THEME: Achieving Quality Classroom Instruction
Achieving Quality Classroom Instruction

The theme of this issue marks the beginning of a series to re-emphasize the importance of maintaining programs of high quality. Declining enrollments, reduced funding and criticisms from several fronts send many supervisors scurrying for evidence and things to justify their program. The best armor-coating we can provide to our program, to protect it from the elements chipping away at it, is to have programs of high quality. The justification for the program in vocational agriculture is sound as long as the programs at the local level are meeting the needs of our students and the agri-industry through programs of high quality. If programs are doing the job well, then we have little to fear.

The theme of this particular issue focuses upon the heart of the problem. The classroom provides the location for the principle reason teachers exist. To have programs of high quality, excellent instruction must be given. The evaluation of our overall program quality begins here. Energies exerted in extracurricular and intra-curricular activities can go unnoticed if this component of our program is found lacking. Every person that carries the prestigious title of "teacher" will have earned it first and foremost in the classroom.

High quality instruction in the classroom places high demands upon the teacher. The difference between a poor and a good teacher is often the willingness to spend that little extra time to prepare. We believe that the lesson is carefully prepared. The excellent teacher carries to class all those extra things that help students learn. The things are not always animate things, but things like clarity, enthusiasm and caring. Enthusiasm is infectious, spread it! Learn all you can to improve your teaching. As the old sage says, "teach students not the subject" and join those that have stepped up to the rung of excellence.

This issue and theme brings a new Editor to The Magazine. Your Editor is concerned about following the fine tradition of service that has been provided by past Editors and at the same time being daring enough to seek newfrontiers that will better enable The Magazine to serve as the voice of the profession. How can The Magazine better serve you? Feel free to contact your Editor and express your beliefs and needs. I look forward to serving as Editor in order that together we might continue to improve the profession. The Magazine needs your input if it is to provide a means of sharing professional concerns and of improving ourselves professionally.

New Editorial Staff

Four new Regional Editors have agreed to serve The Agricultural Education Magazine. Their terms begin concurrently with that of the Editor and will end on December 31, 1985.

The new Regional Editor for the North Atlantic Region is Ellin Cooper of the University of Maryland. He has been active as a teacher of vocational agriculture, state supervisor and now as a teacher educator. The Southern Region will be served by Larry Arrington from the University of Florida. Larry has been a teacher of vocational agriculture and is currently in teacher education in Gainesville.

Joe Townsend from the Department of Agriculture at Illinois State University will serve the Central Region. He has been a teacher of vocational agriculture in Illinois. The new Regional Editor for the Pacific Region is John Mundi, director of vocational agriculture in Idaho. John is widely known for his past participation in the National Vocational Agriculture Teachers Association.

Special Editors
Three Special Editors have consented to serve the profession as Book Review Editor, Teaching Tips Editor and Picture Editor.

The new Book Review Editor for The Agricultural Education Magazine is Lonell Moller. Lon is currently an Assistant Professor of Agricultural Education at South Dakota State University.

The Teaching Tips Editor will be Lowell Hedges from The Ohio State University. Lowell has been a teacher of vocational agriculture, school administrator and teacher educator. He has also been involved in international agricultural education.

Roger Roederer of the Ohio Curriculum Materials Service will serve as Picture Editor. He has an extensive interest in photography and in printing illustrated materials and will carry considerable expertise to the position.

The Cover
Active participation by students in the classroom promotes student learning. (Photograph courtesy of Dr. Gilbert Kuller, The Ohio State University)
Quality Classroom Instruction

A Must For Vocational Agriculture

By Bob R. Stewart

Achieving quality instruction in the agricultural classroom is critical in this age of accountability. Currently, there is a focus on the basics in education. In some school districts, evaluations for programs that are being initiated, and in agricultural education, must be sure we are achieving quality in all aspects of our program.

Teachers Make It Happen

The teacher of vocational agriculture has a tradition of effective resources and methods to use in the classroom. However, the teacher also has many demands for time and may not always teach as effectively as they know how. The outcomes of quality instruction must focus on what the student has learned. Now is the time to assess those methods which serve us well and to implement new procedures to improve the learning environment for our students.

The effective teacher of vocational agriculture draws upon many resources. Furthermore, those seeking to improve their effectiveness must also consider teaching within the context of the classroom environment. The artifice of the teacher comes from classroom instruction; the complete relationship between principles of learning, the problem solving approach to teaching, the evaluation of teaching within the context of the learning environment of the classroom, the utilization of local resources to supplement instruction, the use of competency based instruction, and the role of emerging technology in the agricultural classroom.

The teacher is the critical catalyst in quality instruction. Planning, assessing student needs, selecting content, creating a positive atmosphere, utilizing appropriate methodology, maintaining student control, and utilizing resources are all parts of the process. The list could be expanded. There have been many articles written on effective teaching. An informal review of 11 recent issues of the Journal of the American Association of Teachers Educators in Agriculture revealed that eight of the 64 articles were somewhat related to effective teaching. In the 1980s, there has been a continuing effort for students to reassess the appropriateness of various occupations. They are examining their association with agriculture in the context of the attitudes of their peers and their perceived importance of the food and fiber industry and the services connected with this industry in our country. In a typical class, 1/4 to 1/3 of our students will be seeking and obtaining employment after graduation from high school as others in other production. In a regional survey in Mississippi and Missouri, we found that work in production (1/2) work in related agriculture, and 1/2 work in areas unrelated to agriculture. Therefore, a strictly production oriented curriculum, except as it supplements other areas of agriculture, is preparing only 1/3 of our students for gainful employment. This suggests that we must adjust our curricula and use business examples if our instruction is to be most meaningful for our students.

If the student population does not increase so that we can have more specialized offerings, then it means that we must change the delivery system within the classroom by using different approaches. This suggests that we should have students in some advanced classes studying different subject matter. We should be using small group and individual activities to provide the group involvement important for motivation and sharing among students. This suggests that the primary respondent of the student must assume a greater role as a manager of instruction rather than the guiding force of a group learning process. Coupled with the varying abilities of students in reading and mathematics, the need to adjust methods of instruction provides indeed another challenge for the teacher of vocational agriculture.

Shifting Demographics

The needs of and opportunities for agricultural students have continued to change. There is a continual need for students to reassess the appropriateness of various occupations. They are examining their association with agriculture in the context of the attitudes of their peers and their perceived importance of the food and fiber industry. In the 1980s, there has been a continuing effort for students to reassess the appropriateness of various occupations. They are examining their association with agriculture in the context of the attitudes of their peers and their perceived importance of the food and fiber industry. In a typical class, 1/4 to 1/3 of our students will be seeking and obtaining employment after graduation from high school as others in other production. In a regional survey in Mississippi and Missouri, we found that work in production (1/2) work in related agriculture, and 1/2 work in areas unrelated to agriculture.

Using Learning Principles

An examination of the principles of learning as related to the problem solving procedure would indicate that many desirable aspects of learning are incorporated when the teacher skillfully executes the problem approach to teaching and learning. However, there are those who are concerned about the use of the problem solving approach. They might suggest that "we cannot cover enough subject matter" or that "it takes too long to develop problems with students." In my estimation, these people are approaching education with the theory that "you need to teach students the skills and knowledge for 40 minutes, and screw it back on." The emphasis is on how much information the teacher covered and not on how much learning takes place on the bench. Specialized teachers with teaching an approach to learning, an approach to using information, a way to help the student become proficient in terms of analyzing data, and an approach that draws upon the scientific process will do well to examine the problem solving approach to teaching.

Quality Instruction — Hope For The Future

By Roland L. Peterson

Do we teach as well as we know how? Could American agriculture and natural resources meet the demands of the 21st century? Can our classroom environment be one that prepares our students for a successful future? Can we find evidence of the teaching effectiveness of our classes? Can we measure how well our students learn? The answers to these questions are critical to our success.

In summarizing research studies on teacher effectiveness, Horness (1971) followed the found the following patterns of teacher behavior distinguish between effective and ineffective teaching.

A. Clarity (of the teacher's presentation) Effective teachers provide students with feedback, teach things in a related and step-by-step manner, orient and prepare students for the next phase; they are expected to provide students with standards and rules, use a variety of teaching materials, repeat and stress directions and difficult points, demonstrate, provide practice (superpriced practice is a proven theory of learning), adjust their teaching to the learners, provide illustrations and examples, communicate with students, and explain to students how to organize materials in a meaningful way.

B. Variability Effective teachers use variety in the level of instructional materials, procedures, and activities. There is also variability in the levels of classroom conversation used by the teacher.

C. Enthusiasm Effective teachers exhibit vigor, power, interest and excitement. Consequently, the level of involvement of teachers with students reflects the effectiveness of teachers.

D. Task-oriented achievement and/or businesslike behavior. (Continued on Page 6)
Quality Instruction — Hope For The Future

(Continued from Page 5)

Effective teachers encourage students to work hard and instill a desire to want to learn. E. Student opportunity to learn criterion related material. Effective teachers teach students content on which they will be tested. Consequently, strong positive relationships exist between what is taught and the subject matter taught will be the basis for testing.

Applying These Findings

Wittall (1982) suggested that students need to be active in the learning process. They must be allowed to choose some of their own goals. He suggested that students need to gain personal meaning from their readings, and that learning is organized around student needs, not around subject matter. He stated that “My behavior addresses my needs!” Finally, he pointed out that teachers’ actions speak more loudly than their words. When vocational agriculture 
teachers teach, a number of questions need to be asked if the aim is quality teaching. These questions may be:

What do students observe and experience from their teachers? Would the program and experiences students obtain result in a community actually “fighting” to keep their vocational agriculture program in the school?

Determining quality classroom instruction is a sensitive issue that appears to be extremely difficult to describe but readily detected (right or wrong) by students, parents, administrators, or other teachers and outsiders. In a challenging and demanding address, Drake (1982) reminded agricultural educators that the agricultural education profession must realize that “vocational agriculture programs will remain in schools on the basis of quality teaching. Teacher education programs, state supervisory guidelines, professional associations, standards of students are all of secondary significance when the teacher of vocational agriculture closes the door to the classroom or laboratory and interacts with students. What occurs, or does not occur, will be a result of the accomplishments that really make a difference.” The quality of the situation results in whether or not vocational agriculture makes a difference in the lives of students.

Effects on Students

In evaluating quality teaching, Peterson and Wahlberg (1979) point out that: “Content matter must be shown over a long period of time (years) rather than a few days or weeks. Second, quality measures of students may require that the results from half of the class may be needed to be ignored. Could it be that the quality of vocational agriculture teaching does make a difference but that some tests do not allow the results?” Traditional testing and evaluation generally assumes that all students have the same abilities to learn. Copas and Forsberg (1980) found that 34 percent of the students enrolled in vocational agriculture programs were in the lower 12.5 percent of the class and 25 percent were in the upper 25 percent. Consequently, in evaluating instruction, consideration needs to be given to gain over a long period of time and tuned to the students’ ability.

How to maintain an orderly and supportive classroom climate so that increase in time devoted to learning activities, and hence, impact the quality of learning are all determined by what the teacher does with a wide range of students. Quality instruction rests with the quality of teacher, the type of vocational agriculture depends upon today’s teachers.

The problem solving procedure involves the basic steps of review, motivation, assignment, introduction of new information, discussion, culmination, and evaluation. The related supporting principles of learning are:

- Review
- Use and Discuss
- Set a prior and open by a new topic.
- Perceive the new in terms of our past knowledge and experience.

Motivation is essential part of teaching. As a principle, it states that a learner must find meaning and relevance in the lesson in order to be stimulated and, as a result, learn.

Assignment

- Timing or discussing current happenings and problems as they relate to enhance learning. Students are most interested in what is happening today and how it can focus on them.

Supervised Study

- Self-activity: Maintaining that learning is an active process.
- Involution by the learner should result in more retention.

Individual Differences, for example, may be approached by using different types of media during the supervised study. Different students learn in different ways and at different rates.

Discusion

- Contrast can be an effective method to stimulate discussion by comparing, for example, desirable and undesirable construction of livestock.

Readiness, as a principle, should be applied to allow students to respond to the manner we, as teachers, have prepared them to react. To provide positive reinforcement in this manner will instill class discipline and a cooperative atmosphere.

Recency or using instances that have occurred in the near past are more easily remembered. Today’s hog prices are more easily recalled and mean much when, for instance, developing a partial budget than using last year’s prices. “How does today’s lesson affect me now?” is very meaningful.

Summary/Conclusions

- Association of ideas, concepts, and principles can result in the highest level of learning. The response of a student to a similar situation would depend on the association and application of relationships that we, as teachers, have helped them to previously develop.

Satisfaction can be reinforced by attaining competency based objectives that are measurable. It students find application, learning has become more meaningful.

EVALUATION

Reward for the student should be a teacher goal so as to encourage each student to achieve at their maximum potential.

These procedures become a part of the tools of the teacher as they work with students in the classroom. They promote the use of information by students to solve problems. These procedures can help students learn to think and to provide a basis for solving future problems.

The Learning Environment

Many factors influence the classroom environment or the set which enhances or detrains learning. The following factors need careful consideration in examining the learning environment:

Discipline — There must be appropriate discipline in the classroom for effective learning to take place. Without discipline, positive learning is nearly impossible. Good discipline can be encouraged in a number of ways including teacher planning, successful motivation, and teacher policy but the important thing is that there is discipline.

Teacher Attitude — Does the teacher have the kind of attitude that makes students want to learn? In order to be successful in the classroom, teachers must set the example for students. You as teachers, need to be cheerful, enthusiastic, and willing to take time for students and their problems. Teachers also need to be as fair as possible and, above all, to avoid the"teacher’s pet" syndrome. In short, teachers need to let the students know they really care.

Knowledge of Subject Matter — Does the teacher possess an adequate command of the subject matter in the course? A teacher needs not only to know the subject matter, but be confident of it and able to use it. It is important also to instill knowledge in others rather than just "avoiding the question" or "making up an answer."

Grooming and Appearance — It is important that a
A Basis For Effective Instruction
(Continued from Page 9)

Methods — Are appropriate classroom methods followed consistently in all classes? The use of successful teaching methods should be second nature to teachers of vocational agriculture. Students in each class should be aware of standard procedures and be able to learn within the daily classroom environment.

Summary
After reviewing the learning principles as they relate to problem solving and the factors influencing the learning environment, we have to evaluate the total structure in terms of effective instruction by asking the questions: What learning principles are used? What are the important factors that influence learning? Where do you pay attention to what I’m going to tell you? If you don’t shape up, I’ll send you to the principal’s office! Remember, too, that you have a job to do.

How do the student react? Some will quiet down. Some will begin to listen, and some will say to themselves, “I dare you to try to teach me something today.” Others may well turn their backs on the teacher against the attention they would get from their peers.

Now that the teacher has their attention, what would a “teller” do? Most likely he or she would focus on the interest of the lesson to the students. The best teacher would prob-ably be: “Today we’re going to talk about . . .” The teller by that means of communication would thus make the lesson subject-centered, rather than the desirable student-centered lesson.

Let’s take the same scene, the same students, and the need to bring a class to attention. What is a realistic way? What is the “teacher’s” way?

For one thing, the teacher would motivate, not intimidate. And how would a teacher get the students to want to learn what the teacher wants to teach?

The teacher would meet student needs. Basic human (and student) needs are security, love, approval, having new experiences and achievements, and freedom from feelings of guilt. An effective teacher will understand and appeal to these needs as the lesson is planned and taught.

Rather than use threats and sarcasm to get the attention of the students at the beginning of class, the teacher will first attempt to answer the students’ usually unspoken, but nevertheless, thought question, “Why should I learn what you’re going to try to teach me today?” This will usually be accomplished by helping the students understand how the lesson objectives, if reached, will help the student obtain something wanted, or else remove an unwanted condition. The teacher’s approach toward the teacher-student relationship actually appeals to one or more of the students’ needs. An interest approach appealing to the need for security, for example, might involve the potential for profit if an improved practice, such as improved field drainage, is adopted. A “cause-and-effect” chain can be developed by the class to emphasize how improved field drainage increases profits from crops, thus increasing the financial security of the crop producer.

Aids and the Senses
Once the teacher has obtained the students’ attention and has been able to communicate the lesson so that the student could understand, the teacher must teach the lesson so that the student could understand the lesson so that the student could understand the lesson. This is done? One effective procedure is to use audio-visual aids. When solving and the factors influencing the learning environment, we have to evaluate the total structure in terms of effective instruction by asking the questions: What learning principles are used? What are the important factors that influence learning? Where do you pay attention to what I’m going to tell you? If you don’t shape up, I’ll send you to the principal’s office! Remember, too, that you have a job to do.

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THEME
Be A Teacher, Not A Teller

Teachers and teacher educators share one common concern — quality teaching. Although there are many textbooks to guide each of us in our teaching efforts, many of us trip into the pitfall of being a “teller” and not a teacher.

This pitfall may seem strange because many believe that the two are the same. You may be puzzled, or even insulted because you believe you are a teacher: that you know what quality teaching is! To help clarify the point, one must answer the question, “What are the differences between a teacher and a teller?”

The Teller
Let’s look at this teacher we call a “teller.” Basically, we could identify a “teller” as one who disseminates facts and information. A teller is concerned about giving out facts, and getting them back on examinations. One would thus view a student’s knowledge as being a result of “being told” the knowledge and facts that the “teller” gives them. In this so-called method, the “teller” pours into the students the information needed to satisfy the examination. When test time comes, the student is supposed to give back to the teacher the same facts and information that he has memorized in class.

The “teller-teacher,” by means of the examination, “squeezes” the information out of the “spooned,” the student. The student is, unfortunately, unchanged in terms of needed skills, attitudes, and understandings. If anything, the student has learned to dislike the subject, school or both.

The Teacher
In contrast is the person we call the “teacher.” A teacher is primarily concerned with bringing about relatively permanent desirable changes in the student. A teacher is “taught” the knowledge and facts that “the teller” gives them. In this so-called method, the “teller” pours into the students the information needed to satisfy the examination. When test time comes, the student is supposed to give back to the teacher the same facts and information that he has memorized in class.

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THEM E

Quality Instruction Begins With The Teacher

The job of the vocational agriculture teacher is complex and the teacher's actions reflect upon the philosophy of what he believes be the teacher's role to be. Working with students and parents in the classroom and on the home farm or agribusiness, with in-school and out-of-school groups with curricular and extracurricular activities, and with adolescents and adults makes the vocational agriculture teacher's task uniquely interesting and challenging. With so many tasks and roles to fulfill as teachers of vocational agriculture, we may often lose sight of our primary mission and fail to provide our students with high quality instruction.

Therefore, it would be of benefit for each of us occasionally to take the time from our busy schedule to reflect upon the quality of the instruction we are providing our students. In order to do this, we should ask, "What is quality instruction?" What teaching behaviors are associated with quality instruction? and, "How do we recognize if our teaching is of high quality?"

What Is Quality Instruction?

Quality may be defined as a "degree of excellence." Quality instruction may therefore be understood to be excellence, or rather effectiveness, in bringing about student learning and satisfaction. It is in mind that although the teacher has the responsibility of bringing about student learning, that does not make the responsibility any less significant on the part of the student. Successful learning in the education process is the responsibility of both the teacher and the learner.

We should all be aware that there is no one best method of teaching. Each teacher brings to his or her own individual personality and must build upon it in developing an effective teaching style. At the same time, students vary greatly in their abilities to learn and in the rates at which they learn, just as all subject matter requires different teaching strategies and techniques. High quality instruction takes all these variables into consideration from the initial planning stage. It is important for teachers to remember that one must plan for quality instruction. It does not just happen.

By Jerry L. Peters and Robert A. Martin
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What Teaching Behaviors Are Associated With Quality Instruction?

Student achievement and quality instruction are directly connected in the learning process. Therefore, when attempting to provide quality instruction, it is of benefit to make use of those teaching behaviors believed to be associated with positive student achievement.

Rosenshine and Furst found five teaching behaviors which are most often positively related to student achievement.

The first of the behaviors is that of clarity. Students tend to learn more when the teacher says is "clear" to them. Being "clear" implies that the teacher shares with the student the goals and objectives of the lesson and overall unit. The agenda or "road map" is laid out for all to see where they are headed. In this way, the goals become the student's goals. Additionally, a teacher may achieve this clarity by orienting students to the subject; by repeating and stressing the important and difficult points, as well as the directions; by demonstrating skills and providing illustrations and examples when possible; by adjusting the teaching to the student's abilities; by relating the material in a step-by-step manner; by allowing for practice in problem solving and skill mastery; by providing standards for the student to communicate in an understandable manner; by providing feedback to the students; and by having the students organize the materials they are provided in a meaningful way.

The second of the teaching behaviors is that of variability. A teacher should use a variable of materials, methods, learning activities, levels of classroom discourse and media. This helps the students and teacher to remain interested in the topic.

The third of the teaching behaviors most often having positive effects on student achievement is enthusiasm. The teacher develops a quality learning environment by being energetic, presenting the material and skills with appropriate gestures and eye contact, showing interest in the subject matter through voice inflection, being energetic not only about the subject, skill or problem, but about students and oneself. In this manner, the teacher may enthuse and motivate students.

The fourth of the teaching behaviors is that of presenting a goal-oriented, task-oriented, achievement-oriented and/or business-like behavior. Students know where they stand in the teaching-learning process. The teacher needs to realize that the teacher means business. Goals and objectives must be shared so that there is a feeling of group ownership of goals as well as achievements.

The fifth and final of the teaching behaviors most often having positive effects on student achievement is that of providing students the opportunity to learn criterion material. Tell students what is expected of them and then evaluate them on the material process, product, or skill. Don't allow students to worry about "picky" items; they will be expected to know for the test. Let the students know what is expected.
Helping Students Become Independent Learners

By L. H. NEWCOMB
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Schools tend to force people to depend on teachers as the source of truth and knowledge. This message is conveyed to students by a number of practices which are used by teachers.

Forcing Student Dependence

When teachers "teach" by standing before the class and "telling" the students the facts (see Hedges' article), they are in essence telling the students that teachers are basic sources of knowledge. When students have questions and feel that the chief way to answer them is to ask the teacher, then the idea that they need to depend on teachers to get answers is further reinforced. If the teacher gives the answer to students' questions without promoting the use of other sources of information, then the concept that students need to depend on teachers for knowledge is further reinforced.

Making Students Independent

All of us know how quickly the information we "personally possess" is outdated. We know, too, that with the magnitude of the knowledge explosion we now have at our disposal we are forced to make use of many sources of knowledge, some of which we have never before even heard of. If we are to keep up with the information we need to know to make effective decisions, we must learn to use these sources of information, and we must be able to evaluate them.

As caring and helpful as we agriculture teachers are, we cannot guide our students' learning very quickly. Very quickly we find ourselves at the end of the line, and we are no longer there for them as sources of knowledge.

It is the job of a teacher to prepare the students for the inevitable transition to the real world where they can neither rely on teachers or anyone else to readily give them answers. Our students need to learn ways to help our students become increasingly independent of us as their source of answers. Why? Life demands it.

Students must rely on other standards and reliable sources of information once they are out of school.

In the process of helping students learn to rely on sources other than teachers as their source of knowledge and available and available than teachers, we also help them develop self-confidence and a greater sense of self-worth. In the final analysis, the extent to which we accomplish the goal of helping students become learners, who need not depend on teachers as the primary source of knowledge, is a valuable measure of our success as teachers.

Techniques to Use

The way we teach in the classroom and laboratory is what determines whether students are provided the environment, encouragement and practice needed to become increasingly independent. There are basic teaching techniques and strategies which can provide the skills to make students more independent.

Chief among the basic organized study, when it is properly planned and conducted. This means the teacher creates interest in the students to solve the problem at hand or answer the question which blocks their progress. Study questions are assigned that will carefully guide the class inquirers, students are provided appropriate research materials and tools by which they can find the answers, and a final discussion is conducted with the class to summarize what was learned from the supervised study and to develop conclusions.

Maybe the easiest way to promote independent thinking and inquiry is to use equipment and/or computer devices. When students see the kind of equipment that we have in the classroom, and that they need to know. By using a variety of the above ways to help students find the information they need, we will help them "discover" that teachers are not the only ones even the best source of facts, information or knowledge.

This same basic strategy of helping students find answers without depending on teachers also needs to be used in the laboratory. Too often, students run to the teacher for quick answers that are already in their notebooks. When this is the case, students ought to be instructed to check their notes, and if they still are not clear, come back and you'll help them. This same strategy of having them inquire into related informational areas of their courses needs to be used to get students to rely on manuals and other references to get specific data.

Additionally, we need to display more pieces of work in the laboratory to which students can compare their work in an effort to gauge the need for further refinement without depending on the teacher. If the teacher gives the answer to students' questions without promoting the use of other sources of information, then the concept that students need to depend on teachers for knowledge is further reinforced.

Microcomputers: A "Byte" Of The Action

By WILLIAM G. CAMP
Editor's Note: Dr. Camp is Assistant Professor of Agricultural Education at Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061

Microcomputers are catching on like Hong Kong flu. But in the case of micros, it is better to catch the "bug" than to avoid it. Microcomputers have the potential to provide many opportunities for in-service programs. Instead of the traditional overhead projector, microcomputers are better suited to the task.

In 1982, the National Center for Educational Statistics reported that there were over 100,000 microcomputers in U.S. public schools as of the Spring of 1982. The literature predicts that the average high school will have 16 or more microcomputers by 1990. What will that mean for you, as a vocational agriculture teacher?

Microcomputer Applications

There are three basic uses that we in agricultural education have for microcomputers in our program. (1) CAI, (2) CMI, and (3) agribusiness or farm management application.

The first two of these are common to all teachers. The last one is what makes agricultural education unique. Let's briefly look at CAI and CMI, then examine agribusiness or farm management applications more closely.

CAI stands for computer assisted instruction. This is an area where all teachers can use the microcomputer. Anything that can be written or drawn, can be programmed. As the computer revolution continues to expand, more and more curriculum materials will become available in the form of mass-produced microcomputer software. As a rule, teachers are not very good programmers and programmers are not very good teachers. In general, we will want to buy instructional (CAI) materials rather than trying to program it ourselves.

Another area of potential is to use the computer to give students basic skills tutoring, drill and practice, instructional games, business simulations, and technical instructional materials are already available on the market for the more common micros. The amount of instructional materials is growing daily. The larger vocational areas, such as business and agriculture education, already have vast amounts of such materials. In agricultural education, we have less appropriate curriculum materials available, but this is rapidly changing.

One of the things vocational educators have talked about for years is individualizing instruction. There have been two problems with individualized instruction: students who won't or can't do it and teachers who can't or won't use it. Individualized instruction on the microcomputer actually verifies that the problem is not the student or the teacher and can handle it. A well written CAI program in actually funny. One special education teacher told me that her students (EMR and LD) are tearing down her door to get in, out of, and class since she got micros.

CMI, or computer managed instruction, is another area where all teachers can use the micro. In Virginia, as well as a number of other states, competency based or performance based curricula require student progress charts. Computers are ideal for maintaining individual and class records of all kinds. Busy work such as keeping track of attendance, student scores, scoring tests, computing averages, and so on, can be done faster and more accurately on the computer.

Time Savings

You might develop a file of test items. As you write a test, enter each item on the computer. When your item file is large enough, you can develop new tests by simply selecting the items you want and having the computer print them out.

All the micros have "word processing" programs that allow you to compose and change banquet programs, letters, handouts, instruction sheets, and many similar items easier and faster than by using the typewriter or the pencil. Letters to advisory council members, fellow teachers, former students, young farmers, adult farmers, board members, and all the like can be done by the computer to be developed and stored for use. There is no need to completely retype a letter or a handout just to change a date or a few words. Lesson plans placed on the computer can be up...
Microcomputers: A "Byte" Of The Action

(Continued from Page 13)
dated with little effort each time they are used. Work
schedules, expense records, inventories, FFA activities, state
reports, and many other tasks can be handled by computer programs
you can think of, can be computerized to your advantage.

CALS and CML are both dependent to a great extent to computerize your
operations. The unique microcomputer is a tool that can be used by
the agricultural teacher in particular, who should gain access to and learn to use
microcomputers.

Technology in the Industry

Agricultural and farm management applications of microcomputers are revolutionizing our industries. We are
living through one of the most exciting ages of human
kind. Microprocessor technology (including microcomputers)
make it possible to do things in agriculture that simply
would not be possible just a few years ago.

Farmers everywhere are buying and learning to use
microcomputers. Farm records, budgets, inventories, tax
decisions, livestock records, crop records — in short,
anything that can be reduced to columns and rows — are
already being computerized. Coupled with
radio transmitters/receivers, and microcomputers, make
it possible to automate irrigation systems, feeding systems,
weather predictions, harvesting, and other operations.
Many other operations are starting to be
automated as these microcomputers become more
dynamic. The impact of these changes will be
very significant in the next few decades, and:
what an impact that would be

If agricultural education is to keep pace with these
changes, we must move now and rapidly! State departments and
teacher education programs can help provide
direction and assistance. But, as usual, the teacher is the key
to success in training students to use the micros in agriculture.

Agricultural educators, we owe it to ourselves, our
students, and our profession to move forward with the rest
of the world. We simply cannot afford to ignore the micro
computer. In fact, we need to provide leadership for this in
telligent selection and use in agriculture.

If you are not already familiar with microcomputers, get
started today. You are already late, but not too late. Find a
microcomputer, sit down at it, get help from the
manufacturer, get a manual, and get started. If you are up to speed
already, find a fellow vocational agriculture teacher who isn't and get him or her started. Try it! You'll like it. After all,
without computers won't "byte" you.

BOOK REVIEW

Agricultural Mathematics: Problems in Production, Management,
Marketing, and Environment. 2nd ed. by Roger Higgs, Charles Heidenreich,
Richard Lobeger, Robert Cropp, and Milton Mitchell. Danville, Illinois:
The Interstate Printers & Publishers, Inc., 1981, 297 pp., $6.95, Answer Book,
$1.00.

This is an excellent text for agricultural students from high school
through higher education. The easy to
read print describes mathematical
problems across many areas of agriculture. This text aids the
relatively new subject matter as much as it is a
mathematics text. The mathematics teachers have frequently assumed that
agricultural students possessed competence in
mathematics. To the extent that this was true, they did not know how to do the simplest problems that
arise in the classroom and laboratory.

With the low cost of this textbook, this is a great educational tool. Many
of the areas in the book are too advanced for the middle, or junior high
agricultural courses, but it could be used
in the high school. Instructors will find it useful in polishing their personal skills.

Charles A. Jackson, Jr.
R.E. Aylor Middle School
Stephens City, Virginia
Community Support For Quality Instruction

(Continued from Page 15)

permit. This allows the 300 plus people on the mailing list to be contacted for less than four cents per letter. This mailing list has been very effective. The list also provides an excellent source of names when selecting resource persons for instruction in the secondary and adult classes.

In addition, information can be spread by word-of-mouth or a phone call. When the agriculture teachers are in local agribusinesses, they tell the people what is going on, giving them information regarding the success of a judges team or of a planned adult class program. Posters are also used to supplement the information. When there is parent contact in the community, efforts are made to complement them on their child's accomplishment. Once an acquaintance has been established with people, it is easier to ask them for help on a project when it is needed.

Each year the department conducts chemical and variety yield test plots. These tests plots are a important instructional activity for the students as well as the community. Each year about 20 seed dealers, 15 chemical dealers, 5 fertilizer companies, and 300 area farmers as well as the students are involved. A local farmer donated a combine to harvest the soybean test plots and a fertilizer company donated an electronic weigh wagon. Seed corn representatives helped FFA members record the yield results.

About 120 farmers attended a field day and pork chop dinner and the plot results were mailed to 300 area farmers and agribusinesspersons. "Follow through" on the activity is important to maintain past experience. Dealers know that the department will operate the plots in a professional manner and are willing to provide their support. In addition, the involvement of students in planning and conducting the trials as well as having contact with business persons and farmers in the community has proven to be an excellent educational experience.

Don't Forget The Farm Staff

A group that is often overlooked is the school staff and administration. Many times it is necessary for students to miss other teachers' classes when they are involved in agricultural activities. How can an English or Language Arts teacher be expected to support your program if they do not understand the importance of what is going on?

The principal, vice principal and superintendent have accompanied the National FFA Convention representatives to Kansas City as a second-car driver on several occasions. They have attended the all-FFA and state-wide convention with us. When they are aware of what happens on a field trip, they are very supportive of future trips.

We help our students practice their speaking candidates or essay contestants. They are asked to serve as judges at district FFA contests. In appreciation for this, we provide all students with an expert to speak each year during National FFA Week. This is a good time for a FFA slide show describing the club's activities. Students who are going to miss school for a vocational agriculture activity are required to get each of their teachers to sign a form explaining what they will be doing while they are absent from class. To stimulate interest, the vocational agriculture students conduct a livestock judging contest for the entire school. There were groups of sheep, hogs, and cattle. Winners were selected from junior high students, high school students, and staff groups. Winners were treated to free pizzas at a local restaurant. This is a good FFA Week activity and lets teachers and students see what the livestock team learns.

South Newton has an outstanding school newspaper and its reporters are invited to attend field trips and various activities. This year they attended the Farm Progress Show and the soil judging contest with the chapter. When they see what is going on, they are usually impressed and return for more interviews.

Parents and Students

Do not forget the kids! Make sure their parents are informed about all aspects of the program prior to the students' involvement in various activities. Stress the various activities support and grow out of the classroom instruction. Write the parents a note and compliment them on their child's behavior on field trips and during conventions. Hold a parent-member banquet and invite parents to attend State and National Conventions. Parents are also asked to join the members on field trips. Taking students to a FFA member's farm develops positive feelings. The FFA Chapter has also sponsored scholarships and scholarship dinners for all underclass students.

The department seeks to involve its students in various work projects which can provide additional learning experiences. They have helped erect the roof on a 300,000 bushel grain bin, served as tour guides for a county farm show, covered outdoor grain storage for a local elevator and helped in the research plots of a local seed corn company. The South Newton Chapter in cooperation with Newton-Fairland Schools has hosted a Farm Fair each year during the county fair each year. This gives people a chance to see farm animals and gives the members a chance to exhibit projects.

Summary

In conclusion, almost every activity conducted by the South Newton FFA chapter is related to the adult relations. Every activity worth doing is worth publicizing. It is easy to see that there are many interesting ways in which a community can be involved with and learn about its local vocational agriculture and FFA program. Involving students, parents, school officials, agribusinesspersons, and local community leaders add to the strength and credibility of the instructional program. Through involve-ment in program activities, people will begin to recognize your program as a progressive one that serves the needs of its students and community.

ARTICLE

Quality Teaching: An Elusive Goal

Are We Getting Closer?

Quality classroom instruction will not be achieved until it becomes the number one priority to all parties concerned in the educational process. Teacher educators, administrators, teachers, students, and parents must place quality teaching above all other facets of vocational agriculture. Quality teaching probably requires more "lip service" than any other part of the program, but receives less attention. Somewhere in the mix of FFA, stock shows, fund raising activities, announcements over the school speaking at the FFA meetings, departmental, and other supplies, courtesy pick-ups, and judging contests quality teaching loses its importance.

Don't forget the FFA members as well. Do we really know what they want or need to be a quality teacher? The answer to this question is found in the articles: "The First Days of School" and "The First Days of School" (Continued on Page 18)

By:  
J. M. Johnson
Editor of The Agricultural Education Magazine

In a long-lasting teaching experience for the students.

Funding For Programs

Each of the teachers was interviewed concerning their log. Most were surprised at the amount of class time spent on activities unrelated to instruction. Most said they were going to make changes. Fund raising activities seemed to be a large consumer of time. This probably will not change as long as the local school boards, administrators, and parents realize that the vocational agriculture teacher is running a sizeable business and that operating capital is needed. This lack of funding is partially due to the fact that young teachers have seen their former teachers raise money; they have been taught to fund raising in the teacher education program; and, consequently, have become somewhat of an expert at keeping enough operating capital to run the program. As long as sufficient capital is available, the community and the local educational system see no need for additional funding. The victims of this dilemma are the students who are deprived of high quality classroom instruction.

School Public Address Systems

Administrative policy seemed to continually arise in the interviews. Speaker systems in the public school interrupt more classes and break more trains of thought than any other obstacle. Anyone who travels to a lot of high schools will know that a whole school audience is not easy to get. Some school officials do not have enough space to drive the audio to the back row. This problem has been solved. Principals certainly do not have as their purpose to disrupt the teaching. They just fall into the trap of using their speaking system for convenience. Even worse, in some schools, almost anyone has access to the speaker system.

Teacher Education Impact

On Quality

Quality teaching in the public school cannot be attained without quality teachers. The term "quality teacher" refers to a person who can present material to students through a variety of interesting and effective means. Presenting material does not mean that the teacher is always the lecturer. It may include coordination, peer teaching, consultants and a vast array of teaching methods. Quality teaching should result in long remembered knowledge and skills that students will value enough to use in the out-of-school setting.

Teacher education programs in agriculture have only a short time to prepare teachers for entry into student teaching. All facets of the vocational agriculture curriculum must be taught. Students learn teaching methods through

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THE AGRICULTURAL EDUCATION MAGAZINE 57
Quality Instruction Through Motivation

By R. LEH COLE
Editor's Note: Dr. Cole is Assistant Professor, Agricultural Education, Oregon State University, Corvallis, Oregon 97331.

One of the ten commandments of good teaching is: "Thou shalt not fail to enrich thy material. All doctrine and no story maketh a dull lesson." (Author unknown.)

Quality instruction requires good technical information (doctrine). Understanding and learning are enhanced by providing motivation to that which is taught (story).

Motivation Principles

How can students be motivated to learn what is taught? Several points can be made that will help motivate students to learn that which is to be learned.

1) The instructor should connect new subject matter quickly and clearly with that which has previously been taught.
2) New subject matter should be directly related to student needs (present and future).
3) Be enthusiastic about the material and be positive about how the student will be able to do various challenging activities.
4) Draw on natural interest principles to keep the students involved with the lesson (i.e., curiosity, desire for approval, desire for advancement, competition, pride of ownership, the novel or unexpected, etc.).
5) Challenge students to think and creatively solve problems facing them in class and in life.

One of the key contributors to motivation, interest principles, is frequently overlooked by teachers who are pressed for time by lesson preparation, FFA activities, SHOP supervision and a myriad of other school related activities.

Classroom Application

In his book, Permanent Learning, W. H. Lancelot indentified several interest principles which contribute to a student's motivation to learn. They were identified as: love of nature, curiosity, creativity, gregariousness, desire for approval, altruism, self-advancement, competition, pride of ownership, increase in knowledge and skill, interest is contagious, the novel and unexpected are interesting, and humor creates interest.

Many of these principles are used almost automatically by teachers. Some require real creativity to utilize. The purpose of this article is to provide some ideas and/or examples for one of these principles which is not commonly used, but which sparks real excitement and enthusiasm when it is used. That interest principle is "the novel or unexpected is interesting."

If an instructor was going to start a Dairy Management Unit, and the problem of determining cost of replacement stock was to be considered, the following would be a novel way to start the unit.

Be relating replacement stock purchase to the process of buying a car. The instructor can gain interest in the replacement stock purchase decision making process.

Are Pesticides Really Necessary? is an interesting, informative, and realistic discussion of the usefulness of pesti-
cides in our environment. The book is divided into three sections.

Section I addresses the issue "Why Pests Have Not Overwhelmed Us.", Emphasis is placed on how nature pro-
vides our environment with a defense against pests. The section discusses the development of new disease free seed varieties or hybrids in combating many disease. Importance of selected species of insects has aided in controlling harmful predators. Farming techniques, crop diversi-
fication and rotation have helped in reduc-
ing the severity of pests.

Section II contains some interesting insight into some myths that exist concerning growing plants and how pests may be controlled. The use of facts and examples makes for interesting reading. Integrated Pest Management (IPM) is identified as the practical means of controlling pest populations below the threshold of economic damage. Section II is entitled "The Pesticide Drama.", The impact of seed protec-
tants on crop production stability and the economic benefits resulting from the use of these protectants is discussed. Animal and animal production in the United States is a product of better breeding practices and improved pest control. Facient examples in the book are provided considering environ-
mental reasons why nitrification inhibitors should be utilized with as many am-
monia fertilizers. Emphasis is placed on environmental and chemical practices to provide the necessary components in protecting our health.

Section III, entitled "Pesticide Safety" deals with concepts, control me-
tries, and controls. Chapters 29 and 30 highlight the chemistry and toxicology of many elements in the environment.

APPLYING EDUCATIONAL PSYCHOLOGY TO AGRICULTURAL EDUCATION

By Richard Martin
Editor's Note, Mr. Martin is a Pennsylvania vocational agricultural educator with a graduate degree in the Department of Agricultural and Extention Education at Pennsylvania State University.

The chances are that at sometime in the past you were required to know about B.F. Skinner, Jerome Bruner, David Kloppe, and countless other educational psychologists. Should the ideas of these men be a part of your teaching plan? Do today's terms of operant conditioning, negative reinforcement or concrete operations have any significance for the teacher of agriculture? Is educa-
tional psychology applicable to agri-
cultural education?

This paper is an attempt to answer yes to all of the above questions, you are probably an effective teacher. Too much of what we learn an undergraduate and grad-
uate students is never applied in the classroom and laboratory. This in-
cludes our knowledge of educational psychology. Although agricultural education has its basis in developing tangible skills and learning, educational psychology is important and relevant and cannot be over-
looked. All phases of the teaching/ learning process, preinstructional, instruc-
tional, post-instructional, are dependent on a proper understanding of educational psychology.

Teachers of agriculture are most familiar with the methods and tech-
niques of developing, teaching and evalu-
ing what we know about the learning process, choosing appropriate objec-
tives of instruction, and determining the characteristics of the students that we teach. All of these activities are founded in educational psychology.

Applied Learning Theory in Agricultural Education

Teachers of agriculture need a basic understanding of learning theory. If we can have a basic understanding of learning theory, it will improve our teaching. Teachers of agriculture, should understand the process and practice of effective teaching. The purpose of this paper is not to discuss the process and practice of effective teaching. The purpose of this paper is not to discuss the process and practice of effective teaching, but rather to provide a teacher with insight into the pros and cons of pesticide use.

Fred Reenua
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tion must be made. In too many cases, objectives are written at the lower levels of a single domain of knowledge. In other cases, objectives are most often written at the knowledge, comprehension, and application levels. Too often, we find that the primary purpose of the teacher is the analysis, synthesis, or evaluation levels. This is a serious shortcoming since the upper levels of the cognitive domain are where problem solving abilities are learned.

Learning objectives are usually at the imitation and manipulative levels rather than at the new information level. Teachers sometimes write objectives at any level. Teachers of agriculture need to work on developing both high and low level objectives across all three domains of knowledge: cognitive, psychomotor, and affective.

Characteristics of Vocational Agriculture Students

Why is it that some students choose to participate in public speaking contests when others do not? How can an individual develop the best welding skills in class after failing a test on the theory underlying welding? What explains students who are trustworthy and responsible when others are not? The answers to these questions are student characteristics and their differences.

Teachers of agriculture will quickly recognize that differences such as these are common. Many factors contribute to the development of the student: Age, stage of development, socio-economic status, home and neighborhood conditions, intelligence, and personality are but a few of the variables that interact to affect student characteristics. Some educators believe that sociologists recognize five categories of variables that contribute to student characteristics. These are cognitive abilities, psychomotor abilities, affective characteristics, family and socioeconomic status, and sex (Klaussner, 1971).

The point is that as teachers we need to recognize what these factors are and that they collectively result in student characteristics. The importance of this fact is that we need to develop instructional procedures that are going to affect different learners in different ways depending on the characteristics of the learner (Lembo, 1969).

The teacher also needs to use every available means in assessing student characteristics. Often times this is possible through the use of tests. For example, it is useful to know the present level of reading achievement and specific reading skills of students when planning instructional strategies. In spite of this, many teachers do not consider this information even when it is readily available.

Obviously, some characteristics are difficult or impossible to determine through the use of objective and subjective instruments. It is important that the student/teacher relationship is most important. By establishing rapport and showing interest in the student the teacher is able to gain an understanding of the experiences of factors such as family, peers, and socioeconomic status. In vocational agriculture, this can be readily done through home visits.

The responsibility of assessing the characteristics of vocational agriculture students is difficult but not impossible. The determination of these characteristics will lead to more meaningful and effective instructional strategies in both the classroom and laboratory.

Characteristics of the Vocational Agriculture Teacher

The teacher is primarily responsible for writing instructional objectives, applying the principles of learning theories, or determining the characteristics of students. With this in mind it is not surprising to find a low but positive correlation between teaching effectiveness and general intelligence ability and grade point average during the college years (Klaussner, 1971). The cognitive characteristics of teachers are important. Along these same lines, students are more likely to learn when the instructor possesses and can demonstrate specific psychomotor abilities.

However, the affective characteristics of effective teachers are often overlooked when, in fact, the affective differences among teachers are probably more important in determining teaching success than are cognitive differences. During actual teaching, several affective characteristics of the teacher correlate positively and moderately high with teaching effectiveness. These include being warm, understanding, and friendly, being respected, and being likeable and flexible (Klaussner, 1971). Vocational agriculture teachers cannot disregard the affective domain in any of their activities. It is our responsibility to fully develop the affective characteristics of teachers who are most conducive to teaching effectiveness.

Summary

An understanding of educational psychology is an asset for success in vocational agriculture. The better you comprehend the aspects of psychology, the more likely you are likely to be a good teacher (Biehler, 1971).

It is our responsibility to use every available means to enhance student achievement. If necessary, we need to refresh our understanding of learning theory so that it can be applied in the classroom and laboratory on an everyday basis. All too often, instructional objectives are written to satisfy an administrative requirement. In the future, vocational agriculture teachers must be committed to writing instructional objectives that enhance student achievement.

Finally, teachers need to assess the characteristics of their students in order to select appropriate instructional strategies. If we fail to do so, the situation is analogous to that of a doctor prescribing medication without seeing the patient. To some, these activities may seem incompatible with teaching vocational agriculture. However, this outlook is far from true. The bottom line is student achievement. The commonality of all these practices is in fact enhanced student achievement.

In addition, the above practices clearly demonstrate that teachers of agriculture are professional educators. As a profession, we need to convey an unimpeachable message to others in the field of education. Teachers of agriculture are educated professional individuals who know how to provide broad educational principles in their classroom situations. This includes concepts of educational psychology. As teachers, we must always use our academic background to benefit all vocational agriculture students.

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Stories in Pictures

Learning experiences are extended into the laboratory (photograph by Dr. Gilbert Guiler, The Ohio State University).

High technology is becoming commonplace in vocational agriculture classrooms with many schools utilizing mini and microcomputers. (Photographs by Chuck Wiseman, Big Walnut High School, Sunbury, Ohio 43074).