THEME: Using Research
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Managing Editors

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There is much imprecision about the mission of vo-ag and who it is to serve. Are we involved with only vocational-technical education in agriculture or do we take on the larger area of agricultural education as our mission? Federal legislation has been specific in terms of the mission of vo-ag. Discussions at professional meetings and articles in professional literature would lead one to believe that the mission of vo-ag has changed considerably from that of vocational education. Further, the name this magazine uses "agricultural education," and it has been the professional organ for vo-ag for over 50 years. Many times the terms "agricultural education" and "vocational agriculture" are used synonymously. They are not synonymous, and this is precisely one of the biggest areas in need of clarification.

We must clarify the area (and hence the name) of our program if we are to know our audience. The charge in vo-ag is to serve secondary and postsecondary students with occupational preparation of less than the baccalaureate level for agricultural industry. Further included is adult young adult education for advancing in employment in agricultural industry. Anything other than this is beyond our reason for existence. It puts vo-ag educators into areas they know little about, and for which they have no real legal basis.

Areas of Agricultural Education

There are at least five areas of agricultural education: elementary, general, vocational, college/university, and international.

Elementary and general agricultural education are taught so that all people will have some knowledge of agriculture. Elementary agricultural education is taught in the pre-school and elementary grades, it is frequently concerned with how plants and animals grow, especially from the perspective of food and fiber production. The instruction is usually as units in science or social studies and may involve projects such as gardening or tending small animals. General agricultural education may be taught in separate classes or as units in other classes. Most often it is offered in junior high or high schools. It is intended to provide people with a knowledge of agriculture regardless of whether or not they are involved with agricultural industry.

College/university agricultural education prepares people for higher levels of instruction in agricultural professions. It may focus on research, education, management, production, or other areas of agricultural industry. The education may range from 4-yr. community colleges to 4-yr. private or public universities, or college, or a university. Individuals may obtain associate, baccalaureate, masters, and doctoral degrees. Land-grant universities also offer non-credit agricultural education through the Cooperative Extension Service. Primarily for adults and youth who participate through the 4-H Club.

Accept or Redefine

It is time to accept the responsibility for the segment of agricultural education which is vocational-technical education in agriculture. This is essential if we are to find appropriate program orientation in order to fulfill the mission for which the program was established. This is our legal responsibility and the area in which we have a successful history of performance.

If we cannot accept this mission, we must go about redefining what vocational-technical education in agriculture is all about.

Using Research

There is often a sizable gap between the practices taught and used in educational and those which have been found to be most efficient through research. Vocational agricultural educators are change agents. They are responsible for disseminating and encouraging the adoption of new practices.

An observant trend is that vo-ag programs are increasingly school-based. In short, there is a trend for teachers to restrict instruction and agricultural activities to the school campus, and lose their community orientation. The greatest danger is that they may become agriculturally ignorant. (The name may be said for teacher educators and supervisors.) And using research can help prevent agricultural ignorance.

The theme for this issue: "Research."

Jasper S. Lee, Editor

(Proceeds as Professor and Head, Department of Agricultural Extension Education, Mississippi State University.)

Extension agricultural education does not lead to a college degree.

International agricultural education focuses on agricultural subjects from the perspectives of varying economic and political systems, climates, and cultures. It may be achieved through international agencies, foundations, governmental programs, and colleges and universities.

From the descriptions of these, it is obvious that vocational agriculture and agricultural education are not the same.

Vocational agricultural educators are agricultural educators with responsibility for only a segment of the total area of agricultural education.

EDITOR'S PAGE

In Search of Who We Are

Jasper S. Lee, Editor

THE AGRICULTURAL EDUCATION MAGAZINE

November 1981
Why Use Research In Teaching?

Research is one of the few words in the English language that can mean almost as many negative as positive responses. This may be related to the manner in which research findings are often presented. Research naturally involves the collection and analysis of long sentences, endless charts and graphs, complicated statistical analyses, and thick publications that few people ever read and help provide an area of quick and easy comprehension.

The vocational agriculture teacher who labors through four to six hours of classroom and laboratory activities, an afternoon of visits, and a schedule of adult classes might justifiably look at a research publication and ask, "So what?" State supervisors of agricultural education might easily ask this same question. Many teacher educators in agriculture and those who are clearer as educators (graduate assistants) probably do not ask this question with enough frequency. This theme addresses that "so what" question. Articles in this issue focus upon using and applying research findings, not so much upon conducting research.

Research: Two Definitions

The Scholarly Definition. Just what is this beast we call research? The definitions are as numerous as there are performers of research. One of my favorite definitions was offered by H.M. Hamlin, the noted University of Illinois researcher and vocational education scholar. He wrote that "research is an unusually stubborn and persistent effort to think straight which involves the gathering and the intelligent use of relevant data." (Hamlin, 1962, p.14).

The Practitioner’s Definition. Simply put, research is an investigation to find new knowledge. This new knowledge is gained through two sets of words, those which face a person who has the patience, skills, and willingness to find a solution. Research is making decisions, identifying and solving problems.

Research Breeds New Knowledge

Technical Agriculture. Think for a minute about the situations and times when the following discoveries came about: internal combustion engines; blast resistant varieties of rice; technical hair; and fungicides, herbicides, and insecticides. All of these innovations came about because society faced tremendous concerns and problems and a need existed for these discoveries. Fortunately, individuals who possessed the required skills and dedication were available to find the necessary solutions. American agriculture would still be in the 19th century were it not for these advancements.

Many of today’s problems are being investigated, studied, explored, searched, and then re-searched with the same notion of being first-look. However, much of today’s research is not generally perceived to have far-reaching and earth-shattering impact. This situation exists because many of the problems do not share as much of the national spotlight as did corn blight in the 1960’s and the need for chemicals to control weeds, fungi, and insects in crops such as soybeans, corn, cotton, oranges, and tobacco.

Agricultural Education. This situation also holds true for much of the research conducted by agricultural educators. The problems of interest in most agricultural education studies are significant, but two concerns limit the number of findings that are produced. First, most of the studies are descriptive in nature and attempt to describe opinions, attitudes, feelings, and perceptions of groups such as students, teachers, administrators, supervisors, and teacher educators. The problems studied often focus on the FFA, adult instruction, classroom and laboratory instruction, supervised occupational experience programs, job satisfaction, and other similar topics. Second, many of the studies involve problems wherein there can be no clear, immediate and complete solution.

For example, a petroleum engineer who is developing a new fuel for tractors will have two choices when the study is completed. One is to use several words and focus on the person who can produce the new fuel, that is, the person who has the patience, skills, and willingness to find a solution. Research is making decisions, identifying and solving problems.

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How To Interpret Research Findings

Two Big Questions

Now that we’ve decided that research is not magical, let’s examine more carefully the difference involving the use of statistical procedures. To do this, let’s use examples of vocational agriculture education. Two questions can rest a little easier. In fact, don’t you as a teacher try to guide your students in “finding answers to important questions?” Our orientation in vocational agriculture toward a problem solving approach to teaching implies that we do just that. So, perhaps the key difference between our approach to teaching and research is nothing more than the words “unusually systematic” used in our definition of research.

In our problem solving approach to teaching, we develop a situation, assign background and a rationale for the study. In our teaching, we state a problem (e.g. should Farmer Jones sell his or her cattle on the basis of price weight or grade-and-yeild?); in research, we develop a “statement of the problem.” In teaching, we conduct teaching-learning activities to arrive at an answer to our problem (Farmer Jones should sell his or her cattle grade-and-yeild); in research, we typically collect data to aid us in solving our problem.

To set up research in teaching, we typically use statistical techniques to help us arrive at solutions to our research problems. If we subscribe to a problem solving approach to teaching vocational agriculture, then the students will be aware of the method we will be using. The social and educational research is already familiar to us. Only the use of some of the techniques may be unfamiliar to us as teachers and administrators. Both teaching and research are systematic processes for finding answers to significant questions. Thus, only the word “systematically” describes the research process from the teaching process. And, in fact, research is “unusually systematic” only in our eyes as teachers. Obviously, there is nothing unusual about research to a researcher! There may be one other characteristic of research that sets it apart from teaching: Ordinarily, in teaching, the teacher knows the solution to the problem. On the other hand, the researcher may be trying to answer a question that has never been answered satisfactorily. In essence, the researcher may be “blazing a new trail” rather than following paths already walked.

Research? The word itself conjures up visions of scientists in smelly laboratories mixing chemicals in test tubes. Or, you think of laborious questionable to complete some grand experiment, from which by the time we stop to think about the process a little, we realize that through research we advance the frontiers of knowledge; we discover hidden facts or cures. The purpose of this paper is to examine how practitioners in agricultural education interpret research findings not as to how to conduct research. As educators in agriculture, we must look to both education and technical agricultural answers to questions. The emphasis on “answers to questions” is deliberate, for “research,” the word that sometimes bothers us, might be defined simply as “an unusually systematic process for finding answers to important questions.” Our orientation in vocational agriculture toward a problem solving approach to teaching implies that we do just that. So, perhaps the key difference between our approach to teaching and research is nothing more than the words “unusually systematic” used in our definition of research.

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The AGRICULTURAL EDUCATION MAGAZINE

November, 1981
Researchable Problems For Vo-Ag Teachers

By Johnny Allen
Editor's Note: Mr. Allen is Vocational Agriculture Teacher, Alcorn Central High School, Glen, Mississippi 38840.

The modern teacher of vocational agriculture is responsible for teaching classes for in-school students, supervising occupational experience programs, advising the local FFA chapter, and teaching classes for adults in agricultural industry along with any other duties imposed by the local school. With all of these responsibilities, the vocational agriculture teacher may feel that there is more to be done than time permits.

One of the most important factors determining the success of the vocational agriculture teacher is not how long the teacher works, but how effectively the teacher works. Of paramount importance is the teacher's ability to identify and effectively solve problems related to the local vocational agriculture program. This can easily be done by a well-planned and conducted investigation into the local agricultural situation.

Do Research Yourself

All too often, we as teachers elect to leave all research to university or state department personnel because we feel that research is too complex or time consuming for our busy schedules. On the contrary, a local research project need not be excessively complex or time consuming to be helpful to the vocational agriculture teacher. The type of research most vo-ag teachers would conduct may be classified as descriptive. Descriptive research is done to describe the condition or the status of an event. A descriptive research project can help the teacher determine what the agricultural situation is, how many people these businesses employ, and what entry level skills the employers look for in prospective employees. This information allows the teacher determine what to teach. It also can help the teacher identify placement statements for the supervised occupational experience programs. Time invested in a local research project can pay dividends in planning an agricultural program.

After a problem has been selected, the first step in organizing a local study is to state the objectives for it. A local study has some inherent problems that the teacher should be aware of before undertaking it, however. Local studies often suffer from the personal bias of the teacher. Therefore, one of the problems that can be totally eliminated to eliminating bias from the study. Unclear or poorly worded questions are often the source of unintentional bias. The best way to overcome this problem is to write the questions with the objectives of the study in mind. The questions should then be examined by several people to be sure that they elicit the same kind of information from each person. When the teacher is satisfied that the questions will collect the information that he/she desires, the instrument is ready to be administered.

Normally when the population or group to be studied is very large, teachers should use a technique called sampling. However, when the population is small, sampling can introduce bias that would seriously affect the study. The teacher with a small population should survey everyone while collecting the data from a local community. This seems to be some division among researchers as to how the survey should be administered. However, when teachers understand the problems associated with each method they can do for themselves. The mail survey is a fast way to contact a large number of people. The biggest problem here is the inability to get back all of the instruments with the needed information. Low return rates can seriously affect the quality of the information obtained since less interested people tend to not return the instrument. It is prepared to follow-up non-respondents at least a second or third time. If the mail questionnaire is chosen, a cover letter should be included explaining why the return of the being done and whether respondents will be anonymous.

An alternative to the mail survey is the telephone survey or personal interview. Both the telephone survey and the personal interview have an advantage over the mail survey in that the teacher can guarantee almost a complete response. Also, the responses can be obtained at liberty to ask about any points that are confusing in the questions. A note of caution is necessary here. The teacher should exercise reasonable caution in the angle of the questions asked, to help the same manner to each respondent. This will also help to avoid bias in the study. The most serious liability encountered here is the time required to contact and interview each respondent. However, this time may be well spent if it builds good rapport between the teacher and the agriculturalists.

When the data are all collected, it is relatively easy to tabulate the results and compute the percentages and other simple statistics which help describe the current situation.

Thus, far, only research to determine the current agricultural situation in the local school district has been discussed. However, research should be an on-going concern and would include studies of the various clientele of the vocational agriculture program.

The following is a list of possible groups to study:

1. Former students to determine the present status and the relative worth of their vocational agriculture training.
2. The employers of former students to determine how well they were prepared for entry-level employment.
3. Employers who have students with supervised occupational experience programs to determine their perception of the merits of the program.
4. Parents of vocational agriculture students to determine the opinion as to the worth of classroom instruction, FFA activities, and supervised experience programs.
5. Adults involved in agricultural industry to determine their needs for adult classes.

6. Students currently enrolled in vocational agriculture classes to determine the needs for revised or new programs of instruction.
7. Others as the local situation dictates.

Research Gives You Information

The truly successful teacher of vocational agriculture is one who knows where his/her program is, where it should go, and how to get there. A well planned research project on the local level can help point the direction for these questions. The vocational agriculture instructor be a more effective and efficient teacher.

Research and the Supervision of Instruction

Allegations are sometimes made within the agricultural education family that much of the time and effort invested in research by and for the profession has little utility, particularly as applied to supervision.

In reflecting upon this charge, it is apparent that there can be little merit in a charge that much of the research has been historical or descriptive in design, and that research in agricultural education has not demonstrated a keen interest in or dependence upon good, sound research data for decision making.

Especially, in the latter case, such a circumstance is indefensible. The agricultural education program is an educational program. An educational program to be successful must be based on sound research data for decision making.

Finally, with the major social legislative emphasis that were incorporated into the Vocational Education Amendments of 1968 (PL 90-576), and expanded upon via the 1976 Vocational Education Act (PL 94-482), agricultural education can profit immeasurably by creditable research efforts that address critical social concerns. Research activities related to the disadvantaged and handicapped, increasing the numbers and effectively accommodating non-traditional students in traditional instructional programs, and impacting upon the unemployed and the underemployed populations are but a few illustrations.

The Role of Supervisors in Research

With a few exceptions, research seems not only to have been of little importance to supervisors in agricultural education, but there also seems to be little interest in or desire on the part of supervisors relative to understanding the relationship of research to effective program management. Reasons for such a perceived posture may well include the fact that many move into supervisory ranks directly from the practitioner level. Hence, they may not possess an appreciation for good research products because of the limited number of success stories that can be pointed to where research really made a difference, from the supervisory point of view.

If supervisors are to make more effective use of research in the future, it must be by design rather than by chance. The following suggestions provide a basis for a greater dependency upon research and perhaps stimulate

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Research and the Supervision of Instruction

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the profession to concentrate upon relevant and timely research questions that would have greater utility to program managers and teachers.

There needs to be an attitude change on the part of supervisors so that they recognize the importance to the profession. Such a change in attitude must include a recognition of the necessity for good research and the appropriate allocation of resources to support research activities that are commensurate with program needs.

Supervisors must determine their roles in the research process. Perhaps a major function of supervisors should be one of managing research: that is, to identify research needs and then program accordingly to encourage research undertakings on the one hand and then serve as a catalyst for disseminating and using research findings on the other.

In managing research activities, supervisors should not well to classify research into professional and technical needs. Classifying research activities facilitates separating specific research efforts that may have to be undertaken by the profession from those that may already be available or are in process outside the profession.

To illustrate the above point, for the past two years supervisors in agricultural education in Ohio have collaborated with the College of Agriculture at The Ohio State University in conducting a "Technical Update" for teachers of vocational agriculture. The technical update has been coordinated through the College's Department of Agricultural Education. ThisAllInstitute's update has been familiarize vocational agriculture teachers with the latest research that might be relevant to the teaching of secondary or postsecondary students of agriculture. Every department in the College has been involved in this major Inservice activity.

All participants, including teachers and college faculty, have been enthusiastic about this activity. It has made the latest happenings in technical agriculture available to 490 and 385 educators, respectively, out of 975 teachers from through more than 30 separate workshops on topics ranging from embryo transfer procedures in livestock production to small garden center layout and design.

By managing research in this fashion, good use has been made of technical data and information by having it presented by specialists in these respective areas of expertise. Likewise, such an approach should free researchers in agricultural education to deal with their areas of expertise: learning styles, teaching methodology, evaluation, and others.

Once key questions and information needs have been identified, supervisors should discuss them with qualified researchers. Such dialogue will readily determine which questions lend themselves to appropriate research models and a consensus can be reached regarding what will be researched and when.

A key point of emphasis regarding this suggestion is that, generally, supervisors have neither the time nor the inclination to conduct appropriate research efforts. Most states have creditable researchers in teacher education programs who understand agricultural education and are interested in conducting research in this area. The supervisor's role is to provide for the researchers with the necessary resources to make the best use of such a ready resource.

Joint supervisory-teacher educator meetings should be held periodically at the state level to review research findings, analyze and interpret those findings, and discuss implications for programs dispensed for use to date. Joint research, these meetings can cultivate a growing appreciation for and an understanding of research as an integral professional component.

Supervisors must become more active and visible in regional and national research conferences and activities. Increased participation in these activities would seem to encourage a greater relevancy of research efforts toward practitioner concerns. A forum should be established to discuss, interpret, and apply the most recent research to the standpoint of influential researchers in the profession as well as from the viewpoint of those who should be among the primary recipients and users of research findings.

Traditionally, agriculture has been recognized as having been founded on a strong research base. From the passage of the Morrill Act in 1862 to the Kellogg Act of 1938, institutions, through the evolution of the agricultural experiment and demonstration centers and a strong commitment to research programs that have formed the agricultural industry have developed and maintained a highly competitive economic force throughout the world.

Perhaps agricultural education is one of the many productively goods from which and the work that is quite successful "theory into practice model" that the agricultural industry has perfected. One of the strong linkages between vocational agriculture, research, teachers, supervisors, and institutional research and research personnel could conceivably pay handsome dividends in the future.

Note: For more detailed information concerning the Technical Update, contact Dr. John W. Strong, Chairman, Department of Agricultural Education, The Ohio State University, 2710 Fyffe Rd., Columbus, Ohio 43210.

Using Research for a Personalized Inservice Program

By John F. Parmley

Editor's Note: Dr. Parmley is Assistant Professor, Adult and Vocational Education, Kansas State University, Manhattan, Kansas 66506.

Agricultural Education in the United States of America. The compilation of this document is an activity of the Agricultural Education Division of the American Vocational Association. The document contains abstracts of university staff research, master's studies, doctoral dissertations, and undergraduate honors theses. The studies are indexed by subject to help readers locate topics of interest. Copies of the publication are often found in university libraries and in document collections of agricultural teacher educators.

Another reference on research in agricultural education is Agricultural Education: Review and Synthesis of the Research (Newcomb, 1978). This publication offers an analysis of research conducted between 1969 and 1978. Not all studies are included in the review. Representative studies provide an overview of efforts in teacher education, instruction, curriculum, student services, recruitment and retention of teachers, disadvantaged students, program planning, evaluation studies, administration and supervision, adult education, post-secondary agricultural education, and career education in agriculture.

Reports of agricultural education research may also be found in numerous professional publications such as the Journal of the American Association of Teachers of Agriculture and the American Vocational Education Research Association. Individual agricultural education journals and conferences such as the Journal of the American Association of Teachers of Agriculture consist of research articles and abstracts of studies to determine leadership and personal development competencies needed by workers in agriculture or to determine what to relate to student behavior.

The reasons why agriculture teachers fail to adequately use research are many and varied. Among the factors causing inadequate use are problems of locating research information, specific areas. The market of a personalized in-service program would necessitate that a teacher become familiar with the sources of agricultural education research.

One of the most comprehensive references is the annual Summaries of Research and Development Activities in Agriculture Education. The summaries are published by the Ohio State University, Columbus, Ohio, 1978.
Research Goals in Agricultural Education for the 1980's

By J. ROBERT WAREBROOK
Editor's Note: Dr. Warebrook is Professor, Department of Agricultural Education, The Ohio State University, Columbus, Ohio 43210.

What does the decade of the eighties hold for research in agricultural education? As we think about this question, consider the following statements made by persons who have reviewed and summarized the research.

Our research has been miscellaneous and relatively individualistic.

— Studies are made largely by students in graduate schools.

— Research in vocational agriculture may be characterized as disjointed or lacking in continuity.

— A problem is not ordinarily selected because it is a part of a research program.

— The survey has been a dominant type of research procedure.

There are studies which have not been carried far enough so that supervisors, teachers, or teachers can see how the findings may be used.

Do these statements sound familiar? Probably yes, since similar appraisals can be found in almost any review of research in agricultural education written during the past few years. But most surprising is the fact that these statements were written in 1953 by Dr. R.M. Stewart and Dr. F.W. Lathrop in the first issue of Summaries of Studies in Agricultural Education. Dr. Stewart, of Cornell University, was a Professor in the Research Committee of the Agriculture Section of the American Vocational Association. Dr. Lathrop was Research Specialist in Agricultural Education in the Office of Education, U.S. Department of the Interior. Incidentally, Dr. Lathrop was appointed to that position in 1970.

Perhaps these statements, written more than 40 years ago but apparently applicable to a considerable extent today, bring focus to several issues pertaining to research in agricultural education that should demand our attention during the 1980's. At least four concerns emerge. First, there is the question of the extent to which research is used as the basis for theory and program development. Next, there are the twin issues of what problems need to be researched and the arrangements for conducting research that maximize cumulative rather than disjointed results. And finally, appropriate research methodology and the quality of research must continue to be concerns for us.

Research as the Basis for Policy and Program Development

The 1935 Summaries of Studies in Agricultural Education lists 372 studies completed in the twenties and early thirties. The most recent issue of Summaries of Research and Development Activities in Agricultural Education, compiled by the Research Committee of the

ministators, boards of education, and advisory groups in local and area school districts. It is equally important that departments develop guidelines to assure the development of supplementary research, that is, research that is not directed specifically at the solution of a need as determined by the research committee or the school. As this research is developed, it is recommended that the data be analyzed and summarized, so that appropriate research findings are brought to bear on significant problems and issues in agricultural education.

Research Problems

Important and significant problems needing research in agricultural education are plentiful. Select any phase of educational agriculture — e.g., curriculum development, adult education, instructional techniques, or student interest in agriculture — and a multitude of research possibilities emerge. It is neither necessary nor appropriate to list here problems needing research in agricultural education. It is difficult if not a scarcity of research problems. It can be argued that one difficulty may be that we tend to research a wide diversity of problems rather than concentrate during any one period of time on a more narrow range of high priority research issues that have direct importance for agricultural education.

At the present time, the best source for identifying high priority research issues is the Proceedings of the National Agricultural Education Summer Research Conference, "Agricultural Education: Shaping the Future," held in July 1980. The proceedings have identified three broad but major issue areas as crucial to the future of agricultural education — objectives of agricultural education as part of public education; development of professional teachers of agriculture, and agricultural education at the high school level. This list of high priority issues and concerns identified during the 1980 conference provide the foundation for a series of programmatic and policy analysis studies.

Arrangements for Conducting Research

Universities will continue to be the major location for research. Faculties in agricultural education have both expertise and incentive to conduct research. It follows, also, that a significant portion of the research will be conducted by graduate students, most of whom are former or present teachers of agriculture.

The challenge is to develop a more programmatic approach to research such that the results are cumulative rather than disjointed and lacking in continuity. To meet this challenge, faculty at the major research universities, in consultation with teachers and supervisory personnel, need to develop a system of high priority research areas for programmatic emphasis. Then, problems selected for investigation by faculty and graduate students are more likely to build on previous research in contrast to the more prevalent individualistic pattern.

Renewed effort is needed to initiate cooperative research projects. A prerequisite for cooperative research is the identification of highly significant problems that have broad applicability.

There are multiple examples of the integration of seemingly individualistic and disjointed studies can also contribute to a more programmatic and cumulative research effort. An example of this approach was the 1979 University of Georgia study that focused on the use of research in policy and program development, in

for small groups of researchers with common interests to make thorough studies of research in selected areas of agricultural education, develop a summary of the cumulative knowledge generated, identify emerging research issues, propose specific recommendations for translating research into policy and practice, and critique the methodology employed. These periodic, indepth analyses of research in agricultural education will be the responsibility of the Research Committee of the Agricultural Education Division of AEA. For instance, what have we learned about supervisory education? What new questions arise from research on this topic during the past 5 to 10 years?

Quality of Research

Agricultural educators must continue to place high priority on further developing their expertise to design, conduct, report, and use research. It is evident that many in the profession are working diligently to improve the quality of research in agricultural education. The National Agricultural Education Research Meeting held annually and the regional research conferences in agricultural education attest to this fact. Those in the profession who conduct, supervise, and manage research must continue to stay current in the latest developments in research methodology and data analysis.

Another Decade of Research

Assuming we continue to produce research in agricultural education during the 1980's at approximately the same rate of increase we have during the 1970's, we can anticipate some 1,500 to 1,800 additional studies by the end of the decade. Will the magnitude of the research be matched by its quality and its use as a basis for policy and program development? In addition to high quality research pertaining to significant problems and issues in agricultural education, our goal must be to enhance the renewed efforts to synthesize from the research new knowledge that is used in policy and program development.

In the foreword to the first issue of Summaries of Studies in Agricultural Education, the Assistant Commissioner for Vocational Education in the Office of Education stated, in 1935, that "The continuous development of vocational education in agriculture depends in no small degree on continuous systematic study of its problems." How strongly are we — teachers, supervisors, and teacher educators — committed to this proposition in 1981?

References


3"Agricultural Education: Shaping the Future," Proceedings of the National Agricultural Education Seminar, Kansas City, Missouri, July 15-17, 1980. (Edited by Jasper S. Lee, Mississippi State University)
Using Experiments in Teaching

Why would anyone ever want to use research in teaching vocational agriculture? To answer that question consider what teaching is all about. It is about helping students learn new information or gain new knowledge. This is precisely what research is all about; it's a way of generating or discovering new knowledge.

The current way of practicing agriculture is often based on tradition. The job of the teacher is to provide concepts to students so as to help the students to know how to improve their occupational competence. When there are three turfs plots at the school and one receives no fertilizer, the second receives approved rates and analysis of fertilizer, and the third plot receives one-half the recommended rates, then the results ought to be vivid and memorable learning for the students.

Many experts in vocational agriculture very properly advocate basing their teaching, which is a problem-solving nature, on Dewey's steps of reflective thinking. These steps are: (1) experiencing a provocative situation, (2) defining the problem, (3) gathering data, (4) developing tentative conclusions, (5) testing the conclusions, and (6) evaluating the outcomes. These same basic steps constitute the steps in scientific method which is the basis for most agricultural research. We can have students using the same process in their learning as the researchers use in their learning. This process can be built into instruction whether it is learning from supervised study, lecture-discussion, or conducting or reviewing an experiment.

The next time a student raises a question such as, "Teacher, why do we have to bother with something pointless?" or "What difference does it make what amperage the welder is set on?" you might have given the clue that you want them to want to have the need for the experiment in order to learn effectively. When students raise questions such as these they may not need another lecturer or even one of your good suggestions. Rather they may need the time to try something out and compare the results for themselves.

Why Use Experiments in Teaching?

The use of experiments as a teaching technique has a number of desirable benefits. It allows students to practice inquiry into the subject rather than having to depend on a teacher to give them the answers. Students can learn to think more systematically and draw more careful conclusions when experiments are used as a part of the teaching-learning process when they are "given" by the truth a teacher who acts as an expert. By conducting class and laboratory experiments, students become quite actively involved in their learning. The results of experiments graphically illustrated the concepts and facts teachers want students to learn. When the results of the experiments echo the points the teacher has been making, then the teacher enjoys renewed credibility and students are the usefulness of their classroom and laboratory learning.

Possible Uses of Experiments in Teaching

Vocational Agriculture

Experiments can be used to create interest, gather data needed to answer questions or solve problems, and to test conclusions students have arrived at in their studies.

Create interest. When teaching a welding unit a teacher could weld some of the same type of metal at three different amperages and then propose to the class that they break the different welds to determine which is best. However, the teacher might want to inform them that they must first guess which will be the strongest and why. This will stimulate much discussion and interest. The students could then be allowed to test welds for themselves, followed by supervised study to gain a clearer understanding of why the amperage had the effect it did.

Answering Questions or Solving Problems. At the point where the students in the previous example tested the welds (recorded the results) each student could then act as a researcher in order to learn effectively. When students raise questions such as these they may not need another lecturer or even one of your good suggestions. Rather they may need the time to try something out and compare the results for themselves.

Examples of Experiments

Experiments which answer the following questions can prove useful in instruction in vocational agriculture:
1. What herbicide controls weeds best?
2. What happens to baby chicks that are fed balanced rations versus junk food?
3. Which litter is strongest?
4. What is the effect of temperature on oil viscosity?
5. How does the timing of the engine affect the horsepower?
6. How effectively are erosion control practices functioning?
7. How does plant population per acre affect yield?

Use of Existing Research

It's not always possible or desirable to conduct one's own experiment at school. Oftentimes vocational agriculture teachers can make use of data from research conducted at the state experiment station, the United States Department of Agriculture, or in private industry. Agriculture technology develops so quickly that vocational agriculture teachers who rely on textbooks for their new information will automatically be using information that is five or more years old. This need not be the case. When one can easily obtain up-to-date research results in his/her state on an annual basis. The results are often physically portrayed during field days at each state's research farms.

In using research results of others in class, it is essential that the teacher introduce the background for the research in the same style; then portray the data in "striped down", straight-forward, talk. Then the teacher can lead students to develop hypotheses based on concrete findings that have been clearly presented.

The Admiral Peary Story:

Competency-Based Vocational Education Works!

HANSHEE PANDYA
Editor, Make Dr. Pandya is Instructor of Small Engine Repair at Admiral Peary Vocational Technical School, Route 622, Flehmen, Pennsylvania (1993).

Competency-based vocational education is an integral part of the instruction at Admiral Peary Vocational Technical School in Pennsylvania. The classes in small engine repair could not function as efficiently as they do now without competency-based education because of the clientele served in the regular classes. Regular classes include junior, seniors, advanced, disadvantaged, and adult students in the same classes, as well as students with different learning abilities. One of the advantages of the system is that the teacher can work with each student individually and manage the learning and achievement experiences more efficiently. In the Small Engine Repair class, where the students repair customer's engines, each comes with different repair needs.

A competency-based education, learning, and management system has been used for the past 10 years. Our experience in administering, competency-based education is beneficial to many educational institutions since very few articles have been written that deal with the actual procedures for administering the education. This article will deal with how competency-based education was developed and is administered in Small Engine Repair and related courses.

Guidelines Used

The following guidelines were used for course development and administration:
1. Define scope of course.
2. Collect and validate occupational competencies.
3. Identify valid terminal performance objectives for each task.
4. Identify sequential performance steps for each task.
5. Determine resources required to perform tasks.
6. Determine required task sequence.
7. Evaluate student performance for each task and objective.
8. Identify student need and instructional program contents for each task.
9. Design a learning management system.
10. Conduct periodic, objective, and course evaluations.

After surveying the industries and participating school districts and the nearby region, a two-year Small Engine Repair Program was developed as a part of vocational agriculture. Occupational competencies were collected from different available resources. Suggestions obtained from engine manufacturers were validated by the advisory committee consisting of area dealers and repairmen. A task glossary was prepared arranging 492 tasks in logical sequence.

(Continued on Page 16)
Competency-Based Vocational Education Work!

(Continued from Page 19)

How CBVE Works
At the beginning of the school year, students are provided with a Task Title Glossary as a course outline, a folder in which to keep time and work records, and computer cards. Once a student has completed a task satisfactorily, he or she fills out the computer card, and the teacher allows the student to take the computer card to the data processing class. The student also completes the test (which is not critical) and the 85 percent satisfactory level. At the end of each school year the test and CBVE Log are revised and new necessity modules, units or tasks are added, while unnecessary or impractical units or modules are removed from the glossary.

Myth
There is a myth about competency-based education that once the teacher has prepared the tasks the only thing to be done is give a student a task and let him or her read and finish the task, and then give the student the next task. This belief holds that the teacher's work is more of less monitoring and handing out tasks. According to our experience at Admiral Peary Vocational Technical School, the teacher has to spend more time teaching than in the traditional method of whole class lecturing. Also, the lessons need more preparation since the teacher has to teach many different things at the same time in order to individualize.

By Peter Step
Editor's Note: Mr. Step is Vocational Agriculture Instructor at Rockville High School, Rockville, Connecticut 06067. This article is based on his entry in the Ideas Unlimited Contest sponsored by the National Vocational Agriculture Teachers Association.

Using a Small Hog and Lamb Finishing Unit

Many students in vo-ag do not have farm situations for production agriculture enterprises as their supervised occupational experience. At Rockville High School in Connecticut, a unique confinement structure has been developed. In this structure, students may grade from one to eight lambs or pigs and learn many animal agriculture competencies.

The structure is an 8' x 8' slatted oak floor with sides. If treated, the slats will last about 8 years. In constructing the facility, feeders and waterers should be placed on the slat floor since this will use valuable square footage needed for the animals. The race requirement for feeder pigs on slatted floors is 4 square feet for animals under 100 pounds and 8-10 square feet for those over 100 pounds.

With feeder lambs, 4-5 square feet should be provided for each lamb.

The photograph shows slats bolted to a metal angle iron frame 18 inches off the ground. A simpler procedure would be to nail the slats to a frame constructed of 2" x 10" lumber supported by concrete blocks at each corner. The floor should be constructed in 4' x 8' sections to make the unit easy to move. An alternate is to build the floor on a wagon chassis. This would make it easy to move the pen. Side panels should be about 40 inches high, with a door constructed in one side.

A complete, well-drained ration should be fed.Feeding hay to lambs creates a wasteful situation and the slats might become plugged. Feed efficiency is increased with this unit. Parasite infections are reduced.

IDEAS UNLIMITED

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The National Status of Adult Education in Vocational Agriculture

By M.J. Cepeda
Editor's Note: Dr. Cepeda is Associate Provost of Agricultural Education at Texas Tech University, Lubbock, Texas 79409.

A curve: "The National Status of Adult Education in Vocational Agriculture"

As more emphasis is placed on adult education, we must examine our adult programs. Adult education has been a function of vocational agriculture since the passage of the Smith-Hughes Act of 1917. This Act established a national system of vocational education, specifically including vocational education for adults who were involved in production agriculture. The programs have been expanded to include those persons with interests in all areas of agricultural industry.

Adult vocational education programs are operated independently in each state. The result has been a variety of unique programs in each state. A lack of identifiable program characteristics has existed among schools, states, and regions that provide clear definition to programs. The level of program content, procedures, and outcomes. In order to "bridge the gap" with regard to this problem, the Interregional Agricultural Education at Texas Tech University conducted a national survey to determine the status of adult education in vocational agriculture. To secure necessary information for the study, each state supervisor or director of vocational education in the nation was surveyed.

The Picture

Designers of the Smith-Hughes legislation stipulated that vocational agriculture programs were to conduct adult education. Although the quality of existing adult programs is generally high, only 40 percent of vocational agricultural teachers sponsor adult education. Considering involvement on a regional basis, the Southern region has the highest percent of vocational agriculture departments currently involved in adult programs (20 percent), followed by the Central regions (10 percent). Fewer of the departments in the Eastern and Western regions (16 and 19 percent, respectively) actively reported being involved in adult education programs in the Nation are organized by vocational agriculture teachers according to local needs.

Meeting Needs

Supervisors were requested to identify whether programs in their respective states met the needs of adult agriculturalists and to identify the priority level of adult education as a program area within vocational agriculture. Supervisors were asked if their programs were doing a sufficient job could be told to have selected either the "Very Well" or "Moderate Well" categories. Collectively, these two categories represented 50 percent of the respondents. The remaining 50 percent of the supervisors selected either the "Very Little" or "Not at All" categories, indicating their programs were not meeting the needs of adult agriculturalists.

When supervisors were asked to rank eight priority areas of vocational agriculture, adult education ranked 6th; cumulatively. The complete rank order was as follows: (1) classroom teaching, (2) supervised occupational experiences, (3) programs for high school (Continued on Page 20)
The National Status of Adult Education in Vocational Agriculture

(Continued from Page 19)

students, (3) Future Farmers of America organization, (4) program planning, (5) professional improvement, (6) post-education, (7) public relations and (8) community service. Adult education was ranked fifth in the Central and Southern regions, sixth in the Eastern region, and eighth by the Western region.

Statistical tests were used to determine if a relationship existed between state supervisor preferences rankings of adult education and their responses regarding meeting the needs of adult agriculturists. As adult education was placed at a higher level, supervisors rated the needs of adults as being met moderately or very well. Conversely, as the supervisors rated adult education at a lower level on a priority basis, they indicated that adult programs were not adequately meeting the needs of adults.

Additional information which gives a clearer picture of the present status of adult education includes funding for adult education, teachers role in adult education programs, and recommendations of state supervisors to administer adult programs, and recommendations of state supervisors.

This survey showed that state governments provide the greatest amount of financial support followed by local funds and the federal government, respectively. Furthermore, supervisors indicated additional compensation for adult work while other state agencies consider adult education a part of the regular work load.

Conclusion

When considering problems at the secondary public school level, vocational agriculture is considered a leader in adult education. We must foresee what is the minds of the program leaders from the "grass roots" to the "national level." To assist vocational supervisors, teachers, and other interested persons in further improving adult education in vocational agricultural education, several points should be considered. First, to meet the objectives for adult education, as stated by the Smith-Hughes Act of 1917 and specifically funded by the Vocational Education Act of 1968 and 1974, a higher percentage of vocational agriculture departments and teachers need to be involved in the adult education process. Secondly, state education agencies need to adopt policies which specify qualifications for adult education in vocational agriculture. Also, an analysis should be made to determine courses (future or existing) from which funds may be used for adult vocational education a higher priority item to become a more successful segment of vocational agriculture.

In general, the state supervisory staff should cope with a greater amount of time supervising the adult programs in vocational agriculture. The possibility of forming a working group on adult education in vocational agriculture, such as the Young Farmers, should again be investigated. The need to determine if research specialists should be employed by the state to conduct research on adult education in vocational agriculture should continue to have regional and national meetings to determine goals and objectives for adult vocational agriculture education.

BOOK REVIEW

The structure of education and training for agriculturally related careers is complex. All manners of education exist, ranging from vocational-technical courses to highly specialized post-doctorate study. The training and educational requirements are as varied as the types of agricultural employment.

The mass of opportunities is difficult to comprehend. It certainly is not understood by the high school student and probably not very well by teachers. The best we can do is try to understand a segment of the opportunities. The range of jobs and employment opportunities with which we are familiar is limited by our own experiences and education.

Role of Vo-Ag Teacher

The career guidance provided by vo-ag teachers is an area of concern. The reasons why we choose to becoming vo-ag teachers are many and varied. Where did the spark originate that set us on our path to becoming a teacher? What person or incident planted the seed? Was it a school counselor or a period of incubation before we decided? We made it in a short period of time from the counselor and others that we really should do something else? Is it an interesting and enlightening to review why we became teachers ourselves.

The vo-ag teacher must accept student career advising as one of the professional responsibilities that goes with the job. This is not a responsibility usually detailed in the job description to the teacher can choose to ignore it. However, there are three areas of professional responsibility which should be considered by vo-ag teachers.

The first and most important is to the students. An active personal and professional interest in each student includes an interest in career choice. A second responsibility is to the agriculture teaching profession. We have a responsibility to our profession to help insure a continuing supply of interested and qualified teachers. A third area is our responsibility to the whole industry of agriculture to help our students learn about the careers and jobs which exist and understand how they relate to their interests and abilities.

Vo-ag teacher's responsibility begins with the career awareness activities of the classroom. It also includes guidance, influence, and suggestions to individual students. It is often necessary to push a little, to plant a seed of thought, or "light a fire under a person." Career decisions are not made entirely free choice. They are not made in an open market. The amount and kind of pushing depends on the personality, attitude, and ability of the individual student.

Acceptance of this responsibility may result in opposition from the school counselor or the college recruiter or the vocational school administrator. It may mean advising a student to think about studying agronomy at a land-grant university rather than a premedical curriculum at a liberal arts college. It may mean advising a student to consider a four-year degree rather than... (Continued on Page 22)
Implications for the Vo-Ag Teacher: Student Career Guidance

(Continued from Page 21)

a two-year technical program. It may be counseling a female student to check out a career in veterinary medicine rather than a traditional female role as a nurse. It may mean leading a student to consider tractor mechanics rather than auto mechanics.

Career guidance involves concern for level as well as direction. It includes challenging students to aim as high as possible. For those with ability, a professional degree from a college or university must be considered. A college degree has the potential for placing the student on a career ladder that is longer and reaches higher than does a non-degree program.

Part of the reason for this greater potential is the liberal arts element which is a usual part of degree programs and helps to develop communication skills. The lack of communication skills among non-degree people is emerging as a major difference between degree and non-degree employees at the field and higher levels of management.

Leadership for Agriculture

The development of leadership skills is another reason why we should be concerned about encouraging our students to aim as high as possible. What are the implications for our rural communities if students stay in the community and pursue a postsecondary vocational course rather than a baccalaureate degree in agriculture? Is it possible that rural leadership will suffer because these people do not have the more liberal education provided by a college or university?

How does a vo-ag teacher fulfill the professional responsibility to guide students in their career decision making? The concept of a lifetime career in any one profession or occupation is fading. As our experiences in a job accumulate and our awareness of other job opportunities, we are better informed and more aware of ourselves and our desires.

In order to best help our students we need to push open the doors and windows on job possibilities. We need to expand horizons as far as our experience and education permits. This will enable our students to make choices which are satisfying to them. We need to teach vocational and conduct tours and invite classroom visitors who open job possibilities to our students. We need to know the interests and capabilities of each student and challenge them to make realistic and imaginative selections of entry jobs with some vision of where the future leads. Parents must be involved in this process so there is understanding and support for the decision made by the students.

Vo-ag teachers have a professional responsibility to students and to the agricultural industry to promote high level career goals and choices. They also have the responsibility of providing the education and training to achieve them. Teachers need to challenge students to set high goals. Teachers need to provide the inspiration for realistic aspiration.

How do I incorporate my classroom instruction with the camping trips? First, try student teacher cooperation. In my classroom, they learn to respect both the other students and myself.

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LETTERS

"Letters to the Editor" is a feature to encourage dialogue among readers of the Magazine. Selected letters will be printed without comment or editing. Your letter will be welcomed! (Send letters to: Editor, THE AGRICULTURAL EDUCATION MAGAZINE, P.O. Drawer AV, Mississippi State, MS 34962.)

Editor:

Your forward looking comments in the Editor's Page in the Agricultural Education Magazine are timely and on target. This is particularly true when you suggest a departure from the old and traditional way. Too many "agries" are, unfortunately, uncomfortable and content in the status quo for agricultural education. Your thoughts provoking ideas are very refreshing. Keep up the fine work.

Sincerely,

Ralph E. Matthews, Specialist
Agriculture/Nature Resources
Chancellor's Office
California Community Colleges
2286 S. Street
Sacramento, CA 95814

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Editor:

I am concerned that in your editorial "Keeping Adult/Young Adult Education in Perspective" of the June 1981 issue of the Agriculture Education Magazine, you neglected to mention the one area of adult agriculture education which is not served by the private agribusiness sector. And to us in Minnesota, the most important, is Adult Farm Management Education.

Those of us in the field, who daily work with farmers, realize as you mention, that many services are provided either on a fee basis or a user cost basis by the free enterprise agribusiness sector. We know of no programs offered under such a framework in the field of Farm Management Education. Presently there are some 5,000 farmers enrolled in the Minnesota Farm Business Management Program. This should indicate that there is a need for this program.

May I urge you to need Ed Peterson's contribution to your June 1981 issue which directs itself to this issue?

Sincerely,

Ed Sider
Area Vo Ag Coordinator
Thief River Falls Area Vocational Technical Institute
Thief River Falls, MN 56701

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How FFA Camping Trips Pay Off

When my FFA president says, "FFA members, why are we here," many of my students did not understand the meaning of the statement they had committed to memory. During this time, I had been searching for ways to increase my FFA chapter's membership through activities that would be fun and at the same time provide a learning experience, something that would bring meaning to the words at the beginning of the meeting. Last year, I found the activity that fulfilled this goal: FFA camping trips.

My students comprise a wide variety of backgrounds—from the very rich to the very poor. They live from the integrity to the chateau areas. Even with this variety of backgrounds, many have never experienced the wonders of camping or even thought it could be related to FFA or agricultural studies.

How do I incorporate my classroom instruction with the camping trips? First, try student teacher cooperation. In my classroom, they learn to respect both the other students and myself.

By ELIZABETH SMITH
Editor's Note: Ms. Smith is a Vocational Agriculture Teacher, #1 Thorn Lake, Apt. 31, Newark, Delaware 19711. This article is based on her entry in the 1981 Envirothon Contest sponsored by the National Vocational Agriculture Teachers Association.

Their behavior in the classroom has to be the best, or the trip will be canceled. On the trip, the students learn to get along even with their diverse backgrounds. This is something that does not happen anywhere else in the school system.

The students are responsible for planning the entire camping trip, including finding campers, collecting supplies, planning the menus, delegating cooking responsibilities and chores, and setting up the classroom work they have to bring back. They are also responsible for contacting farms in the area and planning hikes.

On the trip, the classes separate their activities. The wildlife class searches for birds and wild animals by tracking footsteps and ski tracks. The animal science class gains access to farms nearby. They are especially involved in horseback riding which is something most of my students have never done.

The plant classes also get into the act. Members of the landscaping class will try their hand at tree and shrub identification in the wooded areas. The greenhouse and floriculture classes search for flowers that can be identified and dried for future dried flower arrangements.

The students learn survival techniques, how to survive in inclement weather, and how to survive extreme cold at night. Living off the land and finding out what it means to have no washers, showers, or bathrooms.

I can not begin to express my happiness with the students' conduct and interest in learning. These camping trips have been what I needed to inspire students into creating a top notch FFA. Now, when my president asks, "Why are we here," they answer with pride and understanding. Maybe some of my fellow agriculture teachers could try this method of learning and also inspire their students as I have.

Photographs show various activities during a recent camping trip.

NOVEMBER, 1981
The NVATA has operated a booth in the National FFA Career Show each year since the show was initiated. Elin Duckworth, 1980-81 National FFA Vice President of the Western Region, is shown making a presentation to Sam Stenzel recognizing the role of NVATA. Mr. Stenzel is Executive Director of NVATA.

The "Teach Vocational Agriculture" booth in the National FFA Career Show is popular with FFA members. Here members fill out cards indicating career interests. Several thousand persons annually fill out cards, with about 500 identifying agricultural education as their career choice. (Photographs courtesy of Sam Stenzel, Executive Director, NVATA, Alexandria, Virginia).