Agricultural Education

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Stories in Pictures

by
Richard Douglas

Inservice Education by Teaching Machines: Nebraskan Vo-Ag teachers (left to right) Earl Bresson, Gerald Dunn, and Gene Wintersberg improve their skill at machinery utilization and administration via Teaching Machines. The approach seems to be a popular and effective way to introduce new skills to Vo-Ag teachers in Nebraska. The additional feature that really sets this approach apart is that the instructor can pick up new skills while he is using them with his own students. (Photos supplied by Richard Weitbrecht, Coordinator, Inservice Agricultural Teacher Education, University of Nebraska.)

Students at Wayjups High School discuss presentation of pet heifers with their instructor, Charles Ching, Ornamental Horticulture. The students are talking to the heifers in the school. Besides ornamental horticulture, Wayjups High School also offers an agricultural technology course. The students at Wayjups are located in the City and County of Honolulu. (Photo supplied by Tony Haflekren, Program Specialist, Agricultural Education, Department of Vocational Education, State of Hawaii.)

Small Group Instruction

L to R: Lowell Johnson, Vo-Ag Instructor, Scottsbluff, Nebraska; Larry Giffin, adult student, and Mrs. Louise Hansen of Sidney who were the 75 students of the 1972 Nebraska Adult Farm and Field Management Education program. (Photos from Cliff Witten, Coordinator, Nebraska Vo-Ag Teacher Education, Lincoln, University of Nebraska.)

Large Group Instruction

Individualized Instruction

On-Job Instruction

Demonstrations

How Many DO YOU USE?
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Guest Editorial
INDIVIDUAL INSTRUCTION—The Vocational Teacher's New Role

The concept of individualizing instruction is one of the most important trends in the development of educational thought. With the introduction of individualized instruction in vocational education, the concept of teaching as we know it today is undergoing a fundamental change. This new concept of teaching is not just the delivery of knowledge; it is the facilitation of learning, which requires a much greater understanding of the learner and the instructional environment.

A review of the literature reveals that most instructional theories and methods are based on the assumption that all learners are alike. However, recent research has shown that learners have different needs, abilities, and preferences. This has led to the development of individualized instruction, which recognizes and accommodates these differences.

The new role of the vocational teacher is to design and implement individualized instruction that meets the needs of each learner. This requires a deep understanding of the learner and the ability to adapt teaching strategies to meet those needs. The vocational teacher must also be able to evaluate the effectiveness of the instruction and make adjustments as necessary.

Instructional Technology
Advances in the field of instructional technology have led to the development of new tools and methods for delivering instruction. These tools include computer-based instruction, interactive multimedia, and virtual reality. These tools have the potential to revolutionize education by making instruction more accessible and engaging for learners.

1. Does the instruction provide relevant content?
2. Does the instruction include feedback and assessment?
3. Does the instructional system provide for active learning?
4. Is the instructional system user-friendly?
5. Does the instructional system allow for customization?

Conclusion
The single most important component of effective instruction is the ability of the instructor to connect with the learner. Before the knowledge or learning can be transferred to the learner, the instructional methodology and instructional technology must be used effectively. The instructor must have the knowledge and skills to deliver the content in a way that is meaningful and accessible to the learner.
Beginning in January 1973, the twelve issues of the Agricultural Education Magazine will feature themes on "Career Education." Any new concept, until it is implemented in educational settings, is not functional. A major problem in implementing a different concept is communication to users in ways that use language (teachers) can easily understand, preferably with ideas for implementation.

When one examines the "Career Education" concept, it is quick to notice that innovative agriculture teachers are already practicing many of the procedures described; they are preparing young people for planned occupational goals through multi-level programs. The Smith-Hughes high school programs were indeed career education, especially in rural areas, as many teachers at all levels and subject areas, noted classroom discussions to life on the farm and in the farm community.

Have you reviewed the March 1972 issue of the American Vocational Journal? This issue and others to follow will include pertinent articles describing this promising concept in education.

The objectives of the "Career Education Series" in 1973 will be to describe how "Career Education" can be implemented by agricultural educators working at the elementary, secondary, and postsecondary levels. The November 1972 issue, "Career Education in Transition," will include introductory articles which will define the concept.

An article designed as a "guest editorial" may be submitted at any time, while some guest editorials will be solicited. Themes for the January-June 1973 issues of The Agricultural Education Magazine are:

**January—"Elementary Programs"**
1. What should we include in elementary career education?
2. What procedures should elementary teachers follow in relating their teaching to agricultural occupations and the world of work?
3. What is the role of the agricultural teacher in assigning elementary teachers?

**February—"Junior High Programs"**
1. How can we make occupational career education meaningful?
2. The importance of occupational guidance in junior high schools.

**March—"Secondary School Program Vision"**
1. How can we redesign existing programs to relate toward careers?
2. Planning multi-staff programs.
3. How should we program-plan for student clientele groups who have a wide range of needs?

**April—"Youth Organizations As an Instructional Tool"**
1. How should the youth organizations be structured to complement career oriented instructional programs?

**May—"Supervised Agricultural Experience Programs"**
1. Awareness, exploratory, and on-job experience program possibilities.
2. Innovative ways for providing occupational experience.

**June—"The School's Responsibility for Placement and Followup"**
1. Does the secondary and postsecondary school have a responsibility for helping students find jobs?
2. What is the role of the school in the development and followup of the job opportunities available?

It is hoped that each article prepared for a 1973 issue will have incorporated within it, a discussion of how to use the ideas presented in crafting careers, or how to relate to the world of agricultural occupations.

**Cover photos**

Some of the photos that illustrate the "Career Education Series" are:
- A young man with a red tractor.
- A group of students working in a greenhouse.

Send manuscripts to a Regional Editor, or to:
Roy D. Dillon, Editor
The Agricultural Education Magazine
322 Agricultural Hall, East Campus
University of Nebraska
Lincoln, Nebraska 68503

**Specialized Agribusiness skill development programs are needed.**

Donald M. Joenshu
West Bend Vocational-Technical School
West Bend, Wisconsin

Kenneth F. Huddleston
Doctoral Vocational Education Student
University of Illinois

**IV. Agri-Business**
A. Agri-Marketing
   - Product knowledge
   - Sales terms
   - Advertising and promotion

B. Agri-Management and Organization
   - Financing the Agri-Business
   - Business location, design and layout
   - Personnel supervision and management

**V. Technical Skills**
- Farm equipment manufacturing and repair
- Food processing
- Nursery production
- Landscaping

The last category, Technical Skills, is not by itself a common area of Agri-Business training to all students. But each student needs some technical area to round out the Agri-Business area he is working in or manages. Example: A student interested in the landscaping

(The concluding page 315)

**IV. Agri-Business Model Program**

Teaching salesmanship is not enough. If a person is to reach the top rung of the Agri-Business job ladder, he must have more skills than just selling. This means providing education for the whole individual, such as basic communications skills, social attitudes and other skills. The "Model Program for Agri-Business" which we have set up and are using is structured this way:

I. Basic Skills
   - Communications in Agri-Business
   - Math skills in Agri-Business

II. Social Attitudes and Career Guidance
   - Applying for a job
   - Dress and grooming

III. Economics
   - Agri-Business impact on the economy
   - Economics relationship to agriculture

Bob Pocher, Agri-Business student at West Bend Senior High School, discusses the product knowledge section of a professional salesperson. Jerry Arrington, a farm storage facilities salesman who cooperates in the training of Vocational Agri-Business students at West Bend.

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MODULAR SCHEDULING OF SMALL ENGINE INSTRUCTION

Darrell Hartle
Vocational Agriculture Instructor
Glencoe, Minnesota

When a first year teacher was asked about his impression of modular scheduling he replied, "It provides an opportunity to do the most effective job of teaching that can possibly be accomplished on an individual basis." He further commented on the many preparations which must be made for modular scheduling will lose its potential effectiveness. Teaching under modular scheduling requires more preparation than a regular schedule. The preparation which must be considered are the teaching aids such as slides, filmsstrips, models and transparencies, the shop equipment and the physical building involved as the classroom, the shop area and the storage facilities.

PROGRAM PLANNING

When preparing an instructional unit such as small gasoline engines for modular scheduling, the first words of advice are well known to all Boy Scouts — Be Prepared!!! Preparation does not mean for only today's and tomorrow's class, but for the entire time which has been allocated for the instructional unit. It must be remembered that all students will meet together for certain lessons during modular scheduling. There will be one "large group" session during a six day period. The students will then work in the classroom or shop in smaller groups at a variety of scheduled and unscheduled periods. For the vocational instructor who has considered his shop program a three-ring circus, he should double the number of rings when involved with modular scheduling. Each student will be working at his own pace on the instructional unit. Students can appear before school, during lunch hour, during their independent scheduled time, as well as their regularly scheduled periods. The teacher is expected to have all instructional materials prepared and at the student's fingertips. Some students will be on Lesson 2, Exercise 4, while another student may be on Lesson 5 and Exercise 3. Modular scheduling provides the student an opportunity to progress at his best rate of comprehension, but without adequate teacher preparation of instructional materials the student will be handicapped. As the teacher plans the program he prepares his discussion topics. To supplement each of these discussions he will supplement the lesson with workbooks, one page plans, or similar written materials. To help provide the subject matter he may wish to use slides,filmsstrips, transparencies, tapes and models in his presentation. These items are essential for an effective presentation but the availability of the items is also essential for the student who is missed class or wishes to review points which were not covered adequately during the teacher's presentation. In addition to the classroom instruction, there will be shop or laboratory periods. These activities will involve exercises to be completed which will require tools and equipment. These entire sheets, tools, and equipment, must be available for student use with a limited amount of locking of cushions and moving of other items. This does place specific requirements on storage facilities for the supplies and equipment, and also for both shop and work bays to be made available without moving materials left by another class. With several topics being taught in (Concluded on page 265)

Preparation for teaching through modular scheduling requires preparation for the entire instructional unit!

THE AGRICULTURAL EDUCATION MAGAZINE

STRUCTURING OJT FOR INNOVATION

W. Forrest Bear, Professor
Departments of Educational Administration
Agricultural Engineering
University of Minnesota, St. Paul

Innovators are not born, they are made. Innovators do not plan to fail, because they do not fail to plan. Progress is the innovation of the uneducated product. And finally, the innovator is one who finds and uses one way to skin a cat. With success in its proper perspective, success in how OJT can be structured to encourage innovation.

On scheduling has been, and still is, a valuable vehicle for developing occupational competencies. Indeed for those readers, agricultural educators have recognized that OJT can provide an excellent medium for learning by doing. Traditionally, the supervised farming program provided the student with the opportunity to implement the knowledge and skills obtained from formal education. More recently, agricultural occupations programs have evolved in cooperative arrangements with businesses to provide learning by doing experiences.

The well planned, innovative OJT systems have been designed around needs for the occupations. The more innovative programs have allowed for expansion and/or refinement of traditional competencies. These competencies are the same as tasks of the occupation. Doing a task is an excellent refinement of competence. Thus the growth of a task becomes a learning experience. Some of innovative programs will not only fit the student but also the distinction among the student, the employer and the OJT sponsoring institution. The alliance nurtures mutual interests. OJT programs can be structured to encourage innovation. The structure will allow for flexibility while providing safeguards against inefficiency and exploitation.

OJT TRAINING TRIANGLE

The relationships between the student, the trainer and the school coordinator can be compared to a triangle. The training program training triangle is equilateral. Each leg of the triangle is of equal significance and magnitude; however, each is capable of growth. The size of the training triangle is dependent upon the individual training situation. The area within the triangle is composed of learning activities attainable through OJT. The most important concept to be realized from this structure is that any one or the three parties involved can cause the triangle to expand or to contract. An illustration of the triangle follows:

Innovation on-job-training programs foster an understandable alliance among the student, the employer, and the OJT sponsoring institution.

Daniel E. Vogler, Coordinator
Occupational Education Programs
University of Michigan, Ann Arbor

On-job-training is recognized and accepted as an excellent vehicle for learning. Innovations will likely evolve from OJT programs which are structured for flexibility. To paraphrase the first paragraph of this article, an innovative OJT program needs to be planned through a training program. Progress will result by finding more ways for learning.

SUMMARY

On-job-training is recognized and accepted as an excellent vehicle for learning. Innovations will likely evolve from OJT programs which are structured for flexibility. To paraphrase the first paragraph of this article, an innovative OJT program needs to be planned through a training program. Progress will result by finding more ways for learning.
Diversity is the word that perhaps best describes the student of vocational agriculture today as well as the type of occupational experience programs which help to prepare him for gainful employ-
ment. The number of students of vocational agriculture in off-farm agricultural occupations has resulted in a new interest in cooperative placement of students for the many dif-
ferent careers represented in this segment of agri-business. Diversity has also resulted because girls as well as boys are now enrolled in high school programs, and because of the increasing enrollment of non-farm students in vocational agriculture.

The student who is preparing for a career in agri-

business today may take two years of agriculture in his local high school and transfer to a specialized agricultural education program in an area vocational center to complete his preparation. His occupational experience program over this four year period may include production enterprises such as raising corn and hogs during his first two years, followed by a cooperative program which involves placement in an agricultural business during his last two years in school. Variety and diversity instead characterize our students, their career choices, and their training programs.

For many of these students improvement projects offer an opportunity to broaden their experience and to become more employable as a result of better planned programs of experience. Teachers need to plan carefully as they guide students to select, plan, carry out, and evaluate improvement projects as a part of a complete occupational experience.

Some of the questions and answers which follow indicate some ways that teachers can use improvement projects to supplement the diverse occupational experience programs of students who have widely differing educational and career opportunities in agriculture.

Question: What advantages do improvement projects offer the student?

Answer: Improvement projects can be used to gain experience in a wide variety of agricultural operations. They provide valuable exploratory experiences in the field and help in deciding upon an agricultural career. They provide challenging real-life situations in which students will develop skills, habits, and attitudes which are desirable. They can also lead to better understanding and cooperation between parents and students.

Question: What do improvement projects do for the teacher?

Answer: Improvement projects provide a broader basis for classroom teaching. Projects planning improves teacher in close touch with agriculture of the community. Still another advantage is in permitting certain students with limited opportunities to develop worthwhile occupational experience programs through the inclusion of desirable improvement projects.

Question: What can the improvement projects fit into a four-
year agricultural education program?

Answer: Here are two examples:

1. Long-term projects for the four-year program include: A new garden area 60 acres of farm land. He has completed two years in his high school and plans to take two years in an Agricultural Mechanic program at a nearby Area Vocational Education Institute. This boy has also been engaged in terms of additional academic initiative and drive.

2. Short-term projects for the one-year program include: A program for a future implementation includes a plan for a well-organized student council with a purpose of forming an agricultural education cooperative. This student has been engaged in terms of academic initiative and drive.

Improvement projects provide a desirable supplement to cooperative experience for the boy who is preparing for an off-farm agricultural occupation.
TRAINING PLANS—FOR AGRICULTURAL EXPERIENCE PROGRAMS

James Allbracht, Coordinator, Agricultural Education
Kansas State University

In recent years the number of farm operators decreased but the number of persons employed in agricultural related occupations increased rapidly. During this time farm production and productivity has increased greatly. With fewer farms and more services needed, the farmer turned to specialists and representatives of agricultural related firms to service many of his needs. To supply these services, more vocations were needed. Vocational agriculture was then asked to supply workers for new and expanding occupations.

For the past four years the KDA group of Kansas Vocational Agriculture teachers and the writer have been developing a program called Agricultural Career Experience, commonly referred to as the ACE program. ACE is a joint educational program between the school and the firms which serve production agriculture. Its purpose is to provide students opportunities for meaningful employment in agricultural careers. Students enrolled in the ACE program spend part of their school day in gaining career experiences with local agricultural firms when they are not involved in regular high school classes. The vocational agricultural teacher is the coordinator of the program.

Step by step training plans are the heart of the ACE program. The training plans were developed by personal interviews between the vocational agriculture instructor and representatives of the agricultural firms in the community. Some of the training plans which have been developed to date include: meat cutter, irrigation equipment employee, assistant dairy herdsman, elevator mill employee, feedlot assistant, feed store employee, farm fuel supplier, greenhouse employee, lumber yard employee, livestock feeder, nursery employee, farm machinery technician, farm power mechanic, assistant sheep herdsman, assistant swine herdsman, veterinary assistant.

The employer, the student, and the teacher coordinator jointly select the competencies which are to be included in the student's training program. The care with which the training plan is developed will largely determine the educational significance of the total ACE program. By jointly determining which competencies are to be included in the program, the developer, the employer, and the student know precisely which competencies can and should be developed in the classroom, and which can and should be developed on the job. The student does not attend classes to the selecting of the competencies it is certain that the training program will be relevant and interesting to the learner.

The following is a sample ACE Individual Training Plan. (Concluded on next page)

THE AGRICULTURAL EDUCATION MAGAZINE

In Opposition To "DISADVANTAGED YOUTH"—Let's Think Positively . . . . .

Thomas R. Sitts
Agriculture Education Specialist
International Services Division,
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D I S A D V a n t a g e d youth, along with many other young people, have been neglected by society. Many of them have been denied the opportunity to develop their full potential and contribute their unique skills and talents to the betterment of our society. Society has failed to provide these youth with the same opportunities and resources that are available to others.

Most of these youth are from low-income, minority backgrounds. They have faced significant barriers due to discrimination, poverty, and lack of access to educational and employment opportunities. Their educational experiences have been limited, and they have had little exposure to positive role models or mentors who could provide guidance and support.

In opposition to this "disadvantaged youth" label, we must think positively. Positive thinking is essential for both individuals and society as a whole. It helps us to overcome challenges and obstacles, and it allows us to see opportunities and possibilities that may not be immediately apparent.

Let's focus on positive solutions and strategies that can help these youth succeed. We need to invest in their education and development, provide them with job training and employment opportunities, and offer them support and guidance to help them reach their full potential.

It is time to recognize the value and potential of every individual, regardless of their background or circumstances. By doing so, we can create a more inclusive and equitable society where everyone has the opportunity to thrive.

May I suggest an analogy. For the past two years I have been working as an Agriculture Education Specialist in an area 150 miles by 500 miles. The area is comprised of three major ethnic groups with many smaller groups within each. There are two major religious groups (not Christianity) and only 40 per cent of the students can speak the mother tongue when entering school. The population is 80 per cent agricultural, with the average annual income at the last census estimated to be $37,000 equivalent per family. "Disadvantaged," to be sure, by American standards. However, it has been the choice of the State Department of Education in the United States and other agencies who work in international areas to refer to this and others as developing countries, thereby implying positive action and progress. Within this frame work, details are given indicating the specific component which will be encouraged or improved. It appears some positive diplomatic thinking may be in order for the field of education.

Yes, it's only semantics. Yes, the administrative leadership of the country, the education field, and especially vocational education, has used the term. The phrase "disadvantaged" has provided a new but equally uncomplimentary substitute for the "dumbing grounds" which was previously used by some of our peers in referring to Vocational Education.

What name should be given to the program? This is a reasonable question for which I do not presume to have the final answer. The proper name would clearly imply that any participant would be taken from that point at which he entered the program and developed to the highest possible level of personal and occupational achievement. The profession must act immediately to remove the confusion and correct the necessary leadership to alert the educational and political field of the positive contribution our involvement of worthwhile educational endeavors has to offer. To excuse, THINK POSITIVELY. . . . .
A practical approach to agriculture education through a farm laboratory and business enterprise at an Iowa community college.

The community college, with its emphasis on program flexibility and practical education, promises to do something about this problem. The farm laboratory at Kirkwood is a "real" situation. We operate the complete laboratory as a demonstration farm rather than an experimental plot. The distinction is that decisions on the farm operation are made with the primary goal of profits — and with Kirkwood students making most of those decisions. I don't want to leave a false impression about the profit-oriented approach we use at Kirkwood. Financial profit is not sought for the sake of financial profit. It is sought as a means of in- dustrial realism into agricultural education and helping students to learn from their own mistakes.

At Kirkwood, we are fortunate to have the complete backing of the elected board of directors and the college administration in our enterprises. Without that I am certain our program would not be as effective.

Our "laboratory" consists of nearly 400 acres of average Iowa soil. About 300 acres of this land is on the community college campus, which is still largely undeveloped as far as buildings are concerned. The other 100 acres of the laboratory consists of rented acreage near the campus.

By renting additional ground we accomplish several things. We give the student a look at the advantages and disadvantages of renting additional land. We are able to spread our fixed costs on a full line of leased farm machinery. Most important of all, the operation creates dollar income which is needed to meet our cash flow.

The laboratory involves both crops and livestock. The livestock herd must change rapidly as our enterprise records and fluctuate drastically. This past winter, for instance, the enterprise consisted of 400 head, including 150 stock cows and the remainder of calves and feeders. With the addition of a new fattening herd we hope to farrow six times a year and units of 24. This should give us nearly 1,000 head of finishing hogs per year.

The dairy enterprise presently consists of 20 head of Holstein heifers grown for sale as sows. This flock consists of 30 head which include about half purebreds.

Involvement of students in these enterprises revolves around what we call the enterprise system. For these enterprises — Swine, Beef, Dairy, Sheep, and Crops — are each headed by an instructor-specialist. This specialist is in charge of the enterprise, or business.

Student selection may occur at the beginning of each school quarter. From then on, it is up to the students to decide what to sell with one enterprise for the entire seven quarters, or whether to transfer from one to another to gain a broader experience. As a rule, the students prefer to follow the latter course. Considerable counseling is used as students plan together a meaningful education program.

Once assigned to an enterprise, an student finds himself quickly caught up in the day-to-day responsibilities of the job. He must work to keep the program in good condition, with proper supplies and machines taking place during the morning, three hours each day. Although the program is organized to offer a broader agricultural experience, there is no way of doing every project.

Howard Peyton
Enterprise Analyst Instructor, Kirkwood Community College, Cedar Rapids, Iowa

"HANDS-ON AT KIRKWOOD"

PROMOTING "EXCITEMENT OF LEARNING"

Ben A. Burns
Department of Vocational Agriculture
Davies County High School
Owensboro, Kentucky

We must set up rules for teachers and students to become mutually involved in both the philosophy of "pass or fail" in our high school. Teachers have to see their students as individuals — not just sit there mem- orizing everything in sight, or finishing a problem within an hour. Students do not learn or succeed at the same level. Teachers in effect may be saying the student, "I will not ask you to do this or that unless you do that, but I won't mark you down as a failure if you don't do it in your own way."

Of course, teachers have to keep tabs on a student's performance in certain standards. This can be done through written and oral answers. Instead of issuing an A-B-C type report card, the teacher better serves himself and parents by conference and perhaps a verbatim record this time to time on what kind of work the student is doing and an analysis of his attitudes and potential. If a student's performance is very far out of line with the rest of his group, the teacher is a part of the subject, it is best to move him into another group for a subject for a time so he can catch up on the same level with at least one of the classmates. Don't wait until the whole year is over and then talk him. Early success is important there is no stigma in moving him, if necessary, to a class where he can succeed. Don't let him suffer much of failure before trying to help him.

Assuming that no one will give up by traditional marks, I recommend that they be used for outstanding proficiency and "C" for minimum proficiency. Give the grading space blank if the

An enterprise instructor, Mr. Schrage, overlooks an enterprise barn. In-depth enterprise records are kept on all enterprise operations for systematic comparison and analysis.

Howard Peyton

The AGRICULTURAL EDUCATION MAGAZINE
Early Leader in Agricultural Education: JOHN A. JAMES

Professor John A. James, head teacher educator at the University of Wisconsin from 1914 to 1954, was a pioneer innovator in applying educational principles and practices to the teaching of agriculture in the secondary schools of Wisconsin. Among the many contributions made by Professor James, he will be especially remembered for:

1. Bringing practical experience in teaching agriculture at the local level to the teacher education task. (Indications are he was the first teacher educator in agriculture on the national scale who brought previous local teaching experience to the teacher training job.)
2. The contributions made as superintendent and assistant superintendent of the Racine County School of Agriculture, including starting the acre corn yield contest, organizing the local cow testing association, and the introduction of new crop varieties.
3. Development of teaching methods courses based on first-hand field experiences as well as educational data and theory.
4. Taking student teachers in agriculture away from the campus high school and out into the local high schools in agricultural communities. There they observed young and adult farm life practices.
5. The development of teaching aids (bulletins, film strips, slides) and their distribution at cost to Wisconsin teachers.
6. His close relationship with the undergraduate students as a teacher educator and as Assistant Dean of Resident Instruction for 13 years. The students respected Professor James for his principles and standards.
7. His leadership in developing a semester or yearlong course of study for local vocational teachers. Professor James was a native Wisconsinite, born in 1884 in Livingsense, a village in the rich farming country of southwestern Wisconsin. After completing his high school and college years, he enrolled at what was then the state Normal School (presently the Wisconsin State University) at Madison, Wisconsin. In 1900 he became the principal of the Verona High School. As a teaching principal, he taught a one-year course in agriculture — long before there was a program called "vocational agriculture." As evidence of his ever growing interest in professional development, he enrolled in the one-year course at the Cornell University at Madison, taking the feeding and feeding course under Dean Henry, his work under Professor/ Diefenbach in Dairy Manufacturing, and Professor P. A. Moore in Agrometry. This marked the beginning of his ecological agriculture training. James found this knowledge enabled him to make his high school teaching more interesting to his students. He continued his education at the University of Wisconsin and received his B.S.A. degree in 1912.

The two years as superintendent and principal of the Racine County School of Agriculture drew upon Professor James' ability as an administrating teacher, and advisor to students. He was heavily involved in planning the construction and equipping of this school. In 1914 John James accepted a position at the University of Wisconsin as an Assistant Professor of Agricultural Education and Chairman of the Agricultural Education Department. Here he developed courses in teaching methods and acquired teaching experiences for the prospective teachers in local high schools rather than at the university high school. Wisconsin High) which was used by other student teachers.

Professor James became a byword for his interest in students both as a teacher educator and as a student. He was concerned not only with educational welfare, but he was active in placing them in jobs. It was recognized as an educational innovation, and was elected President of the Midwest Vocational Association. During his 13 years at the University of Wisconsin, he had a total of 73 seniors graduating in his department than any other department in the College of Agriculture.

The beginning of systematic, regular summer teaching short courses for vocational agriculture had been secured by Professor James. He also was a leader in the department of a suggested state-wide system of short courses in agriculture.

Today, former students of Professor J. A. James are among the leaders in all walks of life, and they find themselves dropping in to visit him at his Madison home. As one visits old studies and former teachers, they invariably credit in part their success to the influences of their former teacher, innovator, builder of men.

Walter T. Bjornarson is Professor and a Chairman, Department of Agricultural Education, College of Agriculture and Life Sciences, The University of Wisconsin, Madison.
BOOK REVIEWS

TRACTOR OPERATION AND CARE. Arthur R. O. Hume, General Editor. American Society of Agricultural Engineers. 1970, Revised 120 (p. $4.80). The second edition of this standard work by the American Society of Agricultural Engineers has been revised and expanded. It is a comprehensive guide to the operation and care of tractors. The book covers a wide range of topics, including safety, usage, maintenance, and troubleshooting. It is an invaluable resource for anyone involved in the operation of tractors.

EDUCATORS GUIDE TO FREE FILMSTRIPS. Randolph, Wisconsin: Educators Progress Service, 1970. 184 pp. $5.90. This guide is designed to help educators select and use filmstrips in their teaching. It includes an extensive list of filmstrips available, along with descriptions and ratings. The guide is a useful tool for educators looking to incorporate visual aids into their lessons.

The Westwood Agriculture Department is a better department today from having tried a collective effort of students, teachers, and parents. The sale of the wood was not difficult with so many students, parents, and friends involved. There were bids for more wood than had been cut. Later, at Easter, another trip was made by selected students and officers where more wood was cut to fill orders which had been taken. The chapter now has solved the first problem, and sufficient money is available for chapter activities.

The pleasant thing about the money making part of the project was that students learned many skills while cutting, cutting and washing the wood for sale, along with public relations in selling and delivering the wood. It was a project which demonstrated their ability and gave them dignity and self-respect.

With this experience and activity the department now had a foundation on which to build curriculum, and a course in the area of conservation and forestry. Learning activities were implemented to give application as well as information on conservation and forestry. slice, full, and other areas of recreation were developed, which had meaning due to our wood cutting project. We now had partially solved our second problem. Students could see a reason for learning how to use and store our wood saw as well as other forestry tools. Even the proper use of an ax had real meaning to those who were involved. The interest of the parents, with their help and supervision, this became a group project we could be proud of.

(Continued on page 311)
ESePerimentation—Discovery: A Teaching Method

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Here is an easily set-up experiment which embodies the principles of the experimentation-discovery method.

Extra sensory perception is not a requisite in a teaching procedure for vocational educators in agricultural education to recognize that variety is an essential facet to the learning process. As teachers continually strive to diversify their instructional program, consideration should be given to the demonstration, discovery and discovery as a teaching technique. In the context of this article, the experimentation-discovery method is characterized as an approach to teaching. An amplified definition would describe the approach to the research exercise done in the laboratory, discovery as the new learning which unfolds before them, as a result of the orderly exercise.43 Alert teachers will recognize experimentation as a natural approach to teaching agricultural science. The experimental approach to problem-solving is considered by many educators as the single greatest need in agriculture education today. By incorporating the experimentation-discovery method in their instruction programs, teachers of agricultural education will open doors of learning which were heretofore closed to the student of agricultural science.

As teachers search for experiments to use in their instructional programs, they soon discover that available options are limited. Agricultural science experiments are generally not abundant because they are difficult to assemble and time consuming to prepare. However, here is an easily set-up experiment which embodies the principles of the experimentation-discovery method. This experiment is an ideally suited group activity designed to accompany a classroom instructional unit in livestock nutrition. It dramatically demonstrates, in a short period of time, the importance of proper nutrition. Student participation in the design, conduct, and evaluation of the experiment will provide opportunities not only to learn nutrition but also basic research methods. All the materials needed for the experiment were easily assembled from hardware store, feed dealers, and the school. The four-week study involved 200 male, single-combed, white leghorn chicks. The chicks were divided into five groups and each group was fed one of five rations for 10 days.

Preparing Diet

The basic of the vitamin premix was the Ray Ewing Grower Mix, No. 68399. To raise the nutritional level of the ration to minimum requirements as would be needed with feeding only corn, supplemental vitamins were added. Finely ground grower mix was added to bring the total weight of the vitamin premix up to two pounds. These ingredients were then blended in a feed mixer for 10 minutes. In the absence of a feed mixer, a cement mixer would be an appropriate substitute. Eight pounds of Purina Mineral SP-37571 and one pound of iodized salt were combined as a mineral premix. The mineral mix was ground to a texture of table salt and combined with the iodized salt for ten minutes.

Severe combinations of the feed diet components were selected for the following treatments: 1) control diet—corn; 2) vitamin and mineral premix; 3) vitamin-deficient diet—corn, soybean meal and mineral premix; 4) mineral-deficient diet—corn, soybean meal and vitamin premix; 5) vitamin and mineral-deficient diet—corn, soybean meal and vitamin premix; 6) vitamin and protein-deficient diet—corn, soybean meal and vitamin premix; 7) protein-deficient diet—corn, vitamin and mineral-deficient diet—corn. These seven diets were selected as the most representative of feeding situations on the farm. The diet and amount of feed used in the various treatments are shown in Table 2.

PREPARING EQUIPMENT

Before placing the chicks in the diet, all equipment was thoroughly cleaned. The brooder temperature was maintained at approximately 100°F. Every other day the temperature was reduced five degrees until the room temperature of 70°F was reached. The test were identified with a brief description of each treatment; thus making it easier for visitors to understand the experimental differences.

In total, 500 grams of feed were used in the experiment for each group of ten birds. If the chicks did not begin to eat within a few hours, a paper towel was placed in the pen to encourage consumption. The water tanks were filled with clean water at all times. Observations were made daily and noted on a data sheet. The amount of feed added to each treatment was also recorded on the data sheet.

There was some feed wastage when the trays were filled too full. To avoid this, the feed troughs were not filled over one-half full after the chicks were a week old. Spilled feed was removed from the troughs. The troughs were washed every week with the litter paper changed regularly to avoid the cement and sand. At the end of each week, the chicks remaining feed from each pen was weighed. This information was recorded on the data sheet. The weight of feed in the trough subtracted from the initial amount of feed in the trough was the weekly feed consumption. The weight of dead birds was also recorded. No attempt was made to calculate the efficiency of the feed consumption because the lack of all efficiency of the respective treatments.

The weight of feed consumed as well as feed efficiency was a function of the growth rate. The omission of both vitamins and minerals in different combinations from the diet had the greatest effect on percentage of mortality. The lack of vitamin and mineral diet did not appreciably effect loss of the birds during the study.

CONCLUSION

As vocational educators in agriculture continually strive to teach according to student abilities, interests, and motivations, they will find the experimentation-discovery method an invaluable instructional tool in meeting this challenge. Student involvement in experiment-discovery may afford:

1. An opportunity for the inquisitive, imaginative student to become a higher achiever.---An opportunity for the expansion and utilization of imaginative student abilities.

2. An appreciation and understanding of the multiplicity of substances related to agriculture.

3. An understanding of the opportunities in agricultural science.  

4. An understanding of the opportunities in agricultural science.

5. An understanding of the opportunities in agricultural science.

RESULTS OF EXPERIMENT

The effect of a balanced ration was reflected by the control group as birds in this treatment gained more than twice as much as the next highest treatment. This beneficial effect can be seen in Table 2. In this case, the least of the difficulties was caused by a simple vitamin deficiency. The deficiencies of protein or minerals resulted in a very severe growth restriction. This indicated that minerals and proteins are the most limiting factors in this study.

It was interesting to note that the straight corn diet actually showed a decrease in gain during the second week. In this study, the absence of one or more of the components in the diet (formulations was reflected in the efficiency of all the respective treatments. The feed consumption as well as feed efficiency was a function of the growth rate.

6. An understanding of the opportunities in agricultural science.

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APPLYING "LEARNING BY DOING" IN TEACHING

The FFA motto provides a significant clue to the theme of this article, "Learning by doing." The motto is also as adaptable to teaching as it is to learning, for any type of vocational education. This principle adequately applies to the teaching of plant science as a part of the total vocational agriculture program. Using corn production as an example of the "Learning to do, Doing to learn" concept of education, many practical lessons can be developed. Some of these methods of instruction, along with advantages and disadvantages of each, will be discussed in this paper.

One of these methods is an actual production situation such as an FFA farm. Corns could be the example used here, as it could be a part of a three, four, or five year rotation, depending on the local conditions. For example, if a four year crop rotation was established, it would provide a different crop for each of the four years a student would be enrolled in an agriculture program.

The crop could be planted confirming (visual) (actual) practices of the area, or could be planted according to the latest recommended practices of the Soil Conservation Service of the State University. The students should be required to do both traditional cultural practices to follow. The teacher should lead the students in a discussion of the advantages and disadvantages of each cultural practice.

Modern farm machinery introduces additional learning situations, including selection, calibration, operation and maintenance.

Management decisions that need to be made include: whether or not to test the soil, how to meet the fertilizer requirements indicated by the soil test, how to meet the organic matter requirements, time of planting (fall or spring) or use of minimum tillage, method of applying fertilizer, fitting the soil, row spacing, variety of seed, and determinations of planting dates, depth to plant seed, chemical insect control, chemical weed control, cultivation, irrigation, harvesting time, method of harvesting, yield and moisture checks, storage and sale of the corn.

After the crop project is completed, a wealth of education can be secured from analysis of records and comparisons of the results with local, regional, and state production records.

Some potential problems with the education method include: financing, a bar for the crop, labor to carry out the project, coordination of the management, jobs, machines, fertilizer, etc. Some of these problems may be solved by obtaining the coordination of local farmers, parents, and of course the students. Perhaps a student or parent would provide a site for the crop as well as some of the machinery. Departmental directors have similar programs already have machinery and lend to carry out this type of production.

A second method of crop production is experimentation. This area is by far the least utilized as to the facilities for education. For this reason, some limits must be established so that this experiment does not become unmanageable. If the project is too limited, the education derived from the experiment may not be valid. Too many variables may make control difficult or impossible in the experiment.

Begin with a simple experiment to establish the value of chemical weed control. Size of the field should be proportional to the number of students. The number of broadcast plots, the more reliable the results will be. Plot using different chemicals (weed controls) and a control plot variance. Chemical will provide different management prerogatives. After determining what chemicals to plant, split the area in half, lay out the plots.

Using the following example, chemical weed controls (Astras 2, 4-D and a control plot having no chemical, will be laid out. If the corn rows are to be planted with and to the left, divide the area into thirds, applying Astra to one, 2, 4-D to the other, and nothing to the control plot.

This experiment may be expanded simply by adding another set of variables such as fertilizer rates. Using liquid nitrogen in varying amounts, the plots can be easily designed to accomplish this. Since the weed control variables were laid out in a north-south direction, the additional liquid nitrogen should be added in an east-west direction.

Three variables, 100 pounds of actual nitrogen, 50 pounds of actual nitrogen, no additional nitrogen are used. After the plots have been divided, split the west-east direction, apply the 100 pound run to one third, the 50 pound rate to another third. This will result in a pattern shown below.

<table>
<thead>
<tr>
<th>North</th>
<th>100 Lbs. Nitrogen</th>
<th>No chem. control</th>
<th>50 Lbs. Nitrogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>2, 4-D</td>
<td>2, 4-D</td>
<td>2, 4-D</td>
</tr>
<tr>
<td>North</td>
<td>Astra</td>
<td>Astra</td>
<td>Astra</td>
</tr>
<tr>
<td>North</td>
<td>No chem. control</td>
<td>No chem. control</td>
<td>No chem. control</td>
</tr>
</tbody>
</table>

(Concluded on page 314)

THE IMPORTANCE OF SUPERVISORY VISITS

J. C. Simmons — Area IV Supervisor

Louisiana

There is absolutely nothing that can substitute for the tremendous importance and impact achieved through visits to student.

Eventually given the job of caring for the calves and replacement heifers. Other responsibilities were soon added. As the student progressed and became more knowledgeable, Ray succeeded in earning a Vocational Agriculture Proficiency Award in Placement in Agricultural Production. The entire community could see that this was worth it. The student was first in this award. Upon graduation, rather than choosing to attend college or go into some other vocational choice, and because of his interest and the training received through this program, Joe expressed much interest in returning to the business of dairy farming. His teacher contacted another dairy farmer in the community who was interested in working out a partnership with someone he could depend upon. With the recommendations of similar students, the farmer he employed and his teacher of vocational agriculture, this young man is now firmly involved in the occupation of his choosing. When relating this story his teacher gives credit for these achievements and his projects and interest in vocational agriculture. However, upon his initial visit to the home, it became apparent that this boy achieved much more than just making his initial visit to the home, the teacher was encouraged by finding something to work on. However, in his conference with Joe and his parents it became apparent that the young student had scheduled his visit to Joe's agricultural agriculture as one of his courses. His parents explained to the teacher his love for animals and the desire he had always had to own and work with animals, something which his parents or brother had not been able to be afforded. Since the department also served a rural area, this teacher and student developed a program where the student was placed on a dairy farm in the afternoon, and was trained for and
There are nine different post-comparison when you divide tests at harvest time. The crop is already from this point. It is important that all observations be the same on all plots. If the corn is included in these tests, dividing each plot. The number of it is limited by the size of the test.

As might be expected, a very important yields result with this approach. For students having an experience in corn production, this is an efficient way to make new experiments. For more experienced students, the technique can be used to establish better management practices. Upon completing each year's yield checks, the costs of the various alternatives and comparisons can be used for data management.

Some advantages of the experiment method of teaching crop yields include unlimited possibilities for type and scope of variables, central location, local availability of data and experience of management.

Disadvantages include extra 

effort in setting up the plot, the cost of production on a

small scale, and finding a uniform size for the experiment. Local fertilizer and chemical companies are cooperative in providing information as well as fertilizer and chemicals for use in experiments. Possibly a student, parent, or farmer would provide local machinery.

Nowhere there are limitations in each of the methods discussed, but the educational value associated with each make-up of students with careful consideration. With the current talk about accountability in school, there is little doubt that education of this type:

The more people involved in the educational process, the more educated the results. Educational outreach, the greater its chances for success. With the concepts given, the needs and desires of the public relative value of each program can contribute to the success of any agricultural department.

IDEA: Have you prepared an annual report of accomplishments for your year as their Royal of Education?

(Agriculture - from page 312)

At The University of Florida, the agricultural education program is required to have all of these items prepared so his students can learn more from the learning process. As the learning process is completed.

EQUIPMENT NEEDS

To expedite this process the following:

Teaching Tool Are Lacking

The basic concept of all the Agribusiness courses learn best when they combine reading, writing, classroom and field reports. This is the same for a program of instruction in Agribusiness as it is in production agriculture. Classroom instruction can be tailored into a modern Agribusiness curriculum using the Program Model described here as a guide. Agribusiness behavioral objectives, properly written, will provide direction to students and the instructor.

There is a need for high quality Agribusiness teaching aids, such as books and slides. These are hard to find, but some are now becoming

available.

To tie classroom instruction as closely as possible with the on-the-job training, it is necessary for each student at the beginning of instruction to select an agricultural product or service (such as farm machinery) and develop his own Agribusiness Manual. The manual serves as the focal point for relating principles he learns in classroom to those practices on the job.

This manual should have a well constructed cover binder, and have a basic outline of the main topics. It should include: a table of contents, the student's name, a detailed list of Prairie County, the student's name, and a reference list of books, articles, and other materials used in the preparation of the manual. It should have a section on how to write the manual. The student should not be required to do this. The student should be able to do this.

The manual should be a valuable tool for the student. It should be used as a reference book. It should be kept in a safe place.

SUMMARY

Modular scheduling places great emphasis on the teacher's being prepared with all the lessons for the course and an individualized approach to learning activities at all times. Greater attention must be devoted to reviewing and re-learning. Modular scheduling is simpler to teach and is more flexible. The student is in control of his learning. Everyone is an individual. The student is in control of his learning. Everyone is in control of his learning.

(Agronomy - page 290)
Stories in Pictures

by Richard Douglass

A large adjustable mirror over the demonstration table gives students a bird's eye view. This table is also equipped with four floodlights. If your students can see, they should get the most out of your demonstration.

(Photo by Richard Douglass, University of Nevada)

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

(Photos supplied by Donald G. Barber, Owatonna, Minnesota.)

ACCOUNTABILITY: SUCCESSFUL STUDENTS, THE RESULT OF CAREFUL PLANNING

Theme— PLANNING THE STATE AND LOCAL PROGRAM

Agricultural Education

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