the broader occupational objectives in vocational agriculture, that we not lose sight of the primary need for instruction and its educational advantages.

An Exchange Program

In August 1966 the Grant, Michigan, and Maxwell, Indiana, FFA chapters initiated an exchange program designed to provide new experiences to both students and their teachers. In 1966 nine members of Grant High School FFA traveled to Maxwell, Indiana, to initiate a FFA exchange program between the two schools.

Prior to the exchange arrangements were made through correspondence that included the names, ages, and agricultural interest of the boys who were to be involved in the exchange. Boys from the Grant FFA lived with boys of similar age and agricultural interests. Boys from the Hancock Central FFA chapter at Maxwell, Indiana, were on hand to meet their counterparts from Michigan. Only introductions and shifting of luggage were necessary and the boys were on their way.

The Michigan FFA member participated in all activities of his host family in Indiana during the three days of the exchange program. Each visiting boy worked and lived on the farm of his host.

All was not work however. Many of the boys found an opportunity to swim or bike or take a trip to a county fair. One evening the Hancock Central FFA treated the Michigan boys to a watermelon feed. This gave the visiting members a chance to get acquainted with the members and work of the Hancock Central FFA.

A Summer Project for the FFA

GRANT FETTIG, Teacher of Agriculture
Grant, Michigan

and

LEDWARD E. SMITH, Teacher of Agriculture
Maxwell, Indiana

Are you looking for a summer FFA project? Could your students use some new experiences?

An Exchange Program

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During August 1967, members of the Hancock Central FFA returned the visit to Grant, Michigan. The procedure of placing the boys on Michigan farms was the same as that followed the summer before. When possible, the boy who hosted a Michigan boy in 1966 was the guest of that boy on the return trip. A Michigan canoe trip offered a different recreational experience for the Indiana FFA members. It also gave the visitors a chance to meet more of the Michigan boys.

Benefit to Students

We find that the exchange program was educational in many ways. Each group of students had the opportunity to experience first-hand the agriculture in another state. The experience of living with another family for three days was an educational experience for all boys.

The exchange trip was recreational. Even though the boys were required to work on the farms of their hosts, all enjoyed the exchange. The planned recreational activities were very successful.

An exchange trip such as this can be used as an inexpensive reward for members in your chapter. In our exchange trip the only cost involved was gas, watermelon, and canoe rental.

Benefit to Teachers

Probably one of the highlights of the exchange trip from a teacher’s point of view was the intercise education which the trip provided. The opportunity to live with another vocational agriculture teacher for three days and participate in the activities in which he was engaged was invaluable. The exchange trip provided the opportunity to discuss FFA programs of work, instructional aids, curriculum, and many other things that are of concern to teachers.

Getting Started

How can you get an exchange trip started? Actually it’s quite simple. First, select a state that you would like to visit. Next, contact a state officer of the state vocational agriculture teachers association and ask that he relay your desire for an exchange trip to the teachers in his state. Send your name and address so that interested teachers can contact you. Once you are contacted by a group interested in an exchange program, you are on your way to a worthwhile experience.
Stories in Pictures

GILBERT S. GUILER
Ohio State University

Agricultural Education

Volume 40 June, 1968
Number 12

Michigan students operate semi-automatic bonzer for pet plants. (Photo by Walter McCleary)

Nebraska vocational agriculture students use a ring of market swine as their instructional materials for this class situation.

Future Minnesota vocational agriculture teachers, enrolled in Methods of Teaching Agricultural Mechanics, learn concrete block construction principles by the "doing process." (Photo by F. Bean)

Featuring —

EVALUATION