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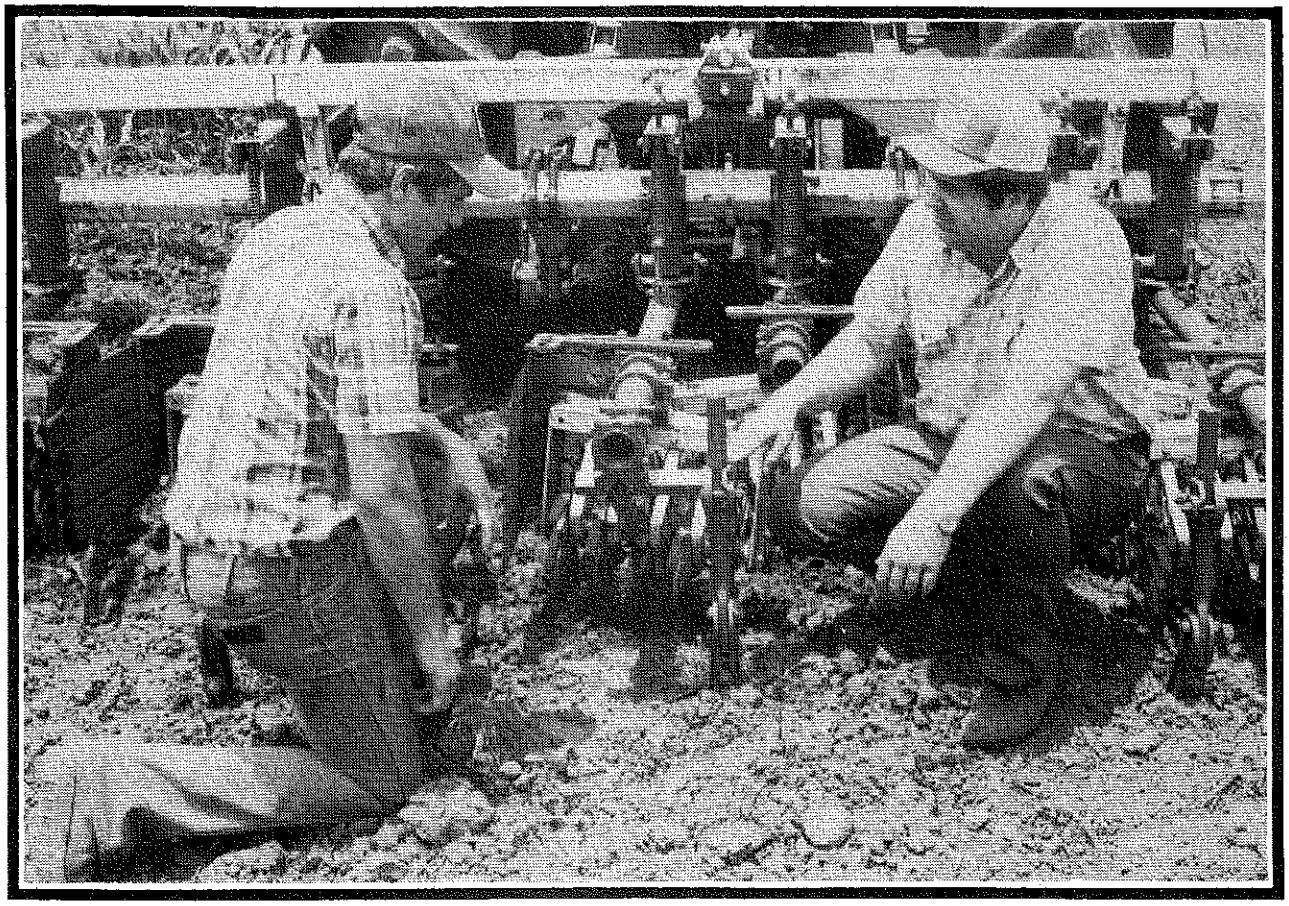

THEME: Assessing Student Performance

Student Assessment: Overview and Emphases

By Arthur L. Berkey, Theme Editor
(Editor's Note: Dr. Berkey is a Professor of Agricultural and Occupational Education, Department of Education, Stone Hall, Cornell University, Ithaca, New York 14853.)

In general education, student assessment typically translates into a letter grade at the end of a marking period. The grade is usually norm referenced in that it reflects student performance in relation to other students. Further, instruction is primarily in a classroom situation.

In contrast, vocational agriculture includes supervised occupational experience programs (SOEP) and FFA in addition to in-school instruction on subject matter. Additionally, a higher proportion of agricultural class instruction is in the laboratory setting reflecting a learning by doing philosophy. Student assessment should encompass all parts of the vocational agriculture program.

Assessment to arrive at the letter grades required by most public school systems is a limited view of assessment and perhaps the least important purpose for evaluation in vocational agriculture. Of far greater importance are the daily and weekly assessments that give feedback to individual students to improve their performance, and that provide the basis for planning teaching strategies to enhance student learning. Such assessments also provide feedback for teachers to improve their teaching.

Student Profiles

The advent of performance/competency based instructional objectives as a part of the competency based instruction (CBI) movement of the 1970's has facilitated the explication and assessment of the knowledge and skills to be learned by students. Individual student profiles indicating the level of student achievement for each instructional objective are widely used by many teachers.

Such profiles guide students as to what they are expected to learn, provide information on student progress during the course, and serve as a record of student achievement at the end of the course. Profiles are also used as a guide (educational contract) for students' SOEPs; the objectives added should reflect individual student career goals.

Student's goals for FFA awards and contests, which are not based on accomplishments in SOEP (e.g., public speaking or local scholarship), are another source of objectives for individual student profiles. The individualized composite profile then serves as an educational guide to, and basis for assessment of, student achievement.

Work Attitudes

The assessment of attitudes and habits is important. Research findings and feedback from employers consistently indicate positive work attitudes and habits to be more important than knowledge and skills for successful employment. At the same time, assessment of attitudes and habits is subjective and, thus, specification as instructional objectives is often difficult.

Despite these limitations, attitudes and habits should be a significant part of assessment due to their importance to successful employment. Some teachers assign a daily attitude/habits grade for individual students, particularly where laboratory work is involved. Grades are communicated to students as part of efforts to improve student affective performance and constitute a part of the course grade.

Assessment of special education students with handicapping conditions mainstreamed into vocational agriculture classes if often a matter of school policy — where such exists, and the nature of the handicap. Assessment based on a profile of instructional objectives reflecting limitations imposed by the student's handicap is feasible. The translation of student achievement on a limited profile of objectives into a letter grade for the course varies depending upon teacher philosophy and school policy.

Summary

In summary, while assessment for grades is typically required in public schools, assessment used to enhance student progress is of much greater significance. Assessment should reflect student achievement in all three components of the vocational agriculture program: in-school instruction, SOEP and FFA. Evaluation of work attitudes/habits as well as knowledge and skills is needed to prepare students for success and satisfaction in agricultural occupations.

Evaluation in the Laboratory

By Darwin J. Miller
(Editor's Note: Mr. Miller is Instructor-Coordinator of the Swine Management Program at Ellsworth Community College in Iowa Falls, Iowa 50126.)

Skills training is a very important component of the Swine Confinement Management Program at our community college since the vast majority of our graduates will assume management roles in swine production. We have identified competency skills that we feel are essential to entry-level occupations in swine production management.

Laboratory and classroom experiences provide our students with an opportunity to gain background knowledge and hands-on training. Our students complete an eight week cooperative field experience period during their last quarter to gain proficiency and additional experience prior to graduation. The laboratory experiences serve as a foundation upon which our students can build in preparation for the cooperative field experience period.

Steps in Competency-Based Laboratory Instruction

We have identified nine steps that we have found to be a successful approach to competency-based skills training.

First, the basis for the need of the training must be established, justified, and communicated to the student. The justification of the need can be established by a job description for the occupational goal, by curriculum standards, or by recommendation of an advisory committee. Whatever the source used for justification, the source should be communicated to the student. This serves as a basis for developing student interest in the laboratory activity.

Second, objectives should be specific and goal-oriented. They also should be written and copies provided to the students. Our students are provided a list of technical skills which they will be able to perform during laboratory training and the cooperative field experience. It is important that students know clearly what they are to accomplish.

Third, instruction is provided for background knowledge of the skills to be performed. Laboratory experiences should simply be putting the knowledge into practice. A schedule for laboratory experience training should be intertwined with classroom preparation.

Fourth, students need to become familiar with the equipment to be used for the skill activity. Instruction on the use, care, and safety is important. It is also helpful if the student can practice the use of the equipment on throwaway material before being confronted with the real thing.

Fifth, an on-site demonstration by the instructor should be given prior to student performance of each task.

Sixth, tasks should be performed under supervision of the instructor. It is important that the instructor observe each student performing the assigned task. Students can also learn by watching each other during the activity.

Seventh, students should receive immediate evaluation upon completion of the task.

Eighth, opportunities should exist for the student to further develop proficiency of the task. In many cases, field experience training or individualized projects can accomplish this objective.

Ninth, students should review and use a checklist of skills completed. Our graduates have found their laboratory and cooperative field experience checklists very helpful in preparing a resume. The checklist should identify the experiences and skills to be performed with a blank provided for the instructor or supervisor to initial upon completion.

Evaluating Laboratory Experiences

One of the greatest challenges facing instructors in evaluating laboratory experiences is how to make the evaluation more objective than subjective. What is important? Should the end result provide the basis for evaluation?

Performance of tasks usually involve several aspects. Some of these are: basic knowledge of the skill, selection and care of equipment and supplies necessary for the task, correct safety procedures used, proper technique as instructed and demonstrated by the instructor, and the product or end result. An evaluation plan should incorporate all of the procedures neccessary for task completion.

The various areas can be weighted according to the individual skill task. A good evaluation plan would be the use of a form listing all of the criteria to be considered in evaluation of the skill with the maximum points possible listed by each criteria. Upon completion of the skill by the student and evaluation by the instructor, the student would receive a copy of the evaluation and an oral summary by the instructor.

This objective approach would eliminate much of the frustration students experience on receiving strictly a letter grade based on a subjective evaluation plan.

Summary

Good laboratory instruction requires diligent planning and coordination. Laboratory experiences should be built around classroom instruction and incorporated into the total instructional plan. It cannot be looked upon solely as an opportunity to escape from the traditional classroom setting. Laboratory experiences should be regarded as one of the methods to accomplish the objectives of the total instructional unit.

Identification and verification of the laboratory and field experience training activities not only spell out objec-

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Evaluation in the Laboratory

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tives for the student but also provide credibility for their learning experiences.

Accountability in evaluation of student performance can be enhanced when the criteria for measurement are clearly stated and reflect achievement of all aspects involved in completion of the activity.

Emphasis should always be placed on achievement of the end result, but techniques used to reach the end should be included in the evaluation because they will be necessary for the success of the student in their occupational area. Our responsibility to students involves not only the instruction of technical skills, but also the development of proper techniques and habits which will be demanded by their respective industry.

Manager must initial skills completed!

_____ 1. Successfully "day-one" process at least 200 pigs.
_____ 2. Successfully castrate at least 100 pigs.
_____ 3. Size and sort at least 20 litters of pigs.
_____ 4. Assume responsibility of a farrowing room for at least 2 weeks.
_____ 5. Feed lactation room animals according to the units feeding program.
_____ 6. Wean at least 2 rooms of lactating sows.
_____ 7. Wash and disinfect at least 1 farrowing room and 1 nursery room.
_____ 8. Assume responsibility for 1 nursery room for at least 1 week.
_____ 9. Size and sort pigs in at least 1 nursery room.
_____ 10. Hand-mate at least 25 sows.
_____ 11. Heat-check at least 50 sows.
_____ 12. Pregnancy-check at least 50 sows.
_____ 13. Prepare a herd health schedule for unit (immunization, sanitation; parasites)
_____ 14. Feed gestating and breeding animals for at least 2 weeks.
_____ 15. Complete a pig flow schedule for the unit.
_____ 16. Complete a management schedule for 1 week's operation of the unit.
_____ 17. Record and use daily information on unit's work record cards.
_____ 18. Complete a monthly unit production summary and herd inventory.
_____ 19. Attend a monthly board meeting of the stockholders.
_____ 20. Monitor and adjust heating and ventilation in at least 2 rooms.
_____ 21. Complete week-end chores for the unit at least two times.
_____ 22. Take rectal temperatures of at least 5 sows.
_____ 23. Ear tag at least 5 gilts or sows.
_____ 24. Repair at least one scrotal rupture.
_____ 25. Assist in at least two unit maintenance projects.
_____ 26. Assist in waste transport and disposal for at least 1 day.
_____ 27. Record the feeding schedule and nutritional program of the unit.
_____ 28. Prepare a monthly cash flow statement for the unit.
_____ 29. _____
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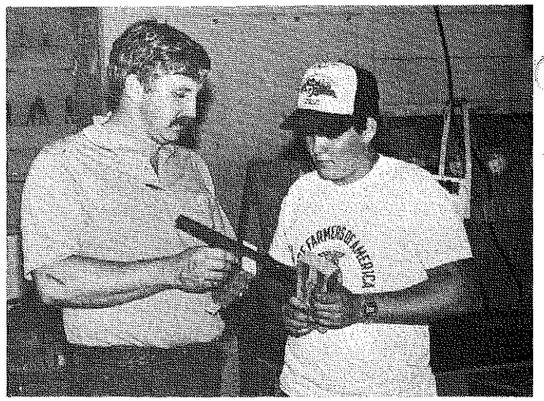

Students should receive immediate evaluation upon completion of the task. (Photograph courtesy of Lindsey Keene, Vocational Agriculture Instructor, Southeast Lauderdale Attendance Center, Meridian, Mississippi 39301.)

Checklist — Swine Confinement Management Skills
Ellsworth College, Iowa Falls, Iowa

Student Name _____

College Year _____

Instructor Initials	Skills to be completed
_____	1. Select four desirable breeding gilts.
_____	2. Select four desirable breeding boars.
_____	3. Successfully ear tag two breeding gilts.
_____	4. Successfully ear notch four pigs using the individual pig identification system.
_____	5. Successfully "day-one" process four pigs, including: tail docking, needle teeth clipping, iron injection, and navel treatment.
_____	6. Successfully castrate four, one week old boar pigs.
_____	7. Successfully pregnancy test two sows using three different sensors on each.
_____	8. Successfully thaw one ampule of frozen boar semen.
_____	9. Select four desirable market hogs.
_____	10. Successfully identify seven wholesale and twelve retail cuts of pork.

I CERTIFY THAT THE SKILLS I HAVE INITIALED WERE COMPLETED BY _____ DURING THE SWINE CONFINEMENT MANAGEMENT SKILLS CLASS AT ELLSWORTH COLLEGE. INSTRUCTOR _____
(Signature)

DATE _____

THEME

Attitude Improvement

Attitudes have a major effect on student employability. If we are preparing students for employment, we must not only help them develop the needed skills but also the needed attitudes. "Many employees lose their jobs because of careless personal habits (for example, being late to work), and not because they are inadequate at the skills required on the job" (Hamilton, et al., 1981, p. 3). One employer, visiting the Coe-Brown Vocational Agriculture class, said he had a student interview for a position at his gas station with bare feet. He did not get the job.

Assessing Attitudes

Teachers traditionally have used paper and pencil tests to measure how much a student remembers about a topic. Many teachers also check skill development of students in the laboratory. Unfortunately, an area often overlooked is the measurement of attitudes. Cheek (1979) suggested that the process of performing a skill be assessed as well as the product. Safety should be evaluated whenever it is involved in a skill. There are many other attitudes demonstrated by students in the development of a product that should also be considered.

Teachers can measure many of these attitudes by observing behavior. Students can be observed as they go about their everyday behavior and given feedback on a regular basis so improvement can be suggested. Calder and Ross suggest that "attitude is an important cause of behavior though by no means the sole cause" (1973, p. 30). If it is an important cause, and if we can teach acceptable attitudes, then we should be able to reinforce positive work attitudes and discourage negative ones.

Methods of Measuement

There are many ways to assess student performance. The ultimate is the evaluation by the employer. Many times we forget to check with them after our students have graduated. We can also make assessments of our students while they are in school. There are attitude questionnaires available and simple checklists which we can develop.

A checklist of attitudes can be developed with the help of your advisory committee. Ask them what work attitudes they believe are important for their employees. They might include such things as getting to work on time, proper care of tools, and being helpful to customers.

We find many students who demonstrate these attitudes and they should be rewarded. There are others who do not worry about getting to school or class on time. Will this attitude also be evident, even though the student may be very skillful?

Positive reinforcement for students is important. The checklist used at Coe-Brown is used in a positive way. Students are given positive reinforcement by receiving check marks on the checklist posted on the entrance door. It only takes a few minutes at the end of the period for the instructor to complete it which is important.

By David L. Howell and Bruce Farr

(Editor's Note: Dr. Howell is an Assistant Professor in the Department of Occupational Education at the University of New Hampshire, Durham, New Hampshire 03824; and Mr. Farr is Vocational Administrator and Agriculture Instructor at Coe-Brown Academy, Northwood, New Hampshire 03261.)

Students look forward to seeing the checks after their names. If a student is seen wasting time, a comment is made by the instructor to the student; if a second comment is required a "W" may be placed on the chart to indicate that the student is not making good use of time.

A safety violation is taken more seriously. A student receiving three safety violations is not allowed to return to the laboratory. An "S" on the chart indicates a safety violation.

The project description is used to identify how a student is progressing. With a large number of students, this makes it easier to keep track of how they are doing and note good progress.

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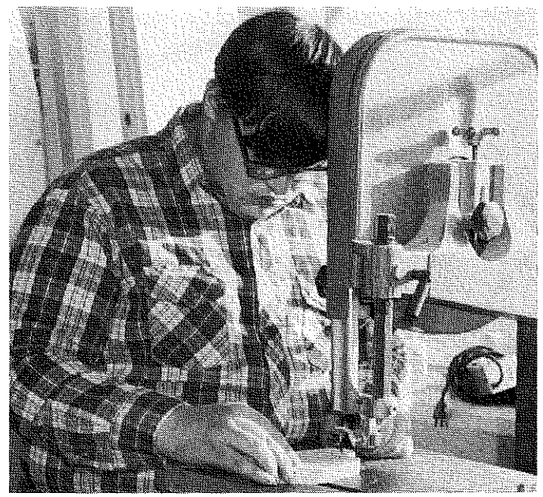

This student is concentrating on his work, making good use of his time and using correct safety procedures. Words of encouragement and a pat on the back are in order.

Attitude Improvement

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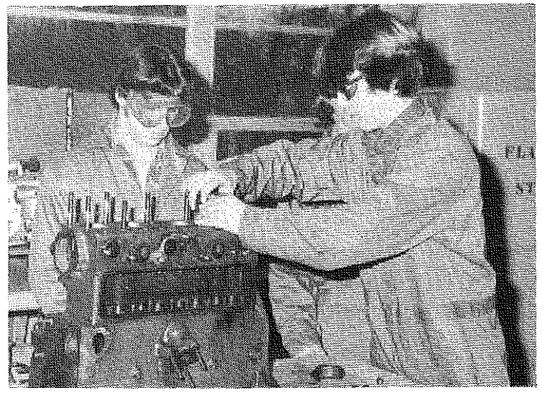
Week of _____

A check (✓) indicates satisfactory behavior

Student Names Correct use of tools	Jon B.	Rodney B.	Diane C.	Chuck L.	Keith J.
Correct safety procedures					
Proper selections of tools					
Make good use of time					
Work area maintenance					
Willingness to help others					
Clean-up duties					
Total					

Project description

This evaluation provides a weekly evaluation of student progress. An "S" may be given for a required reminder of the need for safety glasses.



A willingness to help others is an important trait for employees. Students should be encouraged for exhibiting this behavior.

Summary

Are your student's attitudes showing? Teachers should express positive attitudes that will make them employable and keep them employed. Meetings with the advisory committee to identify what attitudes to consider and then provide students with regular feedback are needed. The school laboratory is a good place to start affecting attitudes.

References

Hamilton, et. al, Assess Student Performance: Attitudes. Athens: 1981.

Cheek, Jimmy G. "Supervised Occupational Experiences in the Southern Region" The Agricultural Education Magazine, April 1979, pp. 226-227.

Caldor, Bobby J. and Michael Ross. Attitudes and Behavior, General Learning Press, 1973.

THEME

Personality: A Factor To Consider

Did you ever feel that the grade you gave John or Jane was not a true indicator of their ability? Teachers at all levels have wondered about this question. We also ask ourselves, could I have done more or was John just not motivated to do the work? Fairness in assessment is very important to students and teachers alike. I suggest that if teachers are not aware of how their student's personalities differ, they will not be able to fairly assess student performance.

By Leverne A. Barrett

(Editor's Note: Dr. Barrett is an Assistant Professor of Agricultural Education at the University of Nebraska, Lincoln, Nebraska 68583.)

Student Differences

It has been well documented in research that students, as well as teachers, can have quite differing personality types. What is personality type? It is a combination of preferred characteristics that determine behavior. According to Myers (1981), persons prefer to be either: outgoing extroverts, or reserved introverts; they are either sensors who gather mental information with the five senses or, intuitives who use their senses to a lesser degree, but add additional meanings. Type is also determined by how people make decisions: analytical thinking or personal feeling. The final determiner of type is how people live their lives either by judging; being decisive, planned and orderly; or by perceiving; spontaneous, flexible, and living life as it occurs. A combination of any four of these characteristics composes one's personal preference or personality type.

Impact of Type on Assessment

What does personality type have to do with assessing students? Lawrence (1979) believes that the failure of teachers to recognize type differences in their students is probably the most serious unrecognized problem in American education.

A few students in vocational agriculture learn well in the traditional classroom where strong emphasis is placed on reading and writing, and they do well on written tests. The majority of students, 75 percent or higher in vocational agriculture classrooms, do not perform well when reading and writing are used as a major assessment technique. Many teachers have known this for years and have based their assessments on hands-on performance in the laboratory rather than just on written tests.

When teachers base their assessment technique on how a majority of students learn best, a gradual change occurs in student success. Students that are labeled low achievers may begin to show remarkable signs of higher intelligence and their performance in agriculture classes improves. Teachers in other subject areas may infer that vocational agriculture is a snap course when, in fact, you have learned how to teach, and assess your student's achievement in a way that truly measures their potential.

Assessment Based on Type

The majority of students in a typical vocational agriculture classroom are extroverted (active) and sensing (practical). Here are a few tips on how to set up an assessment program that will measure student's strengths rather than their weaknesses, which is not true of most grading procedures:

1) Extroverted students need movement and action. Therefore, the more "doing" activity the better they will learn. Being quiet and sitting for an extended period of time is not a conducive learning environment for extroverts. Directed laboratory experiences are ideal for these students. Extroverts may do better than introverts on oral rather than on written tests. Extroverts may do better on tests applying knowledge than on tests of concepts and ideas.

2) Sensing students are more interested than intuitive students in the real thing. They learn best when given a principle or rule followed by many examples of variations in applying it. They enjoy practice. They are at a particular disadvantage in timed tests, written tests; especially essay tests, or tests requiring knowledge or theory. Sensing students do best when measured by performance tests.

Conclusion

In summary, research, and a practical understanding of how a majority of students learn, would indicate that many teachers may need to re-evaluate their assessment techniques. Few of us would deliberately assess student performance in such a way that students would do poorly.

The vocational agriculture teacher is strongly influenced by the academic method of teaching through the way we were taught to teach or by peer pressure. As a result of these influences, we may have subtly abandoned our vocational philosophy that was firmly grounded in the proven learning processes of "learning by doing." More recent findings about learning styles and personality types assures us that the founders of the vocational education philosophy were right. Have we drifted away?

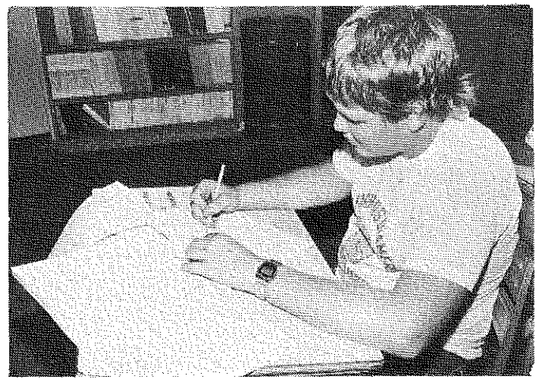
I suggest that it is time to assess our students' progress. Our students do need to be encouraged to read and write, but the extroverted-sensing student will do best when assessment is performance oriented. Teaching and evaluating in the vocational method may not be the easiest, but our students will learn at their best. When that happens, we can be proud to be vocational agriculture teachers.

References

Lawrence Gordon, People Types and Tiger Stripes. Consulting Psychological Press, 1979.

Myers, Isabel, Introduction to Type, Consulting Psychological Press, 1981.

Extroverted students enjoy the action of doing the activities of handling and branding calves as taught in vocational agriculture. (Photograph courtesy of Tom Stultz, Vocational Agriculture Instructor, Hulett High School, Hulett, Wyoming 82720.)



Sensing students enjoy applying the theory and principles through practice. (Photograph courtesy of Lindsey Keene, Vocational Agriculture Instructor, Southeast Lauderdale Attendance Center, Meridian Mississippi 39301.)

THEME

Using Evaluation in Teacher Education

By R. Dean Shippy

(Editor's Note: Dr. Shippy is an Associate Professor in the Agricultural Education Program at the University of Delaware, Newark, Delaware 19711.)

In the spring of 1979, a study of the professional competencies needed by beginning teachers of agriculture was conducted in Delaware. All high school agriculture teachers and their high school principals were asked to rate a list of 250 professional competencies needed by beginning teachers. As a result of this study, those professional competencies rated as most important were given greater emphasis in the agricultural education methods courses and during the student teaching program.

Competency Categories

The teacher competencies were divided into the following categories on the survey form:

I. Program Planning, Development, and Evaluation
II. Planning of Instruction
III. Execution of Instruction
IV. Evaluation of Instruction
V. Student Vocational Organization (FFA)
VI. Supervised Occupational Experience
VII. Management
VIII. Guidance
IX. School-Community Relations
X. Professional Role and Development

The identification of the importance of key competencies in each of the ten professional areas is an aid to agriculture teacher educators in knowing which competencies to stress in preservice courses and experiences for teacher preparation.

Strategies

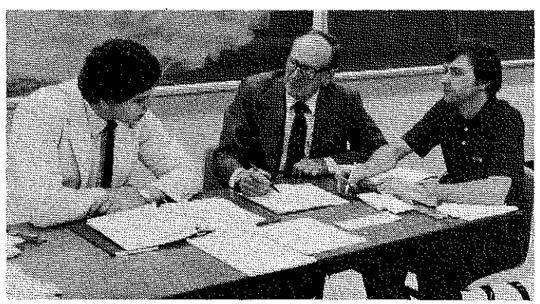
I have selected the top rated competency in five of the ten categories to illustrate how the University of Delaware agriculture teacher education program was changed to prepare more comptetent teachers.

The top rated competency in the Program Planning Development and Evaluation category was "Develop and write general objectives for the vocational agriculture program offerings." This competency is taught by having each student prepare a ninety-day course of study with appropriate objectives for the overall course and individual units.

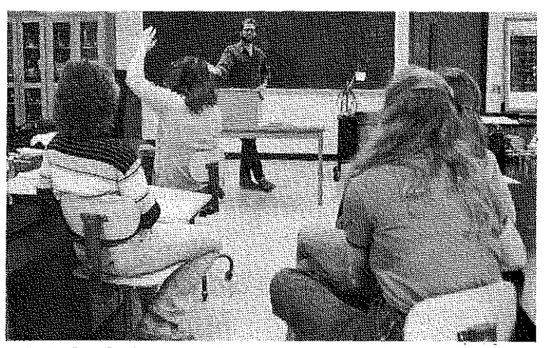
In the Planning of Instruction category, the highest rated competency was "Plan the content of a lesson." After participating in a unit of instruction on lesson planning, all majors plan a series of daily lessons. One of the lessons is taught by the student to the methods class where both written and oral critiques are given to help the prospective teacher improve the lesson content and delivery techniques.

The most highly rated competency in the Execution of Instruction area was "Give an assignment in a clear and concise manner." All students perfect this competency during their eight week student teaching program under the guidance of a cooperating teacher and the teacher educator.

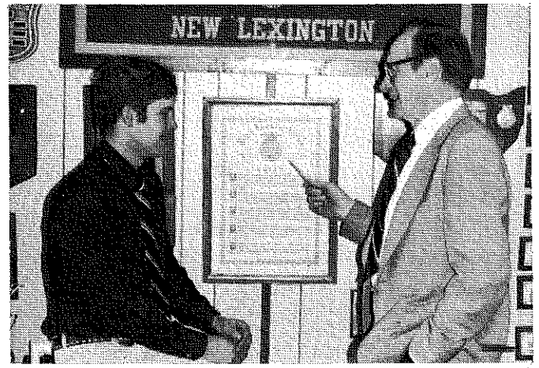
An additional opportunity to develop competency in giving assignments and presenting overall lessons to high school students is available during our five-week winter session. The winter session project encompasses the placement of the student in a local high school vocational agriculture department to teach one course every day during a five-week program. This three credit project is an excellent experience prior to their full-time student teaching program. It also gives them exposure to an additional teacher and department.



Cooperating and supervising teachers should frequently critique student teachers to provide them with evaluations of their performance. (Photography courtesy of Gilbert Guiler, Professor, Department of Agricultural Education, The Ohio State University, Columbus, Ohio 43210.)



Agricultural education majors gain competence in presenting lessons during a 45 minute micro-teaching exercise in their methods class.



Providing student teachers with competence in FFA are important components of student teaching. (Photographs courtesy of Gilbert Guiler.)

In the Evaluation of Instruction area, the top rated competency was "Formulate a system of grading consistent with school policy." A special unit on test construction and grading has been added to the methods course to assist prospective teachers in developing this competency. The unit involves practice in constructing multiple-choice, true or false, and essay tests for high school students. The unit also covers systems of allocating points to tests, student notebooks, student projects, laboratory work, and FFA activities. Students are also required to develop a form for grading daily student work in settings such as the greenhouse and the agricultural mechanics laboratory.

The highest rated competency in the Student Vocational Organization category was "Provide advice for student entries in state and national FFA contests." Students are introduced to the FFA in a major unit of instruction in one of the methods classes. Since fewer than twenty percent of the students have had high school FFA experience, several projects have been developed to assist students in developing their FFA competencies. For example, all majors are required to:

1. Join the collegiate FFA chapter.
2. Serve on at least one collegiate FFA program of activities committee.
3. Assist in planning, organizing, and conducting at least one state FFA contest each semester during the senior year.
4. Attend and participate in the state FFA convention.
5. Assist in the training of at least one high school FFA chapter judging team during student teaching.
6. Actively assist with the high school FFA chapter during student teaching.

As a result of these activities, our students are better prepared to properly advise a high school FFA chapter when they take their first teaching position.

Summary

The basic philosophy of the agricultural teacher education program at the University of Delaware is to provide students with a variety of opportunities to develop professional competencies. We still have several competency areas to refine and develop student activities; however, with the assistance of our high school agricultural teachers we are progressing.

To carry our competency based format through the evaluation phase of our teacher preparation program, we utilize a rating scale during our evaluation of student teachers.

When the final student teacher evaluation report rates key instructional competencies, school administrators have a basis for making hiring decisions. We feel that this is one approach to building more confidence in the agricultural education segment of the educational system.

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Assessing Student Laboratory Performance

By Walter Jones
(Editor's Note: Mr. Jones is a Vocational Agriculture Teacher at Southwest Edgecombe High School, Pinetops, North Carolina 27864.)

In a competency based curriculum, programs of vocational agricultural education are built on the knowledge, skills and attitudes developed by students participating in the curriculum including the school laboratory. The student is held accountable for the demonstration of specified competencies. The emphasis is on demonstrated output and not on participation. A curriculum that emphasized holding the student accountable for demonstrating competence in specified competencies needed for employment has a place in vocational education in agriculture.

Competency based laboratory instruction is designed and delivering educational experiences which will teach students the knowledge, skills, and attitudes needed for successful entry to employment and advancement in agricultural occupations involving laboratory work.

Student Interest

Considerable research has been done on the laboratory learning centers in vocational agriculture. As an effective learning situation, observation of its use indicates that it does stimulate and create an effective learning environment. Teacher - student and teacher - administration interaction has been greatly enhanced by the use of laboratories.

The agricultural laboratory environment can also serve as a catalyst for more joint educational efforts within a school system. Joint planning between the vocational agriculture program, the prevocational program and the post secondary program could occur since all have a vested interest in the development of student performance in school laboratories with emphasis on competency based instruction.

Community Asset

Potential also exists for joint efforts between vocational agriculture departments and agribusinesses to achieve a common educational goal. Use of the laboratories with vocational agriculture programs are almost unlimited. Students in experience programs can use the laboratory environment to help them make production decisions about their SOEP enterprise and accelerate their program.

Students can use the laboratories in many of their day-to-day tasks such as identifying skills, knowledge, and attitudes required for the successful performance of the jobs they had identified. Assessing agriculture student performance in laboratories has many implications for agricultural education programs. Flexibility, size, cost, and versatility all make laboratories a valuable addition to the teaching tools available.

Student response to the laboratory practicum has been exceptionally good. The students come into the laboratory environment with immediate concerns and doubts as to their ability to perform assigned skills. They are eager to develop the needed skills and recognize the value of such.

Initially, some students are fearful and reluctant to attempt the skills. This attitude is reversed when the students observe other students performing the skills which create competitiveness. Students develop a positive perception of the laboratory environment and an eagerness to obtain the knowledge, skills, and attitudes that are required in the labor force. This is evidence for the high regard and respect which employers hold for laboratory learning in vocational agriculture.

Benefits

Laboratory instruction contributes to the vocational agriculture program in several ways:

1) There is a cooperative effort between the agriculture program and community.
2) All students have a chance to participate in some way.
3) The public is aware of this phase of vocational agriculture.
4) The students gain personal development by interacting with other agriculture agencies in the community.

Public Relations

Parent involvement in the laboratory work of our school has been excellent. In the afternoon while parents are waiting for school to be dismissed, they often stroll through the laboratory greenhouse, nursery, and garden to check on their son's or daughter's accomplishments. These individual projects have also inspired the parents of students not in the program to encourage their children to seriously consider enrolling in agriculture. The laboratories also provide an excellent medium for educating parents about the agriculture/agribusiness program, including supervised occupational experience.

Finally, the school laboratory provides a scientific laboratory situation. Experiments and demonstrations are shared with the administration, parents and the community.

Agricultural Mechanization Student Evaluation

By John L. Sackett, Jr.
(Editor's Note: Mr. Sackett is a teacher of Agricultural Mechanization at the Genesee-Wyoming BOCES, Batavia, New York 14020.)

Students often take a path of least resistance. To prepare an adequately trained person, goals are one of the most important stepping stones to success. In developing goals, successful experiences, which are ego and self-identity primers, are needed to stimulate the student's curiosity and ambition.

Students need a continual series of small successful projects and/or learning experiences to raise their level of expectations. We must not only challenge the student but do it by presenting rewarding learning experiences to sharpen and invigorate the student's educational journey.

How does responsibility aid competency based instruction? Let us look at one method. Students in class are given a series of skill areas (projects) with each skill area having a different student supervisor.

The student has the opportunity and duties associated with the supervisor for at least two skill areas each school year. The student supervisor keeps a roster of all students in the class, and records the progress of each student in the particular skill area.

The teacher evaluates the finished project and a grade is assigned to each participating student based on a joint meeting between the teacher, student supervisor and the student. This procedure provides a valuable learning situation for each of the students. Using this system, the teacher will not only evaluate the students' skill level, but also their managerial ability and acceptance of responsibility.

Attitudes Essential

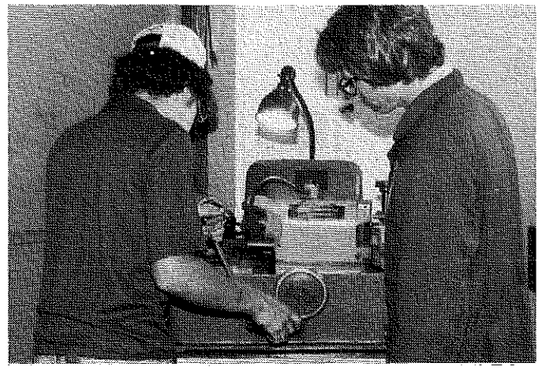
As we all know, there are winners and losers in this game of life. A positive attitude is the number one attribute of a winner. How do we build positive attitudes? Each student must respect the teacher. Generally, the teacher must deviate from this rule in order to maintain class decorum.

Students can assist each other in assessing their performance. (Photograph courtesy of Kenneth Olcott, Agricultural Engineering Technology, Agricultural and Technical College, Cobleskill, New York 12043.)

Habits have a great deal of influence on a person's attitude toward life. As teachers, we must strengthen good habits such as being in class on time, having a project finished on time, and all the little decisions that contribute to a winning or losing attitude. The combination of these little decisions many times determines a person's attitude toward life.

It is very difficult to change students habits. But such can be accomplished with (a) adequate communication, (b) a carrot and stick approach (c) interaction with parents, and (d) well prepared lesson plans that let the student know what is going to happen today and next week. Evaluation of student attitudes and habits is part of every teacher's job.

The last item is values. What are values? Values are the sum of our church, school, and learned heritage. Many students have little or no church exposure and not enough values are taught in many schools. The learned route of television and the daily newspaper do not necessarily foster good values. Values are reflected in proper ethical, moral, and legal conduct. As you live, act, and conduct yourself, so shall your students respond. Teaching by example is important.



Teachers can continuously assess the performance of students. (Photograph courtesy of Billy Harrell, Sam Houston State University, Huntsville, Texas 77341.)

ARTICLE

Determining Student Grades

Determining student grades is among the least exciting activities that a vocational agriculture instructor must perform. Pulling together all the information available regarding a student's performance and then attempting to assign a grade based on a pre-determined scale can be time consuming and frustrating. But it all has to be done.

Grading students is an important part of any teacher's job. Awarding grades based on performance is necessary for several reasons. The American educational system uses grades to promote students to the next higher level. Grades can be a valuable tool in grouping students to work on activities, peer teaching and mastering learning. Student placement as a part of school and after program completion often hinges upon evidence of achievement called grades. Finally, students can be motivated by grades if the grades are used properly.

Steps in Grading

Calculating grades is actually a two-part activitiy. Part one addresses the actual assessment of performance, including knowledge, skills and attitudes. Many guidelines have been written regarding how to assess student performance. Test construction, laboratory project score cards, work habit evaluation and point systems for leadership development are among the issues that address performance assessment (see Figure 1).

Part two of the grading process is much more mundane and receives little attention. How does the teacher arrive at a grade (a number or letter) that will be recorded in the grade book and sent home on a report card?

There are six steps involved in actually computing a grade for students based on individual grades awarded in knowledge, skill and attitude assessment. Generally, the steps are appropriate in any vocational agriculture setting. The example in Figure 2 will help clarify the procedure.

Step 1. Determine Major Areas to be Evaluated.

By R. Kirby Barrick

(Dr. Barrick is an Assistant Professor in the Department of Agricultural Education at The Ohio State University, Columbus, OH 43210.)

Generally, there are four basic areas or parts of the vocational agriculture program. They are supervised occupational experience, laboratory activities, classroom activities and leadership (FFA). A teacher must identify the major areas to be included in determining student grades.

Step 2. Determine the Relative Weight of Each Major Area

To help later calculations, it is best to weigh the major areas on the basis of 100 per cent. The example shown uses possible points based on 100, with SOE worth 50 points or 50 percent, laboratory activities worth 20 points, classroom activities worth 20 points and FFA activities worth 5 points. The relative weights indicate, for example, that SOE achievements will determine 50 percent of the student's grade. These relative weights can be adjusted for different classes and different grading periods if the teacher wishes.

Step 3. Calculate a Numerical Score for Each Area.

By the end of the grading period, the teacher's grade book will be full of grades. The teacher must now use those grades to determine a numerical score for each of the major areas. For example, if the four sub-areas under "Classroom Activities" are of equal value, a student may have an average of 91 on quizzes, 87 on tests, 100 on participation and 92 on the notebook for a numerical score of 92.5 for classroom activities.

Step 4. Compute a Weighted Student Score for Each Major Area.

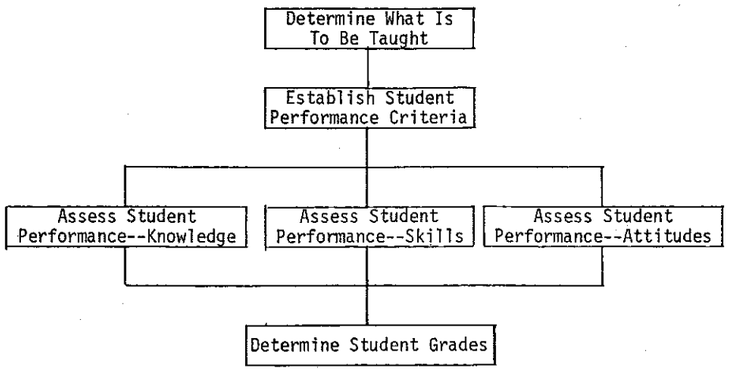
The student score, recorded in the last column of the example grade computation sheet, is determined by multiplying the numerical score (as a percent) times the points possible. Continuing the example, 92.5 on classroom activities equals .925 times 25 possible points is 23.125, the student score.

Step 5. Compute the Total Score.

After a student score is calcuated for each major area, the scores are summed to determine the total score.

Figure 1

INSTRUCTION EVALUATION PROCESS



Adapted from "Determine Student Grades" PBTE Module D-5, National Center for Research in Vocational Education, 1977.

Since this score is on the basis of 100, it could be used as a final grade in schools that use numerical values rather than letter grades for reporting.

Step 6. Convert the Score Into a Letter Grade.

The final step is to find the total score on the grading scale and record the corresponding letter grade. The grading scale should be used throughout the year and may be dictated by school policy instead of teacher preference.

The six steps to determine student grades become even easier when the teacher writes a program for a programmable calculator or micro computer. Stages 3, 4, 5 and 6 would all be done by the machine, with the actual product being the student's grade.

The system of determining weighted scores for each major area can also be used within the area. The example used in Step 3 assumed that all four criteria under "Classroom Activities" were of equal value. If the teacher wishes to weigh each criterion, then a numerical score would be computed by multiplying the score on each criterion times the relative weight for the criterion (a percent of 100).

Summary

Determining student grades may not be the most enjoyable activity in teaching but it is important. Students need accurate feedback, schools use grades for student recognition and potential employers use grades to evaluate prospective employees. It is the responsibility of the teacher to ensure accuracy and fairness in awarding grades that reflect student achievement in the total program.

Figure 2

GRADE COMPUTATION SHEET FOR VOCATIONAL AGRICULTURE

Student_____

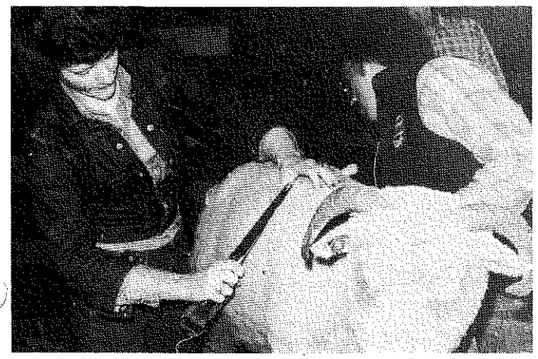
Vo Ag Subject_____

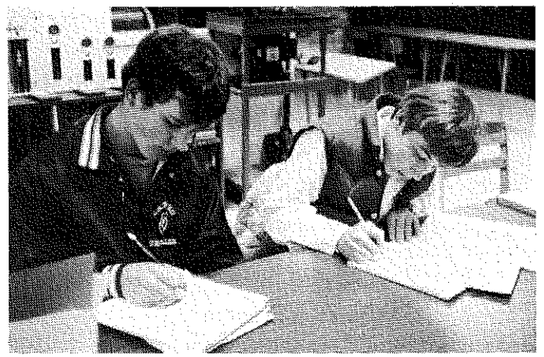
Grading Period_____

Criteria	Points Possible	Student Score
Supervised Occupational Experience Program Scope Approved Practices/Skills Completed Records--Accuracy, completeness, neatness Supplementary Practices, Improvement Projects	50	
Laboratory Activities Required Projects Approved Projects	20	
Classroom Activities Quizzes Tests Participation, Discussion Student Notebook	25	
Leadership Participation in FFA Activities	5	
Total	100	

Scale: 90-100 points = A
80-89 points = B
70-79 points = C
60-69 points = D
60 points = F

Letter Grade _____





Classroom and laboratory performance can receive appropriate weights in grade determination.

ARTICLE

Techniques for Evaluating Students

By Hazel Taylor Spitze
and Ed Osborne

(Editor's Note: Dr. Spitze is a Professor in Home Economics Education and Dr. Osborne is an Assistant Professor in Agricultural Education at the University of Illinois, Champaign, Illinois 61820.)

Evaluation is a broad term that is often narrowly seen as the final stage in teaching. But what is evaluation? What are the purposes of evaluation? What are some evaluation techniques that are appropriate for vocational agriculture teachers to use in assessing student performance?

Evaluation can be seen as a continuous process of making judgements based upon recognized objectives. These judgements are related to present and past experiences and are used to direct future experiences. Evaluation is usually a cooperative effort on the part of teachers, students, and others.

Teachers and students usually find it easier to assess progress when there are clear, reasonably specific objectives stated in terms of expected student outcomes. The most meaningful objectives are based upon student needs, realistic in terms of expected student abilities, and consistent with the nature of the subject matter.

Purposes of Evaluation

While evaluation efforts may be undertaken for purposes such as program planning, selecting teaching materials, seeking funds, and providing public information; assessing student performance and progress is another major function of evaluation that challenges vocational agriculture teachers on a daily basis. Efforts to evaluate student performance should be aimed at recognizing student strengths, diagnosing weaknesses, and identifying strategies to improve the overall quality of instruction.

While attempts to assess student performance have often derived from the need to assign grades, evaluation for the sole purpose of providing feedback on progress is also a worthy endeavor. The evaluation techniques that follow are appropriate in either a graded or non-graded setting and offer many options for teachers to choose from when evaluating students.

Some Evaluation Techniques

Vocational agriculture students can be evaluated by using a wide range of evaluation techniques. Traditionally, teachers have relied almost exclusively upon written tests to evaluate student learning, but there are a number of other evaluation techniques that may be used. These additional techniques can be broadly grouped into two categories: those used to evaluate real life situations and those used to evaluate student performance in simulated situations.

Real life situations occur while students are on-the-job, participating as a class member, or conducting their supervised occupational experience programs. In these cases, students are responding to an actual, not simulated, event. On the other hand, simulated situations are usually contrived by the teacher for the purpose of evaluating the actions and abilities of students as they respond to the arranged situation.

Techniques for Evaluating Real Life Situations

Student performance in reaction to real life events can be evaluated with a variety of specific techniques. Some examples are presented that illustrate how each of these techniques may be used to evaluate vocational agriculture students.

1. *Anecdotal records.* Teachers may use anecdotal notes to record factual descriptions of meaningful student behaviors. Observation may occur as a student prepares for an activity or as the activity is performed. Many teachers use anecdotal records to note observations made during SOEP visits. These observations might include use of approved practices, recommendations forwarded, problems discovered, student concerns and attitudes, opportunities for expansion, and relationships with employer and other employees. The observation should be followed by a brief written interpretation of the behavior or circumstance observed.

2. *Interview.* Teachers can determine students' strengths and weaknesses orally, as well as in written form. This evaluation technique allows the teacher to build upon student responses and to explore understanding in greater detail and depth. Students may be orally evaluated on an individual basis on practically any instructional topic.

3. *Rating Scales.* A rating scale is a device that contains a list of characteristics or qualities to be judged and a scale for indicating the degree to which each attribute is present. Rating scales can be used to evaluate student performance on specific activities occurring in the classroom, laboratory, FFA, or SOE.

Assessing the ability of students to perform manipulative skills is certainly an evaluation activity that lends itself well to the use of rating scales. They enable the evaluator to assess student abilities and performance, leaving other more appropriate evaluation techniques to assess student knowledge.

Skill: Trimming Feet (sheep) Criteria	Points Possible	Points Earned
1. sheep caught & handled correctly	10	8
2. sheep correctly identified and marked	10	10
3. manure, mud, etc., completely removed	10	10
4. foot rot symptoms recognized, if present	15	13
5. feet trimmed to proper length	15	12
6. feet trimmed to proper shape	15	14
7. clippers used correctly and safely	15	12
8. sheep treated with foot bath if needed	10	10
TOTALS	100	89

Evaluating Student Performance in Simulations

Students may also be evaluated on the basis of how well they perform in simulated experiences that require them to display their knowledge, skills, and attitudes. Techniques for evaluating students in simulated settings can provide variety in a teacher's evaluation efforts and allow teachers to determine how students might use their knowledge and abilities when confronted with similar real life situations.

1. *Role Playing.* This evaluation technique allows the student the opportunity to show behaviors and incorporate the principles and information they have learned. A teacher might use a role play to evaluate students' job interview skills, techniques for greeting customers, or ordering feeds, supplies, or equipment. The teacher should identify the desired behaviors and/or procedures beforehand and use these as a basis for evaluation.

2. *Games and Situation Simulations.* While educational games are often used for teaching, they can also be used to evaluate student learning. Educational games are contests played by set rules for educational objectives (Spitze and Griggs). These games could require students to recall information, such as an agricultural version of the TV game show "Jeopardy". Other games, such as the farm management game "Rich Farmer, Poor Farmer", can also be used to assess levels of student learning and understanding beyond mere recall.

Situation simulations are dramatizations that can be used to evaluate students' decision-making skills and their ability to apply what they have learned. For example, students in an agribusiness class could pretend to be buying into a business by choosing one of five business opportunities. In another situation, simulation students could seek the best source of credit to finance a capital investment. Microcomputers offer many opportunities to increase the use of educational games and simulations in teaching and evaluation. Creative teachers can develop a variety of useful educational games and simulations on their own or obtain them commercially.

3. *Inquiry.* When using inquiry as an evaluation technique with individuals or groups, students are shown a film or demonstration and then inquirers (teacher or students) ask questions about the event just seen, according to set rules. For example, following a demonstration on sweating a solder joint, a student could ask the teacher only questions answerable by yes or no and continue to question as long as a "Yes" answer was received. The "winner" could be the first to explain the process of sweating a joint. Inquiry as a teaching or evaluation technique is especially good for causing students to use reasoning and logic skills in developing and defending a theory.

4. *Contrived Incident.* This evaluation technique requires the teacher to fabricate a situation that requires student action or performance. As an example, students may be working in the laboratory when someone arrives with an axe with a broken handle (set up in advance by the teacher). The teacher may ask one or more students to talk to the person and proceed to repair the broken handle. The student(s) would then be evaluated according to the repair procedures used and the quality of the repair job.

5. *In-Basket.* The "in-basket" technique is excellent for allowing evaluation to occur on a continuing basis. Students have their own in-basket (e.g., file folder) and the teacher places an item there which requires action by the student to get it to the "out-basket" (e.g., the teacher's desk or box). Items could be the same for all students or different for each student. The in-basket technique is very useful in both a teaching and an evaluation setting. A teacher might place the following item in a student in-basket:

> The plants in the greenhouse have white flies. Explain on paper how you can verify the presence of white flies, what can be used to control them, and how the control measures are applied. After your instructor has checked these answers, proceed to treat the plants in the greenhouse. (Note: the student could be evaluated on their written responses, their treatment procedures, and the effectiveness of their treatment.)

6. *Q-Sort.* This research technique can be easily adapted for evaluation purposes. Students sort items into a specified number of piles according to simple and compound types or basic shapes. Students in a horticulture class could be asked to classify indoor plants according to growth requirements or propagation methods. Students in an agricultural production class could classify livestock feeds according to type or nutrient value.

Summary

Evaluation is a continuous process that is undertaken for a variety of reasons. Many of the evaluation techniques described are not only useful in evaluation settings, but in teaching settings as well. Evaluation of students can be performed to determine grades or merely to provide concrete and specific feedback to students regarding their progress and skill development.

The evaluation techniques highlight the variety in techniques available to teachers as they assess student performance. They also illustrate the key point that the process students follow to make decisions or perform skills is just as important as the decisions made and the product produced through skill performance.

The techniques teachers use to assess student performance must be selected according to the instructional objectives set forth and the purpose of conducting the evaluation. Use of a variety of techniques will improve the validity and fairness of evaluation results, as well as stimulate student participation in the learning and evaluation processes. Perhaps students may then be led to show even greater initiative in evaluating themselves as learners and identifying their own educational needs.

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ARTICLE

Evaluating Affective Development

By J. David McCracken

(Editor's Note: Dr. McCracken is a Professor in the Department of Agricultural Education at The Ohio State University, Columbus, Ohio 43210.)

Should vocational agriculture teachers grade students on their attitudes? Students resent being graded upon "whether the teacher likes them." How can attitude grades be justified in vocational agriculture?

Grades given in vocational agriculture should be a reflection of student performance. Performance should be measured in terms of the objectives of the course.

In vocational agriculture, graduates should be knowledgeable about agriculture subject matter (cognitive performance), have attitudes which enable them to succeed in agricultural employment (affective performance), and the ability to do manipulative tasks (psychomotor performance).

Therefore, course objectives should reflect these areas of performance. Also, if these three areas are important to success in agriculture, and are reflected in objectives for vocational agriculture courses, then all three areas should be considered in assigning grades to students.

A System

How can teachers give grades on attitudes without receiving criticism for favoritism? Such grading is subjective by nature. However, the supervised occupational experience program develops student intiative and responsibility. Work habits are developed in the laboratory. The FFA organization provides opportunity for developing cooperation, citizenship and leadership.

An appropriate instrument which can be used to measure attitudes is a rating scale. Figure 1 is a rating scale containing items to assist in developing cooperation, responsibility, leadership, work habits and social habits.

The specific items could be revised to meet the needs of any local program. The greater the specificity of the items, the less subjectivity in the ratings.

Some teachers have students do a weekly self-rating using this form. The teacher then reacts to each student's self-rating by marking changes on the form. Student improvement then becomes a cooperative venture between the student and the teacher.

Scores on scales of this nature can be used as a measure of student achievement in the effective area. As with any type of student evaluation, students should be rated frequently throughout the grading period.

Teacher Emphasis

Students will be more likely to progress in the affective area if they perceive that the teacher regards affect as important. Using such a form should help students in improving their employability. It also will provide a more objective means of grading students on their attitudes.

Figure 1

Affective Rating Scale

Category	Indicators	Rating
	5=excellent 3=satisfactory 1=poor 4=very satisfactory 2=needs improvement N=not applicable	
1. Cooperation	a. Works well with fellow students	1 2 3 4 5 N
	b. Seeks help when needed	1 2 3 4 5 N
	c. Assists others	1 2 3 4 5 N
	d. Receptive to suggestions	1 2 3 4 5 N
2. Responsibility	a. Completes assigned work	1 2 3 4 5 N
	b. Follows policy & rules	1 2 3 4 5 N
	c. Assumes responsibility for actions	1 2 3 4 5 N
	d. Attends regularly	1 2 3 4 5 N
	e. Is on time	1 2 3 4 5 N
3. Leadership	a. Influences others	1 2 3 4 5 N
	b. Makes decisions	1 2 3 4 5 N
	c. Provides constructive criticism	1 2 3 4 5 N
	d. Develops and works toward personal goals	1 2 3 4 5 N
	e. Demonstrates initiative	1 2 3 4 5 N
	f. Demonstrates poise and confidence	1 2 3 4 5 N
4. Work Habits	a. Works well under pressure	1 2 3 4 5 N
	b. Works rapidly and accurately	1 2 3 4 5 N
	c. Demonstrates patience	1 2 3 4 5 N
	d. Uses available time	1 2 3 4 5 N
5. Social Habits	a. Meets people properly	1 2 3 4 5 N
	b. Uses appropriate dress	1 2 3 4 5 N
	c. Respects the rights of others	1 2 3 4 5 N
	d. Is well-groomed	1 2 3 4 5 N
	e. Is concerned about others	1 2 3 4 5 N

ARTICLE

Legality of Grading

By Lee Cole and Forrest Gathercoal

(Editor's Note: Dr. Cole is an Associate Professor of Agricultural Education and Dr. Gathercoal is an Associate Professor of Educational Law at Oregon State University, Corvallis, Oregon 97331.)

Is it fair to assess non-academic performance, behavioral performance, as part of the overall course grade? Should a grade in a course represent purely academic accomplishment?

Constitutional Consideration

As constitutional rights of students gain increasing recognition, it is possible that teachers may be denying students their 14th amendment right to liberty guaranteed by the Constitution. For example, if a student received grade deductions for unexcused absenses, and these were averaged with test scores and other grading criteria, which in turn caused his or her grade to be lowered, the final grade may not be an accurate reflection of the students true academic achievements.

This lowered grade on the students' transcript may place in jeopardy his or her future goals and may result in loss of scholarship money, admission to college or even cost a job. The letter grade assigned to a course title on a transcript is usually interpreted as the students' level of skill and understanding in that subject.

Rarely would the reader be informed that the grade was an average of attendance and achievement. This misinformation about the student resulting in his or her loss of future opportunities has the effect of denying that liberty guaranteed by the 14th amendment.

A Plan

How does this legal concept affect our vocational agriculture courses? One of the goals of vocational education in agriculture is to educate the individual directly and specifically in the attitudes, basic education skills, and thinking and manipulative habits required in the occupation itself (Prosser).

What are the attitudes that a vocational agriculture teacher would try to teach and how might they be taught and still stay within the 14th amendment guarantees? Would assessing attitudes as part of a grading system allow the grade to reflect academic achievement, or are there courses that because of their nature and goal should include assessment of non-academic functions?

The attitudes which vocational agriculture teachers should attempt to instill in their students are those which are important to employment in agriculture, if we follow Prosser's logic. A partial list might include honesty, loyalty, high ethical standards, a concept of fairness or fair treatment, safety, and organization or neatness.

One way to teach these attitudes, and at the same time meet the constitutional test, would be to establish a grading system similar to the setting. This would allow grades to substitute for dollars paid by an employer.

The system might be designed so that a part of the pay was held-up, temporarily or permanently depending upon whether make-up efforts were completed, if students were late to work; did not treat their fellow workers fairly; turned in someone else's work as their own; did not leave a clean, orderly work area which would reduce potential accidents for fellow workers and customers; did not make up for lost production time; did not put in a fair day's work; did not submit the quality of work, or product, required of the market place; and/or did not place a fair assessment on the value of their product.

Conversely, extra pay could be earned by putting in overtime; by producing superior quality products for the market; by establishing and maintaining a record of fair and honest treatment of fellow workers and customers; by keeping the work place clean, neat and well organized so customers feel good about buying there; and/or by letting the employer know when they were not going to be able to perform specific tasks because of illness or other problems.

When a task was not complete the student would receive an incomplete until it was finished. No work produced, no pay or in this case no grade. If a student has too many absences and misses the educational opportunities of class discussion, assign a term paper to make up for class time missed. This practice allows for a "no-impact" possibility of behavioral factors on the academic grade, if the student takes advantage of it, but at the same time it clearly provides for training in the attitudes of the work place.

Impact on Students

To determine whether a student would be treated fairly by including these criteria as part of a grading system, one must consider both the goal of the program and the constitutional rights of the students.

Since the primary goal of vocational education in agriculture is job placement in an agricultural occupation, then a grading system that helps prepare a person with the attitudes and work habits of that occupational system would do the best job of preparing a student for work.

Now, what about the students in vocational agriculture courses that are college-bound? Will they be adversely affected by a grading system which has as part of its structure non-academic considerations?

There is no opportunity for an admissions director, or a potential employer, to know the degree of behavior that was averaged into the grade on a transcript. For this reason alone, educators must be careful to keep to a minimum the amount behavior plays in the computation of the final grade.

Attitude problems, work habits, loy-

(Continued on Page 20)

Legality of Grading

(Continued from Page 19)

alty and other important employment characteristics may best be communicated in ways such as letters of recommendations, telephone calls, personal conversations and information on transcripts showing the times tardy and days absent.

Carefully consider the constitutional rights students bring with them into your classes. These rights need to be considered when assigning a grade. How much do we base our grades on academic knowledge and skill acquisition, and how much on behavioral attitudes needed for the job market? It is truly a professional educator who finds the balance between these forces in our society.

ARTICLE

Service or Education?

By Martin B. McMillion

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A teacher once showed a farmer how to caponize fourteen roosters, yet the farmer was not about to touch the operating equipment. The farmer hoped the teacher would finish the whole group, thus keeping the farmer from having to do it.

It is difficult to separate school education in agriculture from service, yet some service has merit. On-farm demonstrations are simultaneously education and service. If farmers learn to repeat the demonstration they have been educated and the service is no longer necessary. Conversely, if farmers do not learn and insist that the teacher do more "demonstrations" a service is being performed.

When the teacher does something for a farmer, the farmer should be trying to learn. If the teacher calibrates a sprayer, the farmer should fully intend to calibrate the sprayer the next time.

Things of a service nature should not be done in the absence of the farmer. If the farmer is too busy to be present for a corn yield check, the teacher should direct his/her efforts to somebody who is as interested in education as service.

Service to Gain Attention

Some service activities such as taking soil samples or forage samples are ways to get the attention of clientele. In fact, the examples given are the interest approach to a lesson on fertilization or ration balancing, respectively. In Pennsylvania where soil tests must be purchased by the farmer, free soil tests are frequently given as a door prize at adult meetings to facilitate on-farm contact with the more conservative farmers. A free kit leads to showing how to take the sample and forward it for analysis. The test result comes to the teacher who interprets it to the farmer, and hopefully the farmer will continue to look to the teacher for individual instruction.

Community service projects by the FFA or Young Farmers are an indirect service of the teacher as is the provision of equipment purchased by the school or clubs. This kind of service which is generated through teacher leadership is desirable. Direct community service by the teacher is normally done as a member of a civic or other community organization.

Employment Service

A fully justified service is an employment service for students. Students are taught how to obtain employment, but the teacher should also make an effort to get full-time employment for the students as a service.

Teachers can keep track of who is looking for employees and who is looking for jobs without it being too time consuming. The employer contact is good for the teacher in that it contributes to an occupational orientation of the teacher and the program.

Withdrawal of Services

Services of long standing such as open laboratories and canneries cannot be discontinued abruptly because of the ill will of those who have grown to expect the service. Even the sudden withdrawal of mechanical repair service for the school can have some detrimental effects to relations within the school. These three activities appear to be primarily service. As long as there is educating to be done, education is more appropriate than service.

Bartering Service

Educational programs need community resources which seldom are the kind that can be purchased. Teachers and students commonly prune fruit trees in the community which is a service in return for the opportunity to get practice. Another example is the building of a farm wagon for a farmer who is willing to purchase the materials, thus the educational program benefits and the farmer benefits.

Bartering is common in the greenhouse operation. In return for a garden center providing supplies, the school will deliver marketable plants. By avoiding large retail sales the school is not seen as competition to community businesses.

Historically, a humorous example of bartering service for educational opportunities was the frequent practice of agriculture teachers helping put hay in the barn for the opportunity to talk to the farmer. That is humorous to most of us now, but it happened and perhaps still does from time to time.

Summary

In the agricultural education program, education is primary, service is secondary. Service does not appear in the title of the program offered through the schools although it does in the title of some other educational agencies in agriculture.

Teachers must distinguish where education ends and service begins as well as where it overlaps. Service to the community resulting from leadership of youth clubs is accepted as one of the objectives of the program. We must also be aware that local expenditures for our program are considerable. The community has the right to buy some services with its money if that is its collective desire.

ARTICLE

Inservice Education Is Essential

By Curtis R. Weston

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As I think back on what agricultural mechanics (farm mechanics) was like in 1950 when I became qualified as an instructor of vocational agriculture, I see the image of small skill projects such as hay hooks, bread boards, clevises, feed scoops, S-hooks, and small woodworking projects. Welding was still a novelty with one or two arc welders and one oxy-acetylene outfit per laboratory, or none at all.

Power tools, both woodworking and metal working, were rare in vocational agriculture laboratories in Missouri.

The only shop plans available for students to follow were crudely drawn or perhaps a photograph of an item someone had built with some degree of success. No sizes or dimensions of projects were available for students to follow. Large projects were made primarily of wood with some metal working involved. Standardized plans were available on several woodworking projects such as hog houses, picnic tables, and saw horses.

When projects were displayed at fairs and shows throughout the state, it was not unusual to have many standardized woodworking projects, but metal projects ran the gauntlet of size and shape due to no one having desirable standardized plans for vocational agriculture students.

The Curriculum

Instruction in agricultural mechanics was custom made for every vocational agriculture department because each teacher put together their own course of study. No statewide curriculum was available. No one would take the initiative to develop nor would teacher educators or supervisors condone a standardized instructional program (core curriculum) for agriculture mechanics.

Each instructor was expected to survey their school service area and determine the instructional needs of the community and, in turn, to write their own lesson plans. This still has some merit but time does not permit it when much planning can be standardized. If one person can develop instructional materials that can be used or modified by the majority of instructors, we have a tremendous time saver built into our program.

Determining Content

Inservice education for instructors of vocational agriculture in the late 40's and early 50's was spasmodic at best. Some inservice education was organized as a joint effort between industry and the state supervisory staffs and some was conducted by teachers.

In 1956, the University of Missouri-Columbia added an agricultural mechanics specialist to their staff as a full-time position. This was similar to what a few other states were doing.

A survey was conducted to see what mechanical skills farmers performed which would dictate the kinds of mechanical skills which would be needed by instructors of vocational agriculture (Weston, 1959). The survey revealed that farmers performed the same skills regardless of where they lived or the nature of their tenure in farming.

If these data were correct, then we could develop a three-prong attack to the training of our teachers in mechanical skills. Those three steps were: (1) revised preservice training to provide the skills needed; (2) development of curriculum materials to include lesson plans, laboratory exercises, and project plans; and, (3) intensified inservice education programs to upgrade the mechanical skills needed by instructors. Additional research revealed the greatest deficiencies to be in the areas of welding, tractor and machinery maintenance, and farm buildings and conveniences.

Initial Efforts

My first statewide training program for instructors of vocational agriculture was a concentrated effort to upgrade them professionally in the area of electrification. Arrangements were made with the Missouri Farm Electrification Council (MFEC) to provide funds to equip each vocational agriculture department with the materials to construct three electrical demonstration panels.

Supplies were purchased and 22 training sessions were conducted on how to construct these three demonstration panels. As soon as the panels were all constructed, statewide workshops, four hours in length, were conducted to train instructors on how they could teach with their new electrical equipment.

At this same workshop, two items of curriculum materials were distributed to the teachers. One item was a set of detailed lesson plans which was keyed to the second piece of curriculum; a manual on how to perform the various electrical demonstrations.

Demonstration panels were made available to the University of Missouri-Columbia for use in their preservice training program. This concurred with the three phases of upgrading the mechanical skills of the teachers.

Due to the high rate of turnover of

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teachers, all three phases of the training program must be kept intact or the total system soon has teachers deficient in some skill. This one training effort took about two years to implement and requires periodic upgrading about every five years to keep electrical panels and curriculum materials current.

When a workshop was conducted, curriculum material was left with the instructor either in the form of lesson plans, laboratory exercises, or project plans. It is very critical to quality inservice education that the materials be current and presented by someone who is knowledgeable about teaching vocational agriculture. The materials left with the instructor must be immediately useable by the instructor with their students whether high school, post secondary, or adult.

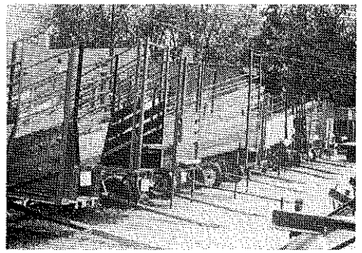
Teachers soon started demanding that some form of recognition be given for their training efforts in terms of college credits or certificates of attendance. Many efforts were made to award graduate credit to instructors attending inservice training workshops to no avail. An eight credit, five part course was approved in 1967 to award graduate credit in five areas of agricultural mechanics. The course is "Inservice Education in Agricultural Mechanics" with the five areas being: (1) Farm Power and Machinery; (2) Farm Buildings and Conveniences; (3) Rural Electrification; (4) Soil and Water Management; and, (5) Agricultural Construction.

A similar companion course exists in the Agricultural Economics Department. It also has five sections and carries ten hours of graduate credit. Most of our instructors now will accumulate from two to 18 hours of graduate credit from these two areas of inservice education.

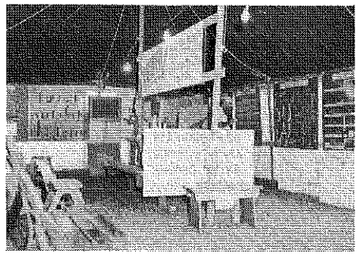
For several years after 1967, most of the inservice education was graduate courses taught at various locations over the state. Due to the length of time (eight, 4-hour sessions), it took at least two years to deliver a course to the state. Teachers, supervisors, and teacher educators decided to use short, intensive non-credit workshops to fill the voids in inservice training.

How to Finance

The most logical place to obtain funds for inservice education is from your own institutions or the State Department of Education. Another source of funding, of course, is industry. We have used many industry sources. The Department of Education has been a source of funding for many training programs. Examples were the EPDA funds which were available and funded such activities as traveling seminars, welding schools, small gas engine schools, tractor schools, and others. As a last resort for funding, the instructor can be asked to pay a fee to support the costs of inservice education.



Agricultural mechanics projects on display today. They are a direct result of inservice education in Missouri.



Early agricultural mechanics projects consisted of small skill projects such as was displayed at the Missouri State Fair in the early 1950's.

Rewards

Many values can be seen resulting from inservice education, such as:

1. A more skilled and competent cadre of instructors of vocational agriculture is developed.

2. More emphasis is placed on such areas as tractor and machinery maintenance, farm structures, buildings, and conveniences.

3. There is an opportunity to field test and develop new curricular materials.

4. There are many intrensic rewards for teacher educators who conduct such inservice training activities.

5. Instructors are motivated.

6. A better trained group of students are graduated into the community.

7. A higher quality preservice training program results due to college instructors keeping current with technology.

8. Much standardization of the vocational agriculture program can be accomplished by inservice education.

Inservice education has been demanded and delivered in Missouri with outstanding results in agricultural mechanics. The one real problem of inservice education is the continual stream of new faces into the profession with a zest for learning that can only be met by another series of inservice education classes. The job is never completed; just a new set of students emerge.

Reference

Weston, Curtis R. "A Study of Mechanical Jobs Performed by Selected Farmers in Missouri." Ed.D. Dissertation, Columbia, Missouri: Library, University of Missouri-Columbia, 1959.

Coming in January . . .

SOEP: ENTREPRENEURSHIP

TEACHING TIPS

Finding needed specimens of insects and crop diseases when needed for a particular teaching unit is a problem most teachers have faced more than once in their teaching career. Pictures and slides leave a lot to be desired in terms of clarity, color, relative size, and shape. Many times, commercial specimens preserved in vials of alcohol discolor, distort and tend to be expensive. Dried mounts get crushed and disintegrate with normal classroom use.

George Cummins, Instructor at the Hawkeye Institute of Technology, Waterloo, Iowa, has found a way to remedy those problems. He makes permanent specimens by preserving them in clear casting resin mounts. George states that if care is taken in the mounting process, the specimens will retain their natural color and detail. These qualities of the specimen permit students to study the mount in minute detail with magnifying instruments. George has used the resin castings to mount insects, crop diseases and deficiency symptoms, plus grain damage. The same process can be used to make paper weights and hot pads with imbedded items of interest such as flowers, coins, butterflies, etc.

According to Mr. Cummins, casting resin is available at most art and craft supply stores. Some school systems have a supply on hand for art and/or industrial arts classes.

George suggests the following steps in constructing resin mounts. A variety of containers can be used: milk cartons, waxed paper cups and plastic cup liners. Styrofoam cups are not recommended since they are dissolved by the casting resin. Coating the cup liners with petroleum jelly will make mount removal easier. If the bottom of the mount is blurred during the container removal, pour a thin layer of the resin on the blurred surface and it will set clear.

Kill the insects in boiling water and blot them dry. Pour a thin layer of the casting resin in the mount and imbed the insects in the desired position. One precaution during this step: large beetles may float in the resin. Therefore, imbed them in a thin layer of resin. After the resin hardens, cover the beetle with an additional layer of the resin. Life cycles of insects can be demonstrated in one mold: egg masses, larva, pupa, adult male and female.

Plant specimens can be imbedded directly with no drying necessary. Identifying labels can be imbedded with the specimen.

TEACHING TIPS

Water In the Soil[1]

Soil water capacity and other terms connected with water in the soil can be made clearer to students by following some suggestions of Leland Browning, vocational agriculture teacher at Butler, Missouri. Mr. Browning has developed and used two short demonstrations that helped his students develop a quick understanding of what they considered "big words" and hard to comprehend facts.

Pore space and its relationship to water holding capacity can be demonstrated by using two 500 ml beakers, several marbles, and some sand. Filling one beaker with marbles (representing sand particles) and the other with sand (representing clay particles) simulates two types of soils. Equal amounts of water are added to the beakers. Students quickly see that although the beaker of marbles contains larger pore spaces, the clay holds more water after these beakers have been drained.

The second little "trick" is to use a sponge to represent soil. First, the sponge is brought to saturation (all it will hold). This represents the "saturation point" of the soil. Any more added water causes water to leave the sponge. Thus, the water leaving the sponge at that point represents "gravitational water." Next, the sponge is squeezed tightly, thus eliminating all "useable water." The sponge-soil is now at "wilting point." The water that no one can now squeeze out and that still remains in the sponge represents the "hygroscopic water," or water that can not be used by the plant. Thus, the following terms now have clearer meaning to the students: hygroscopic water, or water in the soil now available to plants; wilting point, or the point at which only hygroscopic water remains and plants begin to wilt; useable or capillary water, or water available to plants; saturation point, or the point at which the soil is full of water and incapable of holding more; gravitational water, or water not used by plants and which is lost due to over-saturation.

These two demonstrations can be completed in one class period. Student comprehension of some "big words" in the area of soil science can be speeded up.

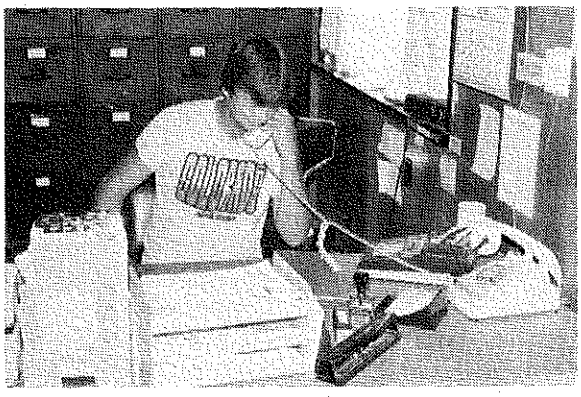
[1]From "Missouri Agricultural Education Bulletin," Volume XXXVI, Number 2, Spring, 1983

Stories in Pictures

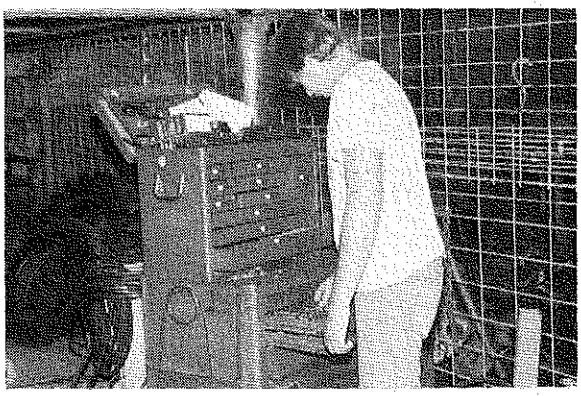
Evaluation Has Many Facets:

Classroom Achievement

On-the-Job Performance

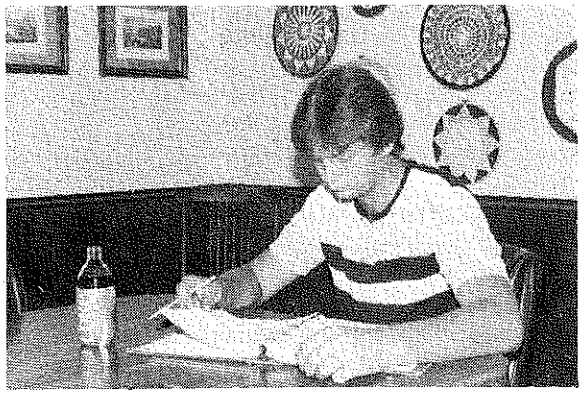


Personal Development



Laboratory Procedures

SOEP Practices



Records

(Photographs courtesy of Dan Gutshall, Agribusiness Instructor,
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