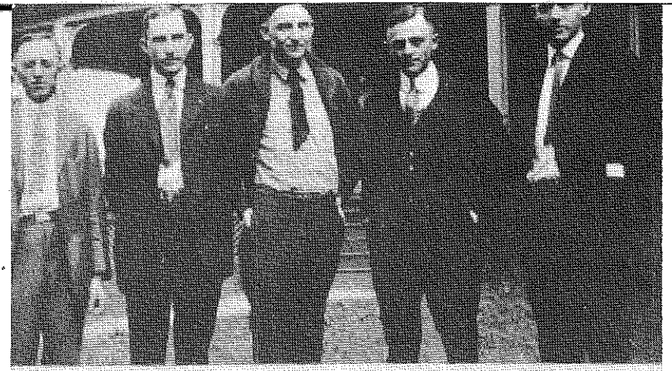


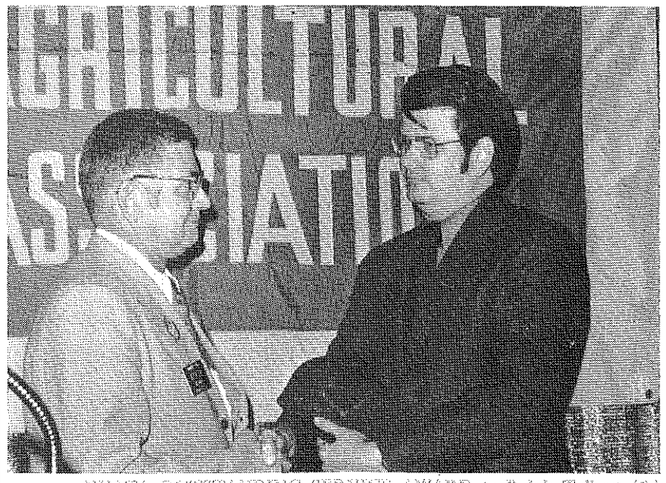
Members of the Professional Improvement Committee of the West Virginia Association of Vocational Agriculture Teachers (top photo) met at Mountain Lake Park in Maryland in the summer of 1921. Attending that meeting were: Fred A. Bradley, H. D. Rohr, J. G. Umstattd, Tracy Fling and John M. Lowe.

Fifty years later all living members of that committee got together again at Cedar Lakes (bottom photo) to reminisce and to enjoy the reunion. From left, Fred A. Bradley, Elkins; H. D. Rohr, Weston; Dr. J. G. Umstattd, Austin, Texas and John Lowe, Charleston. Tracy Fling is deceased. All are retired with the exception of Dr. Umstattd who is professor of Curriculum and Instruction, University of Texas (Photo reprinted from the West Virginia Education Association News, August 1971 —submitted by W. H. Wayman)

Members employed in the NVATA National Office at Lincoln, Nebraska are: (L to R): Beth Otto, Assistant to the Office Secretary; Georgia Wall, Office Secretary; James Wall, Executive Secretary; and Sam Stenzel, Assistant to the Executive Secretary. (Photo from James Wall)

Stories in Pictures

by Richard Douglass



NVATA OUTSTANDING SERVICE AWARD to Ralph Tolbert (R) Sales Manager Central Region on behalf of Geigy Agricultural Chemicals. They have provided an all-expense, 10 day tour of Europe for an Outstanding Teacher of Vo-Ag. Geigy has for many, many years given outstanding support and co-operation to Vo-Ag and the FFA.

Approximately 42,000 pieces of mail were sent from the NVATA National Office in 1972-73. Pictured are Sam Stenzel and James Wall loading a sack containing issues of the January Every Member Newsletter. The mailing totaled over 2,400 pounds. (Photo from James Wall)

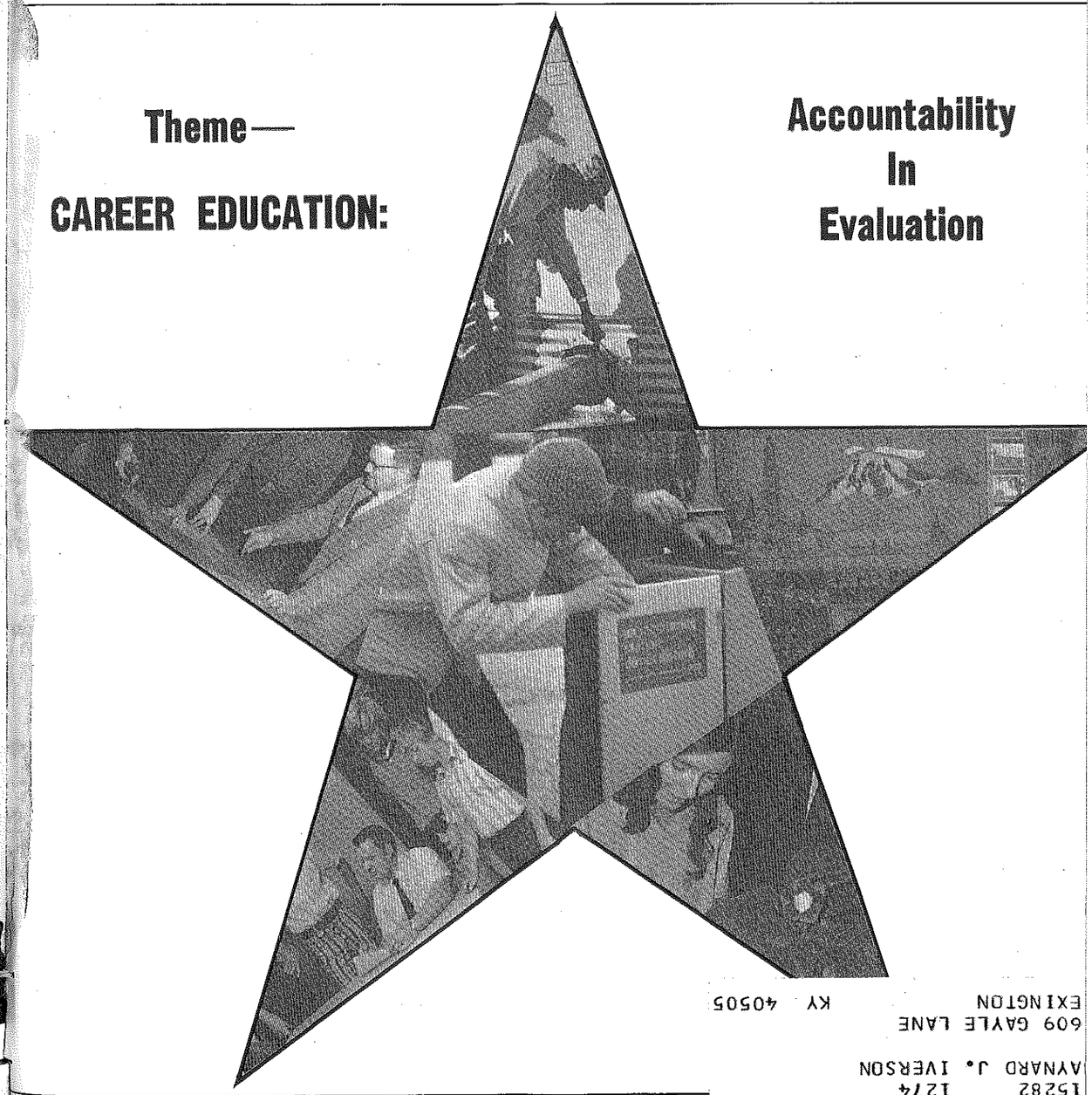
Agricultural Education

Volume 46 December, 1973 Number 6

Theme—

CAREER EDUCATION:

Accountability In Evaluation



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AYNARD J. IVERSON

The
Agricultural Education
Magazine

EDPRESS Vol. 46 December, 1973 No. 6

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This publication is the monthly professional journal of agricultural education. The journal is published by THE AGRICULTURAL EDUCATION MAGAZINE, INC., and is printed at the Lawhead Press, Inc., 900 East State Street, Athens, Ohio 45701.

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Send articles and pictures to the Editor or to the appropriate Special Editor.

COVER PHOTO

Program evaluation must be balanced, and from several points of view. In the center photo, a student at the Montgomery County Area Vocational School, Ohio, places a weighed clean air filter on a machine which measures foreign matter filtered from the air. (Photo from Leslie Crabb, Area Supervisor, Ohio.) Clockwise from the top, photo #1 depicts the need for accountability in adult farmer education, as a rice farmer in teacher Doyle Cannon's program at Fenton High School, Louisiana, prepares to remove an auger from a drying bin. (Photo by Ivan Baker, Area III Supervisor, Vo-Ag, Louisiana.); Photo #2 (R) from Roy Hallstrom. Vo-Ag Teacher at Highland High School, Corwiche, Washington, depicts the harvest display, end product of the production orchard; In photo #3 (LR), a student sales girl prepares to gift wrap a customers plant purchase, (Photo from Leslie Crabbe, Area Supervisor, Ohio); Photo #4 (LL), Larry Greer, Vo-Ag Teacher at Lakeside Jr. High, South Carolina, provides group guidance, (Photo from J. Alex Hash, Clemson University); Photo #5 (UL) Donald Mincemoyer, Vo-Ag Instructor at Mifflinburg High School, Pennsylvania, provides instruction in safe operation of a pneumatic sheet metal cutting nibbler. (Photo from Samuel Curtis, Pennsylvania).

THE NEW EDITOR


M. B. McMillion

Dr. Martin B. McMillion, Associate Professor of Agricultural Education at Virginia Polytechnic Institute and State University, assumes the editorship of *The Agricultural Education Magazine* beginning with the January 1974 issue.

He was special editor of this magazine in the Central Region for Editors Warmbrod, Kitts and Dillon while a faculty member at the University of Minnesota. Another editorial duty has been editing the *Alpha Tau Alphan*, the newsletter of the Alpha Tau Alpha Fraternity, during his four year term as national secretary-treasurer which ended in October, 1973.

He has a bachelor's degree from West Virginia University, his native state, a master's degree from The Pennsylvania State University, and the doctorate from the University of Illinois. Dr. McMillion has worked as a vocational agriculture teacher in West Virginia and Pennsylvania, as a graduate assistant at The Pennsylvania State University, as a graduate assistant and an instructor at the University of Illinois, a faculty member at the University of Minnesota and has overseas experience in agricultural education in New Zealand and Brazil. Presently he is conducting research and teaching off-campus courses at his new location in Virginia.

From Your Editor . . .

A CHALLENGE TO USE OUR JOURNAL


Roy D. Dillon

The view I experience out the airplane window as I prepare this editorial is much the same as the perspective as Editor of our *Journal* over the past two years. One sees the great distance in several directions, highs and lows of clouds, and a storm cell. Even though we are now maneuvering around the storm cell, eventually, the destination will be reached.

The greatest reward I have received during the past two years is the professional privilege granted by my colleagues to utilize our National Journal to editorialize concerns, along with the contributions of fellow professionals.

I am hopeful that the recent volumes of our *Journal* have made the practitioner; local agriculture teacher, teacher-educator, and state-consultant, **sensitive** to the true situation in our field, and of **actions** he can take to be more effective in his job.

The ultimate objective in our business is what happens to the student at each level of the educational spectrum. I believe contributions to our *Journal* have (1) helped update the philosophical base upon which occupational education programs are based, (2) outlined progressive program planning concepts and procedures, and (3) identified practical operational techniques usable by the local teacher.

I would challenge (1) the teacher-educator to continue to use the *Agricultural Education Magazine* as a teaching tool in the pre-service and in-service program, (2) the state-consultant to utilize the *Magazine* as an in-service reference, and (3) the local teacher to glean those concepts, techniques, and operational ideas which will directly influence his local program.

Your new Editor, Dr. Martin McMillion, is well qualified to assume this leadership role. I am certain he will receive the same excellent professional cooperation I have enjoyed. Let us continue to use our *Agricultural Education Magazine* as it was intended in 1929, as a tool for maintaining meaningful programs of vocational education for youth and adults.

—RDD

Guest Editorial . . .

BE MORE EFFECTIVE — Use Options

Willie T. Ellis
North Carolina A&T State University, Greensboro


Willie T. Ellis

Most teachers teach and supervise the ways they have been taught or as the "system" prescribes that they teach and supervise. In support of this postulate, an overwhelming majority of teachers of Agriculture are excellent candidates for retraining in either in-service education or graduate programs in Agricultural Education in order to teach and supervise students in vocational agriculture with a career education twist.

Career education consists of the knowledge, understanding, skill and attitude aimed at enhancing the students' abilities to cope with the problems of learning to live, learning to learn and learning to make a living. It correlates theory and practice by providing curricular options and alternatives appropriate to each individual to assist the student to adjust in the work-a-day world.

We have countless success stories of successful vocational agriculture career education programs. However, there is a strong belief and contention by many that teacher educators and supervisors could improve instruction and learning in their pre-service and in-service programs by providing more options in their methods. The students and teachers will adopt diverse options which they know and have experience to enhance learning in career education.

Options for Upgrading Teacher Education and Supervision

INSTRUCTIONAL TECHNOLOGY: Teacher education must upgrade college teaching to comply with demands of students who have been born and reared in a media oriented environment, and draw heavily upon instructional technology for teaching and learning.

Media and instructional technology have aroused more excitement and controversy than any other pedagogical development of recent years. The big question is how to exploit new technology — televised instruction, computer assisted instruction, programmed instruction, cassettes, 16MM films, single concept films, overhead projections, learning laboratories, etc.

Teacher educators must employ instructional technology in the interest of expediency, diversity and efficiency in teaching and learning for teachers for the 70's.

INDEPENDENT STUDY: The idea that colleges use independent study in instruction of courses is not new. What is new is its position or priority as a major development in college teaching. Independent study as a concept has been regarded historically as a prerogative of the superior student in honors and tutorial courses. It is now being used by all students and is being made available at the beginning rather than the close of the college career.

FIELD EXPERIENCE AS A WAY OF LEARNING: Historically, field experiences in teacher education has been limited essentially to student teaching. Teacher educators have failed to use the larger community as a resource for educating college students in career education. As a consequence, students do not get a chance to test their ideas against experience. The future teacher's personality and skill development are impeded substantially because the field experience is not exploited.

Several colleges are adopting new calendars that require students to spend part of their student teaching in industries, businesses and related institutions in order that students may acquire career concepts of the various jobs and the kinds of skills needed to keep these businesses and industries operable and viable.

OTHERS: Other conventional approaches should be employed, such as team teaching, differential and flexible scheduling, demonstrations, projects, seminars, discussions, supervisory study, lectures and reports, etc.

Coordination of Teacher Education with In-Service Education Provided by The State Departments of Public Instruction

There is a need for closer coordination between teacher education and in-service education provided by State Supervisors in the State Departments of Public Instruction.

Teacher educators and state supervisors need to keep each other informed. They should design and implement programs which complement each other in the interest of producing competent teachers at the pre-service and in-service levels who consequently will produce better students at the high school levels. ◆◆◆

Themes For Future Issues

March —	Looking Ahead in Vocational Agriculture	July —	Program Planning and Evaluation
April —	Production Agriculture — Still in Vogue	August —	Teacher Education
		September —	School Organization and Articulation
May —	Summer Accountability	October —	Instructional Technology
		November —	Improving the Profession — the Job and the Teacher
June —	Administration and Supervision — Local to National	December —	Better Teaching and Learning

Let's Quantify Our Welding Instruction

Glen C. Shinn
Associate Professor
University of Missouri, Columbia


Glen C. Shinn

Have you ever been in a situation trying to evaluate the welds from either a secondary student or an adult and wound up with a friendly argument based on opinions? At that point, each of us wishes for a simple shop test which would solve these "discussions." A second problem which arises during the teaching of arc welding is how much time to allocate for practice of each position. This question is especially critical with adults who have a limited amount of time to spend in the classroom. Several research studies have shown that practice does effect terminal performance but only when the actions can be examined by the student in light of a correct example. Practice without knowledge of results has appeared to have very little effect upon individual performance. By using the two tests described, each student can individually assess his performance either in a formal class setting or at the home farm or job.

During a symposium dealing with weld defects, several defects were listed which bear special consideration. Granting that the inspection process involves judgment on the part of the evaluator, Thielsch (1966), suggested special consideration for: (1) cracks, (2) lack of penetration, (3) incomplete fusion, (4) slag inclusions, (5) porosity, (6) entrapped weld spatter, (7) undercut, (8) concavity, and (9) center line crevice. In an attempt to evaluate the effects of a variety of weld defects and joint conditions on performance, Randall and Meister (1966) divided the defects into three groups. Group I included those defects which did not affect weld fatigue. This included root oxidation, crater pits, repaired burnthrough, and upper slag inclusions. Group II, those which were consistently degrading, included lack of penetration, root undercut, incomplete fusion, and root concavity. Group III included counterbore, excess weld-face reinforcement, porosity, and lower slag inclusions. These factors were degrading in some tests but not in others.

The nick-break test was introduced as a simple evaluative instrument during the latter part of the 1930's to improve industrial welding. The test is primarily used to investigate the internal characteristics of the weldment. The weld is made in position and air cooled. It may either be a single or multi-pass depending on the thickness of the material. The recommended material is ⅜"x1½"x10" multi-pass. A 1½" coupon is cut from the cross-section of the weld sample with an oxy-acetylene cutting torch. The coupon is then nicked with a hacksaw approximately one-eighth inch on the edge at the center line of the weld. The coupon is then struck with sufficient force to cause the weld to shear exposing the weldment for visual examination.

> **Practice with knowledge of results, compared to a correct example, should help a student individually assess his performance.**

Using the Evaluation Score Card, shown in figure 1, each student can evaluate his own weld coupon and determine the source of the problem.

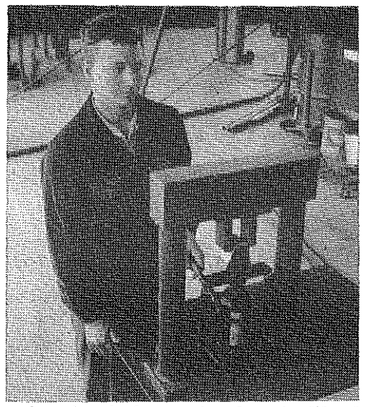
A student is shown using the guided bend test to determine the quality of his weld. This test is used after he has developed good welding techniques.

Figure 1
Evaluation Score Card for Nick-break Tests

School _____ **Position** _____

1. PENETRATION, 30 points maximum—
   full, even deposition 26–30
   ¾, even deposition 22–26
   ¾, uneven deposition 18–22
   ½, even deposition 18–22
   ½, uneven deposition 14–18
   ¼, even deposition 10–14
   ¼, uneven deposition 6–10
   less ¼, even deposition 2– 6
   less ¼, uneven deposition 0– 2

2. CRYSTAL STRUCTURE, 30 points maximum—
   fine grain throughout 25–30
   upper weld fine with moderate course strata 17–25
   moderately course 10–17
   moderately course with course strata 5–10
   course grained 0– 5

3. SLAG INCLUSIONS, 30 points maximum—
   free from inclusions 30
   small inclusions, less than 3 .. 25–29
   small inclusions, 3-6 17–25
   moderate inclusions, less than 3 17–25
   moderate inclusions, 3-6 12–17
   large inclusions, less than 3 7–12
   large inclusions, 3-6 ..... 4– 7
   large inclusions, more than 6 ..... 0– 4

4. VISUAL INSPECTION, 10 points maximum—
   rolled edge blending into base
   height of reinforcement
   ripple pattern

TOTAL FOR THE SAMPLE—

(Concluded on top of next page)

Each of the four sections does involve some arbitrary judgment on the part of the evaluator, however, after a few tries, there should be a high correlation between your score and the students score for each coupon.

After the welder is consistently scoring in the high 80's and low 90's, the nick-break test should be discontinued in favor of the guided-bend test. This is a go or no-go test which requires more weld preparation prior to testing but does give a more stringent test. The same width coupon should be cut from the weld sample and placed in a guided bend machine with the bead on the top for a face bend as pictured.

Any crack which appears over one-eighth inch is considered a failure. A more detailed description of this test is available from the Lincoln Arc Welding Company, Bulletin No. 2120.2. Needless to say, the latter test is not recommended for the novice welder, but if properly used, it can furnish the challenge necessary to produce quality welds.

◆◆◆

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CAREER EDUCATION: ACCOUNTABILITY IN EVALUATION

Welch Barnett
State Supervisor
Columbus, Ohio

Welch Barnett

The local advisory committee should play a key role in the measurement of accountability.

When we evaluate accountability in career education, two questions come to mind; what are we accountable for, and to whom are we accountable? In order to get the answers to these questions, an occupational task analysis of the occupations for which the individuals are being trained must be completed. From this information can then be developed a basic curriculum. The accurate measurement of accountability to the industry, students, and school community members must result. Teachers can also measure their own professional and technical competencies and evaluate themselves to determine their additional educational needs.

Personnel in vocational education in Ohio have developed what could be described as an effective system of evaluation for accountability. It has been named PRIDE, program review for improvement, development, and expansion. The key to this process is the formation of a local advisory committee for this purpose. This committee should be composed largely of persons from the area of agriculture for which the local program is designed to train individuals. There should be representation on the committee from the school administration, other basic community industries and from service business areas. Selection of these persons must receive careful consideration. They are the key to the determination of the need for the program in terms of manpower and available occupational training opportunities so that students may successfully complete the acquisition of entry level skills, knowledge, and abilities. They must enter successfully into jobs in the area of training if we in agricultural education are to meet accountability requirements. Where manpower needs and placement opportunities are available the committee is ready to move on to the review assignment. They must meet and be informed relative to the four main program areas. These include, as mentioned, the curriculum; the facilities, including equipment and tools; the students in terms of their interests; and the teacher. Past placement of graduates into the agricultural area of training receives major consideration.

After the local advisory committee reviews the local situation in regard to these four basic program areas, they are then ready to prepare their suggestions for program improvement, development, and expansion. A state staff member then reacts to the review and a final draft of the recommendations is written and forwarded to members of the school administration and the Board of Education. PRIDE becomes the delivery system for supervisors.

Persons in agricultural education where such a review has taken place, and will continue to take place, are thus enabled to take the responsibility for the instruction and experiences that go into the kindergarten through grade six career motivation and the grades seven and eight career orientation programs. We in agricultural education are also responsible for the instruction and experience that go into the career exploration program for students in grades 9 and 10 other than those who are enrolled in agricultural education programs. Obviously, agricultural education programs for grades nine and ten are vocational in nature because of the in-depth occupational experience programs which are the basis for the instruction. In Ohio, we have identified eight or nine broad areas with which students must become familiar. The additional breadth of such a program in agriculture as compared to other areas of information causes us some difficulty. Much time is needed in agriculture to teach each area separately and then evaluate them in that manner. Additional career program development in career education in Ohio awaits us as we improve, develop, expand and extend career motivation, orientation, and exploration programs. ◆◆◆

W. Richardson, Jr.

FACTORS THAT AFFECT THE EARNING POWER OF POST-SECONDARY VOCATIONAL GRADUATES

William B. Richardson
Assistant Professor of Agricultural Education
Purdue University

Donald D. Osburn
Associate Professor of Agricultural Education and Agricultural Economics
University of Missouri

Donald Osburn

Post-secondary vocational programs have as their primary objective the preparation of an individual for an occupation. Implied in this objective is that a graduate of a vocational program will have a marketable skill that will demand a wage in the labor market, which reflects the added investment in post-secondary training. The question that often comes to mind is, "What factors affect that quantity of that wage?"

A research study of junior college vocational programs in Missouri attempted to analyze the factors that affected wages of vocational graduates. Two-hundred and eighty-nine vocational graduates returned a mailed questionnaire upon which they reported their earnings history since completing a vocational program in Missouri junior colleges. These individuals were graduates of seven vocational program areas (Agriculture, Business and Office, Data Processing, Distributive Education, Health Occupations, Trade and Industrial Occupations, and Public Service related Occupations) found within eight Missouri junior colleges.

The average monthly earnings of the 289 responses was $489.00. Monthly earnings before taxes and other deductions was the bench mark figure for earnings power. This study hypothesized that several factors influence the earnings both positive and negative, of these graduates. Multiple regression techniques were used to quantify the net effect such factors had on earnings. The following model explained 68 percent of the variations observed in monthly earnings of junior college graduates.

Sex. One would expect that male graduates earn significantly more than females. This contention was supported in that the males in this study earned $100.00 more per month than did females. There were 149 males and 140 females in the sample.

Age. One would expect that the older the graduate the more their earning power. The average age of the sample was 24.3 years. The analysis revealed that older graduates earned approximately $5.00 per month for each additional year of age.

Labor Union Membership. Membership in a Labor Union was expected to be positively related to the earnings of the vocational graduate. Eight percent of the graduates were labor union members. The study revealed that labor union members could expect to earn $65.00 more per month than non-labor union members.

Hours Worked. Supposedly the more hours a vocational graduate worked the more money they would earn. The analysis showed that for each additional hour worked per week, the respondents received $4.00. The 289 individuals worked an average of 40.7 hours weekly.

Year of Graduation. Three graduation dates were examined in this study; 1969, 1970, and 1971. Theoretically, 1969 graduates should earn significantly more than 1971 graduates. This was expected since the earlier graduates undoubtedly acquired skills and on-job training. The 1969 graduates earned $95 more per month than 1971 graduates, but the 1970 graduates did not earn more than the 1971 graduates.

Junior College District. The specific junior college districts from which students graduated was specified as an explanatory variable so as to reflect labor market conditions and quality of educational offerings not accounted for by other statistical control measures. The one urban junior college district's graduates earned significantly more than the outstate districts. Likewise, one outstate district located in commuting distance of one urban labor market earned more than other outstate districts.

Vocational Program Area. The specific vocational program area in which trained would supposedly be related to earnings. With the exception of Data Processing, there was no significant difference in earning's of graduates of the various program areas. This is to say, the program area the individual graduated from did not influence their earnings. Data Processing was an exception since their graduates earned significantly less than other vocational program area graduates.

Father's Educational Level. The socio-demographic background of an individual may influence job selection and labor market performance. Father's educational level was specified as a proxy for socio-economic environmental influence of the student. The education level of the father of the 289 individuals was 10.6 years. The analysis showed that the number of years of education the father had did not influence the earnings of the vocational graduate.

Job Relatedness. One would expect graduates who were employed in occupations related to their training would earn more than graduates who were employed in occupations un-related to their training. The graduates were asked to determine the degree of job relation. They were given three choices; (1) highly relative, (2) moderately related, and (3) not related. Of the 281 responses, 64 percent or 185 reported that they were working in occupations highly related to their vocational training. Another 23 percent reported a moderately related relationship between their vocational training and their occupation. This hypothesis was rejected. This study revealed that there was no relationship between related vocational training and occupations.

Job Satisfaction. It was hypothesized that if the graduate liked their job, productivity would be enhanced and

(Concluded on page 131)

REVITALIZING THE VOCATIONAL AGRICULTURE DEPARTMENT

J. C. Atherton
Teacher Education, Louisiana

J. C. Atherton

Occupational education in agriculture must keep pace with the times in which it is a part. It should be ever responsive to the changing needs and circumstances that a community faces as it attempts to provide for the education of its youth and adults. This includes the preparation of individuals to engage successfully in productive useful occupations. This goal of occupational education does not change; it is constant. However, the ways and means of attaining it must vary. Procedures and organization must be kept flexible, adaptable and usable.

The department should be geared to meet the needs of the community in the field of occupational training in agriculture. The overall program must be organized with this as its primary objective. To do this there must be organization, not just any type, but the kind that will assist the teacher in accomplishing the tasks before him. Each department of vocational agriculture will have some form of organization as this is essential to the conduct of orderly operations. However, the arrangement may not be one that is conducive to efficiency of operations.

To function properly, there must be appropriate organization. There must be structured activities which are based upon planning that is designed to achieve the goals established for the department. It is through this means that the instructor is able to do his work effectively.

It should be recognized, however, that organization of itself is neither beneficial nor detrimental. Properly conceived and managed it may do much to facilitate the program. Poorly set up and too inflexible to change can result in organization being a hindrance to the teacher. It must be kept in proper perspective. An orderly arrangement should be so designed that it will be of service to the persons involved. Improperly conceived it may be a hindrance rather than a benefit. Its major function is to create opportunities although one should be aware that it has a tendency to limit the program to a certain extent also.

One should beware of the temptation to slavishly follow past patterns, customs, precedents, and traditions. Constant review is needed to see that the setup is fulfilling its function and that it is retained only so long as it proves useful to the ongoing of the educational program.

The organizational set-up should be one that is responsive to the changing needs and circumstances the educator encounters.

The temptation arises frequently to hang onto an activity long after it has served its purpose and is no *longer* compatible with needs and interests of those it was assigned to serve. There is no place for reminiscing about the past simply because it was once a vital phase of the work. When its usefulness is diminished, it should be replaced with more worthwhile activity. In other words, the setup should be one that is responsive to the changing needs and the circumstances the educator encounters in the fulfillment of his overall goals.

It is not anticipated that there will be many alterations in the overall objectives or mission of the educational programs. Preparation for citizenship and employment seem to be the basic purposes and no major shift of emphasis appears on the horizon. However, the day by day activities which should be utilized to reach these objectives must be modified and replaced from time to time so that the results attained will be those which were desired.

Innovations and change should be so related to operations that the ends sought will be attained. When this will not result, one should stick with the current routine of activities.

There is a tendency on the part of the young teacher to update the program during his early years of tenure. But once it is ongoing and seems to be operating satisfactorily there arises a temptation to maintain current procedures and policies and to resist change. Soon the educational program is out-of-step with the times and fails to meet current needs. To prevent this from taking place, there must be a continual revitalization of the program. The status quo should not be maintained and defended beyond its period of usefulness.

Some individuals will be reluctant to make drastic changes even though they are aware of the shortcomings of the present program. In some instances this may be due to a lack of comprehension of the procedures to follow in such an undertaking. Too often it seems that the effort and pain that must be expended in such a venture tends to encourage one to just hang on hoping that things will right themselves and that the next school session will automatically bring about better things. In so doing, one permits the situation to deteriorate to the point that it may become dangerous or unbearable.

It will soon be ten years since the passage of the 1963 Act and half that long since the 1968 Amendments were enacted. Sufficient time has elapsed for those interested in job training to take an honest look at what has been done, where we are going and the methods used to get there. No doubt it will soon become evident that there has been more talking about changes than there have been efforts to plan and implement innovations which are required today.

It seems obvious that on the local level the teacher(s) of agricultural occupations is the key to program planning and evaluation in this area. Only by facing the situation realistically will constructive results be brought forth. It is much easier to sweep the dirt

(Concluded on page 140)

SUPERVISED EXPERIENCE PROGRAMS IN CAREER EDUCATION: A Must In Agribusiness Education

Harold Binkley
Teacher Education
University of Kentucky, Lexington

Harold Binkley

Career education is the "in thing" today. Agribusiness, since its beginning in 1917, with its supervised experience programs, has been a significant part of the modern concept of career education. The basic philosophy of vocational education in agriculture (agribusiness education) was sound in the beginning and is sound today—that of "class instruction followed by supervised occupational experience in the agriculture to be learned."

Experience Programs Are Basic

There can be no adequate training in agricultural occupations that does not have its foundation in experience (participation) in the tasks for which the abilities are needed. That is why the individuals in every group taught should have experience programs: the high-school group; the young-farmer group, and the adult-farmer group. (For young and adult farmers the experience program are called farming operations). Sometimes, those in agribusiness education (teacher educators, supervisors, and teachers) proceed as if it were not. What one practices, what he experiences, what he participates in, he learns not something else.

Teachers, supervisors, and teacher educators must be committed to quality in experience programs if the programs are to provide the training desired by the present day and future employers in the agricultural industry.

Quality in experience programs in farming has been dependent upon the teacher and the student deciding on a good experience program to have, and on developing a good understanding and a close working relationship with parents as to what a good program is and why students need to have them.

The same understanding and close relationship must be developed on the part of other cooperating employers who are to provide occupational experience programs in the broad spectrum of agricultural occupations. The difficulty of doing this will not keep it from being a must.

More Experience Program Possibilities

A whole new world is open to the leadership in agribusiness education, with opportunities for significant contributions and service to the total agricultural industry and the development and growth of local programs. Prior to 1963, teachers of agriculture used largely the home farms of their students in arranging experience programs. Today many teachers are making use of the total agricultural resources of their communities to provide a diversity of experience programs in agribusiness education, to meet the individual needs of their students. In some departments, the teacher(s) are providing specialized training in agricultural mechanics, horticulture, or supplies and services with placement of students in appropriate agricultural businesses. Still other departments offer a diversified agricultural occupation (DAO) program in agribusiness education in which the teacher places students for experience programs in a diversity of agricultural businesses in the community and provides individualized instruction for each student based on where each student is placed for an occupational experience program. These latter teachers are on the "cutting edge" of program development in agribusiness education.

Teacher Guidance in Selecting and Planning Experience Programs

Students need guidance, by the teacher, in selecting and planning their experience programs. And, before guidance, the teacher needs to know *where* he is going to guide his students or else the process of guidance will be a miserable operation of the "blind leading the blind." The teacher must know what experience program possibilities are available to students in the community and then guide them to see and discover these possibilities. The business of guiding students is built upon the teacher developing in his students a series of fundamental understandings which are basic for students to wisely select and plan appropriate and challenging experience programs.

Memorandums of understanding and *individual training plans* based on the kinds of jobs and responsibilities each student will perform at his respective training station are basic to good experience programs in agricultural businesses. Both of these instruments should be developed cooperatively by the student, the parents, the teacher, and the cooperating employer. To do less than this, is likely, to end up with students *just* working in a place of business, with earning, not learning, as the primary student goal.

Teacher Supervision Needed for Student Success

"Learning to do by doing" is not a safe philosophy for the director or supervisor of the learning process unless he knows what the expression means. Not just any doing—not just any activity—produces desirable change in behavior. If it did, men who have been farming 40 years should be approaching perfection, as would all of the older teachers. The whole question of *supervised* experience and its necessity in vocational education in agriculture is closely related to some of the fundamental urges of human beings. The teacher does not have to do all the supervision of his students, particularly those that are placed for experience programs in a diversity of agricultural businesses. The teacher needs to see that each student has a good, interested on-the-job supervisor who will see that the student get quality experience in the diversity of jobs and responsibilities in his training plan. The teacher must visit each training station frequently to show his genuine interest in the student and his training. And, to show his appreciation to the cooperating employer for providing progressive training to the student.

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MAKING LESSONS RELEVANT THROUGH EVALUATION

D. M. Hall
University of Illinois, Urbana

D. M. Hall

"Carcer Education" is merely a fancy name for "education for something useful." This means goals, and goals give rise to questions "what?" and "how much?". Without goals students "dilly-dally." The number one rule for building and maintaining interest is to give the student objective measures of progress. No one can evaluate until he knows what you are trying to do. The old numeric system of grading was based upon passing 75 percent of the subject matter. The alphabetic system was based upon passing 94 percent of the students. Now "pass-fail" and "no-grade" systems are being recommended. Instead of objective evaluation we are merely juggling symbols.

Teachers have no right to *give* grades. Grades are earned by specific accomplishments and attitudes, in areas of health, vocation, social-civic effectiveness and re-creative activities. The 24 criteria coded below were established in conferences with parents, students and teachers. Scores were assigned to keep all concerned informed about "how well" each student does in learning essential facts, reference facts, physical skills and attitudes.

Codes used in evaluation

A- (a)	Attendance
B- (a)	Promptness
C- (a)	Cooperation
D- (a)(s)	Discussion
F- (r)	File system
G- (a)(s)	Group roles
H- (a)(s)	Home work
I- (a)	Interest, class, community projects
J- (a)(s)	Judgment
K- (e)	K1 History, K2 Science, etc.
L- (a)(s)	Leadership roles
M- (s)	Manuscripts, essays, news stories, publications
N- (a)	Neatness
O- (r)	Outside readings
P- (e)	Problem sheets
Q- (e)	Quiz
R- (r)	Reports, Library research
S- (s)	Skills, verbal, number, shop, lab, etc.
T- (r)	Text, reference books
U- (s)	Use, practices adopted
X- (a)(s)	Ratings by peers and parents on items, C,D,G,I,J,K,S,U,Z.
Y- (a)(s)	Self appraisals
Z- (s)	Behavior other than those coded above.

Scoring — Points are assigned for each accomplishment according to its difficulty and scope. The range of values may be agreed upon by the class or set by the instructor. In some cases each paper may be graded by three students selected at random, or by a student and teacher and averaged. In other cases all students may be assigned to score all others during a class period on items D, G, J, or K. Students teach other by discussing how to score.

File systems permit scoring reference facts. Each student keeps a 3x5 card file in which he records useful reference facts. Each six weeks these and his bulletins and clip-sheet files are scored by the teacher. Then the teacher gives oral exams with files and note books permitted. The idea is to select useful facts not easily remembered and test the ability to find these facts in the student's file system.

To encourage outside readings scores are assigned for summaries with author and publication made on 3x5 cards. No limits are imposed on items coded F, O, R, T. Scores are weighted by scope and difficulty. Some graduate students have complained about this procedure as a "rat race" but it permits the class to set its pace. The more one does the more points he earns. Those who want to "just get by" may not make it.

Problem sheets are pages from the student's note books with the following headings: **1.** Problem, **2.** Assignment questions, **3.** Essential facts, **4.** Conclusions and **5.** Applications. Headings 1 and 2 are filled in as the problem develops in class. Facts with references are added during the study period. Conclusions are developed during the next discussion period. Applications are statements about the use the student expects to make of the information and skill.

Local editors often accept news stories about pertinent topics or practices the students have studied especially if they are local problems. Students eagerly re-write when told, "If I pass it and the editor accepts a poor copy everybody in town will know what a poor writer you are." You'll note improvements in writing as stories are accepted for publication.

Judging Score Cards. Score cards for judging, baking, sewing, livestock and shop work are prepared for scoring items J and S. A demonstration rating scale is shown below:

Other rating sheets on this same format may be prepared, for example:

1. **Shop Project Evaluation Sheet** — (with headings as follows:)
   Design
   Craftsmanship
   Usefulness
   Variety of learning experiences
   Utilization of materials
2. **Student rating sheets** (for students to rate each other) on present knowledge of the problem at hand on quality of participation in class discussion.
3. **Sociograms.** Students asked to check names of class members with whom you work or chum. Double check those you consider to be leaders (From answers you may draw sociograms).
4. **Score cards for ratings by employers, parents and peers** (Students will learn much in developing these rating sheets and by seeing how others score their attitudes and achievements.) Attitudes coded B, C, D, G, and N should be scored frequently, others as occasions arise. These ratings must be held in confidence. Only average scores are entered on each student's Evaluation Chart.

Weekly totals from each student's Evaluation Chart are plotted as accumulated scores on a class chart so that each may see his standing in the class.

There are two factors in learning, — a "what" and a "how." About 50 years ago Lancelot[1] held seminars that began

DEMONSTRATION RATING SCALE

Instructions: Rate each person including yourself on each item assigning values 10 (highest) to 1 (lowest).

1. Showed need for subject or skill
2. Had tools and materials ready
3. Clearly explained terms and materials
4. Used proper pace and sequence
5. Gave accurate information-Improved practices
6. Stressed safety and cautions
7. Maintained group interest and control
8. Encouraged questions
9. Summarized important points

Person No. or Name	Score Total	1	2	3	4	5	6	7	8	9	Comments
1.											
2.											
3. (etc)											
4.											

to identify and separate essential from reference facts. In 1962 the U.S. Office of Education published Circular 308 outlining the essential facts in physics, chemistry and biology. In 1963 the California State Department of Education published Biological Principles in Agriculture as the essential facts for teachers. In 1935 I reported a sampling method which included both "whats" and "hows" for assigning class grades.[2] Whenever all class members have been scored on similar tasks the scores may be standardized. Porter[3] has prepared the conversion chart which makes easy standardizing scores based on normal distributations. Standard scores show standings at a particular time. They do not measure the progress a person makes from time to time. Progress is shown by *S* shaped growth curves.

Nearly 40 years ago Courtis[4] published a manual in which he showed how to use maturation curves to measure progress in learning. His work gave real meaning to grades and grading, for students, parents and school administrators. Calculating growth curves is the ultimate in evaluation. In 1943 I published a report of surveys of community farmers to measure their growth in efficiency.[5] It is past time for educators to assign funds to studies of growth in knowledge, skills and attitudes. The task will not be easy. It took about 25 years to calculate the growth curves for measuring physical fitness.[6] We need to re-do Courtis' work since "new math" has come. Agricultural teachers have led the way in developing the problem method. Maybe they should finish the job for calculating growth curves for vocational efficiency. Then perhaps social-science teachers will undertake measuring social-civic growth. Must grades be meaningless forever?

The method described herein specifies the essential tasks to be rewarded and objectifies the grading through increasing the number of samples and the number of raters. The system puts the teacher on the side of the student in trying to conquer the subject matter, in contrast to traditional methods which put teacher and subject against the student. It also puts the burden upon the student to earn all he can rather than to see how little he can do to get by. By parents, teachers, and students agreeing upon the coded items the system gives relevance to the content. ◆

1. Lancelot, W. H., *Permanent Learning*, John Wiley and Sons; New York, N.Y. 1944.
2. Hall D.M., "Increasing the reliability of scholastic marks by better sampling methods." *The Visitor*, Vol. 22, No. 4, July 1935. Division of Agricultural Education, University of Minnesota, St. Paul. Also published in *The Journal of Educational Research*, Vol. 41, No. 3, Nov. 1947, p. 214.
3. Porter, C. H., "Conversion Chart for Standardizing Scores." State University of Illinois, Normal, Illinois.
4. Courtis, Stuart A., What is a Growth Cycle? *Growth*, 1:155, 1937.
5. Hall, D. M., "Evaluating Educational Programs," *Agricultural Education Magazine*, February 1943.
6. Hall, D. M., Cain, Rolene LeHayne and Tipton, C. M., "Keeping Fit—a 23 year evaluation study," *Cooperative Extension Service ES 1759*, University of Illinois 1964.

(Richardson & Osburn—from page 127)

they would earn more as a result. No relationship between job satisfaction and earnings was found.

Summary and Conclusions

The implications of the findings of this study of factors influencing earnings of post-secondary vocational training graduates of post-secondary vocational education are paramount. The important factors in the minds of vocational program planners would revolve around the program area and job-related variables. In both cases, evidence suggests that specific training areas and placement of graduates in jobs related to their training have limited effect on earnings. The lone exception, in this study, being the data processing program area as previous reported. The implications of these findings appear contrary to the philosophical rationale of vocational training and additional research should be undertaken to confirm or refute such findings.

In conclusion, the following variables were observed to have an influence on the earnings of vocational graduates of Missouri junior college vocational programs: (1) sex, (2) age, (3) labor union membership, (4) hours worked per week, (5) year of graduation, (6) junior college district, and to a limited extent, (7) vocational program area. Also, noteworthy was the fact that the following variables were found not to be related to earnings of junior college vocational graduates: (1) socio-demographic background of student (2) placement of graduate in jobs related to training and (3) job satisfaction. ◆

Paul E. Hemp

OCCUPATIONAL ORIENTATION: A NECESSARY STEP IN EDUCATIONAL AND VOCATIONAL PLANNING

Paul E. Hemp
Professor and Chairman
Division of Agricultural Education
University of Illinois

Robert W. Walker
Associate Professor

R. W. Walker

Students who have participated in a career exploration program have been "flying about." A time comes when they must make an occupational choice. This phase of the process is called occupational orientation. Plans can then be developed to acquire the educational preparation for job entry into the chosen occupational field.

The choice of an occupation is a series of progressive steps that should begin at the start of a child's formalized educational involvement in pre-school and kindergarten and go on through elementary, secondary and post-secondary school, and may continue throughout the working life of an individual. In a recent article by Walker[1] in *The Agricultural Education Magazine,* the Illinois Career Education Model was illustrated. The model showed these progressive steps of career development as follows:

1. Awareness of the world of work (K-3)
2. Awareness of self (4-6)
3. Exploration of occupational clusters (7-8)
4. Orientation to selected occupational opportunities (8-9)
5. Preparation for entry into a chosen occupation (9-14)

Children should go through these steps as they develop positive attitudes toward the world of work, learn about themselves, explore occupational opportunities, make an occupational choice, and gain the know-how for entry into a chosen job.

Orientation

The fourth step in the model is occupational orientation. Orientation is defined by Webster as the "determination or sense of one's position with relation to some particular field of knowledge." This definition is good. The process of career development is recognized. Educators implementing the model can make the assumption that a knowledge of the world of work, one's self, and a comprehensive overview of occupational opportunities has been acquired by the student when ninth grade is reached. Now the student is ready to determine a position from which a departure can be made. The student is at that point where occupational and educational plans must be formulated that are in keeping with his or her aspiration, interest and capability. Now is the time to match the student with an occupation or occupational area.

To illustrate further the orientation phase, this point in the students progress is not unlike the experience of a student who had learned to fly an airplane and was feeling very good about his ability to maneuver the plane during take off, flight and landing. One day while practicing a maneuver that was simply making turns around a barn while maintaining a constant altitude, the instructor suggested that the student fly directly back to the airport. The student had no idea where he was and he couldn't identify familiar landmarks. "Orient yourself," suggested the instructor, "determine your position with relation to the airport." The instructor was aware of the need to help the student locate his position before any attempt could be made to head toward a destination.

The Current Status of Occupational Orientation

A formalized program for occupational orientation exists in very few Illinois schools at the present time. A need for a formalized approach has been determined through a statewide evaluation program[2] that has been in operation for three years in Illinois. Teachers, guidance counselors, administrators, students, parents, and citizens involved in the evaluation process have stressed the need for a program designed to help the student make informed career choices. In response to this need, the Division of Vocational and Technical Education, State of Illinois contracted with several Illinois Universities to develop and test orientation materials for the five major occupational areas.

At the present time, the orientation materials developed at the University of Illinois for Applied Biological and Agricultural Occupations are undergoing further testing in 25 selected Illinois schools. During the 1974-75 school year, all five orientation curriculum packages will be offered to all students in a school to be selected in the near future.

How Orientation Fits into the Total Career Education Program

In deciding how and when occupational orientation units or courses should be incorporated into a career education program, certain assumptions need to be made. The first assumption is that all students should receive occupational orientation prior to the time when occupational preparation begins. Occupational education in the context of a career education model should be defined in broad terms to include both the academic and vocational courses which contribute to occupational competence. For example, decisions regarding which mathematics course or which science course to take at the ninth or tenth grade level can best be made if the student has developed a tentative career plan. This is one of the major reasons why schools should install occupational orientation programs at the eighth-grade level.

A second assumption regarding occupational orientation programs is that students should be informed about occupational opportunities in all five major vocational areas not just the area of agricultural occupations. In other words, the orientation program in agriculture should be a part of a larger orientation program which includes health occupations; industrial occupations; business, management, and marketing occupations; and personal and public service occupations.

If schools are to install a complete program of occupational orientation in the curriculum, it must be included as a separate program of courses preferably taught at the eighth- or ninth-grade level.

One plan for installing orientation instruction in the five occupational areas into the curriculum is shown in Figure 1 and labelled as Model "X" — a three-semester program. Under this plan each student would be required to spend ten weeks in orientation to each of the five occupational areas. A two-weeks module at the beginning and the end of the program would be used for a self-inventory unit and a career plan unit. Guidance counselors would be involved in the teaching of the self inventory unit and the career plan unit.

An alternative plan, Model "Y" is shown in Figure 2. Under this plan all students would spend the first two weeks of the first semester on a self inventory unit. The next eight weeks would be spent on occupational orientation in the area of the student's first preference. All five occupational areas identified previously would be offered. The next six weeks of the first semester would be devoted to a composite module which would include seven or eight days on each of the four occupational areas not previously covered by the student. The student would be encouraged to identify occupations in each of the four major occupational areas that have a relationship to occupations studied during the first eight weeks. For example, the student who has learned about agricultural occupations and has an intense interest in becoming a veterinarian may discover occupational opportunities of equal interest when studying about occupations in the health area. Another reason for subjecting students to a short overview or composite of all four occupational areas is to help the student who made a first choice but later recognized that this choice was not his first preference. As he becomes better informed and has an opportunity to preview the other four areas, the student may see the need to study another area in depth during the second semester. The last two weeks of the semester would be devoted to the development of student plans for career development and further education.

At the close of the first semester of Model "Y" students could "spin-off" into an occupational preparation program or, if they felt a need for additional occupational information, they could enroll for another semester to explore their second and third area of preference. A two-weeks unit on career plans would be included at the close of the second semester to provide students with an opportunity to revise or modify the career plan developed the previous semester.

In Model "Y" the self-inventory module, the composite module, and the career plan module would be team taught. Guidance counselors should be involved in the teaching of the self-inventory and career plan modules.

Figure 1
OCCUPATIONAL ORIENTATION PLAN
Model "X" — Three Semester Program

2 Wks.	Development of Career Plan
10 Wks. for each area	Personal and Public Service Occupations
	Industrial Oriented Occupations
	Health Occupations
	Business, Management, and Marketing Occupations
	Applied Biological and Agricultural Occupations
2 Wks.	Self Inventory

Figure 2
OCCUPATIONAL ORIENTATION PLAN
Model "Y" — One or Two Semesters

First Semester

Self Inventory Module	Agric. Occup.	Composite Module	Dev. of Career Plan Module
	Bus. Occup.	Composite Module	
	Health Occup.	Composite Module	
Team Taught	Ind. Occup.	Composite Module	Team Taught
	P. and P. Service Occup.	Composite Module	
2 Wks.	8 Wks.	6 Wks.	2 Wks.

Second Semester (Optional)

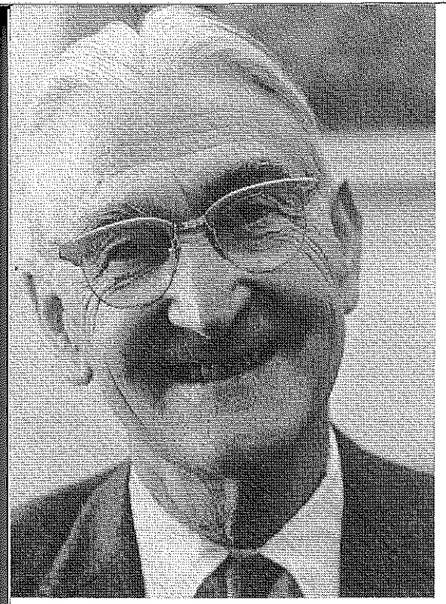
Area of Second Preference	Area of Third Preference	Dev. of Career Plan
8 Wks.	8 Wks.	2 Wks.

The question concerning what to teach in orientation modules is of primary concern to teachers and guidance counselors. In a pilot program conducted in six Illinois High Schools in 1972,[3] certain learning activities and teaching techniques emerged as "successful" components of the agricultural occupations orientation program. They were as follows:

1. Field trips, tours, work activity samples and field demonstrations were given high evaluation ratings by students.
2. An overview of the total field of agriculture and its importance to the national economy was presented to the student followed by a study of job opportunities and careers in ornamental horticulture, agricultural mechanics, agricultural supplies and products, agricultural production, and natural resources and forestry.
3. Support and assistance from business people and others in the community was an essential part of the program. An advisory council composed of industry people can be used to solicit and organize community involvement.
4. A pass-fail system of grading was preferred over a letter-grade system.
5. Parents should be involved in the student's career preference decisions and in the development and/or review of career plans.
6. In an activity-centered program students may become so involved in the class activities that they forget to intellectualize these activities into a career orientation process. Teachers must remind students that the purpose of the orientation unit is to learn about career opportunities and job requirements and to orient themselves to a particular cluster or family of occupations. ◆◆◆

1. Walker, Robert W. "The Role of the Agricultural Occupations Instructor in Placement and Follow-Up," *The Agricultural Education Magazine,* Vol. 45, No. 12, June, 1973.
2. Division of Vocational and Technical Education. *Three-Phase System for Statewide Evaluation of Occupational Education Programs.* Bulletin Number 35—772, Springfield, Illinois, July, 1972.
3. Hemp, Paul E. and Robert W. Walker. *Development of an Occupational Orientation Unit in Applied Biological and Agricultural Occupations Using a Job Cluster Approach.* Division of Agricutural Education, University of Illinois, Urbana, 1973.

"SID SUTHERLAND"— — Innovator, Pioneer In Teacher Education



Sidney S. Sutherland

It was a lucky day for California when Sidney S. Sutherland left his native Montana to become teacher educator in his new home. In those early formative years, vocational education was growing and developing into the great force it now is and "Sid" joined the giants of that era, including *Nichols, Hamlin, Hammond, Brunner, Stewart* and *Getman,* all pioneers that made it happen.

With his wife Ethel and 3 children he arrived in California in 1931 in a Model A Ford, but his ideas were not low horsepower. He developed a system of teacher education admired and copied the nation over, and which is functioning today in much the same structure he originated.

He became professor of agricultural education and chairman of the department at the University of California at Davis and was state teacher educator for 34 years until his retirement in 1965.

A graduate of Montana State University, he first taught agriculture in South Dakota, then joined the faculty at Montana State, first in agricultural engineering, then as professor and head of agricultural education. That same institution honored his accomplishments by conferring upon him the "outstanding alumnus award" in 1963. That same year, at the American Vocational Association Conference, he received the *National Distinguished Teacher Educator in Agricultural Education* award. It was a great year for the Sutherlands as that year his son became a teacher of agriculture after graduating from Montana State.

Professor Sutherland was recognized as a great teacher and master of the "problem solving" approach to teaching. Nationwide, as well as at home, he was in constant demand as a consultant and conference leader without peer. His imagination, initiative, and interests knew no bounds. In 1945 he initiated teacher education in homemaking on the Davis campus of the University of California. Later he started programs in teacher education for both secondary and elementary teachers, a program that has since grown to a major force in the university system.

The Master of Education degree for teachers of agriculture was also the result of his insight and efforts. Recipients of this degree have advanced to positions of high responsibility in the state and nation: nine are university professors; three are university administrators; thirteen are state university and college professors; twenty-three are junior college teachers or administrators; three are deans of colleges; and one is a college president. This degree is also held by three regional supervisors and the assistant state supervisor of vocational agriculture, two city supervisors of agriculture, and three superintendents of high schools. Sutherland initiated the summer session program on the Davis campus and served as director of summer session throughout his university career.

While professionally always busy, he was active in his local community as well. For many years he was a member of the local school board, an elder in the Davis Community Church, and president of the Davis Rotary Club as well as being active in many professional organizations allied to teacher education.

He could write poetry or a professional article with equal ease, speed and quality. One of his books "When you Preside" is still a popular best seller used both by professionals and the general public.

Avocationally he was best known as a successful fisherman and expert flycaster. He fished all the northwestern states testing their trout streams, especially his favorite ones in Montana. Hundreds of persons profited from his skill as he regularly conducted clinics and gave demonstrations to coaches, Future Farmers, Boy Scouts, sportsmen, teachers, and civic groups.

Each summer he led seminars and taught college classes on campuses throughout the nation from Washington to Texas and coast to coast. When the need for a center for research in vocational education became apparent, he was instrumental in getting the concept accepted and was appointed a member of the original committee which established the National Center for Research in Technical and Vocational Education at the Ohio State University.

In 1962 he received a grant from the California Council of Growers to find a way to upgrade supervisors, especially those working with rural labor. The outcome of this was a method of instruction that was adopted statewide and resulted in the creation of a special Bureau staff member to implement the program. Simultaneously he developed a teaching concept based on the "principle approach." The result of this was the development of a set of

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Author Oscar Loreen is Historical Editor of the **Agricultural Education Magazine,** *and Professor of Agricultural Education at Washington State University, Pullman.*

Oscar Loreen

THE SELKIRK STORY: A Contemporary Program Of Environmental Education

Keith E. Fiscus
Agricultural Education
Washington State University, Pullman

Keith Fiscus

Selkirk High School took a bold step forward in 1971 when an innovative program of environmental education was developed. The Outdoor Demonstration Center was designed and developed as a Model Environmental Education Laboratory. The program utilized a leased tract of forest land in its natural setting as an instructional resource to study environmental education.

The Community

Selkirk High School is located 95 miles north of Spokane in Eastern Washington. The Selkirk School District serves the communities of Ione and Metaline Falls, Washington. The population of the school district is approximately 2,500 persons. The land comprising the school district is predominantly forested; there are only three farms in the 270,000 acres contained in the school district. Approximately 80 per cent of the Selkirk School District is considered public land in that it is either owned or controlled by the United States Forest Service, Washington Department of Natural Resources, and other public agencies.

The Box Canyon Dam and Reservoir is also located in the Selkirk School District. The dam and reservoir was constructed for the production of electrical energy primarily, but it is of tremendous importance to the ecology and the environmental setting of the region.

Mr. George Fisher, Vocational Director and teacher of Agricultural Education and Mr. John Redinger, teacher of Agricultural Mechanics were the teaching staff for the Selkirk Program. Approximately 75 students at Selkirk High School were involved in the development of the environmental education program.

The Program

The Selkirk School District leased eighty acres of forest land from the Diamond International Corporation in 1971 for the site of the Outdoor Demonstration Center. Diamond International also donated $1,000 for professional services to the project. Invaluable services in staff time and curriculum materials were obtained from Washington Department of Natural Resources, Washington State Coordinating Council for Occupational Education and Washington State University.

The physical site of the demonstration center included a natural waterfall, a mountain stream, a recreational area and a comfort station in addition to the natural forest environment.

The Outdoor Demonstration Center was the central core of the Environmental Education Program at Selkirk High School. The program was oriented toward student activities. Students were involved to a considerable extent in the planning of the program, construction of the site, and the operation of the "Demonstration Center."

The development and operation of the Environmental Education Program can be grouped or categorized in three segments of activity: (1) Development of the Environmental Laboratory; (2) Development and operation of the Demonstration Center; and (3) The extension of the classroom to the natural setting of the forested plot.

1. *Development of the Environmental Laboratory.* The demonstration center is adjacent to State Route 31, one of the major highways in Eastern Washington. The construction of the learning laboratory included building a nature trail from the highway to the waterfall; and constructing a picnic and recreational area, automobile parking area and comfort station. During the construction of the "public" facilities, great care was observed to maintain the natural setting of the demonstration center.
2. *Development and operation of the Demonstration Center.* The central idea of the demonstration center was to invite elementary and secondary schools to visit the Environmental Education Laboratory. During the 1972-73 school year there were approximately thirty schools that visited the Demonstration Center. Several schools have initiated plans to construct Environmental Laboratories at their own schools as the result of the success of the Selkirk Program.

Dr. Fiscus receiving the Presidential Citation for his participation in the Selkirk Project. The Citation was presented by Mr. Donald Moos, Deputy Administrator of the Environmental Protection Agency.

In preparation for the visiting schools, the students in the Selkirk Program developed several teaching and touring procedures. A map for the tour of the center was developed and distributed to each visiting person. Items of ecological importance were emphasized on the map. Several species of forest plants and animals were identified and discussed on the tour. At the completion of the tour, a pantomine of "Henry and Joe" was presented to the visitors. In the pantomine, Henry was in tune with the environment; he loved and protected nature. In contrast, Joe was a careless destroyer of nature. The pantomine developed by the students of Selkirk High School was very effective teaching instrument to the visiting students.

3. *Extension of the classroom in a natural setting.* The students at Selkirk High School have learned much from

(Concluded on page 142)

FARM BUSINESS ANALYSIS PROGRAMS ACCOUNTABLE IN UPGRADING ADULTS

John T. Starling
Ohio State University, Columbus

John T. Starling

The Situation

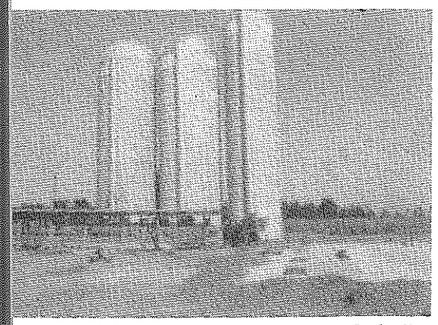
Accountability has become an important word in the vocabulary of vocational education across the country. Simply stated, when we spend money for an educational program we are responsible for the product or the measurable results of this program.

In order to be accountable in a vocational education program one of the first steps is to take a look at the occupation for which we are providing training and determine the educational needs for success in this occupation.

The farm business analysis program focuses on the business of farming and the upgrading of young and adult farmers engaged in the business of farming. Since farming is the occupation for which we are providing training we need to take a look at the needs for success in this occupation.

Half a century ago, agriculture's major inputs were land and labor. Higher production normally brought higher profits, and the way to higher production was to put more labor to work on more land. The picture has now changed because land and labor are both limited and expensive. They have been overshadowed in importance by three other inputs—capital, management and technology.

The capital requirements of the average American farm are increasing rapidly. In the picture below one can see that a farmer has spent several thousand dollars for silos, automated feed bunks, and a waste disposal system. This expenditure was necessary in order to expand a cattle feeding operation and keep the labor requirement at a minimum.



Major expansion of a beef cattle feeding operation included new silos, automated feed bunks and a manure disposal pit.

Table 1
OVERALL CROP SUMMARY OF 65 OHIO CROP FARMS

	Average
General Crop Acres	374
Special Crop Acres	64.5
Total Crop Acres	439
General Crops Value per Acre	$101.70
Special Crops Value per Acre	$124.69
Fertilizer and Lime Cost per Acre	$13.77
Machinery Investment per Crop Acre	$75.61
Total Power and Machinery Cost per Farm	$12,690.44
Machinery Cost per Crop Acre	$33.40

When we consider that an acre of land may cost more than $1,000 and the cost of a new tractor often exceeds $10,000 it is obvious that most farmers cannot finance their operations by themselves. They have to turn to other sources of capital. The use of outside capital is increasingly a requirement of good farm business management.

Management means making the right decisions at the right times, and todays farming is full of decisions. These decisions involve such factors as: when to sell, when to buy, what to buy, and which way to speculate. The decisions hold the potential to keep a farmer in business or put him out. He needs education in good decision making because learning by experience may cost the whole farm operation.

Technology brings the development of new seed varieties, better livestock, disease resistant crops, vaccine and other medications for livestock as well as improved production practices. Technology is the result of research efforts by universities, agricultural companies and farmers themselves. Current competition and slim profit margins mandate early adaptation of promising technological developments.

The Plan of Action

In order for the farmer to secure capital, make sound decisions, and introduce the needed technology he must have a complete analysis of his farm business. As the old saying goes, "A farm without records is like a clock without hands." The Ohio farm business analysis program emphasizes the keeping of complete and accurate farm business records which can be analyzed and used as a basis for making decisions in the operation of the farm business.

The Results

Teachers who have been conducting farm business analysis programs can display some very favorable results. For example, the teacher who was conducting a farm business analysis program in Wayne County, a predominately dairy area, soon identified one farm problem as low production per cow. By emphasizing such practices as: (1) Improved forage quality and raising the protein level of the ration, (2) Improved breeding practices to attain a better conception rate, (3) Culling low producing cows and (4) Increasing the feed for high producing cows, the result was an average increase of 1,641 pounds of milk per cow with 324 cows. This produced an increase of 531,684 pounds of milk and if we assume a price of $6.00 per cwt. for milk, this was an increased income of $31,901.

"Agriculture is a large and vital industry in Ohio. It has a high 'multiplier effect' in its secondary benefits throughout the state's economy. Each $1.00 in personal income from agriculture will produce at least $3.00 in personal income for other people."[1] If we apply this multiplier effect to the increased income from the dairy enterprise and multiply this $31,901 by 3 this means a total increase of $95,703 for the community.

Farm operators are constantly faced with the dilemma concerning where to put their capital to achieve the greatest return. They need to be objective when making business decisions and they need to set goals to strive for. There is another old saying that "No wind is favorable if you know not for what port you are bound." Farm business analyses helps to determine

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USING FIELD TRIPS IN CAREER EDUCATION

Arthur L. Berkey
Associate Professor
Agricultural and
Occupational Education
Cornell University, New York

Arthur L. Berkey

Use of community resources becomes of increasing necessity and importance as occupational educators develop and implement career education. The school classroom and laboratory can provide only a limited part of the educational experiences necessary to prepare students for success and satisfaction in an occupation, and instruction in the community will be necessary to provide the bridge between in-school career education activities and the realities of the world of work. Real settings in the community offer learning experiences that simply cannot be duplicated in the school.

Agricultural educators have historically used the community as an extension of the school through supervised farming programs and placement for off-farm work experience. In teaching the K-10 career development stages of awareness, orientation, and exploration leading to career choice, expanded use of community-oriented learning activities will be necessary.

Providing occupational education and subsequent placement of graduates is based on the individual making a free and valid occupational choice. The student is only free to choose when he has adequate self-knowledge and adequate information and exploration related to alternative educational programs and career opportunities.[7] Each occupational teacher has responsibility to insure that orientation-exploration experiences in his occupational area are provided. Who in the school is better qualified to do so?

Field trips to real employment situations in the community are one effective method of providing students with information on the kinds and nature of the occupational options available. Trips to agricultural business and industry in the community also provide an opportunity for first-hand follow-up of graduates of the agricultural program, as well as opportunity to obtain information on future placement opportunities. Trips to employers where students are placed for occupational work experience provides another tie between the school and the community. The student on placement experience can provide a valuable contemporary peer viewpoint for both the planning phase and during the trip.

Field trips into the community can also teach positive and realistic attitudes toward work which are also important for career choice. Students who find simulated classroom situations not relevant are often motivated by actual situations.

Thus, through field trips and other community-based activities, the orientation — exploration — education — placement and follow-up can become a continuous process in which the field can be an important teaching tool.

As with most teaching methods, however, effective use of the community environment and resources does not occur by chance; planning, implementation, and evaluation are required.

The teacher must know the experience program possibilities available in the community, and guide students to discover these possibilites.

Deciding to Use Field Trips

The professional decision to use a field trip should be based on the educational objectives to be achieved. Once this decision is made, selection of the type, location, and time for the trip are determined by a combination of objectives and administrative considerations. This leads to the first of the three essential steps of (1) planning, (2) conducting, and (3) evaluation and follow-up for field trips. For purposes of this article, a field trip is defined as a planned visit by a class or one or more students to an out-of-school location that involves student participation and is based on specific behavioral objective(s).

Planning The Trip

Students should share in planning trips for study in the community. Sharing in the planning process is in itself an important source of learning. Cooperative student-teacher planning to select the "best" resources to visit provides knowledge about the scope and different types of resources available. A resource judged not appropriate to achieve one group of instructional objectives may well be optimal for different objectives or for special interest study by individual students.

Another important element of planning is the development of the student skills necessary for community study. Field trips typically require keen student observation and visualization skills in order for students to "see." The time for application of competencies demonstrated or observed on a trip is usually limited at best. Many trips have information as a primary purpose making effective observation skills necessary in order to make the trip worthwhile. Dale[8] describes development of "sight" into "insight." Data collection skills such as use of tape recorders, note taking and picture taking (motion and still) are also often necessary where students are expected to gather and retain detailed information. Students need to be prepared to achieve the objectives before the field trip method is used.

The community offers a wide range of applications and experiences for career study. A field trip may involve individual or small groups of students, or a total class. The group size is determined by the objectives for the study trip, the maturity of students (younger students, of course, need more supervision and direction), and the type and location of resources to be studied.

The principal difficulties encountered in field trips are time required for advance arrangements, scheduling transportation and travel time required, inclement weather, and preparing hosts who may be inexperienced in working with students. By adequate planning, however, these difficulties may be overcome. Some points to check are:

★ Review and follow school policy on approval and procedures for field

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CHARACTERISTICS OF SUCCESSFUL YOUNG FARMER CHAPTERS IN TEXAS

D. L. Steakley

Derrell L. Steakley
Assistant Professor
Teacher Education
Tarleton State College
Stephenville, Texas

Earl S. Webb, Professor
Teacher Education
Texas A&M University
College Station, Texas

Earl S. Webb

Much research has been conducted to identify problems associated with young farmer education. A popular approach in many of these studies has been the identification of characteristics associated with successful programs. The approach has failed, however, to identify characteristics common to the most and least successful alike or the ones peculiar only to the most successful. According to research conducted at Texas A&M University by the Department of Agricultural Education, the most successful young farmer chapters (local programs) do have characteristics that are distinctly different from ones that are least successful.

The Study

The purpose of the study was to identify characteristics that contributed to the operation of the most successful young farmer chapters in Texas.

Area supervisors of vocational agriculture rated chapters within their respective areas into three groups, according to their perception of the performance level of each chapter in achieving the objectives of the State Association. Thus, 44 chapters were rated at performance level I (highest rating), 44 at performance level II, and 40 at performance level III (lowest rating). Chapter ratings were utilized as the dependent variables. Level II chapters were not considered in drawing conclusions since they served basically to broaden the distinction between characteristics of chapters rated at levels I and III.

Findings

1. The level of performance at which young farmer chapters were rated was not significantly associated with the number of years teachers had served as advisors to young farmer chapters, the number of years they had taught vocational agriculture, nor the number of years they had taught at the school where they were located at the time of study.
2. Neither the age of advisors nor the number of graduate hours completed were significantly associated with the level of performance at which chapters were rated.
3. Teachers of vocational agriculture who sponsored chapters that were rated at a high level of performance assigned a significantly higher level of importance to young farmer chapters in achieving the objectives of vocational agriculture than did teachers of chapters rated at a low level.
4. Members of chapters rated at a high level of performance were significantly younger than were the members of chapters rated at a low level of performance. The mean age of members in Level I chapters was 31.8 years compared to almost 35 for chapters rated at Level III.
5. Chapters composed of a large number of members who had completed high school or one college degree were rated significantly higher than chapters composed of members who had achieved other levels of education.
6. Young farmer chapters composed of a larger number of members who were employed full-time in agricultural occupations other than production agriculture were rated significantly higher than were chapters with fewer members employed in this occupational category. No significant association was found between the level at which chapters were rated and the number of members employed as full or part-time farm operators, managers, farm workers, or the number employed in non-agricultural occupations.
7. Chapters that conducted a larger number of educational and social meetings were rated significantly higher than were chapters conducting a smaller number of such meetings. Chapters that conducted a large number of educational meetings in the subject matter areas of production agriculture, farm management, and agricultural mechanics were rated significantly higher than chapters conducting a smaller number of such educational meetings. The number of meetings conducted as local field days was not significantly associated with the way chapters were rated.
8. Chapters rated at a high level of performance had a significantly larger membership than did chapters rated at a low level. The mean number of members enrolled in performance level I chapters was almost 32 compared to 19 for level III chapters.
9. Young farmer chapters rated at a high level of performance had a significantly higher number of members in attendance at an area young farmer convention, an area field day, or the state convention, than did low performance chapters.
10. Chapters that conducted a larger number of community service activities were rated significantly higher than chapters that conducted a smaller number of such activities. The number of chapters sponsoring local awards programs was not associated with the ratings assigned young farmer chapters.
11. No significant relationship was found between the number of members visited by advisors and the ratings assigned chapters.
12. Utilization of an advisory committee for planning young farmer programs and time schedules used for planning meetings were not significantly different for chapters rated at high or low levels of performance.
13. Chapters rated at a high level of performance had a significantly larger number of meetings taught by persons other than advisors, members, or Texas Education Agency Adult Specialists, than did chapters rated at a low level.
14. Neither the method used to notify members of meetings nor the method used to recruit members were significantly associated with the level at which chapters were rated.
15. The perceived attitude of school administrators, sponsorship of a young homemaker chapter, and the number of students enrolled in vocational agriculture were not significantly different for chapters rated at high and low levels.
16. Chapters rated at a high level of performance had a significantly larger number of teachers of vocational agriculture than did chapters rated at a low level.
17. Chapters located in young farmer districts where the major source of income was agriculture were not rated significantly different from chapters located in industry or business based economies.
18. Chapters located in communities with a larger number of other agricultural and civic organizations were not rated significantly different from those located in communities with a smaller number of such organizations.

(Continued on top of next page)

Conclusions

Chapters considered to be highly successful had significantly (a) higher ratings assigned to the importance of young farmer chapters by advisors, (b) younger members, (c) more members that had completed high school and one college degree, (d) more members that were engaged in an agricultural occupation other than production agriculture, (e) larger numbers of social and educational meetings conducted with the educational meetings consisting of higher numbers of production agriculture, farm management, and agricultural mechanics, (f) larger memberships, more members in attendance at area and state meetings, more community service activities, larger numbers of resource persons used for teaching young farmer classes, and (g) more teachers of vocational agriculture employed in schools.

Recommendations

1. A concerted effort should be made to improve the attitude of teachers of vocational agriculture toward the importance of the young farmer program in meeting the educational needs of young men in agriculture.
2. One or more educational meeting should be conducted monthly. The subject matter should consist of production agriculture, farm management, or agricultural mechanics, in accordance with the needs of the membership. Social meetings should be held occasionally throughout the year.
3. Persons employed in all segments of agriculture should be encouraged to become members of young farmer chapters.
4. Members should be encouraged to attend area and state meetings.
5. Chapters should be involved in community service activities.
6. The establishment of multiple teacher departments should be encouraged so that additional time can be allocated to the educational program of young farmers.
7. Extensive use should be made of resource persons available for teaching young farmer classes.
8. Research should be conducted to determine effective methods for improving teacher attitude toward the young farmer program.
9. A study should be made to identify factors influencing participation in young farmer chapters. ◆◆◆

BINKLEY: Supervised Experience Programs in Career Education—*from page 129*

A Precaution and a Challenge

There are dangers and challenges ahead. It is possible, very possible, that good experience programs, necessary to learn agricultural occupations, can be progressively displaced by weak ones or none at all. Experience programs are the training and development arm of the program in agribusiness education. In some departments, experience programs have dropped to such a low ebb that teachers of agriculture are not employed during the summer months—no experience programs to supervise, therefore no need for a teacher.

With teacher involvement in career education: lending assistance to the "Awareness Phase" — K-6 grades, the "Orientation and Exploration Phase" — grades 7-9, and the general education phase in the upper grades, what may this do to the experience programs of his high school students in agribusiness education? This involvement could take more and more of the teacher's time and energy and leave him with less time to develop and supervise the all important phase of his program of agribusiness education — high quality supervised experienced programs. By spreading one's self too thin it is possible to make some immediate gains and end up with some important long-time losses.

It is entirely possible for experience programs in agriculture to end up in The Educational Museums. The profession must be united in its belief and conviction that supervised experience programs are a must for the students of agriculture and provide teacher time to develop and supervise them. The profession must roll up its sleeves and "fight for what is right." Goals to develop high quality in occupational experience programs in agribusiness education must be intense enough to pay the price in study, hard work, and devotion.

Dedication, determination, and enthusiasm will enable the profession to develop the kinds of experience programs in agribusiness that will serve the agricultural industry. These three characteristics of "aggressive action" must be brought into sharp focus by the total leadership of the profession if agribusiness education is to meet its challenges and responsibilities of the future. ◆◆◆

BOOK REVIEWS

A COURSE IN HORTICULTURE (Agriculture XXIIIx), by Roy D. Dillon, Lincoln, Nebraska, The University of Nebraska Extension Division, 1973. Price for complete syllabus described (including all references and set of five cassette tapes) $33.65.

In a completely self contained course, the author has developed ten modules, or units, dealing with basic horticulture. The ten modules are:

I. Introduction to Horticulture
II. Establishing A New Bluegrass Lawn
III. Maintaining a Bluegrass Lawn
IV. Controlling Diseases In Established Bluegrass Lawns
V. Controlling Weeds In Established Bluegrass Lawns
VI. Controlling Insect Pests Common To Bluegrass Lawns
VII. Fertilizing Established Bluegrass Lawns
VIII. Pruning Flowering Shrubs and Broadleaf Evergreens
IX. Pruning Narrow Leaf Evergreens
X. Pruning Shade Trees

Included in the study material for each module is the syllabus material (introduction to module, statement of performance objectives and learning activities, the work sheet, the review sheet), a tape recording and script of the recording to follow (the content material of the module) and the necessary reference materials.

Individuals may carry out several learning activities which have been outlined in each module. Activities include listening to the tape recording, answering questions regarding the module, completing review sheets and the answering of problems. Learners are encouraged to consult local community resource specialists to obtain special information pertaining to local conditions. Suggested reference materials are also listed with each module.

Before coming to Nebraska, Dr. Dillon had numerous experiences with horticulture, and as a staff member at the University of Nebraska's Department of Agricultural Education, he has pioneered in conducting workshops on horticulture for instructors of Vocational Agriculture and has served on a number of Horticulture advisory committees.

Because of the flexible design of the course, it could be used in total, or in part, for individuals or group instruction for Junior High, High School or Post-High School students, inside of or outside of the classroom. It might also be used by Vocational Instructors, as well as other professionals or adults, desiring to upgrade their competencies in horticulture. The material is also adaptable to ongoing school programs in horticulture and has potential in the increasingly popular mini-courses. Obviously, very useful as a reference source in any classroom.

Reviewed by: Dr. Allen G. Blezek
Administrative Coordinator-Career Education
Lincoln Public Schools
Lincoln, Nebraska

A COURSE IN HORTICULTURE (Agriculture XXIVx), by Roy D. Dillon, Lincoln, Nebraska, The University of Nebraska Extension Division, 1973. Price for complete syllabus described (including all references and set of cassette tapes) $31.55.

Although the basic course format is similar in design to this author's first course, this, the second completely self contained course has been developed around eight additional modules, or units, of instruction dealing with horticulture. This course deals with landscaping and starting annual flowers and vegetables. Specifically, the eight modules included are:

I. Introduction to Horticulture
II. Designing a Home Landscape Plan
III. General Yard Care Equipment
IV. Maintenance of General Yard Care Equipment
V. Lawn Care Equipment
VI. Maintenance of Lawn Care Equipment
VII. Mixing and Sterilizing Potting Soil
VIII. Planting Seeds and Growing Annual Vegetable and Flower Starts in Flats

The study material for each module includes the syllabus material (introduction to the module, statement of performance objectives and learning activities, the work sheet, and the review sheet), the recording or script of the recording (the content material for the module), and the reference material. Also included are specific learning activities for each module.

Dr. Roy D. Dillon has coordinated the components of this course so that it would be of value to junior-senior high school students as well as adults. It is designed so that it could be taught in part, or in its entirety. Dr. Dillon has field tested the materials contained in this course in actual classroom situations to insure their usefulness.

It is evident that if you have an interest in horticulture, you would find this course to be of extreme value.

Reviewed by: Dr. Allen G. Blezek
Administrative Coordinator-Career Education
Lincoln Public Schools
Lincoln, Nebraska

(Atherton—from page 128)
under the carpet, but this just delays the day of reckoning.

The obstacles to program modernization are partially real and sometimes imaginary. In either case, they are not insurmountable although it will take dedication and effort to remedy the situation. To be of assistance in such an endeavor the individual must become involved. The community will assess largely the importance of program development on the activities of the teachers and the school administration. If they give it only secondary interest and if they are lackadaisical, the nonchalance is transmitted to others with whom they are in contact. Only by giving priority to the task at hand can the instructor hope to communicate the importance and enthusiasm which should be given to the enterprise.

Community understanding and support are essential for successful modernization of the program. They are the people who will in the final analysis make the venture work as it is implemented through use of their time, talent and resources.

A thorough comprehension of its nature, its purpose, and its functions is basic to the vigor and growth of the educational program. Educational personnel must center their attention here. Objectives, priorities, organization and activities should all be set up on the basis of the sociological, psychological and environmental needs of those whom the program attempts to serve.

(Loreen—from page 134)
Principles for Teaching Biological Science which was immediately accepted nationwide as one of the most advanced concepts in teaching. It has been frequently reprinted as demand continues because it is so basic to new curriculum in agriculture or biology.

This same kind of thinking was characteristic of Sid who was always searching for better ways regardless of which direction it led. It was entirely fitting in 1965, after his retirement, when the U.S. Office of Education cast around for someone to write the *History of Agricultural Education,* they chose Professor Sutherland.

Few persons in the U.S.A. in vocational education circles did not recognize his tall, lean body, distinguished mass of grey hair, and his sparkling grey eyes which showed he appreciated equally a good tale, an anecdote, or a new idea. ◆◆◆

AGRICOLOGY: Agriculture And The Environment

Glen Mills
Agriculture Instructor
Brownstown High School
Brownstown, Illinois


Glen Mills

An agricultural career is one of the few career choices one can make and yet be directly involved with natural phenomenon. A basic program of agriculture has provided our students the chance to enter these careers. This basic program should be expanded upon, inorder to have our students more ready to enter a career which involves work with nature. These careers are becoming more enticing to students as our nation has become more nature aware. Obviously this awareness came to the front during "Earth-Day."

To expand student interest and motivation to enter Natural-Careers an Agricology course was offered. I firmly feel that it has met the challenge of expanding student knowledge and increasing student skills in areas which are closely related to "Nature—Careers."

Course Problem Areas:

Ecology—BOAC—FFA—

This Problem Area was developed to lay the ground work for the course. A basic understanding of Ecological principles is necessary for the student wishing to enter a nature related career. I feel that this has been the one weakness in our conservation courses. Many Ecological principles need to be provided to our agricultural production students so they will be more able to answer the charges of consumers who try to blame them for pollution. An Agri-business student obviously needs to know the responsibility that his business has in protecting the ecology. This course is a natural for completing the FFA BOAC program. Also, the FFA is a very integral part of this course like all other Agriculture courses. The FFA can initiate a chemical safety program to inform the public on the correct use of pesticides to protect the Environment.

Occupational Fields—Training—

Students were required to make an in-depth study of a specific career they might like to or plan to enter. This study involved two weeks of individual study and research on that career. Ideally one would like for the students to know or at least be aware of the possible careers before they become seniors in this class. In this the first year for the class I have found that students were not aware of the possibilities. One would want to also make "Nature-Careers" a part of his Occupational Awareness program in the early grades.

Air, Water Pollution and Agriculture—

As Agricultural Occupations teachers we are all aware of the blame certain groups are trying to place on the Agricultural people of our country. I feel that it was extremely important to make the students aware of the blame we face. One of our major projects was to host the SIU Edwardsville Water Testing Van. They were able to test water samples, talk to the Chairman of the Sanitation Technology program at the campus, and view possible career choices in the area of water pollution.

Agricology Mechanics—

One of the most important Ecological Principles is natural cycles. With this in mind the students participated in an actual recycling project. Any career they might choose will surely involve reclaiming or recycling some item. In our community there are many abandoned and unused items of farm machinery. The class saw the problem and recycled an old number 60 Allis-Chalmers combine. They gained skills in welding, cutting, machinery mechanics, and recycling. They made a two wheel trailer from the axle. They salvaged almost 200 feet of angle iron, and they made a grain auger wagon from the grain tank.

Farm Waste Handling and Recycling—Manureology—

All of us are aware of the increase in machinery, engineering principles, and research the problem of livestock wastes has caused. This can only lead to new and different careers. If we are to have students claim these careers we must train them not to be manure handlers but also manure managers.

Governmental Regulation Agencies—

Do you know all of the laws? Laws are changing so fast the lawyers and courts are having trouble. You will agree that any career your student enters will be governed by some law to protect the environment. This is good if we have prepared the student. We must relate in a planned manner the rules he must follow in his career and show him why it is important for him to know these rules.

Natural Resources—

All Agriculture teachers have been covering this topic well. I feel that to have students arrive on the job ready to work we must build our "Natural-Career" program around Natural Resources, but also include the other areas I have listed.

Pesticides, Fertilizers and Ecology—

Have we been preparing students to realize and make use of knowledge concerning some of the chemicals used in all phases of Agriculture from Agri-businessman to the consumer? We may have been telling students how to use them and why to use them, but are we telling them their potential problem in the environment? We must prepare the future pesticide seller, applier, and user to take the pesticide and make use of it in the best manner for our consuming public. In this part of the class it has been necessary to discuss chemical production in the United States.

Student Project—Non Shop—

Each student has prepared a written report supporting it with research, readings and slides or visuals. The purpose of this portion of the class is to provide experience in "people skills" so necessary in any career.

Summary—

The purpose of Agricology was to expand on the Natural Resources—Conservation program. These programs have been limited in total career preparation. If your school is in a large city I feel that this class can become a very important part of your program. In a small community a class of this type will add the diversity of program one might need.

We must begin training the future Environmentalists now. ◆◆◆

(Fiscus—from page 135)
the Environmental Laboratory. Following are some of the topics studied: A study of the balance of forces in a natural setting; conservation of natural resources; study of forest biology; identification and study of timber species; and study of the esthetic values of nature. According to Mr. George Fisher, future plans include the utilization of the Environmental Education Laboratory to gather data on snowfall, stream flow, changes in aquatic life, effect of insects and diseases upon the forest; classification of all plants; study of animal habitat; and techniques for survival.

The Selkirk Program received the Award of Excellence from the President of the United States in March, 1973. The Award was presented to Selkirk High School by Mr. Donald Moos, Deputy Administrator of the Environmental Protection Agency.

The author asked Mr. Fisher, Director of the Selkirk Program to comment upon some success factors and some problems encountered with the program. Mr. Fisher related, "There were certainly more success contributing factors than problems. Some of the most beneficial factors in the development of this program were:

1. An active and capable advisory council of both lay and profession people.
2. A very cooperative and innovative school administrator.
3. The very helpful and willing cooperation at the state level and Washington State University.
4. The utilization of high school students in the construction of the Environmental Laboratory and the conduct of the educational tours. Students also were very effective teacher aides in the forest site.

The main problem was the supervision of students in a wooded area. It was impossible to "see" the students at all times, and safety practices were so critical in those conditions."

The "Selkirk Story" is basically a story of the utilization of a community resource as a method of instruction. It is also a testimonial of cooperation of people in many and varied walks of life dedicated to a program designed to meet a community need. Perhaps the greatest value of the Selkirk Story is the method of contemporary program development and student involvement. ◆◆◆

(Starling—from page 136)
when goals are realistic and reasonable.

A farm business analysis teacher in northwestern Ohio spent several hours with a young farmer budgeting and analyzing alternatives in making a decision as to whether he should invest in his own grain drying and storage facilities. After budgeting several alternatives the farmer invested in platform scales, dryer, and 40,000 bushel storage facilities. A budget using minimum storage charges in the area revealed that the farmer would have an increased profit of $2,232 per year. In addition to the increased profit he will reduce harvest time by avoiding long lines at the elevator and he will gain greater flexibility of marketing.

Farm Business Analysis Shows Other Career Opportunities Supported by Farming

A recent Ohio publication "Farm Business Analysis Report of Programs Conducted by Teachers of Vocational Agriculture"[2] presents factual information which shows that farming supports other agricultural careers. Some examples of this can be seen by an analysis of Table 1 below:

In addition to the income from the sale of crops, crop farming operations generate other business income and provide jobs for the community. For example, the above expenditure for lime and fertilizer of $13.77 per crop acre multiplied by 439 acres equals $6,045.00 per farm in additional business transacted in the community. Of greater significance is the investment in machinery of $75.61 per crop acre which is an investment of $35,461.00 per farm. This was likely sold by community dealers resulting in additional business and jobs for the community. A machinery cost of $33.40 per crop acre means dollars expended for fuel, oil, grease, and machinery repairs, which is further business and employment for the community.

Farm business analysis instruction provides the core for a continuing education program which improves the economic and social status of farmers and stimulates other business in the community. ◆◆◆

1. "Ohio Agriculture and You" by Lois Simonds, Department of Agricultural Economics, The Ohio State University, 1972.
2. "Farm Business Analysis Report of Programs Conducted by Teachers of Vocational Agriculture" by John T. Starling, Department of Agricultural Education, The Ohio State University.

(Berkey—from page 137)
trips.

★ Make an advance personal visit to the trip site(s) to check timing, travel route, and to coordinate arrangements (including clear understanding of the objectives of the trip) with hosts.
★ Provide information to parents and obtain their approval.
★ Make a last-minute call to hosts before departing to clear any final arrangements.

Conducting The Trip

Procedures during the trip will vary with the size of group and type of trip. Trips by individual or small groups of students on their own should take place only after the students have demonstrated expertise and maturity on a teacher-supervised trip. The teacher has comparable responsibility for class-sponsored community study by individual students as for activities under direct teacher supervision.

Key points to check are keeping on schedule, safety, accounting for all students, and assisting hosts who are inexperienced in working with students.

Evaluation and Follow-Up

Evaluation of community-oriented study should be in terms of the educational objectives and be a joint student-teacher endeavor. Some results that may be important but difficult to measure are changes in student attitudes and broad outlook.

Another, and often overlooked criteria is the effect on community relations. A well planned and conducted trip is necessary to build and maintain a viable school-community partnership for career study.

Summary

Use of community resources will be a necessary part of education for careers at all levels. Students need to be taught how to learn in the community where much of their learning after graduation will take place. ◆◆◆

1. Carpenter, William. "24 Group Methods in Adult Education," Educational Systems Corp., Washington, D.C. pp. 21-22.
2. Cenci and Weaver. *Teaching Occupational Skills*, Pitman Publishing Corp. pp. 145-148.
3. Dale, Edgar. *Audiovisual Methods in Teaching*, Dryden Press. pp. 296-321.
4. Drawbaugh and Hull. *Agricultural Education: Approaches to Learning and Teaching*. Merrill Publishing Co. pp. 163-192.
5. Morgan, *et.al. Methods in Adult Education*, Interstate, Illinois. pp. 127-133.
6. New York State Education Department. "Preparation and Use of Teaching Aids in Agriculture." pp. 31-34.
7. The New York State Education Department. *Occupational Education: A Statement of Policy and Proposed Action by the Regents of the University of the State of New York*, Albany, 1971.
8. Silverstone and Brandon. *Instructional Materials Primer*, Educators Publishing Service. pp. 21-22, 135-138.

FROM THE RESEARCH EDITOR'S DESK:

J. David McCracken
Assistant Professor of
Agricultural Education
The Ohio State University
Columbus, Ohio

J. D. McCracken

Since 1967 resource materials have been announced to educators by the Educational Resources Information Center (ERIC). ERIC Clearinghouses have acquired, selected, processed, and announced information in all fields of education. Documents submitted by each clearinghouse are processed by a central facility and indexes are produced.

Research has shown that agricultural educators have not generally utilized the potential of the ERIC system. Few agricultural educators even have had a knowledge of ERIC. Of those who have had knowledge of the existence of the system, few have received instruction on how to use it.

An *ERIC Instructional Package for Vocational Educators* has been developed by David H. Miller and Gary F. Beasley at the ERIC Clearinghouse on Vocational and Technical Education. This package should prove useful for agricultural education personnel involved in teaching graduate education classes, preservice and inservice instruction, conducting seminars and workshops, and self-study. The content can be covered in approximately two hours. An additional three hours is rquired for hands-on experiences.

The package has been field tested and consists of teaching-learning materials in booklet form, transparency masters, and sample indexes. Pre and post tests are included. Student exercises and tests may be duplicated by the instructor for use with students. The total kit with 10 indexes may be obtained from The Center for Vocational and Technical Education, 1960 Kenny Road, Columbus, Ohio 43210 for twenty dollars. If purchased separately, the teaching-learning materials in booklet form are priced at five dollars and the transparency masters are priced at four dollars. ◆◆◆

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BOOK REVIEW

PRACTICAL FARM BUILDINGS, by James S. Boyd. Danville, Illinois: The Interstate Printers and Publishers, Inc., 1973, 265 pp., $5.95.

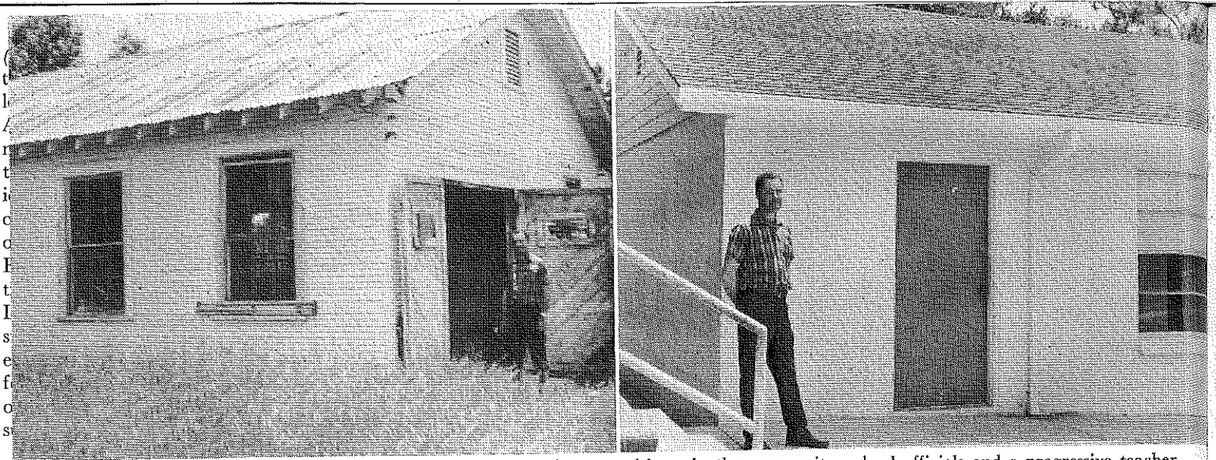
This book, as the name suggests, has some very good information on hand tool use, farm building construction requirements and selection features of different building materials. Much information is given on requirement features for livestock buildings.

The charts and diagrams are excellent and easy to read. These charts and diagrams are used extensively and anyone teaching farm building construction or even making buildings could find about anything they wanted to know as far as building farm sheds, etc.

This book would be a very good reference for a high school instructor of farm building construction and could also serve as a reference or text for college students who want a very thorough knowledge of requirements in building farm construction.

This book has questions after each chapter and could easily be a college text. Next year I plan to use the book for pictures it has of the hand tools.

Ralph Stuekerjuergen
Winfield-Mt. Union School
Winfield, Iowa



EVALUATION TO IDENTIFY NEEDS—Cooperation between citizens in the community, school officials and a progressive teacher of Vocational Agriculture and his students resulted in Thomas High School (La.) obtaining a modern new Vocational Agriculture Department. Billy Ray Crain, Vocational Agriculture Teacher, is shown standing (left) at the door of the old department and in front of the new facility (right). Patrons, parents, and Vocational Agriculture students from Thomas High School all assisted in the actual construction of the building during the summer months. The building 28′ x 72′ in size and contains the classroom and a well planned and equipped shop. (Photo from J. C. Simmons, Louisiana Area Supervisor).

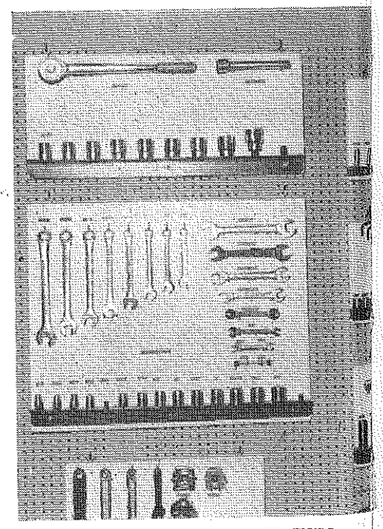
THE ROLE OF EVALUATION AND ACCOUNTABILITY

Teachers are accountable for many roles. Minnesota FFA Executive Secretary, W. J. Kortesmaki is wearing hats illustrating the responsibilities of the Agricultural educator. "Kort" used this technique to impress FFA members with many jobs to be done in each Chapter. (Photo from the Minnesota State Department of Education)

Stories in Pictures

by Richard Douglass

ACCOUNTABLE FOR STUDENT PROGRESS—J. D. Richmond, second from right, Vocational Agriculture Teacher at Clinton High School (La.) is shown evaluating students at one of the skills in plumbing. Observing are East Feliciana Parish Superintendent James V. Soileau, right, and Huey Tynes, Parish Supervisor. (Photo from J. C. Simmons, Louisiana Area Supervisor)



ACCOUNTABLE FOR FACILITIES — Vocational Agriculture Teachers are expected to use and care for well equipped Agricultural Mechanics labs and Horticulture facilities. Well designed tool storage and student cooperation make this job easier. (Photo by Richard Douglass)