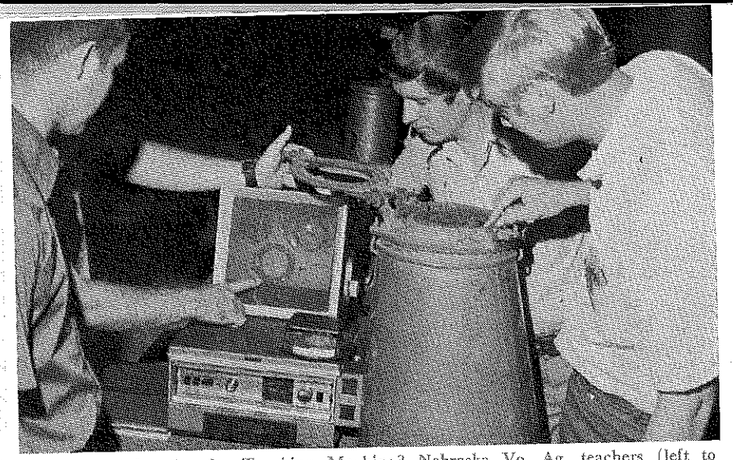
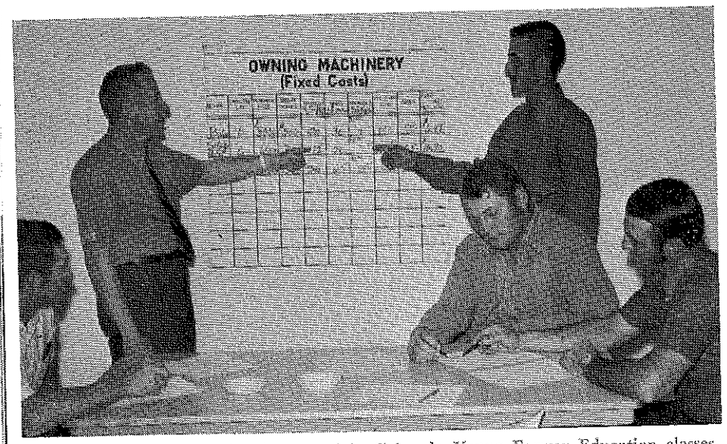


Inservice Education by Teaching Machine? Nebraska Vo. Ag. teachers (left to right) Carl Brown, Gerald Dux, and Gene Wissenberg improve their skill at machinery calibration and adjustment VIA Teaching Machine. This approach seems to be a popular and effective way to introduce new skills to Vo. Ag. Teachers in Nebraska. The additional feature that really sells this approach is that the instructor can pickup new skills while he is using the media with his own students. (Photo supplied by Richard Bringelson, Coordinator, Inservice Agricultural Teacher Education, University of Nebraska.)

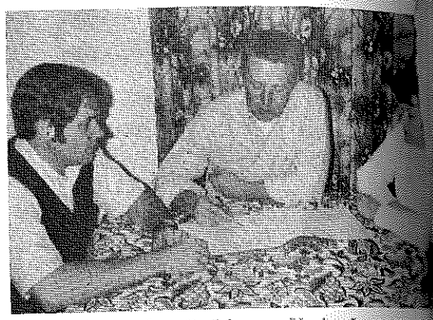
Stories in Pictures

by Richard Douglass



Home and Farm planning is stressed in Colorado Young Farmer Education classes. A series of charts compiled by the State Division of Agricultural Education is used as a guide for work sheets in classes on this subject. Instructor Jack Annan (standing, left) is explaining to Gary DeSoto, Iliff, Colorado, how interest and other charges are assigned to specific items of farm machinery. This particular chart enables a young farmer to determine whether it is cheaper to rent or to own a particular machine.
(Photo supplied by Agriculture Education section, Colorado Board for Community Colleges and Occupational Education.)

Students at Waipahu High School discuss propagation of pot flowers with their instructor, Mr. Charles Chong. Ornamental Horticulture is becoming popular with the co-eds in the urban schools. Besides ornamental horticulture, Waipahu High School also offers an agricultural technology course. The suburbs of Waipahu are located in the City and County of Honolulu.
(Photo supplied by Tom Hatakeyama, Program Specialist, Agricultural Education, Department of Education, State of Hawaii.)



L to R — Lowell Johnson, Vo-Ag Instructor, Stanton, Nebraska, and adult students Mr. and Mrs. Landon Hansen of Stanton review the 1971 records of the Hansen farm during an on-farm instruction visit by Mr. Johnson. Mr. and Mrs. Hansen are two of nearly 300 family persons in about 25 local Vo-Ag departments participating in the 1972 Nebraskaland Adult Farm and Ranch Management Education program.
(Photo from Cliff Vrieze, Coordinator, In-Service Ag. Teacher Education in Ag Business Management, University of Nebraska.)

Ron Vargas, right, Vo. Ag. instructor, Madera High School, California, explains to Wildlife Management students, Greg Michalls and Alvin Matlock, how to cull birds from the school pheasant flock. The birds are raised on the school farm and later sold to restock the local farms.
(Photo by William D. Wills, Agricultural Mechanics Specialist, California State Polytechnic College.)

AGRICULTURAL EDUCATION

Agricultural Education

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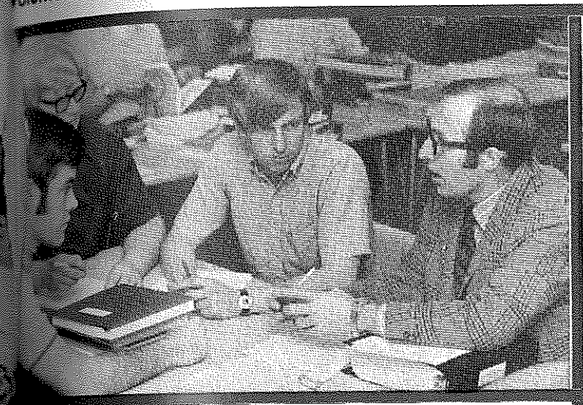
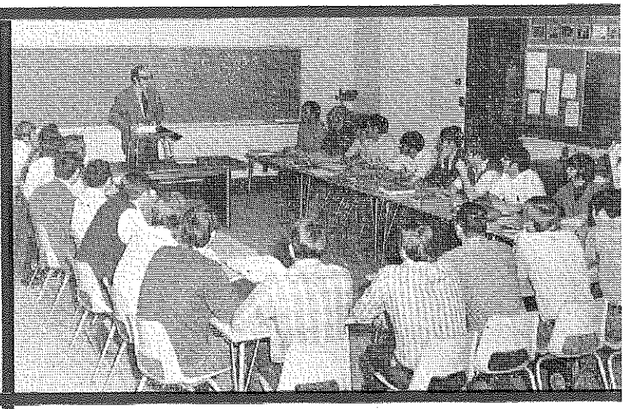
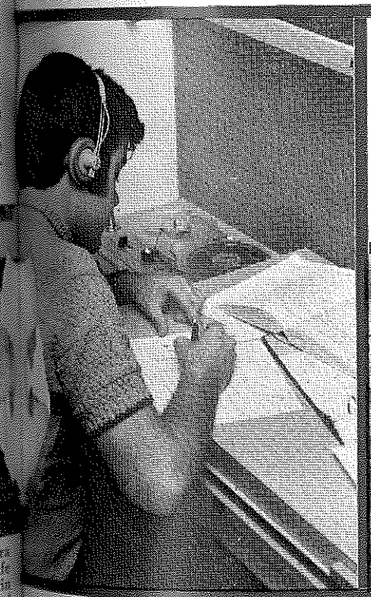
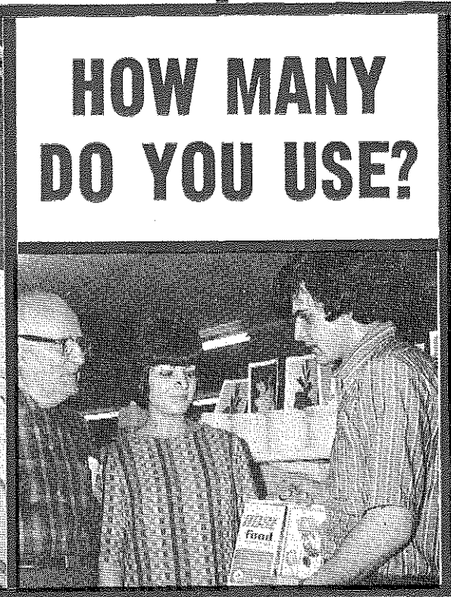


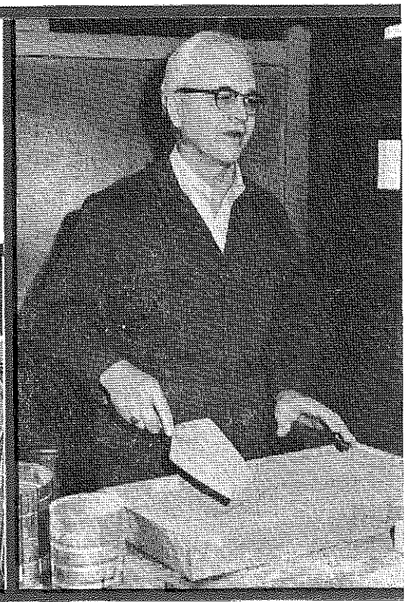
Small Group Instruction



Large Group Instruction







Individualized Instruction

On-Job Instruction

Demonstrations

Theme— TEACHING METHODS

The
Agricultural Education
Magazine

EDPRESS Vol. 44 June 1972 No. 12

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Guest Editorial . . .

INDIVIDUAL INSTRUCTION— The Vocational Teacher's New Role

David C. Bjorkquist, Chairman
Department of Industrial Education
University of Minnesota, Minneapolis

D. C. Bjorkquist

The concept of individualizing instruction is not new to teachers of vocational subjects. They have long taken responsibility for the preparation and placement of students as individuals. With the tradition of individualized instruction in vocational education in mind, it is the purpose of this article to reexamine this concept in light of what we know about the learner, the developing science of teaching, and instructional technology.

The Learner

There is a renewed emphasis on making the learner responsible for more decisions about his own education. The most important student input may well be the identification of his objectives. To make intelligent decisions about objectives, the learner must be made aware of the options available to him. As the student expresses himself relative to his objectives, the teacher must be willing to listen and be flexible in altering instructional content for the student.

Recognition of such individual differences as student experiences, learning capabilities, and likes and dislikes should increase program flexibility. One result of individual student differences is that the learning rate for each student will differ. If the content presented is constant and the time to learn is constant, the amount learned will vary among students. It is more satisfactory to vary the time to learn a module of content and to also vary the number of modules to be learned. As a result in a single horticulture class, for example, one student may be prepared as a nurseryman, another as a flower grower, and a third as a nursery laborer.

Teaching Method

The rediscovery of behavioral objectives and their expanded use has facilitated individualized instruction. Broadly identified student goals can be analyzed to identify tasks which the learner must accomplish if he is to progress at his own rate and achieve his goal. Diagnostic testing can be used to place a student at a level where he can succeed without repetition of previously acquired learning. This will help to insure that the learner begins with tasks within his capability where he can enjoy the success of learning and avoid boredom resulting from the duplication of previously acquired learning.

With the analysis of job functions one should not be surprised if long held notions about what the learner needs to know to perform a job are challenged. A teacher should constantly ask himself, "Why should my students learn this?". In addition, student questions about learning content should be encouraged.

The concept of mastery learning is important to individualized instruction. Rather than expecting 70% learning by students or expecting 70% of the students to learn, mastery learning by all students should be the goal. If mastery is expected in learning, then something else has to vary. The *amount of content can be varied* by breaking large bodies of knowledge into meaningful components. The *amount of time* for learning *can be varied as well.*

Instructional Technology

Advances in the development of instructional technology permit the use of learning packages transmitted by hardware which are capable of developing knowledges and manipulative skills without the involvement of a teacher. The production, selection, and use of these learning packages can be a real aid to the teacher in circumstances such as starting individuals on a unit, providing advanced or remedial experiences for students, and for course orientation. The teacher can be aided in the production and selection of learning packages by what we know about how individuals learn. By asking several questions the teacher may better select or plan individualized instructional sequences to more effectively accomplish the learner's objectives.

1. Does the instruction provide the learner with knowledge of the results of his performance?
2. Does the instructional sequence allow the student to experience success?
3. Are a variety of presentation modes, appropriate to the content to be learned, used in instruction?
4. Does the instruction provide for some form of active response by the learner?
5. Does the instruction provide for different rates of presentation?
6. Does the individualized instructional system give the student the opportunity to select the content appropriate for him?
7. Does the instruction provide for review spaced periodically throughout the instruction?

Conclusion

The single most important instructional component in effective individualized instruction is probably the teacher. Before the knowledge we have about the learner, instructional methodology and instructional technology can be used effectively, the teacher must have the desire to deal with each student as an individual. As more is learned about the teaching/learning process, each teacher must remain ready to incorporate new ideas into his educational program and set the importance of the learner ahead of all other considerations in the classroom. ◆◆◆

This article is based on a publication authored by Dr. Bjorkquist titled What Vocational Education Teachers Should Know About Individualizing Instruction. *Columbus, Ohio: The Center for Vocational and Technical Education, The Ohio State University, November 1971.*

PREVIEW OF 1973

Roy D. Dillon

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 users (teachers) can easily understand, preferably with ideas for implementing.

When one examines the "Career Education" concept, he 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, related classroom discussions to life on the farm and in the farm community.

Have your 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 post secondary levels. The November 1972 Issue, with the theme—"Agricultural 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 assisting elementary teachers?

February—"Junior High Programs"

1. How can we make exploratory career education meaningful?
2. The importance of occupational guidance in junior high school.

March—"Secondary School Program Vision"

1. How can we redesign existing programs to relate toward careers?
2. Planning multiple-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 compliment 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 post secondary school have a responsibility for helping students find jobs?
2. What procedures should be used when following students after graduation for purposes of evaluation.

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

Reader reactions and suggestions for remaining "Career Education Themes" are welcomed—RDD.

Articles should reach the Editor two and one-half months before the issue for which intended.

Send manuscripts to a Regional Editor, or to:

Roy D. Dillon, Editor
The Agricultural Education Magazine
302 Agricultural Hall, East Campus
College of Agriculture
University of Nebraska
Lincoln, Nebraska 68503

COVER PICTURES

Five teaching procedures are pictured, to challenge the reader to consider some possible variations in instructional techniques. U-Left: Dr. Roland Peterson, now at the University of Minnesota, conducts a small group class session; U-right: large group discussion by teacher trainees; L-left: Lloyd Bell, Teacher of Agriculture at West Point, Nebraska, listens to an audio tape while preparing a worksheet; L-center: Ricky Watts, student of vocational agriculture at St. Francisville High School, St. Francisville, La., demonstrates his salesmanship ability as he explains a product to a prospective customer. Joseph Rinaudo, Ricky's employer observes. L-right: U. E. Wendorff, University of Nebraska, uses a "show and tell" technique in giving a demonstration, followed with an opportunity for students to learn by doing. (Pictures by Richard Douglass, Picture Editor, and J. C. Simmons, Area Supervisor, Department of Education, Louisiana.

HOW WELL ARE WE TEACHING AGRI-BUSINESS?

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

Kenneth F. Huddleston
Doctorial Vocational Education Student
University of Illinois

Donald M. Jaworski

Kenneth F. Huddleston

No vocational agriculture subject has been analyzed more in the past five years than Agri-Business. But instructors are just now beginning to come to grips with what is really needed to adequately teach the subject.

In the past, the concentration has been on assessing the **size** of Agri-Business and detailing the job opportunities available. And, indeed, this is a tremendous story. Some of the latest figures show:

*40% of all jobs in the U.S. are now in some phase of agriculture.

*20% of all U.S. scientists work in life sciences and agriculture; we need 2,000 new agricultural scientists every year.

*Agricultural education alone provides careers for 37,000 men and women.

*There are more people transporting, distributing and marketing farm products today then there are producing them.

Specialized Agribusiness skill development programs are needed.

Skill Development Programs Needed

Impressive as the job opportunity picture is, it only scratches the surface of the Agri-Business teaching challenge. Agri-Business careers must be **explored in-depth.** The industry needs people trained with specialized skills, and this demands specialized Agri-Business **skill development programs.**

There are many programs being launched at the secondary and post secondary school level that are strictly Agri-Business oriented, involve cooperative work experience, and add important units to the traditional production programs.

But we still need skill development curricula and the educational tools to go with them to do an adequate job of teaching Agri-Business. To train students for today's jobs we've got to help them develop specific Agri-Business skills, as well as give them an understanding of production agriculture. This means establishing Agri-Business behavioral objectives which are precise descriptions of performance that each student must develop. These performance descriptions are the actual competencies necessary today to get a job in Agri-Business.

Let's use "salesmanship" as an example, since it has been identified as one of the most common competencies needed in Agri-Business. The behavioral objectives of salesmanship would be that a student should be able to perform the nine steps of the selling process: prospecting, pre-approach, approach, presentation, demonstration, trial close, handling objections, close and follow-up.

Agri-Business Model Program

Teaching salesmanship alone 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 abilities, 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 in Agri-Business

II. Social Attitudes and Career Guidance
- Applying for a job
- Grooming and dress
- Human relations

III. Economics
- Agri-Business impact on economy
- Economy's relationship to agriculture

IV. Agri-Business

A. *Agri-Marketing*
- Product knowledge
- Display techniques
- Advertising and promotion
- Salesmanship

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
- Production farming
- 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 one technical area to round out the Agri-Business area he works in or manages. Example: A student interested in the landscaping

(Concluded on page 315)

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

MODULAR SCHEDULING OF SMALL ENGINE INSTRUCTION

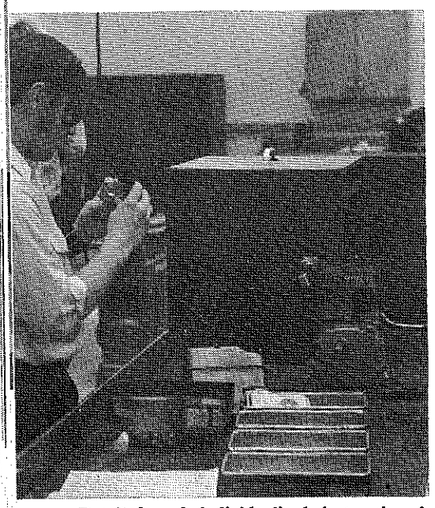
Darrell Hartle
Vocational Agriculture Instructor
Glencoe, Minnesota

W. Forrest Bear, Professor
Departments of Agricultural Education and Agricultural Engineering
University of Minnesota, St. Paul

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 achieved on an individual basis!" He further commented on the many preparations which must be made or else 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, filmstrips, models and transparencies, the shop equipment and the physical building involved as the classroom, the shop area and the storage facilities.

PROGRAM PLANNING

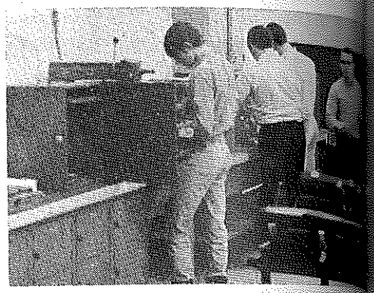
When preparing an instructional unit such as small gasoline engines for modular scheduling, the first words of advice are well known to all Boy Scouts — Be Prepared!!! Preparation does not mean for only today's and tomorrow's class, but for the entire time which has been allocated for the instructional 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 module. 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 the 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 fingertip. 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.



Detailed and individualized instruction is possible when adequate facilities and equipment are provided.

As the teacher plans the program he prepares his discussion topics. To supplement each of these discussions he will supplement the lesson with worksheets, one page plans, or similar written materials. To help provide the subject matter he may wish to use slides, filmstrips, 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 has 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 activities. These activities will involve exercises to be completed which will require tools and equipment. These exercise sheets, tools, and equipment, must be available for student use with a limited amount of unlocking of cabinets and moving of other items. This does place specific requirements on storage facilities for the supplies and equipment, and also for bench or other work space to be made available without moving materials left by another class. When several topics are being taught by

(Concluded on page 315)



Each small engine is stored in a box with a top shelf of basic tools. A rollaway cart with two tool cases is used for the more expensive and less frequently used tools. Each student is assigned a locker below the work bench where he stores his engine parts, shop clothing, and safety glasses.

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

STRUCTURING OJT FOR INNOVATION

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

Daniel E. Vogler

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

Innovators are not born, they are made. Innovators do not plan to fail, because they do not fail to plan. Progress is the innovator's most important product. And finally, the innovator is one who finds more than one way to skin a cat. With innovation in its proper perspective, let's look at how OJT can be structured to encourage innovation.

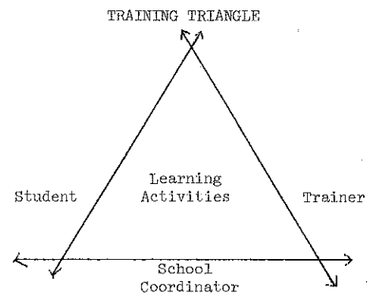
On-job-training has been, and still is, a valuable vehicle for developing occupational competencies. Indeed for decades, agricultural educators have recognized that OJT can provide an excellent medium for learning by doing. Traditionally, the supervised farming program provided the student with the opportunity to implement the knowledges and skills obtained from formal education. More recently, agricultural related occupations programs have relied on cooperative arrangements with businesses to provide learning by doing experiences.

The well planned, innovative OJT programs have been designed around competencies for the occupation. The super-innovative programs have allowed for expansion and/or refinement of occupational competencies. These competencies are the same as tasks of the occupation. Doing a task is an excellent measurement of competence. Thus the doing of a task becomes a learning activity.

Scrutiny of innovative programs will reveal that they foster an understandable alliance among the student, the employer, and the OJT sponsoring institution. The alliance nurtures mutual interests. OJT programs can be structured to create innovation. The structure will allow for flexibility while providing safeguards against inefficiency and exploitation.

OJT TRAINING TRIANGLE

The relationship between the student, the trainer and the school coordinator can be compared to a triangle. The optimum 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 of the three parties involved can cause the triangle to expand or to contract. An illustration of the triangle follows:



The expansion or contraction of the triangle must be regulated to create ideal training. The intersection of the legs of the triangle can be established through communications. The principal means of communications are the training agreement and the training plan. These means of communications are keys to structured flexibility. Structured flexibility promotes innovation.

Each segment of the training triangle must be supportive in nature. Training will not occur without all parties supporting the venture. A triangle does not exist without three connected legs, with each leg connected to the other two legs. Purposes of on-job-training dictate support: The trainee is involved in training to secure additional knowledges and skills which prepare him for the world of work. The trainer is involved in training to secure additional resources for his business. The school is involved in training in order to provide an optimum learning environment for the student. Trainees, trainers, and school coordinators identifying with this structure can facilitate an expanded, connected, and supported training triangle. Hence, an innovative program is produced.

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 innovator in OJT can be *made* through *planning*. *Progress* will result by finding *more ways* for learning. ◆◆◆

USING IMPROVEMENT PROJECTS TO SUPPLEMENT OCCUPATIONAL EXPERIENCE PROGRAMS IN AGRICULTURE

Ralph J. Woodin
Professor, Agricultural Education
The Ohio State University
Columbus, Ohio

Ralph J. Woodin

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 employment. The preparation of students of vocational agriculture for careers in off-farm agricultural occupations has resulted in a new interest in cooperative placement of students for the many different 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 agribusiness today may take two years of agriculture in his local high school and transfer to a specialized agricultural business 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 indeed 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?

Improvement projects provide a desirable supplement to cooperative experience for the boy who is preparing for an off-farm agricultural occupation.

Answer: Improvement projects permit the student to gain experience in a wider variety of agricultural operations. They provide valuable exploratory experience which help in deciding upon an agricultural career. They provide challenging real-life situations in which judgment abilities, skills, habits, and attitudes are developed. They can also lead to better understanding and cooperation between parents and students.

Question: What advantages do improvement projects offer the teacher?

Answer: Improvement projects provide a broader basis for classroom teaching. Production projects alone may include only a limited number of the most important farm enterprises. Teaching, based in part upon improvement projects, keeps in closer touch with the agriculture of the community. Still another advantage lies in permitting certain students with limited opportunities to develop worthwhile occupational experience programs through the inclusion of desirable improvement projects.

Question: How do improvement projects fit into a four-year vocational agriculture program?

Answer: Here are two examples:

The first, which is a program for a future farm operator, was developed by a boy who wanted to become a farm operator and who was above average in energy and ideas. This boy was the only son of the owner of a 240 acre farm. His parents were cooperative in developing this program, but insisted upon fair business-like procedures. It should be noted that each of these improvement projects relate to that instruction ordinarily offered in each year of the four-year production agriculture curriculum.

FOUR-YEAR FARMING PROGRAM WHICH INCLUDES APPROPRIATE IMPROVEMENT PROJECTS

	First	Second	Third	Fourth
Production Projects	1 Sow and Litter 5 Acres Corn	2 Sows and Litters 1 Beef Heifer 10 Acres Wheat	3 Sows and Litters 3 Beef Cows 10 Acres Corn	1/3 Interest in a 30 Sow Swine Herd 11 Acres Corn 5 Acres Wheat
Improvement Projects	Home Landscaping	Install Holding Pens & Chutes. Reforestation 200 Trees.	Wiring the Barn. Parasite Control Program for 22 Ewes.	Farm Accounts Farm Layouts

A PROGRAM FOR A FUTURE IMPLEMENT DEALER

This boy plans to enter his uncle's farm implement dealership upon graduation. He lives with his parents on a 60 acre part-time farm. He completed two years in his local high school and plans to take two years in an Agricultural Mechanics program at a nearby Area Vocational Center. This boy is above average in terms of scholastic ability, initiative and drive.

(Continued from page 300)

A FOUR-YEAR OCCUPATIONAL EXPERIENCE PROGRAM FOR A STUDENT IN AGRICULTURAL MECHANICS

	First	Second	Third	Fourth
Production Projects	12 Ewes and Lambs 6 Acres Soybeans	16 Ewes and Lambs 22 Acres Soybean (rented land)	16 Acres Soybeans 22 Acres Corn (rented land)	46 Acres Corn 22 Acres Soybeans (rented land)
Improvement Projects	Home Farm Shop	Home Farm Shop Fence building.	Build concrete table. Overhaul tractor.	Overhaul combine. Home library
Cooperative Work Experience			Cooperative work experience in machinery dealership — 600 hours	Cooperative work experience in machinery dealership — 600 hours

Question: What are some improvement projects especially appropriate for non-farm students?

Answer: Establishment of a home shop and mechanics center.
Development of a home agricultural library.
Renovation and management of a lawn.
Home landscape planning.
Building concrete structures for the home landscape including benches, walks and patios.
Construction of fences.
Painting of residences and other buildings.
Installation of extensions to the home wiring system.
Overhaul of small engines and lawn mowers.
Carrying out a maintenance program for home electric motors.
Growing a home vegetable garden.
Producing small fruits such as strawberries or raspberries.
Extensions to the plumbing system.
In addition, improvement projects may also be located on the farms of neighbors or relatives of these students. Many of those listed in the work section may be appropriate.

Question: How should classroom instruction be used to assist students in planning for improvement projects?

Answer: The program of instruction for each class should provide for timely class study of those improvement projects elected by one-third or more of a given class. Students electing other improvement projects should make plans for them on the basis of individualized study.

Question: How does the supervision of improvement projects differ?

Answer: There is no basic difference. The general purpose of instructional visits for either production or improvement projects is to help the student evaluate what he is doing, to help him see possible needs for improvement, to encourage him in his work, and to improve the cooperation of parents.

Question: Should financial records be kept on improvement projects?

Answer: Not for all improvement projects, but for most of them. For example, financial records would not be necessary on a dairy herd record project, but they would be appropriate for such improvement projects as electrical wiring, concrete work, beautification, reforestation, and of course, farm accounts.

Cost account records, similar to those kept in the project record book are most appropriate, since the project is an attempt to determine the financial costs involved in a particular operation. Both labor and cash costs are usually desirable.

Question: What help should teachers provide students in keeping records of improvement projects?

Answer: The records should be evaluated regularly and carefully. Class time should be used in which to prepare and to make comparisons of records of other students in the class.

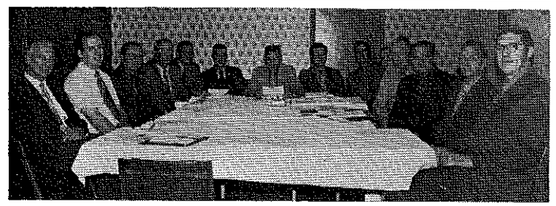
Question: How should students evaluate their improvement projects upon completion?

Answer: The educational value of any experience is enhanced by the individual considering thoughtfully what was gained through the experience. Such written evaluations may include only two or three paragraphs but even so, they will involve important and useful thinking on the part of the student.

Comparisons of the outcomes of groups of improvement projects are just as important as comparisons of other aspects of occupational experience. Such comparisons can provide a basis for some of our most practical teaching. We are short-changing our students who have worked on a project during the entire year, and put in many man hours, unless we take the time to discuss accomplishments and ways and means of future improvement.

Summary

Nietzsche says "A man has no ears for that which experience has given him no access." For many of today's students of vocational agriculture, improvement projects can provide that experience which is necessary for illuminating and understanding the curriculum of vocational agriculture on the part of the student. Teachers who guide students to intelligently select, plan, carry out, and evaluate improvement projects will find that their learning is enhanced and their potential for vocational success improved.



Kentucky teacher educators and state staff hold regular joint meetings to facilitate program planning and coordination of efforts. Seen at a recent meeting in Central Kentucky are (left to right): Dr. Harold Binkley and Charles Byers, University of Kentucky; Dr. Herbert Bruce, Instructional Materials Laboratory, University of Kentucky; D. E. Bayless, State Coordinator for Special Programs in Agriculture, W. Glenn Collins, Instructional Materials Laboratory, University of Kentucky; Jim Judge, State Coordinator for Adult and Young Farmer Programs; Robert Kelley, State Director of Agricultural Education; Dr. Lloyd Jacks, Murray State University; Dr. Ted Zimmer, Western Kentucky State University; Dr. Joe Bendixen, Morehead State University; James Maddox, Assistant State Director; Eldon Heathcott, Murray State University; Dr. Jim McGuire, Western Kentucky State University; and Dr. Maynard Iverson, University of Kentucky. (Photo by Dr. Maynard Iverson, University of Kentucky)

TRAINING PLANS— FOR AGRICULTURAL EXPERIENCE PROGRAMS

James Albracht,
Coordinator, Agricultural Education
Kansas State University

James Albracht

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 workers were needed. Vocational agriculture was then asked to supply workers for these new and expanding occupations.

For the past four years, a 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 with experiences necessary for 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 instructors 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 beef herdsman, agricultural chemical employee, assistant dairy herdsman, elevator mill employee, feedlot assistant, feed store employee, farm fuel supplier, greenhouse employee, lumber yard employee, livestock buyer, nursery employee, farm machinery mechanic, farm power mechanic, assistant sheep herdsman, assistant swine herdsmen, 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 teacher, 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. By having the student assist in the selection 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

The employer, the student, and the teacher jointly select the competencies which are to be included in the student's training program.

Plan for preparation as a Feedlot Assistant:

Where Learned: In Class	Where Learned: On Job	Competency and/or Experience Required
		I. Feedlot facilities and requirements
		A. Requirements of the job
		B. Space requirement per head
		C. Types of feedlot fence
		D. Bunk space requirement
		E. Shelter
		F. Working pens, chutes, scales and sick pens
		G. Water requirements
		II. Purchasing or contracting cattle
		A. Use of teletype to determine price
		B. Bidding on cattle
		C. Contracting cattle
		D. Yardage fee in contracting
		E. Grain markup in contracting feeders
		F. Filling out contract
		III. Feed preparation and loading
		A. Hay processing
		B. Storage of feed grains
		C. Operation of feed preparation equipment
		D. Weighing and distributing ingredients for ration
		E. Mixing and blending
		F. Loading feed
		G. Recording ration ingredients and weigh out
		IV. Animal Nutrition
		A. Animal requirements
		B. Balancing a ration
		C. Starting cattle on feed
		D. Changing a ration toward full feed
		E. Calculating a full feed ration
		F. Use of feed additives
		V. Animal Health and Identification
		A. Health vaccination program for incoming cattle
		B. Identification of penned cattle
		C. Worming cattle
		D. Identifying and treating bloat
		E. Identifying and treating foot rot
		F. Identifying and treating pinkeye
		G. Identifying founder
		H. Identifying cattle off-feed
		I. Vaccinating and treating animals
		J. Sorting sick animals in pen
		VI. Animal Feeding
		A. Determining feed schedule
		B. Operation of truck scales
		C. Operation of feed truck
		D. Recording feed distributed to pens
		E. Adjusting ration according to bunk carry-over
		VII. Records
		A. Contracts
		B. Recording daily feed distributed from truck
		C. Figuring feed efficiency
		D. Figuring cost per pound of grain
		E. Recording daily charges
		F. Figuring break even point
		VIII. Marketing
		A. Use of teletype in determining price
		B. Futures contract and hedging
		C. Sorting for uniformity
		D. Grade and yield marketing
		E. Figuring shrinkage
		IX. Animal Waste Management
		A. Use of lagoons and diversions to prevent run-off
		B. Familiar with state sanitation requirements
		C. Disposal of solids
		D.

(Concluded on next page)

Although the ACE program is comparatively new in Kansas, approximately one-third of the vocational agriculture departments have established programs. With a good training plan the program not only provides the student with job competencies and successful job placement but it also can serve as a motivation for post high school education and for the proper choice of an occupation. ◆◆◆

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

Thomas R. Stitt
Agriculture Education Specialist
International Services Division,
Southern Illinois University, Carbondale

Thomas R. Stitt

Disadvantaged youth, along with its many synonyms has become the key to attention, new programs and money for the field of education. Special programs for students with special needs have grown into a nation-wide network, substantially supported at the local, state and national level. Politicians and poor alike have responded to the call to do something for the disadvantaged. Considerable work had been done to categorize and compartmentalize the disadvantaged. It has been established that one can be economically, emotionally, culturally or educationally disadvantaged. The degree or type is overshadowed by the fact that the student is disadvantaged.

From the beginning the term has seemed offensive. As I opened the *Agricultural Education Magazine* and noticed that we as a profession were devoting a complete issue to *Disadvantaged Youth*, I again became incensed. A trip to the **Webster's Seventh New Collegiate Dictionary** did not improve my position. It states: "1. loss or damage especially to reputation, credit or finance: DETRIMENT 2a. an unfavorable, inferior, or prejudicial condition. b. HANDICAP." It appears that as educators we have done just that. By placing a student in a *"disadvantage"* program the school may inflict damage to his reputation and future credit through the prejudice of placing the student in an unfavorable or inferior position which becomes a future handicap, i.e. he has been titled "disadvantaged."

Those of you who are involved in the operation of sound programs for the "Disadvantaged" youth will by this point be furious. Before you cancel your subscription, finish the article. I do not mean to imply that quality programs should be changed — **just the name.**

May I consider 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 composed 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 85 per cent agrarian, with the average annual income at the last census estimated to be $87.00 equivalent per family. "Disadvantaged", to be sure, by American standards. However, it has been the choice of the State Department of 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 sematics. 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 uncomplementary substitute for the "dumping grounds" which was previously used by some of our peers in refering 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 actively seek a solution, develop a professional consensus and exert the necessary leadership to alert the educational and political fields of the positive contribution our involvement of worthwhile educational endeavors has to offer. In essence, THINK POSITIVELY. ◆◆◆

"HANDS-ON AT KIRKWOOD"

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

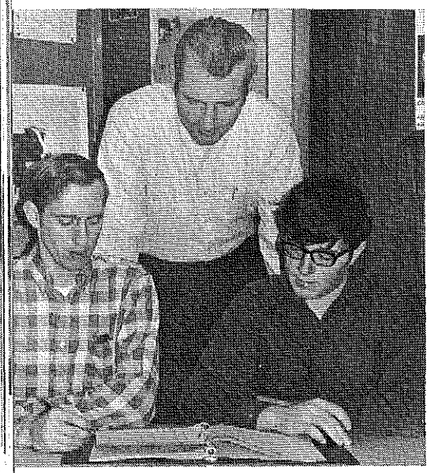
Howard Peyton

A practical approach to agriculture education through a farm laboratory and business enterprise at an Iowa community college.

Farm money management is a topic which is not easily taught through textbooks. At Kirkwood Community College in East Central Iowa, we are engaged in a practical demonstration in the teaching of money-handling and management.

It stands to reason that learning farm money management is best accomplished by realistic business examples. The closer agricultural teachers can bring their students to a hands-on learning situation the better.

But the colleges and universities are generally not in a position to place the student in a regular hands-on situation. The walled-in classroom and the laboratory, modern as they may be, are as close as many agricultural students come to real-life learning in too many cases.



An enterprise instructor, Mr. Schrage, overlooks an enterprise record keeping problem. In-depth enterprise records are kept on all enterprise operations for systematic comparisons and analysis.

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 injecting 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 head count changes rapidly as our enterprise records and market fluctuation dictate. This past winter, for instance, the beef enterprise consisted of 400 head, including 180 stock cows and the remainder of calves and feeders. With the addition of a new farrowing house we hope to farrow six times a year in 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 springers. The sheep flock consists of 30 head which includes about half purebreds.

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

Students may select their enterprise at the beginning of each school quarter. From then on, it is up to the student to decide whether to stick 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 involved as students put together a meaningful educational program.

Once assigned to an enterprise, the student finds himself quickly caught up in the day-to-day responsibilities of the farm business. All enterprise experience takes place during the morning, three hours each day. Although the program is organized to offer a broad agricultural experience, there is no way the

(Continued on page 308)

PROMOTING "EXCITEMENT OF LEARNING"

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

Ben Allen Burns

We must set up ways for teachers and students to become mutually involved. We must abolish the philosophy of "pass or fail" in our high schools. Teachers have to see their students as individuals. Students have to feel the excitement of learning, how to solve problems and discovering things for themselves — not just sit there memorizing everything in sight, or finishing a problem within an hour.

Students do not learn or succeed at the same level. Teachers in effect should be telling the student, "I will not fail you. I won't give you credit for what you don't do, but I won't mark you down as a failure."

Of course, teachers have to keep track of a student's performance against certain standards. This can be done through written and oral answers. Then instead of issuing an A-B-C type report card, the teacher better serves the student and parents by conference and perhaps a written commentary from time to time on what kind of work the student is doing and an analysis of his strong and weak points.

If a student's performance is way out of line with the rest of his age group in a particular subject, it is best to move him into another group for that subject for a time so he can achieve on the same level with at least some of the classmates. Don't wait until the whole year is over and then flunk him. Early success is important and there is no stigma in moving him immediately to a class where he can succeed. Don't wait for him to suffer months of failure before trying to help him.

Assuming that no one will give up the traditional marks, I recommend "A" be used for outstanding proficiency, "B" for average proficiency, and "C" for minimum proficiency. Leave the grading space blank if the youngster's work did not meet at least minimum standards of a "C". If that happens, he should repeat parts of the subject with which he experienced difficulty.

The first question that comes to the teacher's mind is, "How do you keep discipline — or are students free to do as they please?" The answer is **no.** Work has to be done in an orderly and cooperative manner, but not necessarily in complete quiet on the part of the students. I don't think physical or other punishment, which is really a form of reprisal, is going to produce anything more than conformity and resentment. Discipline has to be aimed at helping the youngster figure out successful ways of behavior. If a student keeps interrupting, you might discuss his actions with him. Encourage him to evaluate his behavior, and maybe exclude him from class for a short time until he can return with a plan for improving his behavior. Ask him to make a commitment to follow that plan, and then hold him to that commitment. That is, I would not under any circumstance excuse him if he did not keep to his commitment. As a teacher, I would let him know that I care enough about him as a person to realize that he is hurting himself by not keeping his commitment. If I accept his excuse without question, he would know I don't really care about him.

Today's young people need teachers who will keep working with them until commitments are fulfilled. Only then will youngsters begin to get the feeling of success — not the feeling of failure. They will have started to learn that they can be responsible, which is far better than just conforming. The task of memorizing material must be carefully evaluated as to its effectiveness in the learning process. To say that a student understands something because he has memorized it is silly. Unless he knows what it means and how to use it, it is useless. This is what thoughtful youngsters are rebelling against. When a student begins to depend on memory rather than on constructive thinking, it provides him with a thin potential for identity and for discovering the world and his place in it. Many failures and also many bright students are turned off because they consider their education irrelevant — and they are often right.

If teachers are to make sense to disadvantaged and handicapped students, it will be necessary for them to become involved with individual students. This can only be done in small groups or individually. It will be necessary for classes to be small.

A good school system may spend $1,000.00 per child and a poor system $300.00. We spend our money at the wrong end — to patch up the failures. If we can prevent failures we can save money. It isn't even a question of spending more money, but of spending time and changing the philosophy of operation in order for schools to be more responsive to students. It is a matter of understanding that youngsters didn't make this society. We created it and we must be willing to provide the kind of schools to help them live in it. As long as we do not do this we will pay heavily for the failures — the runaways, the violent ones, the welfare cases in our society. **We must work hard at making learning an exciting process.** ◆ ◆ ◆

Today's young people need teachers who will keep working with them until commitments are fulfilled.

Early Leader in Agricultural Education:

JOHN A. JAMES

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 processes 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 scene who brought previous local tag teaching experience to the teacher training job.)
2. The contributions made as superintendent and ag instructor at 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 principles 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 farmer classes.
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 suggested statewide course of study for local vo-ag teachers.

Professor James was a native Wisconsinite, born in 1884 in Livingston, a village in the rich farming country of southwestern Wisconsin. After completing elementary and secondary schools, he enrolled at what was then the state Normal School (presently the Wisconsin State University) at Platteville, Wisconsin. In 1909 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 summer course at the College of Agriculture at Madison, taking the feeds and feeding course under Dean Henry, and worked under Professor Beckendorf in Dairy Manufacturing, and Professor P. A. Moore in Agronomy. This marked the beginning of his technical 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 administrator, teacher, and adviser 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 arranged for student teaching experiences for the prospective teachers in local high schools rather than at the campus high school (Wisconsin High) which was used by other student teachers.

Professor James became a by-word for his interest in students both as a teacher educator and as assistant dean. He was concerned not only with their educational welfare, but he was active in placing them in jobs. He was recognized as an educational innovator, and was elected President of the Midwest Vocational Association. During his 40 years at the University of Wisconsin he had a total of more seniors graduating in his department than any other department in the College of Agriculture.

The beginning of systematic, regular summer session short courses for vo-ag teachers was made by Professor James. He also was a leader in the development of a suggested statewide curricula for local teachers of agriculture.

Today, former students of Professor J. A. James are among the leaders in all walks of life, and they enjoy dropping in to visit him at his Winter Park, Florida home. As one visits with them about their life, they invariably credit in part their success to the influences of their former teacher — dedicated educational innovator, builder of men. ◆ ◆ ◆

Walter T. Bjoraker is Professor and Chairman, Department of Agriculture and Extension Education, College of Agricultural and Life Sciences, The University of Wisconsin, Madison.

Walter T. Bjoraker

THE FUTURE FARMERS OF COLOMBIA

Nestor Osorio Donado
Supervisor for Vocational Agriculture
Ministry of Education
Colombia, South America

Nestor Osorio Donado

In each of the 62 Vocational Agricultural schools of Colombia, there is a youth organization called "Club of the Future Farmers of Colombia" to serve the students in these schools. The clubs or chapters are organizations whose members are the sons and daughters of farmers, who decide to study in one of the vocational agricultural schools. The chapter is an integral part of the program in vocational agriculture and also a part of the general program of the total school. Many of the objectives of vocational agricultural education are realized through the activities of the chapters because they are believed to be the best medium to use in obtaining such goals. Therefore, the Future Farmers of Colombia are just one link in the chain of activities of the school.

The chapters of the Future Farmers of Colombia are designed to give the students of vocational agriculture a series of experiences, abilities, and dexterity which enables each to do a more efficient job. It improves in each the ability to express himself, to be a leader, to learn the democratic process, to have the desire to serve the community, the ability to make decisions, the love of vocational education, the habit of studying, and research and healthy recreation. It arouses in the students the interest for living in rural areas, and gives them a strong desire for improving the agriculture of Colombia. With the active participation of its members in the Club of Future Farmers of Colombia in each school, the student employs a series of activities that enables him to be more efficient in his future participation as a member of the rural community, and therefore, he can be an influence in the agricultural improvement of the country.

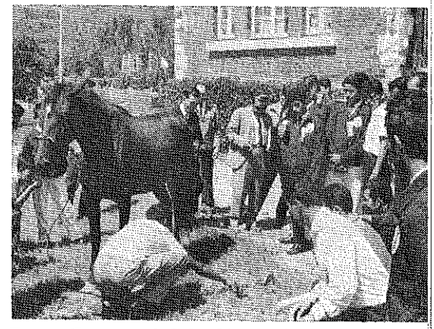
The young person learns practical skills, and the ability he acquires enables him to teach the farmers modern methods of production. When the student leaves school and makes a life of his own, he can see what the main problems are in agricultural production. He can contribute with his knowledge and experience to the integral agricultural improvement of the country.

The clubs which were created in the different agricultural schools, and those created by the National Federation of Coffee Growers, had been working separately since 1941. The necessity of creating an organization that would coordinate the different activities of the clubs soon became evident. In 1966 the First National Convention of the Future Farmers of Colombia took place in the rural area of Ibague-Tolima. Twelve vocational agricultural schools and ten rural centers were represented. As a result of this first convention, it was agreed that a convention should be held every two years. Also the members of the National Committee were elected.

The second national convention was held in the vocational agricultural school of Valsalice-Candinamarca on December 5-8, 1968 and the third convention was held on October 28-30, 1970. At the last two conventions there were delegates from the Future Farmers of America (Vice President Joe Martinez, Lennie H. Gamage, Manager of International Programs, and Adold Trujillo).

For 1971 there were six regional conventions planned, since the country is divided into six regions.

In order to stimulate the good functioning of the Future Farmers of Colombia, a national committee was organized in Bogota. This Committee is formed of representatives of the Ministry of Education and the National Federation of Coffee Growers. These two organizations promote a program of agricultural education through the vocational schools and rural agricultural centers. This national committee began its operations on June 17, 1966 when its members were elected



Future Farmers of Colombia shoeing horses at the Third National Convention.

to go to the First National Convention of the Future Farmers of Colombia which was held in Ibague.

The object of the committee is to (1) integrate all the chapters in the schools of vocational education, (2) bring together professional people and teachers with experience in agriculture, so as to stimulate the systematic education of the rural youth, (3) obtain economic resources from organizations and individuals in Colombia and foreign countries in order to finance the activities of the clubs, (4) let the government know that the clubs have as their goals to create better opportunities for the young farmer who is in need of agricultural education.

The National organization has 12,000 active members. These chapters are provided with technical information, illustrated material, publications, and methods of teaching others concerning agricultural practices.

The graduates of these schools live in rural areas and work as progressive farmers on the farms of their parents or relatives, with the financial help of credit entities like the National Federation of Coffee Growers, the Agricultural Bank, and the Cattle Bank. This work is supervised by the teachers of vocational agriculture along with the agronomists and veterinarians working with Rural Extension. Other graduates

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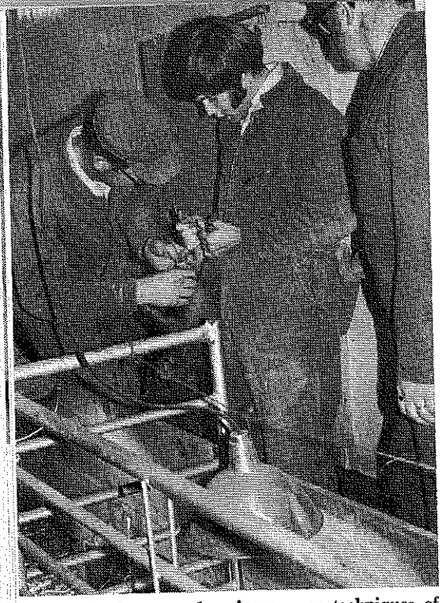


Students are learning proper techniques of swine husbandry during a three hour morning enterprise session under the careful supervision of their instructor, Mr. Juhl.

(Peyton—from page 304)

student can escape constant exposure to money management.

A two-part record system is part of every enterprise. The students in each enterprise are responsible for the cash flow-net worth statement for that enterprise. The cash-flow budget is constructed in advance of each school year, but is adjusted as current trends develop.

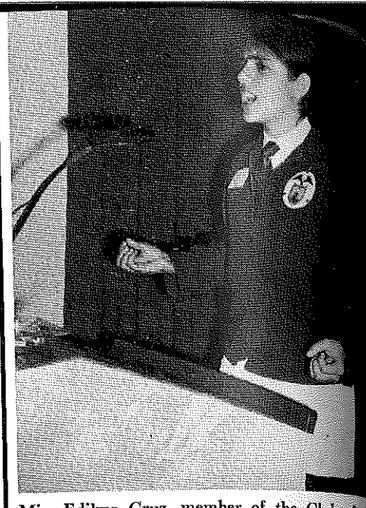
Our first year's experience with the enterprise record system has proven so realistic that it hurts. Students quickly find that they are not in a sheltered classroom environment. They find themselves facing all of the problems of real farming operations, including the meeting of financial obligations.

Some facilities and equipment have even been purchased on lease-purchase payments, along with such needs as deferred payments on fertilizer, chemicals and seed corn. After 14 years of farming myself, I am able to testify to the students that deferred payments are very real — and sometimes cause for lost sleep.

The more formal classroom instructor is not outmoded at Kirkwood. During the afternoon three hours, the production agriculture student attends classes on such topics as livestock and crop production, agricultural finance, record keeping, marketing, and communications. Even during these classes we keep in mind that a cornfield or beef feed lot can be just as effective as a classroom and sometimes more so.

At the last meeting of our laymen program advisory committee, members expressed a desire to see even more money management incorporated into our program. Recently I read an article centering around agriculture student's opinions and found the same sentiment expressed there. Many of these young people seem to feel that farm financial management is as important as any technical skill. I agree, although I feel that the two must go hand-in-hand.

At Kirkwood we do not claim to have all of the answers, but we feel we are on the right track. In the future we may change our system from time to time, but I feel we must always do so with the thought in mind of "hands-on" education. If we are to remain a true community college and teach production agriculture, I feel it a necessity to keep the students involved in planning. Not only in husbandry and records, but in complete financial matters. ◆ ◆ ◆



Miss Edilma Cruz, member of the Club of Future Farmers of Colombia in Jardin Antioquia, in a speech contest of the Third National Convention (1970).

(Donado—from page 307)

continue their studies in technical education in the Agricultural Institutes. These additional studies enable the students to become professionals, giving them the opportunity to attend the university and pursue higher agricultural studies. ◆ ◆ ◆

EDITOR'S NOTE:

Mr. Donado is a native of Colombia, and during his educational program as a youth, received a high school diploma, a Practical Agricultural diploma, an Agricultural Expert diploma, and a degree in Law. He is rated by the ministry of Education in Colombia as a specialist in Vocational Agriculture Education and Community Development, serving in this capacity during the last 16 years. He organized the Future Farmers of Colombia and most of the curriculum materials which have been developed for Vocational Agriculture for Colombia. He has attended the National Future Farmers Convention in Kansas City. He is presently writing a book called, *Vocational Agricultural Education in Colombia.*

BOOK REVIEWS

Gerald R. Fuller
University of Vermont

EDUCATORS GUIDE TO FREE FILMS. Randolph, Wisconsin: Educators Progress Service, 1970, 790 pps., $10.75.

This 30th edition contains 5,002 titles, of which 1,284 are new. A total of 1,344 films were withdrawn during the year and have been deleted from the listings. Many rental films are available to "Guide" users without charge.

Every school system must have this publication.

EDUCATORS GUIDE TO FREE FILMSTRIPS. Randolph, Wisconsin: Educators Progress Service, 1970, 184 pp., $8.50.

This twenty-second annual edition lists 139 silent filmstrips, 164 sound filmstrips, and 157 sets of slides and 2 sets of transparencies. The borrower may retain permanently 29 color and 4 black and white filmstrips. New titles account for 114 of the 462 listings.

Be sure your school has one copy of this publication for teacher use.

TRACTOR OPERATION AND DAILY CARE. Athens, Georgia: American Association for Vocational Instruction Materials, 1970, Revised, 120 pp., $4.80.

Nominal revisions in content have been made by J. M. Fore, Professor of Agricultural Engineering, N. C. State University and in illustrations by George Smith, Art Director, AAVIM. The material is well presented and supported with abundant multi-colored illustrations. A must in teaching agricultural mechanics.

STUDENTS, PARENTS, AND TEACHERS COOPERATE FOR STUDENT LEARNING AND MOTIVATION

Leo Peterson
Vocational Agriculture Teacher
Westwood High School
Mesa, Arizona

The Westwood Agriculture Department is a better department today from having tried a collective effort of students, teachers, and parents.

The vocational agriculture department at Westwood High School in Mesa, Arizona was caught in a dilemma without a solution. There were three problems which needed to be solved.

First, the Future Farmers of America chapter needed money for sponsoring activities. Members were not satisfied with selling lollipops, candy bars, pencils, and other various items. The second problem was how to arrange student activities to give the students actual experience in conservation, forestry, and outdoor recreation. The vo-ag department had just added a new course consisting of these subjects and it was difficult to find experiences of application. The **third** problem was how to involve the parents more directly in working with their sons and daughters, thus cultivating a feeling of responsibility for their education as well as to have a genuine experience of fellowship with their child which could draw them closer together.

A new idea was born: The teachers and officers of the F.F.A. decided a wood-cutting project in the mountains would be a partial answer to solving the first two problems. They also decided that this activity might solve the third problem and be a good opportunity to include parents and friends, thus allowing the students, parents, and teachers to become closer and have a common interest and goal in the educational process.

A plan was formulated after several committee meetings with students and teachers. Parents were consulted and given opportunity to express their opinion on the problem. Teachers and selected students with previous experience went to the mountains to make preparations for the following week, when all of the students would participate.

Chain saws and axes had to be inspected, a wood permit had to be obtained from the forest service, and sufficient long wood had to be brought back to the school to allow all students the opportunity to be checked out on a chain saw for operational safety.

Students had to receive instruction not only on using saws but also on the use of axes. They had to learn how to fell a tree, proper procedures for cutting and trimming trees, as well as what to do with limbs which were left over, to meet the forest service ecology requirements.

All students who were going had to prepare to leave at four o'clock in the morning. Each student was required to buy club insurance to allow some protection in case of a serious accident. (Incidentally, the only mishap was a cut finger). Each student was required to have a personal safety check-out on any equipment he planned to use.

The only problem left now was how to get all of this wood back from the mountains. Several fathers and friends offered to accompany the group furnishing trucks, trailers and pickups. Others came along just to be with groups and help give supervision where the teachers could not. Leo Peterson, Richard Sawyer and Richard Heward, vocational agriculture teachers, were grateful to have these dads along. You can imagine how difficult it would be to watch and help 65 young, eager boys and girls scattered throughout the forest, all sawing, cutting and loading wood at the same time. But thanks to the interest of the parents, and with their help and supervision, this became a well-conducted project. As one dad said, "I haven't been so tired in the last year." With the aid of the teachers, parents, three former students and two older brothers, the F.F.A. was able to cut and haul back approximately 15 cords of wood, to be sold at $45 a cord.

Even though everyone was tired and worn out from bucking green trees all day, all said it was a rewarding experience and worth the cost, time, and effort.

The sale of the wood was not difficult with so many students, parents, and friends involved. There were sales 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 had solved the first problem, and sufficient money was available for chapter activities.

The pleasant thing about the money making part of the project was that students learned many skills while securing, cutting, and preparing the wood for sale, along with public relations in selling and delivering the wood. It was a project truly worthy of 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 of study in the area of conservation and forestry. Learning activities were implemented to give application as well as information on conservation and forestry. Later units on outdoor 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 service a chain saw as well as other forestry tools. Even the proper use of an ax had real meaning. Proper safety procedures needed to be studied and applied. Principles of forestry, conservation and ecology were studied before the project was undertaken. Each student could even specialize in a given area to prepare for the project. Those taking shop were motivated in studying principles and operation of chain saws. They now needed to know how to repair and service a chain saw as well as sharpening

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ESPerimentation—Discovery: A Teaching Method

Richard F. Welton
Specialist, Agricultural Education
Southern Illinois University, Carbondale

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 repertoire for vocational educators in agriculture 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 experimentation 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 "experimentation as the research exercise done in the laboratory; discovery as the new learning which unfolds before the student as a result of the ordered exercise."[1] 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 education today. By incorporating the experimentation-discovery method into instructional programs, teachers of agricultural education will open doors of learning which were heretofore closed to the student of agricultural science.

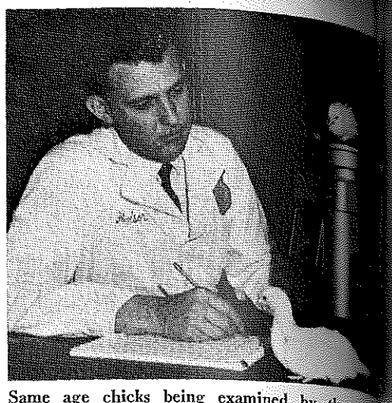
As teachers search for experiments to use in their instructional program, they soon discover that availability is limited. Agricultural science experiments are generally not abundant because they are difficult to assemble and time consuming to prepare. However, here is an easily set-up experiment which 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 hatcheries, feed dealers, and the school. The four week study involved 200 male, single combed, white leghorn chicks. The chicks were divided into six groups of 30 birds each and one of 20 birds. Each group was further divided into pens of ten each.

The chick diet components consisted of four basic ingredients: 1) ground corn; 2) soybean oil meal—50 per cent protein; 3) vitamin pre-mix; and 4) mineral pre-mix. Nutritional requirements[2] for the chicks from birth to eight weeks of age were used to determine the nutritional level of the control diet.

TABLE I
KIND AND AMOUNT OF FOOD USED (POUNDS)

Treatment	Corn	Soybean meal	Mineral pre-mix	Vitamin pre-mix	Total
1	25.8	12.0	1.8	.4	40
2	26.2	12.0	1.8	0	40
3	27.6	12.0	0	.4	40
4	28.0	12.0	0	0	40
5	37.8	0	1.8	.4	40
6	38.2	0	1.8	0	40
7	40.0	0	0	0	40
TOTAL	223.6	48	7.2	1.2	280



Same age chicks being examined by the author as they show the effects of the corn only and control diets.

PREPARING DIET

The basis of the vitamin pre-mix was the Ray Ewing Grow-Lay Pre-Mix, No. 6399.[3] To raise the nutritional level of the ration to minimum requirements as would be needed when feeding only corn, supplemental vitamins were added. Finely ground corn was added to bring the total weight of the vitamin pre-mix 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-3775[4] and one pound of iodized salt were combined as a mineral pre-mix. The mineral mix was ground to a texture of table salt and combined with the iodized salt for ten minutes.

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

PREPARING EQUIPMENT

Before placing the chicks in the battery, all equipment was thoroughly cleaned. The brooder temperature was set at approximately 100° F. Every week the temperature was reduced five to seven degrees until the room temperature of 70° F was reached. The 20 pens were identified with a brief description of each treatment; thus making it easier for visitors to understand the experimental differences.

Initially, 500 grams of feed were placed in a narrow, tall mound in the feeders for each group of ten birds. If the chicks did not begin to eat within a few hours, a paper towel with feed on it was placed in the pen to encourage consumption. The water troughs were filled with fresh water.

Observations were made daily and recorded on a data sheet. The amount of feed added to each trough was also recorded on the data sheet.

There was some feed wastage when troughs were filled too full. To avoid this waste, the feed troughs were not kept over one-half full after the chicks were a week old. Spilled feed was placed back into the troughs. The water troughs were washed every week and the litter paper changed regularly to assure cleanliness and sanitation.

At the end of each week, the chicks and remaining feed from each pen were weighed. This information was recorded on the data sheet. The weight of the feed in the trough subtracted from the amount fed during the week was the weekly feed consumption. The weight of dead birds was also recorded, as this information was necessary for proper calculation of feed efficiency.

RECAPITULATION OF DATA

For summary purposes, here is how to determine the factors needed:

1. Divide the original number of chicks in each pen into the number which have died by the end of each week to get the *percentage of mortality* —cumulative.
2. Divide the weight of the chicks in each pen by the number of birds in the pen to get the *average weight.*
3. Add the present weight of the chicks in each pen, to date, to the weight of the pen of birds to get the *gain*—cumulative.
4. Determine the total amount of feed consumed by each pen of birds, to date, to get *feed consumption* —cumulative.
5. Divide feed consumption by gain to get *feed efficiency*—feed/gain.

TABLE 2
EFFECT OF DIET UPON BODY WEIGHT GAIN

Dietary Deficiency	Average Body Weight (grams) Start	1st Week	2nd Week	3rd Week	4th Week	Overall Average Gain
1 none	34	72	130	212	309	275
2 vitamin	34	65	94	132	160	126
3 mineral	33	47	58	64	73	40
4 vitamin and mineral	33	45	45	45	46	13
5 protein	32	45	55	69	82	50
6 protein and vitamin	33	49	62	76	94	61
7 protein, vitamin and mineral	32	38	37	37	39	7

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 were 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 feed components in the diet formulation was reflected in the overall efficiency of the respective treatments.

—Feed consumption as well as feed efficiency was a function of the growth rate. The omission of both vitamins and minerals in different combinations from the diets had the greatest effect on percentage of mortality. The lack of only one feed component in the diet did not appreciably effect loss of the birds during the study.

IN CONCLUSION

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

—An opportunity for the inquisitive, imaginative student to become a higher achiever.

—An opportunity for the expansion and utilization of imaginative student abilities.

—An appreciation and understanding of the multiplicity of sciences related to agriculture.

—An insight into career opportunities in agricultural sciences. ◆◆◆

1. Drawbaugh, Charles C., and Hull, William L. *Agricultural Education: Approaches to Learning and Teaching.* Columbus, Ohio: Charles E. Merrill Publishing Company, 1971.
2. *Nutrient Requirements for Chickens.* Washington, D.C.: National Research Council, National Academy of Science.
3. Grow-Lay Premix 6399, manufactured by Agriculture Division, Hoffman-Roche Inc., Nultey, N.J.
4. Purina Livestock Mineral SP-3775, manufactured by Ralston Purina Company, St. Louis, Mo.

Information about author
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(Peterson—from page 309)

the chains. After the initial project, many class hours were spent in review of the activities which the students were engaged in during the actual cutting and hauling of the lumber, and processing for market.

Perhaps the best thing that came out of the activity was the solution of the third problem. We definitely had a tool to involve students and parents—all students that had parents accompany them were pleased, and the stigma of having Dad along as being undesirable, was gone. They were ready to bring him along again next year as well as encourage others to do so. The Agriculture Department and F.F.A. had alot of new friends that were ready to help and back them on many other department activities. Many of the parents have expressed desire to help in the future years. Others who did not go have expressed a desire to attend.

The Westwood Agriculture Department is a better department today from having tried a collective effort of students, teachers and parents. ◆◆◆

APPLYING "LEARNING BY DOING" IN TEACHING

Raymond E. Crilley
Teacher of Agriculture
Northwestern High School
Albion, Pennsylvania

Raymond E. Crilley

The more people involved in the original planning of any educational endeavor, the greater the chances for success.

The FFA motto begins "Learning to do, Doing to learn". This motto is also an effective basis for any type of vocational education. This certainly 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 article.

One of these methods is an actual production situation such as an FFA farm. Corn could be the only crop or it could be 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 conforming to the usual cultural practices of the area, or could be planted according to the latest recommended practices of the Extension Service of the State University.

The students should be required to decide what 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 plowing (fall or spring) or use of minimum tillage, method of applying fertilizer, fitting the soil, row spacing, variety of seed, determination of planting date, 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 comparison of the results with local, regional and state production records.

Some potential problems with the production method include: financing, a site for the crop, labor to carry out the project, coordination of the management jobs, machinery, storage site, etc. Some of these problems may be solved by obtaining the cooperation 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. Some departments having similar programs already have machinery and land to carry out this type of production.

A **second method** of crop production is **experimentation.** This area is practically unlimited as to the possibilities for education. For this reason, some limits must be established so that experiment does not become unmanageable. If the project is too limited, the education derived from the experiment may not justify work involved. 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 plots is not as important as uniformity of conditions such as soil type, drainage, microclimate, etc. Of course the larger the plots, the more reliable the results will be. Plots using different chemical weed controls and a control plot using no chemical will provide different management prerogatives. After determining what chemicals to use and the rates of each, lay out the plots.

Using the following example, two chemical weed controls (Aatrex and 2,4-D) and a control plot having no chemical, will be laid out. If the corn rows are to run north and south, divide the area into thirds, applying Aatrex to one, 2,4-D to one, and nothing to the remaining one.

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 accommodate these additional variables. Since the weed control variables were layed out in a north-south direction, the additional liquid nitrogen rates can be layed out in an east-west direction. Three variables, 100 pounds of additional actual nitrogen, 50 pounds of additional actual nitrogen and no additional nitrogen are used.

After the plots have been divided into equal thirds in the east-west direction, apply the 100 pound rate to one third, the 50 pound rate to another and the 0 rate to the last third. This will result in a pattern shown below:

North

Aatrex 100 Lbs. Nitrogen	No chem. control 100 Lbs. Nitrogen	2,4-D 100 Lbs. Nitrogen
Aatrex 0 Lbs. Nitrogen	No chem. control 0 Lbs. Nitrogen	2,4-D 0 Lbs. Nitrogen
Aatrex 50 Lbs. Nitrogen	No chem. control 50 Lbs. Nitrogen	2,4-D 50 Lbs. Nitrogen

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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 VISITATIONS TO STUDENT.

It has become quite evident over the past several years that supervisory visits of students and their projects and or occupational experiences by teachers of Vocational Agriculture has not been at the desired level. This has and is causing much concern among local and state administrative and supervisory personnel. Although all of us readily agree that vocational agricultural education has taken new and innovative directions, which have unquestionably greatly enhanced and widened the scope of the program, there is absolutely nothing that can substitute adequately for the tremendous importance and impact achieved through visitations of the students.

It should be fully realized by all that the traditional one acre of corn, the pig, the calf, etc. no longer exist as the major projects of the students of vocational agriculture. One must be quick to state that production agriculture is very important in our program and, hopefully, always will be. Many students begin their supervised production programs with projects such as the above or similar to these. This fact should never be overlooked. However, teachers must reconcile themselves to the trend toward off-farm agriculture, agribusiness, or whatever term is used. Students who participate in this phase of vocational agriculture should and must have supervised visits from their vocational agriculture teachers just as those do who are in production agriculture.

In some instances, it is apparent that teachers are confused in their attitude toward supervised visits of their students, especially during the freshman and sophomore years where the student is in an urban situation and plans on selecting a phase of the agri-related program upon entering his or her junior year.

The question is now asked: "Why visit 9th and 10th grade students who are enrolled in basic vocational agriculture with plans to make their occupational choice in an agri-related field upon entry into their junior year?" The answer to this question will depend on several different factors.

The interest of the teacher in his students is of immense importance. *All freshmen or first year students should be visited on a schedule organized by the teacher.* This applies from the most rural situation to the most urban situation which may exist. Prior to these supervisory visits, the teacher should inform himself with any facts or circumstances surrounding individual situations which might assist in making these visits more meaningful and helpful to the student, the parent, and to himself. Prior information may be obtained in different ways. Questionnaires, classroom discussions, individual conferences, discussions with guidance counselors, etc. often provide insights to facts which will afford more meaningful visits to the homes of the students.

Another factor in answer to the question of "why supervisory visits" is the individual situation of the students. At first glance into a student and his or her surrounding circumstances, it might seem a total waste of the teacher's, student's, and parent's time in an effort of this type. However, upon the initial visit, teachers have found to their pleasant surprise that underneath this surface of information, there often lies a great deal of potential good which can be accomplished for these students.

Many teachers have cited numerous examples of these situations. One veteran teacher related the experience he encountered with a young student enrolling in his first year of vocational agriculture. This particular student lived in a strictly urban surrounding. Upon researching his situation before making his initial visit to the home, the teacher was discouraged about finding any possibilities of helping Joe. However, in his conference with Joe and his parents it became apparent why the young student had scheduled vocational 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 did not have facilities for nor could afford. Since the department also served a rural area, this teacher and student worked out a program where the student was placed on a dairy farm in the afternoons, and was trained for and eventually given the job of caring for the calves and replacement heifers. Other responsibilities were soon added. As a senior he applied for the Agricultural Proficiency Award in Placement in Agricultural Production. The entire community applauded his placing 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 remaining in the business of dairy farming. His teacher contacted another dairy farmer in the community who was interested in working out a partnership plan with someone he could depend upon. With the recommendations of the dairy farmer where he was 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 to his initial visit in the home of the student and his parents.

Another teacher cited the example of a freshman enrolled in his department whose situation seemed totally impossible for him to gain anything at all from taking a four year course in vocational agriculture. However, upon his initial visit to the home, it became apparent that this boy achieved much satisfaction in growing plants and flowers on even the very small plot of ground on which his home was located. From this knowledge, the teacher worked out a program for his student through which he has gained training that is making vocational agriculture his most interesting and informative high school course.

These individual situations, and similar ones, can be multiplied many times over by every teacher who has or is teaching vocational agriculture. The depressing side of the story results from those students who are seldom or never visited by their teacher of vocational agriculture throughout

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(Simmons—from page 313)
their four years as a student and, therefore, never have their full potential realized.

Too many of our vocational agriculture teachers end their school day along with their fellow teachers who are teaching in other fields far removed from having the term "vocational" preceeding the course title. There would be a very, very low percentage of students who cannot in some way profit from visits which soon turn into supervised occupational experience visitations. Funds, while not exceedingly high are usually available to teachers of vocational agriculture to be used as expense money.

It might be that some teachers, especially those just entering the field, do not yet realize the objectives of supervised visits. Primarily, supervised occupational experience visitations should be an extension of the instruction given by the teacher to the students in the classroom, shop, greenhouse, etc. As an example within the production phase of the program, a student might have dairying as his supervised production program. The vocational agriculture teacher should advise and assist this student in practices that would enable him to reach an objective of increasing his production and quality products and in turn realize an increased profit from his enterprise. This could include a variety of improvement practices: culling, sanitation, feeding, pasture improvement, prevention, identification and treatment of diseases, parasite control, management, and many others that would assist this student in attaining his goal of being a successful dairy farmer.

In the agri-business or off-farm phase of the supervised occupational experiences program, an example could be that of a student in the cooperative program with his objective being in meat merchandising, and employed during school released time in a market. Here, again, the supervised visits by the teacher would be an extension of the instruction given at the school. In these situations there should be close cooperation between the employer and teacher in seeing that the student is properly supervised and receives training which would enable him to enter the field of meat merchandising. Just as in the case of the young dairyman, there are many practices with which the teacher could assist. Some of these are: identification of cuts, packaging, marketing, sanitation, care of equipment, buying and many other practices that would assist this student to attain his occupational goal.

Much of this article has been devoted to situations where initial examination indicates that no possible good could be achieved through supervised visits of the students. Unfortunately, we still have those teachers in our ranks who do not make supervised occupational experience visitations where conditions so obviously indicate that worthwhile outcomes can be achieved. To these teachers we can only say that you are not doing the job you pledged yourself to do by merely accepting a position as a teacher of vocational agriculture. It is sad indeed to hear comments from students and former students to the effect that they are not or never were visited by their teachers. The possibilities you have and have had to help these young people, and did not, are no doubt numerous.

At this point, it is most important to state that many of our teachers are continuing to do an excellent job with their supervised visitation program. These are the teachers who are referred to by not only their students, but also their parents as "my agriculture teacher" and are familiar enough with the home to even know the name of the family dog.

The most recognized successful teachers, in their communities and on the state and national levels, are those who best know their students through visitations of their homes. Many of them may never achieve greatness in the world outside their immediate communities, but the self satisfaction they feel when it becomes obvious that they have in some manner contributed to the success of former students makes up for any lack of personal glory or recognition they might not have received. When that former student, now on his own and successful in his chosen field of endeavor, whatever it may be, approaches his former vocational agriculture teacher with: "Do you remember when you visited me as one of your students? I just want you to know how much I appreciated those visits and what they did for me." It is very evident to that teacher that it was all worthwhile. ◆◆◆

(Crilley—from page 312)
There are nine different plots for comparison when yield checks are taken at harvest time. The center plot is the complete control in this example. It is important that all other cultural practices are the same on all plots.

Additional tests to study varieties of corn could be included by further dividing each plot. The number of divisions is limited by the size of each plot.

As might be expected, a very wide range of yields result with this approach. For students having no experience in corn production, this is an extremely effective experiment. For the more experienced students, the results can be used to establish better management practices. Upon completion of yield checks, the costing out of the various alternatives and comparison with income potential results in much data for management study.

Some advantages of the experimental method of teaching crop production include unlimited possibilities for the type and scope of variables, centralized location for collecting data and convenience of management.

Disadvantages include extra time and effort in setting up the plots, the high cost of production on a small scale, and finding a uniform site for the experiment. Local fertilizer dealers and chemical companies are cooperative in providing information as well as fertilizer and chemicals for such experiments. Possibly a student, parent or local farmer would provide land or machinery.

Obviously there are limitations to each of the methods discussed, but the educational value associated with any of the methods make them worth careful consideration. With the current talk about accountability in education, who could dispute education of this type?

The more people involved in the original planning of any of these educational endeavors, the greater the chances for success. With the cooperation of parents, farmers and dealers, the public relations value of such a program can contribute to the overall success of any agriculture department. ◆◆◆

★IDEA: Have you prepared an annual report of accomplishments for the past year, suitable for presentation to your Board of Education?

BOOK REVIEWS

EDUCATORS GUIDE TO FREE TAPES, SCRIPTS AND TRANSCRIPTIONS. Randolph, Wisconsin: Educator Progress Service, 1970, 199 pp., $7.75.

This publication, for use during the 1970-71 school year, is the 17th edition. There are 222 new titles this year. Stero tapes are listed for the first time. A total of 298 free tapes, 15 free scripts and 62 free transcriptions are listed in the publication.

Reprints of an article, "Documenting the World Around Us Through Audio Experience" will be furnished free to educators and libraries. Dr. Wittich explains why the inquiry approach to learning requires a wealth of materials to maximize pupil and teacher involvement.

Each school should have at least one copy of this "Guide" available for use by teachers.

Gerald R. Fuller
University of Vermont

PRACTICAL ELECTRICITY by Robert G. Middleton. Indianapolis, Indiana: Theodore Audel and Co., a division of Howard W. Sams & Co., Inc., 1969, Second Edition, 473 pp., $6.95.

The author has utilized simple language, using technical words and phrases only when necessary, and explained the technical words and phrases in the text and in the glossary. Considering the reasonable size of the book and the magnitude of the task, comprehensive coverage has been accorded the following topics: magnetism and electricity, conductors and insulators, electric circuits, series-parallel circuits, electro-magnetic induction, principles of alternating currents, inductive and capacitive alternating current circuits, electric lighting, lighting calculations, house wiring, wiring with armored cable and flexible conduct, wiring requirements for the home, electric heating, intercommunication and alarm installations, and generating stations and substations. Emphasis has been placed on functional, well chosen illustrations.

No information is provided about electric motors. The suggestion is made that the reader consult specialized motor books for such information.

An engineer, lecturer and writer of many books on electricity and electronics, the author has impressive professional qualifications. He has taken care to ensure that all material is accurate and that procedures are in accordance with good practice.

This is not a book for beginners, although they should be able to understand portions without difficulty. *Practical Electricity* should be valuable as a text book and reference in technical institutes, as well as a self-instruction guide for the general reader. Since the text progresses from the elementary considerations to the more complex situations the journeyman electrician must be concerned with, some background knowledge of electricity is required of the reader who wishes to utilize the book to any great extent. It should have a wide application as a reference book, but more restricted as a text book.

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(Jaworski & Huddleston—from page 297)
business needs to learn the specific technical skills of that trade, as well as the skills relating to social attitudes, economics, agri-marketing, management and business organization. It is also important to recognize that all students may not develop competencies in all of these areas. But if a young man expects to approach the top rung of the Agri-Business job ladder, this is the complete training he should have.

Teaching Tools Are Lacking

The basic concept that students learn best when they combine reading, listening, doing and reporting is the same for a program of instruction in Agri-Business as it is in production agriculture. Classroom instruction can be tailored into a modern Agri-Business curriculum using the Model Program described here as a guide. Agri-Business behavioral objectives that are properly written will provide direction to students and the instructor.

There is a need for high quality Agri-Business teaching aids, such as books and slides. These are hard to find, but some are now becoming available.[1]

To tie classroom instruction as closely as possible with 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 Agri-Business Manual. The manual serves as the focal point for relating principles he learns in the classroom to those he practices on the job.

This manual should have a well constructed cover binder, and have a basic make-up that includes title page, acknowledgements, introduction, table of contents, and bibliography. The student then develops chapters discussing the principles of each topic studied and relates them to his own product or service. If, for example, the unit taught is on salesmanship, at completion the student would write a section in his manual describing how he would use the selling principles to market his own product. He would also relate experiences he gained on the job.

This is our approach to teaching Agri-Business. What is yours? ◆◆◆

[1]The salesmanship phase of the "Model Program for Agri-business" described in this article has been developed into a text format and appears in a special section of the 1971 Farm Youth Almanac, 515 W. Jackson St., Woodstock, Ill. 60098

(Hartle & Bear — from page 298)
modular scheduling it is easy to recognize the need for organization of classroom and shop teaching stations. The teacher is required to have all of these items prepared so his students can move from lesson to lesson as the learning process is completed.

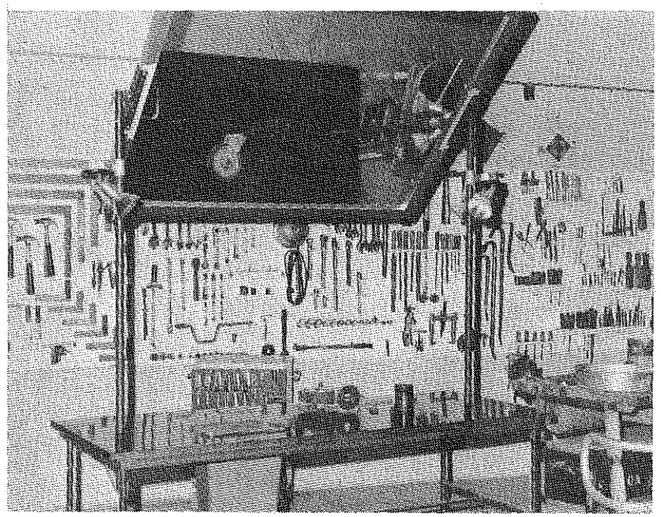
EQUIPMENT NEEDS

To expedite this process the following teaching materials and equipment storage have been developed for small engine instruction by the authors of this article. A two or four drawer file cabinet is used for the storage of teaching aids. Overhead transparencies, slides, filmstrips and scripts are stored in one drawer. A second drawer has folders containing the exercises which are to be completed in the classroom prior to the shop activities. The shop activities are listed and available in folders. In addition to the assignments which are available for the student, special reference books and manuals are available in a drawer. The file cabinet should be on castors for mobility in the classroom or shop. The books which all students must utilize should be on the shelf in the departmental library. The engines being studied should be in a box which can be locked. Certain basic tools can be included with each engine, as well as the repair manuals for that engine. A special work area is essential for the operation of the engine, and an exhaust system is helpful for the elimination of the exhaust gases. These instructional aids are for both the teacher and the student — for the teacher's preparation, and to enhance the students learning experience. Coordinating of these instructional components with the proper supervision will provide a small gasoline engine course which can be adequately taught by modular scheduling.

SUMMARY

Modular scheduling places a greater demand on the teacher; his being prepared with all the lessons for the classroom and being available for shop activities at all times. Greater attention must be devoted to checking the progress of each student. Modular scheduling promotes individualized instruction which has been the goal of vocational education for years. If effective education is your goal then consider modular scheduling. ◆◆◆

Harold Johnson, at left, District Manager of Pfizer, Inc. at Spokane, Washington, rewarded three Agriculture Teachers with $500 cash at the AVA in Portland, Oregon. Pfizer makes this cash award to the Advisors of the National FFA Foundation winners. Left to right are: Ed Fisher, Hilmar, California —Region I, Dairy farming; Roy Reno, Riverton, Wyoming—Region II, Livestock farming; Jerry Sherwin, Cuba City, Wisconsin—Region III, Poultry farming. (Photo by Peter Corvallis, Portland, Oregon).



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 demonstrations. (Photo by Richard Douglass, University of Nebraska)

"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, land tillage and grain quality as part of their career orientation project. Bradley Ahrens, a recent Regional Star farmer, and David Janke show 4th graders how a corn combine removes the grain from the cobs. (Photo supplied by Donald G. Barber, Owatonna, Minnesota).

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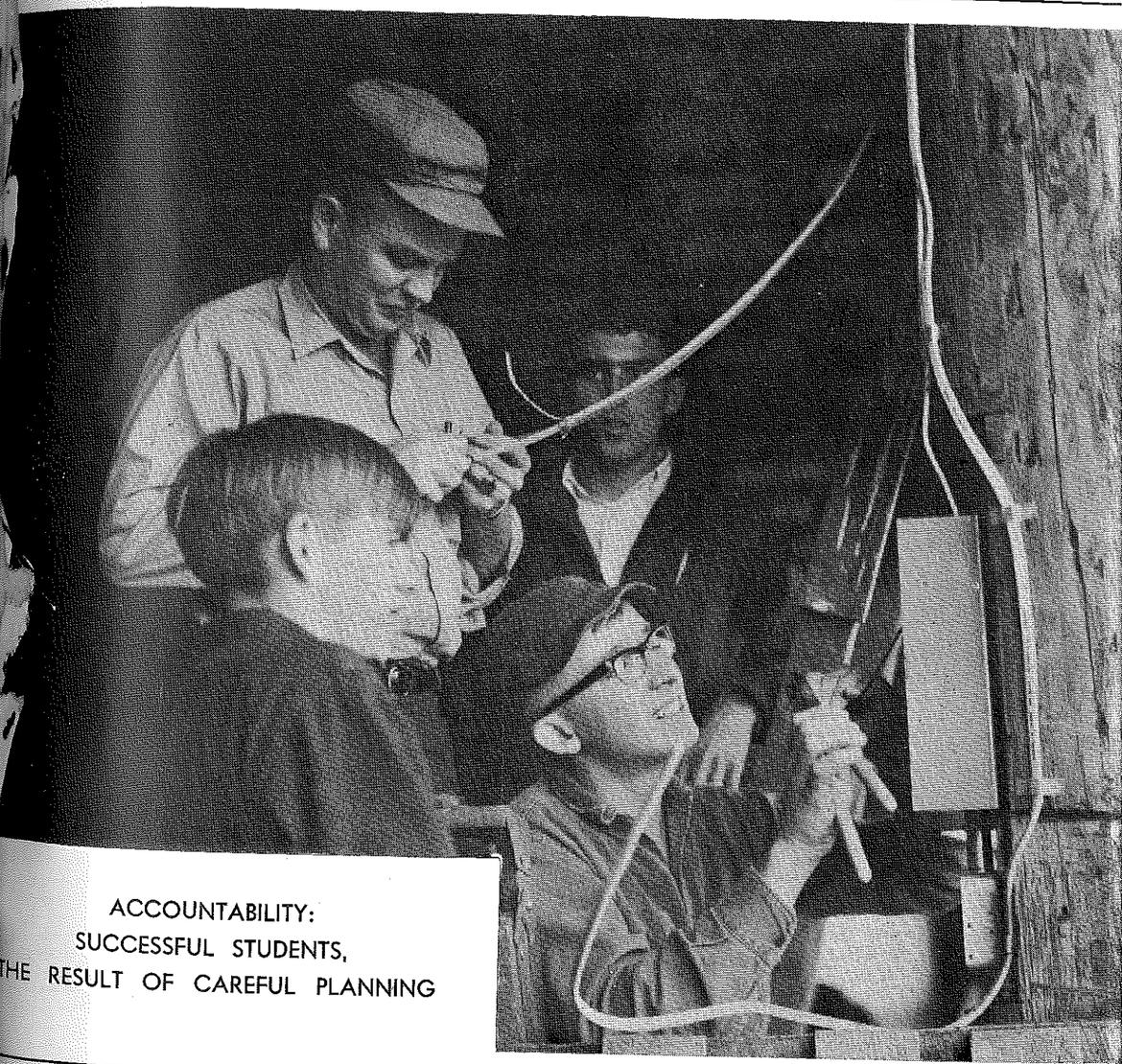

ACCOUNTABILITY:
SUCCESSFUL STUDENTS,
THE RESULT OF CAREFUL PLANNING

Theme— PLANNING THE STATE AND LOCAL PROGRAM