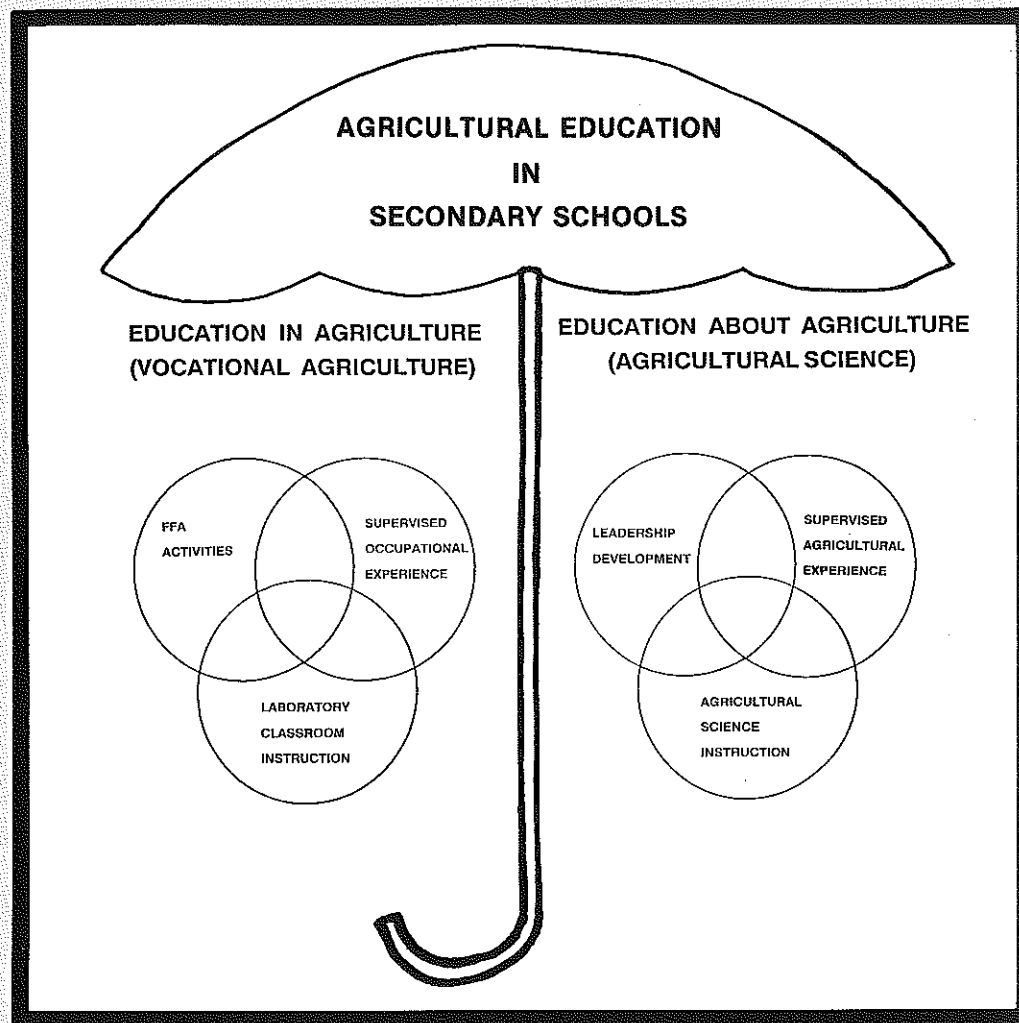


The

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Magazine



The Profession Reacts

THE AGRICULTURAL EDUCATION MAGAZINE



May, 1989

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The National Summit

"What is the ideal agricultural education program for this country?" Dr. Larry Case concluded the initial session of the National Summit on February 24, 1989 with this question for all of the 46 participants in this historic meeting on agricultural education. The second session of the National Summit, May 10-13, 1989, ". . . will focus on clearly articulating the vision and plan complete with a blueprint whereby the national organizations can move together to coordinate and execute a national presence for agricultural education," according to Dr. Case.

The concept of a National Summit on agricultural education was proposed in May, 1988 by The Council's Board of Directors with the expectation that the results would include: 1) a strategic plan for agricultural education; 2) improve the effectiveness of national leaders to manage change; 3) lay the foundation for a marketing plan for agricultural education. The initial session entitled "Leadership and the Change Process in Information Age" was an overwhelming success under the direction of Bob Moawad, Chief Executive Office, EDGE Learning Institute.

Participants were urged to remain, "green and growing and not to become ripe and rot." While the concept is a truism for the plant scientist, it has great merit for individuals and institutions. All that has to be done is equate "green and growing" with "changing (adaptation) and learning" and the concept fits like a glove for us as individuals and to our profession of agricultural education. Without the enthusiasm created by new challenges, we tend to get in a rut and our programs are perceived as traditional and outdated.

Time For Change

An important criteria for change is timeliness. Conditions must be correct if change is to occur. Individuals involved in organizations and programs must perceive a need for change and there must be a vision of what might be and that vision must be perceived as more desirable than the status quo. It would certainly seem that the time is right to take a look at the total agricultural education program and make significant adjustments to meet the emerging needs of our changing clientele. Contributing to this timeliness is the National Research Council study released in September 1988; the changes in the National FFA organization; and the resolutions adopted in St. Louis in 1988 by all three of the professional organizations (NVATA, AATEA, and NASAE) to expand the mission of agricultural education.

Further, evidence of the timeliness for change and the importance of agricultural education to the nation is provided in the opening statement by Clayton Yeutter, President Bush's nominee to be Secretary of Agriculture, when he appeared before the Senate Committee on Agriculture, Nutrition and Forestry on February 2, 1989. Secretary Yeutter concluded his prepared statement by noting:



By PHILLIP R. ZURBRICK, EDITOR

(Dr. Zurbrick is Professor in the Department of Agricultural Education at The University of Arizona.)

"Education has always been the antidote to poverty, and that shall continue. So why mention it at all? Because the commitment to education and vocational training in this country is not sufficiently strong. We should not aspire to competing with the rest of the world in wage rates, in agriculture or anywhere else. We must compete on the basis of technology, innovation, entrepreneurship, creativity, institutional flexibility and personal and institutional freedoms. All of those are built on education! That is a challenge for America — at every level and at every institution, including the Department of Agriculture." (1989, p.7.)

The Vision

The Secretary's philosophical note encompasses vocational agriculture and the broadened mission of agricultural education very nicely. The challenge to the agricultural education profession and the leaders attending the May session of The Summit is to develop a vision of agricultural education for the next decade that addresses technology, innovation, entrepreneurship, creativity, flexibility and individual needs for education in agriculture. The vision needs to make agricultural education more than vocational agriculture as recommended in the National Research Council study. The broadened mission needs to be applied to existing vocational agriculture programs as well as to new programs that serve additional clientele in need of education about agriculture.

The leaders in agricultural education and all of those who are members of the profession must guard against superficial name changes that lack substance or direction. Such superficial "tinkering" will not serve the profession well and in fact will be regressive in its effect. While some might opt for such a "quick fix" rather than the effort required to develop a new vision, the effort will pay dividends in the final analysis.

This issue of *The Magazine* provides a vision of agricultural education for the future. The model depicted on the cover provides a concept of agricultural education at the secondary school level that is in fact more than vocational agriculture. Further, the model provides for two

(Continued on page 4)

Agricultural Education in the News

Congratulations to the teachers, teacher educators and state supervisors for their undying commitment and dedication in making agricultural education such a successful discipline. The time, effort and energy which the total agricultural education family has exerted in building our profession is unmatched by any discipline at the local, state, or university level. Where can one look, regardless of discipline, to find better people who work any longer, harder or smarter than those in the agricultural education profession?

The agricultural education profession should be excited about being studied by the National Academy of Sciences. Why, you may ask? Well for starters, the study has brought national attention to agricultural education. The study has everyone from administrators to legislators talking about agricultural education. This is a much needed change from agricultural educators talking to themselves.

The study did not identify anything shocking or new that hasn't already taken place in some program, somewhere, at some point in time during the history and the development of agricultural education in this country. Agricultural education teachers at the secondary level have integrated science throughout their entire agricultural education curriculum. Many states have implemented agriculture in the classroom. The profession has even integrated computers into their educational program. Over the years secondary agricultural teachers have successfully offered semester specialty classes for high school students not interested in gainful employment in agriculture, but wanted to learn specifics about certain areas of agriculture. Agriculture teachers have taught about agriculture at the middle school for several decades. Many teachers of agriculture have been innovative and creative in their approach to provide students with supervised agricultural experience programs that meet their occupational objective.



BY STACY A. GARTIN, THEME EDITOR
(Dr. Gartin is an Associate Professor in the Department of Agricultural Education, West Virginia University.)

The Smith-Hughes Act of 1917 provided funding for supervision of teachers of vocational agriculture. Throughout the glory years while agriculture and vocational agriculture were flourishing, state supervisors were in abundance. In the midst of the seventies and early eighties with a tightening of economic conditions in many states, many state supervisory staffs were cut to a minimum. Could this have had any effect at all on implementation and diversity in which agricultural education programs at the secondary level needed to follow? Did this cutback in state supervisory staff affect the quality of teaching that was displayed and exhibited at the high school level? In many states annual or semi-annual supervision of high school teachers of agriculture changed to one every other year or one visit in three years.

Teacher education over the years has continued to support and promote the problem-solving approach to teaching. The problem-solving approach to teaching is and will continue to be an important factor in the promotion, development and delivery of agricultural information at all levels.

Now is the time, this is the place, and we are the people who must be willing to lead the re-tooling effort of agricultural education.

The National Summit

(Continued from page 3)

delivery systems each with unique characteristics that provides instruction: 1) about agriculture and 2) in agriculture as recommended in the National Research Council report.

The Ideal Agricultural Education Program

I would like to challenge each reader of this issue to give serious consideration to the question of the ideal agricultural education program for this country. Share your vision with the leaders of your professional organization. Both the President and President-Elect of all national agricultural education organizations are involved in The National Summit.

I can assure you they would appreciate your vision of the future for agricultural education. Remember one of the distinguishing characteristics of leadership is a willingness to share your vision for the enhancement of the organization. Finally, remember that "managers are people who do things right and leaders are people who do the right thing." (Bennis, 1985 p. 21).

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LEGOS — Building Blocks For Leadership Skills

A twist on traditional leadership development "games" may be as near as a child's toy box. The Management Training and Development Institute of Washington, D.C., uses Lego building blocks as a tool in their leadership/management training sessions. The two-part group activity centers on the ability of teams to replicate a Lego model that's been developed by the session leader.

This exciting variation of other leadership training techniques can be used with nearly any group. While the activity has been used primarily to identify effective leadership and management styles, it could easily produce discussions on group dynamics as well.

Pre-Activity Needs. (a) Create teams of 5-6 members, (b) design and build one Lego model with 5-6 pieces per team member (e.g. 6 members per team = one model with 30-36 Lego pieces), and (c) prepare a bag of the model's Lego pieces for each team.

Part One. Ask each team to select a leader. Direct the team leaders to view the model which is not within their team's view, preferably in another room. Instruct the leaders to draw the design and develop instructions for building it (allow about 15 minutes). Tell the leaders that once they've completed the instructions, they should return to their group, open the Lego bag, and direct their team's building of the model, using the instructions he or she developed. When the teams have built the model correctly, ask them to take the model apart and wait for instructions on completing the next stage (allow 15 minutes).

Part Two. As session leader, ask each team to develop its own strategy for completing the model (allow about 15-20 minutes). The only rule is that the team's strategy must allow each team member to build a part of the team's model, about 5-6 pieces of it. Direct the teams to practice building their models as quickly as they can once they've developed a building strategy. After about 30 minutes of practice, begin the model-building competition between the session teams. Also ask the teams to try breaking an all-time, model-building record of three seconds. The team with the fastest model-building time is the session winner. The model-building record may or may not be broken.

Anticipated Experiences. Initially team members will become frustrated with lesser skilled members. It will take



By ROSE JONES, SPECIAL EDITOR

(Dr. Jones is Director of Communications for the College of Agriculture, University of Minnesota.)

some time for teams to realize that they need to revise strategies so their team's strengths will be maximized and its weaknesses minimized. Teams may have to reassign tasks for members. Often team members will volunteer to switch tasks assigned to them. Leaders will find themselves providing moral support for their team as members become frustrated with the time element. Initial practice attempts will be slow, but as the team begins to modify its strategy and reassign tasks, the team's speed will increase.

Possible Lessons. Team decisions on how to complete a task are usually more effective than top-down instructions (Part One). Management needs to listen to its workers. Some people are better at some tasks than other tasks. Revise strategies based on the skills of the people who are to implement the plan. Leaders need to prepare their group members for potential frustrations and provide encouragement, direction, and control. People perform better when they have a goal (beating the 3-second record), even if they don't achieve it. Competition provides motivation, but it also creates stress. Change initially slows productivity, but may increase it over time. Prepare people to expect an initial slow down due to change. Training people to complete even small tasks takes time. Management and workers must cooperate to achieve the goal.

About The Cover

A Model for Agricultural Education in Secondary Schools proposed by the faculty in The Department of Agricultural Education at The University of Arizona. (Illustration prepared by Heidi Schewel.)

Misoneism and Agricultural Education

misoneism - n: hatred, fear, or intolerance of innovation or change.

The recently released *Understanding Agriculture* has caused some agricultural educators to become afflicted with misoneism. Primarily, because change, the new, or the unknown is frightening. The first time many agricultural educators were exposed to computers, they were apprehensive. But now that we have learned to use computers, we wonder how we ever got along without them. The same type of statement may be made several years from now as we look back at the changes in agricultural education resulting from the National Research Council study.

Cardinal Newman said "To grow is to change." If agricultural education is to grow, it will need to change. The profession has already been through many changes that have been positive. There is no reason to believe the next wave of change will not also be positive.

Curriculum

One of the recommendations of the report is to overhaul the curriculum in vocational agriculture. In 1902, the USDA recommended that the agricultural curriculum in high schools should consist of Zootechny, Agronomy, Dairying, Rural Engineering, and Rural Economy. Where would agricultural education be today if we have not changed the title or content of what was taught in the years since 1902?

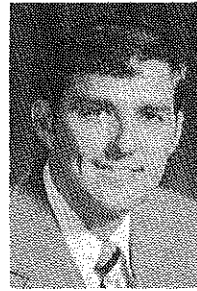
The passage of the Vocational Education Act of 1963 was feared by some agricultural educators. This act broadened the scope of vocational agriculture from preparation for farming to include agribusiness, horticulture, forestry, agricultural mechanics, etc. Contrary to the belief of some of the nay sayers at that point in time, the change has been beneficial to the well being and growth of agricultural education. The recommended curricular changes for agricultural education in *Understanding Agriculture* are a natural evolution and should not be feared.

Supervised Experience Programs

A common statement made by those suffering from misoneism is, "If the vocational agriculture curriculum is changed, how can we still have students who have Supervised Agricultural Experience Programs? It will just ruin the project program." There are several good answers to this concern.

The first answer is to be creative. The study made several recommendations such as considering special summer experience programs or expanding the scope of experience programs to include such activities as working in research laboratories and with commodity markets. A good vocational agriculture teacher is limited only by his or her imagination in structuring experience programs.

Many of us "old timers" grew up with the gospel that a supervised experience program consisted of production pro-



By GARY E. MOORE

(Dr. Moore is Professor, Vocational Education, Louisiana State University.)

jects, improvement projects, supplementary practices, and placement. There is no law saying new or additional categories of experience programs can't be developed. I would advocate the addition of three new categories of supervised experience programs:

Experimental Project. The student will design and implement an experiment. Several steps will be involved.

- A. Identify an area of interest (i.e., plant growth hormones.)
- B. Conduct a survey of the literature (compile a list of hormones and describe each).
- C. Design an experiment (growing plants using several different hormones).
- D. Formulate hypotheses (which hormone will work the best).
- E. Conduct the experiment.
- F. Report the results.

There are a number of desirable benefits to this type of project that should be obvious. I would suggest that this type of project carry the same weight as an ownership project and that every student in a semester-length agriscience class be required to have one. Oh, by the way, this is not a new idea. Rufus Stimson first advocated experimental projects for agricultural students in 1912.

Problem-Solving Project. The student will identify a problem and then gather information to solve it. This will be a self-directed activity and will involve several steps.

- A. Identify the problem, (i.e. acid rain).
- B. Gather pertinent information from a VARIETY of information sources. At least one source must be a computerized on-line data information system. Sources may include journals, Agricola, extension service, books, AgriData, etc.
- C. Analyze and synthesize the information.
- D. Prepare recommendations on how to solve the problem.

The main purpose of the problem-solving project is to acquaint the students with information sources and how to discriminate between different sources of information. This project would be equal to the improvement project.

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Meeting The Challenge of Change

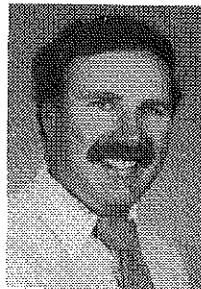
The long awaited report on agricultural education by the National Academy of Sciences has received mixed reviews from educators at the secondary level. Some view the recommendations as a threat to their programs while others view them as an impoverished car buff might view a passing sports car — nice, but how can I afford it. To the majority, however, the study represents a long overdue look at their profession. For the past several years vocational education has suffered the humiliation of being reassigned to a role of second class citizen while the educational community has gone off in search of "Academic Excellence." If nothing else, the study should provide an opportunity to focus attention on the problem and perhaps help reestablish the role of the profession in American education.

Those who cast a skeptical eye at the report are not necessarily those whose programs are threatened. In fact, many of them have very successful programs and subscribe to the old adage, "If it ain't broke, don't fix it." Some agricultural educators are less than enthusiastic because of their experiences with the multitude of educational reform movements we have seen in the last several years. Many have revised their curricula as many as three times in the past five years in an attempt to satisfy the changing whims of over zealous administrators and school boards. Still others have simply succumbed to the human aversion to change.

Perhaps our resistance to change is somehow related to painful memories of the transition from childhood to adolescence and from adolescence to adulthood. Some might even liken the current situation to passing from middle age to old age and enduring the indignities of being relegated to an insignificant role far removed from the mainstream of society.

While the change process might be painful for us, the rewards usually far outweigh the temporary discomfort we might have to endure. As we review the findings, conclusions and recommendations of the report it is obvious that some of the changes suggested can be implemented relatively painlessly. For example, many of the recommendations regarding changes in the FFA were adopted at the National Convention in November. The appointment or revitalization of local advisory councils is another recommendation that can be easily implemented and could be an important first step in bringing about necessary improvements. The sharing of high quality software and curricular materials could be enhanced through added emphasis by our professional organizations. The NVATA and many state associations have encouraged the sharing of such information for many years. The reaffirmation of support and perhaps development of new incentive programs could further advance the cause.

We should not overlook the computer as a tool for distribution of curricula and other information. AgriData Resources has worked very hard to provide a vehicle for



By JERRY PAXTON

(Mr. Paxton is Vocational Agriculture Teacher, Encampment High School, Encampment, Wyoming.)

the dissemination of curriculum material through the Ag Ed Network. As more and more states become affiliated with electronic networks, the sharing of information will certainly become an easier task.

Agricultural teachers in general appear to be enthusiastic about teaching biotechnology and other agriscience subjects as long as they can receive the training and other support that is required. Along with revised and expanded curricula it will be necessary for local school administrations to provide equipment and facilities needed for activity related learning experiences. Most agricultural teachers agree that without proper funding any attempt to prepare students in the high technology areas would be an exercise in futility. Because of recent cutbacks in vocational funding in secondary schools the prospect of expanded budgets for new and revised programs seems somewhat dim under current funding systems. The need for political activities to assure proper support is apparent.

Many of the recommendations in the report are directed toward local school boards, administrators, teacher training institutions, State Departments of Education and legislators. Although some individuals in each of these categories are willing to work toward implementing some of the recommendations, there will have to be coordination at the state level before any significant changes can be made. The establishment of a commission on agricultural education by each state is the key to any reform attempt. Because of the numbers of secondary agricultural teachers and because they may have the most to lose, they must accept the challenge and aggressively pursue a course which will lead to the appointment of such a commission.

Without a commission to study the needs of individual states and make recommendations, the agricultural education reform movement will be piecemeal, at best. A firm commitment and a concentrated grassroots effort by secondary agricultural teachers is essential for program improvement. As individuals, we have little opportunity to apply the kind of political pressure necessary to secure the resources needed to implement the required changes. In

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Computer Resources

Building a Communications Bridge

Bridges can be as simple as a flatcar laid across a creek or as complicated as a span across San Francisco Bay. The same applies to file transfer between computers.

THE PROBLEM

If you just bought a portable computer with 3½" drives, you may want to share files with your desktop computer which has 5¼" drives. You may be replacing your Apple computer with an IBM and want to convert text files (lesson plans and handouts) so that they can still be used or edited. When so many potential formats exist (Apple, IBM, Mac, 5¼", 3½") it is often necessary to transfer files between formats. A number of commercial products allow different computers to work as a team, sharing resources such as printers, modems and drives. These products often go beyond the task of sharing files and generally come with hefty prices. What is needed is a simple "bridge" that allows file transfer between different computer formats.

THE SOLUTION

You may already have most of the "parts" you need to solve this problem and not realize it. With the addition of a null modem adaptor, available from Radio Shack for \$7.95, and a serial cable, you can begin to connect two dissimilar computers together. The null modem is a unit that fools your computer into thinking it is connected to a modem and not directly to another computer. It is possible to make these connections between any combination of computers because of the universal nature of the serial port, also referred to as the RS232 port, common on most computers. These communication ports come in a number of shapes and pin configurations but, regardless of how they might look, the same functions and pin assignments are universal among computers (one of the few standards in the computer industry). For a more complete explanation of serial ports and instructions for building a null modem see *PC Magazine*, January 17, v8 n1.

After assembling the needed items, connect the serial cable to the serial port of one computer; connect the null modem at the other end of the cable and plug this into the other computer's serial port. You may need to use a port adaptor or gender changer to make the match. Turn on both computers, and boot the communication software. The programs for each computer need not be the same; they only need to be flexible enough to match communication parameters. Identify the serial port used (com1-4 or slot 1-6) and configure your software to match. Each unit must send and receive at the same speed (baud rate 300, 1200, 2400, 4800, 9600, 19,200) and use the same data word format (7E1 or 8N1). The speeds available through a null modem far exceed what is commonly available through our regular



BY NAT JAEGLI, SPECIAL EDITOR
 (Mr. Jaeggli is Coordinator, California Ag.Ed. Computer Network, University of California-Davis.)

modem/phone connection. Now force both computers into terminal mode (the mode you use to "talk" to other computers). If they are correctly configured you should be able to type on one computer and have it appear on the monitor of the other. Use "chat" or half duplex mode (instead of full duplex) on one computer if what is typed appears on the receiving monitor but not on the sending one. All of your communication software functions (send, receive, print, write to disk) should be available as if you were on line via the phone; however, you don't have to worry about static, phone charges or hang ups.

THE APPLICATION

The actual file transfer can now take place once the mechanics have been worked out. Text file transfer between different formats (Apple —► IBM) can only be accomplished using "text file or ASCII" transfer protocol. Program and text file transfer between similar formats (IBM 5¼" —► IBM 3½") can be accomplished using both "X modem" and text file protocol. The documentation for your communication software can provide more specific information about file transfer procedures. By transferring files within this local environment you may gain additional practice using the many features of your communications software. You might also find this local communications link between computers a useful tool for developing spontaneous writing skills between students, very much like talking on the phone.

The use of the null modem is a simple, safe and effective method of connecting two computers together for the purposes of file transfer and limited local communication. If you have additional questions write to me c/o *Agricultural Education Magazine* or via AgriData/StarGram NJ502N.

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Agricultural Education Model

For over 70 years, vocational education in agriculture, has had an illustrious past — serving tens of thousands of America's youth by providing instruction necessary and essential for them to become prepared for employment in agricultural occupations. The delivery system consisting of classroom/laboratory instruction, SOE and FFA, likewise, has been hailed as a model for all of education (Rosenfeld, 1987). But, like all things, change is inevitable — vocational education in agriculture is no exception.

Early Mission

From the time of its inception with the passage of the Smith-Hughes Act of 1917, vocational agriculture has addressed occupational preparation for individuals interested in agriculture. From 1917 to 1963, programs of vocational agriculture had as their primary aim to "train present and prospective farmers for proficiency in farming" (Cook, 1947, p. 6).

With the passage of the Vocational Education Act of 1963, the instructional mission of vocational education in agriculture expanded from strictly one instructional area — production agriculture — to encompass agribusiness and natural resource occupations also. During these times of change, female students were allowed to enroll in vocational agriculture programs and the "New Farmers of America" organization was integrated with the "Future Farmers of America." Thus, the 1960's were times of broadened mission of instruction and attempts to eliminate gender and ethnic discrimination in vocational agriculture.

Recent Changes

The profession in the mid 1980's began exploring innovative program approaches such as aquaculture, agrimarketing, infusing agricultural sciences into the curriculum, infusing international agricultural education into the instructional program, etc. All approaches were designed to maintain or increase student interest and enrollment in a "program" developed and delivered primarily to prepare people in employment in occupations in production agriculture, agribusiness and natural resources. However, in many instances, programs designed to stress vocational education were being threatened and, in many cases, phased out.

With the tremendous impact of the National Commission on Excellence in Education report, "A Nation at Risk" (1983), educational reform in this nation was launched. The intent of this reform was to improve the quality of education, especially in basic education. In 1985, then Secretary of the U.S. Department of Education, Terral Bell, and Secretary of the U.S. Department of Agriculture, John Block, signed an agreement whereby the National Academy of Sciences' Board on Agriculture would undertake a companion comprehensive study of "Vocational Agriculture in Secondary Schools."



By DAVID E. COX, FLOYD G. MCCORMICK, & GLEN M. MILLER
(Dr. Cox is an Assistant Professor; Dr. McCormick is Professor and Head; Dr. Miller is an Assistant Professor in the Department of Agricultural Education, the University of Arizona.)

"Agriculture is too important a topic to be taught to the relatively small percentage of students considering careers in agriculture and pursuing vocational agriculture studies," concluded the Committee on Agricultural Education in Secondary Schools (1988, p. 8). Therefore, the study recommends instructional programs should be broadened to include both "education in agriculture" (vocational agriculture) and "education about agriculture" (agricultural literacy). There appears to be surfacing a new broadened mission of agricultural education — a mission which now addresses "agricultural education" in lieu of only "vocational education in agriculture."

Education in Agriculture

In 1966, the Office of Vocational and Adult Education of the U.S. Department of Health, Education and Welfare issued Policy Bulletin Number 4 which (U.S. Department of Health, Education and Welfare, 1966) cited six major program objectives. These program objectives provided the "framework" upon which vocational agriculture programs have been delivered for the past 24 years. These were as follows:

1. To develop agricultural competencies needed by individuals engaged in or preparing to engage in production agriculture.
2. To develop agricultural competencies needed by individuals engaged in or preparing to engage in agricultural occupations other than production agriculture.
3. To develop an understanding of and appreciation for career opportunities in agriculture and the preparation needed to enter and progress in agricultural occupations.
4. To develop the ability to secure satisfactory placement and to advance in an agricultural occupation through a program of continuing education.
5. To develop those abilities in human relations which are essential in agricultural occupations.

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Agricultural Education Model

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6. To develop the abilities needed to exercise and follow effective leadership in fulfilling occupational, social and civic responsibilities.

With minor revisions, these six major program objectives could still be applicable for programs of "Education in Agriculture" in the 1990's and beyond.

Purpose of Instruction

Based upon the above cited program objectives, the purpose of vocational education in agriculture is primarily for preparing people for careers in agriculture including entrepreneurship and/or seeking further education in agriculture. Programs are designed to teach those competencies (knowledges, skills, and attitudes) which are necessary for individuals to secure, hold, be productive, and advance in an occupation in agriculture, if they so desire.

Characteristics

Vocational agriculture programs are characterized by several unique aspects. Instruction in these programs is:

- taught to the level of doing and application.
- occupationally-oriented.
- program-based, not semester or course-based.
- of year round duration, in most instances.
- sequential by years progressing from basic to specialized instruction.
- funded under state and federal vocational education legislation to cover the "added costs" associated with delivering vocational education programs.
- designed for those individuals who need, want and can profit from such instruction.

Delivery System

For over 60 years, a "time tested and time proven" delivery system has been utilized which provided specialized preparation for specific agricultural occupational clusters encompassing classroom/laboratory instruction, leadership development (FFA) and Supervised Occupational Experience

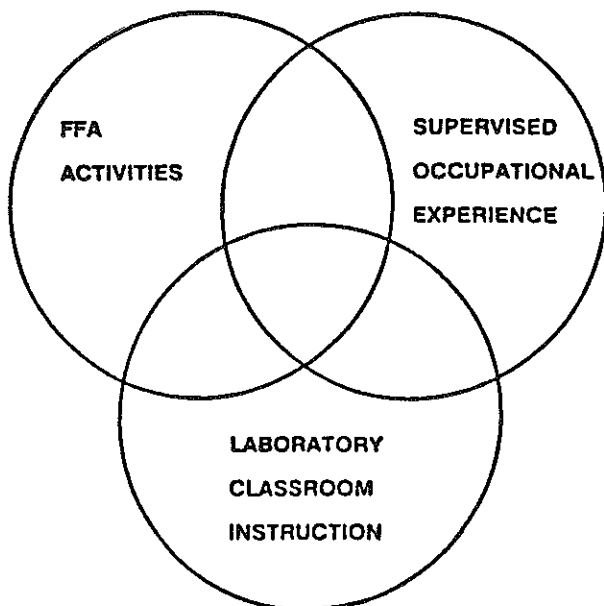


FIGURE 1. Components of a Vocational Agriculture Program

(SOE) programs (National FFA Foundation, Inc., 1984). This delivery system shown in Figure 1 has been effective. (Committee on agricultural education in secondary schools, 1988.)

These components comprise the delivery system for vocational agriculture and contribute to its effectiveness in the development of human resources (competent students) to enter (and advance) in agricultural occupations, entrepreneurship or advanced education. This delivery system has withstood "the test of time." It is effective in delivering the "educational in agriculture" facet of AGRICULTURAL EDUCATION IN SECONDARY SCHOOLS.

Education About Agriculture

What is now needed to implement the concept of AGRICULTURAL EDUCATION IN SECONDARY SCHOOLS is an additional delivery system to accommodate the "education about agriculture" facet. The agricultural literacy facet brings about additional purposes, additional clientele to serve and added dimensions to instruction in AGRICULTURAL EDUCATION IN SECONDARY SCHOOLS.

An additional delivery system for "education about agriculture" programs at the secondary school level is needed to better serve the needs and interests of students not occupationally committed to agriculture. Expecting that current courses in science, vocational agriculture, etc., can serve this broadened mission is unrealistic. A review of recent history illustrates the point when the impact of career education is assessed. The concept of career education was built upon the idea teachers would stress careers in their teachings. This did not happen, and similarly neither will agricultural literacy be achieved if developed by teachers who are for the most part agriculturally non-literate.

One of the principal recommendations of the report (Committee on agricultural education in secondary schools 1988, p. 2) was, "... that beginning in kindergarten and continuing through twelfth grade, all students should receive some systematic instruction about agriculture." Agricultural literacy is envisioned as a complex educational delivery system designed to create an agriculturally literate person who understands the food and agricultural problems, nationally and internationally.

Major Program Objectives for "Education About Agriculture"

The following major program objectives may provide the foundation upon which agricultural literacy programs can be designed and delivered:

1. To develop an understanding and appreciation of the role and value of agriculture to society.
2. To develop an understanding and appreciation of the food and fiber industry, including its history and its current and future economic, social and environmental significance to society.
3. To develop an understanding and appreciation of the role, functions and dynamics of agricultural systems impacting food and agricultural problems nationally and internationally.
4. To develop enough knowledge of agricultural products to make informed choices about diet and health.

5. To develop practical knowledge needed to care for the outdoor environment, including lawns, gardens, recreational areas and parks.
6. To develop abilities needed to exercise and follow effective leadership.

Purpose of Instruction

The purpose of "education about agriculture" programs would be to serve those students who have no occupational interest in agriculture but who desire to increase their level of understanding and appreciation of the food and fiber systems which sustain them and also provide the nation with an internationally competitive agricultural industry. Instructional emphasis would be placed upon science and biotechnology in agriculture. Therefore, it is suggested the term "agricultural science" programs be utilized due to the appeal to key decision makers. This name in no way connotes that agricultural science is not taught in vocational agriculture programs.

Students currently enrolled in vocational agriculture programs to receive science credit required to meet high school graduation requirements would be better served by this program. It would enhance their appreciation of agriculture, increase their awareness of science in the real world and improve their ability to solve complex agriculture problems.

Characteristics

As contrasted with the vocational agriculture program, the programmatic characteristics of an agricultural science program would be quite different. Instruction in these programs would be:

- taught to the level of understanding and appreciation.
- agricultural science-oriented.
- course-based. Students could select as many semesters as needed to meet their individual needs.
- of a semester duration.
- non-sequential by courses.
- funded as part of general education.
- designed for all students.

Delivery System

"Agricultural education in U.S. high schools usually does not extend beyond the offering of a vocational agriculture program" (Committee on Agricultural Education in Secondary Schools, 1988, p. 2). Such programs have served at their peak about 5% of the students enrolled in high schools in this country. Employment figures suggest that 20% of the work force in the United States is employed in jobs associated with the agricultural sector.

Most teachers of vocational agriculture would acknowledge they are serving and have served students through their vocational agriculture programs who were enrolled for reasons other than occupational preparation in agriculture. What percentage of students currently enrolled in vocational agriculture could be more appropriately served by some alternative non-vocational education program? Teachers have estimated that in some schools the percentage may be as high as 80-90%! It is obvious that an additional delivery system which would serve a large number of students and enhance agricultural literacy of the American populace is necessary and desirable. The following caveats are given by the authors:

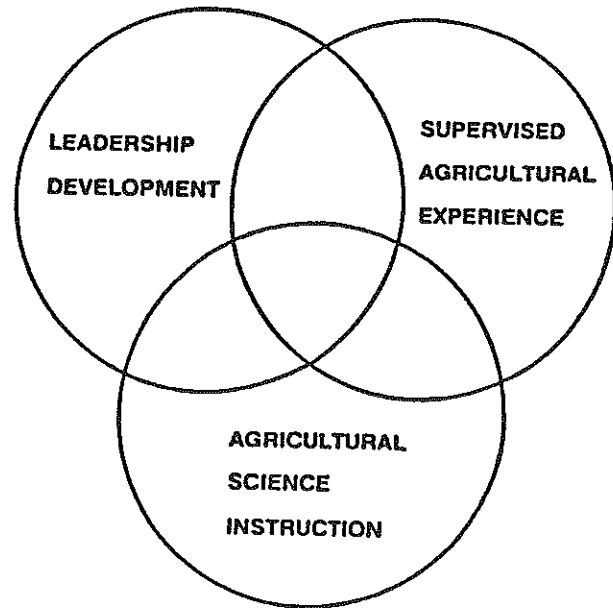


FIGURE 2. Components of an Agricultural Science (Literacy) Program

- Without leadership, "education about agriculture" programs will never develop.
- The local teacher of vocational agriculture will be the catalyst to initiate such programs.
- The agricultural education profession can provide leadership to develop and implement programs of agricultural literacy.

Figure 2 illustrates a proposed delivery system for providing programs of "education about agriculture" in secondary schools.

Each component of this delivery system serves an implicit function. Each component complements and supplements the others.

- Instruction would stress the science of agriculture (production, processing and marketing) through the use and application of agricultural, biological, physical science and management principles to promote students' understanding and appreciation of the value of science and biotechnology in agriculture.
- The agricultural science program would not require or use the traditional Supervised Occupational Experience (SOE) program. Rather, a "Supervised Agricultural Experience" (SAE) program could be included to incorporate some experiential learning. Students could select from a list of suggested agricultural activities of a short term, observational or limited participation nature. Each student could individually structure his/her SAE program by selecting experiences which complement their educational needs and interests. Such experiences could be completed during the semester and would not require a great deal of teacher supervision.
- Teachers would not be required to provide summer program supervision, thus reducing program costs. The number of students permitted in each class might be expected to be the same as other non-vocational education classes. While some basic mechanics skills might

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Agricultural Education Model

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be included, the emphasis would be much less intensive than currently utilized in the vocational agriculture curriculum. The curriculum content would place a premium on science, biotechnology, and computer application of a business management (free enterprise) nature.

- Facilities for agricultural science programs would be considerably different from those of vocational agriculture programs. Schools would not need expensive land-livestock laboratories. Perhaps the classroom would more resemble that used to teach biology or earth science.
- Actual instruction on leadership would be emphasized. The leadership component could serve the leadership development needs of students in the entire school. Students currently enrolled in vocational agriculture solely for the leadership experience provided through the FFA could be better served with the agricultural science program. Actual instruction specific to leadership development could be included. Student body and organizational leaders in high schools could be enrolled in a semester course on leadership development with participating leadership experiences gained through the student council or student organizations.
- This delivery system would not utilize the existing FFA organization. However, it might logically employ a student organization, but it would have a vastly different orientation, structure and purpose than the FFA organization.
- At the national level, such an organization might be titled NASO, National Agricultural Science Organization, or NFAS, National Federation of Agricultural Students. The National FFA organization could be reorganized with three separate organizations: FFA, PAS and NASO.
- With dynamic national leadership, this concept of an enlarged national federation or organization of "students studying agriculture" could be realized. Student membership potential could be astronomical (5-10 million).

A Model

Based upon the aforescribed delivery systems for "education in agriculture" and "education about agriculture" programs, a model for implementing AGRICULTURAL EDUCATION IN SECONDARY SCHOOLS could be illustrated as follows:

This proposed model would serve both facets of AGRICULTURAL EDUCATION IN SECONDARY SCHOOLS. The traditional delivery system illustrated on the left side of the model has proven to be effective for occupationally-oriented programs of agricultural education. The additional delivery system shown on the right side of the model would promote agricultural literacy.

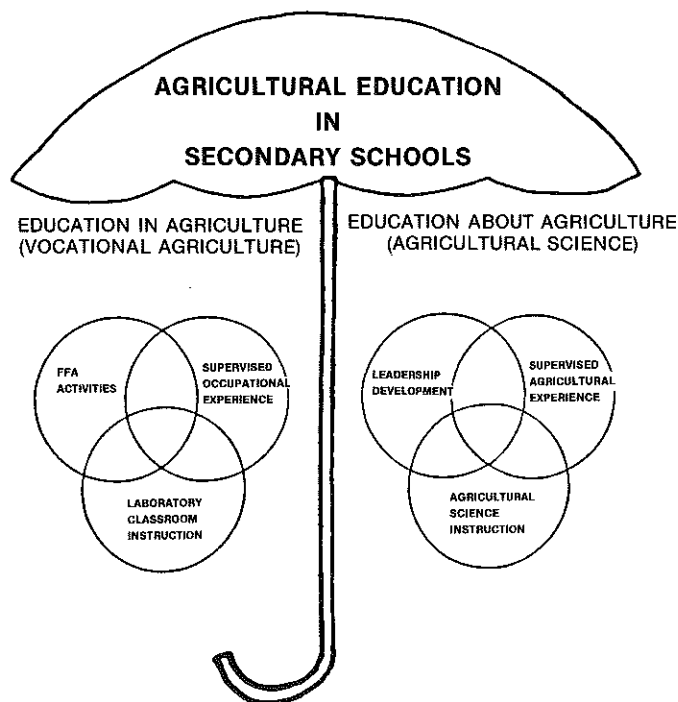


FIGURE 3. A Model for Agricultural Education in Secondary Schools

Summary

The attitude of the profession is change. A change in the overall mission of the profession is advocated along with changes in terminology. Change to accommodate service to a larger clientele is appropriate. However, in so doing, the profession must not destroy an effective delivery system designed to serve those students occupationally-committed to agriculture. It is obvious an additional delivery system is needed to serve those students who are interested in agriculture, but not occupationally committed.

A model has been proposed which could provide delivery systems for both educational programs "in" and "about" agriculture. The major concern is whether the profession is really ready to implement change or just talk about it. From all appearances, the profession has bought the concept of a broadened mission; it is now time to "fish or cut bait." Is the profession ready to implement agricultural education in secondary schools as advocated by the National Research Council's report on "Understanding Agriculture: New Directions for Education"?

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Moving Day for Teacher Education

"I find the great thing in this world is not so much where we stand, as in what direction we are moving." — Oliver Wendell Holmes

Many people approach the process of moving, whether to a new house down the street or across the country with apprehension. It is hard work to take inventory of possessions, decide what to abandon and what to keep, pack, load, unload, and unpack in unfamiliar surroundings. Yet, every day people brave the arduous task of moving and set off for better opportunities and new experiences.

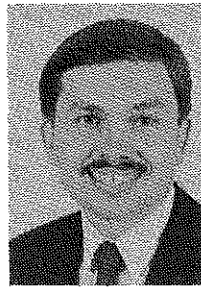
It's moving day for agricultural education! The report of the Committee on Agricultural Education in Secondary Schools, the National Study, has told us where we stand and has offered specific recommendations for moving into the decade of the 1990's. Few in the profession were particularly surprised or have openly disputed the findings of the Committee. In recent years we have been increasingly concerned about the viability of our present vocational agriculture programs. The national study was initiated "because of concerns about the declining profitability and international competitiveness of American agriculture, as well as concerns about declining enrollments, instructional content, and quality in agricultural education programs" (National Academy of Sciences, 1988, p.v).

There are two challenges presented in the report. Agricultural education must become more than vocational agriculture and major revisions are needed in vocational agriculture. Meeting those challenges will require all of us in agricultural education - vocational agriculture teachers, national leaders, state supervisors, and teacher educators - to move our thinking beyond traditional programs of the past toward innovative approaches for the future.

What will be (or should be) the role of teacher education in making the move to insure viable agricultural education programs in our secondary schools? A first step is to decide what to keep, what to leave behind, and what additional things will be needed at our new destination.

What to Keep

The Committee recommended that teacher education programs continue to stress applied learning as the delivery process for agricultural education. We should continue the problem-solving approach to teaching agricultural education as well as activities which involve students in the subject and develop thinking abilities. The methods we have used in the past (such as demonstration, lecture-discussion, supervised study) will work in the future. Our process has been to provide students with viable learning experiences through classroom and laboratory instruction, supervised occupational experiences and FFA membership. Teacher educators must be careful not to lose sight of that process during an attempt to modify the content of what is taught. We must be certain to keep those preservice courses that



BY JEFFREY W. MOSS
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give prospective teachers the foundation for operating a comprehensive agricultural education program in terms of instruction, supervised experience, and the FFA. The comprehensive program provides students with practical skill development, self-confidence, and leadership abilities. These elements should be maintained as we make adjustments to the scope and content of our present curriculum.

In-service programs that educate teachers about new technologies and developments in agriculture and rejuvenate enthusiasm for teaching must also be kept. States that have adopted a cooperative approach among teachers, teacher educators, and state staff in the planning and delivery of worthwhile in-service that includes an industry perspective must continue to do so in the future. Quality in-service programs will play a major role in moving agricultural education forward in the 1990's.

What to Leave Behind

Many of us hate to throw anything away because maybe, someday, we will need it again. Yet, there is a limit to what we can carry to our new destination. What to leave behind may be our most difficult decision. Based on the Committee's findings, we might begin by throwing away outdated curricula that emphasizes production agriculture only. Material about agriculture that is, according to the national study report, "fragmented, frequently outdated, usually only farm oriented, and often negative and condescending in tone" can also be left behind. The content of a majority (the report didn't say all) of the curricula for teaching vocational agriculture has, according to testimony heard by the Committee, failed to keep up with modern agriculture. The Committee states that "available statistics on program subject matter point to the dominance of production agriculture . . . and prepare students for a limited, generally shrinking component of the job market. These programs are also geared to a shrinking component of the student population" (National Research Council, p. 22). Only eight students per vocational agriculture program are needed to meet the demand for new farmers. Production practices will always be a component of modern agriculture and some aspects of our present curricula should be maintained, but a culling process is definitely needed.

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Moving Day for Teacher Education

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Teacher education can lighten its load by leaving behind rigid college plans of study which primarily emphasize production aspects of agriculture and promote only production-oriented interests in prospective teachers. Secondary programs haven't kept up with changes in agriculture because of the narrowness of the preparation for teaching vocational agriculture and the narrowness of the high school curriculum. Kenneth Reisch, Associate Dean for Instruction in the College of Agriculture at The Ohio State University, in testimony before the Committee, grants that the emphasis is beginning to slowly shift away from traditional production agriculture. Teacher educators must do more to allay the concerns of a skeptical Committee and insure that "there is an adequate supply of teachers with a broader range of interests and teaching skills that may be needed in future agriculture courses of the type recommended in this report" (National Research Council, p. 47).

What Is Needed

One of the enjoyable aspects of moving to a new destination is that we usually acquire something new during the process. The same will be true as we move agricultural education into the 1990's. The national study offers several suggestions for adding something new. The concept of an organized program of agricultural literacy, education about agriculture, is new for many of us. Implementing systematic instruction about agriculture beginning in kindergarten and continuing through twelfth grade, even by incorporating it into existing courses, represents a major challenge to the profession. A lack of resources, support, and materials was cited by the study committee as factors that have prevented the growth of agricultural literacy. Teacher education can make an impact in this area. The talent exists to develop cohesive, current, broad, positive, and congenial material to replace the fragmented, outdated, farm oriented, negative and condescending material that now exists. What is needed is motivation. Perhaps teacher educators should forego one research project this next year and invest this energy in

developing new instructional material that can be used to promote agricultural literacy.

Teachers can also make agricultural literacy happen in their community. Teachers should plan, with students, at least one additional activity than undertaken last year to inform the community of the history, current economic, social, and environmental significance of agriculture to all Americans. Agricultural literacy is not something totally foreign, the "Ag in the Classroom" project is highly successful, but emphasizing it as a part of agricultural education will be new for many agricultural education teachers.

If we modify the traditional production agriculture curriculum, something must be recommended in its place. The new curriculum must reflect the scientific progress that has been made in agriculture during the 1980's. Teaching the new science oriented curriculum presents a challenge to the teacher. To prepare teachers for the challenge, basic science requirements in teacher education curricula should increase. Tomorrow's agriculture teacher must be better prepared in instructional areas of science, technology, economics, agribusiness marketing and management, international agriculture, and public policy, as suggested by the Committee. If the key to a successful program is the teacher, then the preparation of quality teachers, comfortable with teaching the new technologies of agriculture, is of paramount importance to the progress we will make in the future.

Moving Forward

The magnitude of moving agricultural education to the level recommended by the Committee seems overwhelming. Yet, the talent, energy, and ability of our national leaders, teacher educators, state staff and teachers is equally astounding. The national study is our direction for moving. As Oliver Wendell Holmes stated, where we are now is not as important as where we are going. Through joint effort and cooperation, agricultural education is moving to better things in the years to come. We should all think seriously about what our contribution to the move will be.

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National Research Council (1988). UNDERSTANDING AGRICULTURE: NEW DIRECTION FOR EDUCATION. Washington, D.C.: National Academy Press.

Meeting The Challenge of Change

(Continued from page 7)

order to focus media attention and gain the support of the public, we must pull together and speak with one loud, clear voice.

The NVATA and affiliated state associations can and should play a key role in this movement. The report provides a perfect opportunity for increased membership and a renewal of purpose.

Members must also be encouraged to get behind the agri-

cultural literacy movement. Secondary agricultural teachers are in a position to not only provide resources but to be strong advocates for agricultural literacy.

The road to reform will be long and sometimes rocky. We must accept the fact that there will be no "quick fix." Patience and perseverance must be the watchwords of the crusade but, remember, it is a noble cause. As the report says, "Agriculture is too important a topic to be taught to the relatively small percentage of students considering careers in agriculture and pursuing vocational agriculture studies." I might add that agriculture is too important to be demoted to a position of obscurity in a few small rural schools.

Agricultural Education Yet To Come

During the holiday season Charles Dickens' famous story, *A Christmas Carol*, traditionally recurs. Generations of readers equate the characters of the story and the plot with individuals and situations in their everyday lives. Scrooge, The Cratchets, and the three spirits, in particular "The Ghost of Christmas Yet To Come," endure as reminders of the necessity to venture beyond the past and present when planning for the future.

What would "The Ghost of Agricultural Education Yet To Come" reveal? What is the fate of agricultural education? Does there exist a bleak or dynamic future for the profession?

One realizes that spirits, ghosts, and specters exist only in story books. They cannot materialize. Or can they?

The National Academy of Science report, *Understanding Agriculture: New Direction for Education*, recommends sweeping changes in our delivery of agricultural education. Without change the future of agriculture education will parallel the scenario presented to Scrooge, a bleak future. During the National Academy of Science Teleconference on Agricultural Education, Dr. J. Robert Warmbrod stated, "The focus of agricultural education in the public schools must change. Agricultural education is more than vocational agriculture . . . if there is anyone . . . who has vocational agriculture connection who reads that as an endorsement of the status quo, you're not paying very close attention." What is the message for Departments of Agricultural Education that prepare teachers of agriculture? The message is change.

Leadership for local and state change occurs in teacher education institutions that prepare agricultural education teachers. The following ideas exemplify recommendations that progressive departments have executed or are considering for implementation.

Adjust Philosophy Statement

First and foremost, the purpose of agricultural education in the state's philosophy statement is adjusted to reflect the direction the state wishes to travel. Concurrently, a statewide effort is made to modify agricultural education's language in accordance with the philosophy statement. As a result, all agricultural educators are "singing off the same song sheet." A unified message is then presented in all teacher education courses. If the new philosophy statement calls for more emphasis in agriscience and agricultural literacy then teacher education departments should reflect that message in their teacher education programs. A persistent effort to modify the teacher education courses in accordance with the new purpose portrays a new image of agricultural education and illustrates the correct usage of modern language. The departments of agricultural education provide leadership, guidance, and information for public school agricultural teachers who wish to explore new



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and creative extracurricular activities for their students in agricultural literacy classes. Some ideas include science fairs, research exhibits at county fairs, and business management contests.

Involve Industry and Business

Involvement with industry and business exists as a key component of the future. Examples include the development of a model classroom with industry assistance; a computer company equipping and maintaining a bank of computers, a chemical research firm supplying the necessary materials to operate a biotechnology laboratory, and companies furnishing veterinary supplies, audiovisual materials, modern curricula, and other items not included in a university budget. Product recognition and the opportunity to support the education of young people provide incentives for many industries and businesses. The model classroom provides teacher educators the proper environment to prepare future teachers of agriculture. In addition, close ties with industry at the university level serve as examples of possible sources of revenue and expertise for K-12 agricultural education programs.

Develop New Courses

Agricultural education professors teach several new courses. The first course entitled "Integrated Elementary and Middle School Methods: Agriculture" integrates agricultural concepts with elementary and middle school science, mathematics, social studies, and language arts classes. "Integrated Secondary Methods: Agriculture" provides secondary education majors with methods and materials for integrating agriculture in their subject matter areas.

The following three courses approved for general university credit enhance agricultural literacy at the university level. A humanities requirement is awarded to students who complete "History of an Agrarian National: The United States." "America and World Problems: An Agricultural Perspective" satisfies a social science criterion and "Writing for Agricultural Majors" develops and refines composition ability for students in Colleges of Agriculture and fulfills a general university English/language requirement.

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Agricultural Education Yet To Come

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Offering the above mentioned agricultural education courses at all teacher education institutions through interactive video provides all education majors the opportunity to become agriculturally literate. Destroying agricultural stereotypes is accomplished in all of these courses which is especially important because of the drive to educate not only rural but urban and suburban students about agriculture.

Establish External Networks

External networking offers a wealth of information and is a common occurrence in progressive departments. Experts throughout the university and industry play prominent roles in preparing teachers of agriculture. In addition to offering required university courses and courses in technical agriculture, university personnel assist with technical agriculture updates and serve on department curriculum advisory committees.

Teachers educators frequently collaborate with "outsiders" in research ventures. Joint efforts with psychology, sociology, and other education researchers heighten the quality of research in agricultural education and human resources. Cross-discipline research expands sources of funding and ultimately the quantity and quality of department productivity, thus creating better teacher education programs. The value of research is emphasized throughout the undergraduate and graduate programs.

Teacher educators interact with colleagues in external organizations such as: science, administration, history, English, mathematics, and research while maintaining a unique identity with the American Association of Teacher Educators in Agriculture. External networking and cooperative efforts generate new teaching and research ideas and informally educate outsiders about the profession. In addition, external networking enhances agricultural educators' understanding of other disciplines.

Prepare Agricultural Directors

The inclusion of local, district, or county agricultural directors insures continuity in agricultural education programs at the elementary and secondary levels. Former secondary agricultural teachers with advanced degrees in elementary education, administration, or agricultural education satisfy the qualifications for the director positions. They coordinate agricultural education throughout the entire K-12 school system, directing and interacting with teachers from many disciplines. These individuals or other equally prepared teachers, both positions with adjunct faculty status, teach advanced placement classes and supervise students teachers. Close cooperation between the faculty of agricultural education departments and agricultural directors occurs from the time the prospective directors apply for advanced degrees and continues as the directors guide student teachers and instruct college courses at the high school level.

Expand Use of Mentors and Coaches

The use of mentors and/or coaches is viewed as common place in the not too distant future. Mentoring begins prior to enrollment in agricultural education and continues through the first few years of teaching. Experienced professionals familiarize newcomers with the complexities of agricultural education. Mentors and coaches receive formal education in agricultural education departments through seminars or in-service programs.

Emphasize Public Relations, Field Experiences, and Writing Skills

Several areas receive more emphasis in teacher education departments. Public relations functions as an integral part of teacher education programs. Future teachers learn the value and the methods of developing effective programs in public relations. Increased instruction through agricultural communication courses strengthens the abilities of those in the profession to communicate the value of agricultural education.

The majority of education courses includes an appropriate amount of field and clinical experiences. Applying educational, psychological, and sociological theories throughout entire teacher education programs reinforces the general principles that support approved practices.

Preparing teachers who are technically competent and also able to compose their thoughts in a logical manner proliferates the image of combining the "basics" with core competencies.

Serve as Role Models

Last, but certainly not least, teacher educators strive to be the most dynamic and innovative teachers in the university setting. Constant evaluations by their peers remain essential for maintaining high levels of teacher effectiveness. They serve as model teachers in their colleges. Seminars for faculty from other departments who wish to improve their teaching skills are offered on a regular basis.

Conclusion

Teacher educators in agriculture need to ask themselves if they are ready for the challenges presented in the National Academy's report. It is essential that teacher education departments charter their future direction and then incorporate the recommendations with and without the help of outside experts. Agricultural educators who assume a "can do" attitude instead of a "gloom and doom" attitude help create an era of growth and expansion.

As in one's daily life, the future is unknown and often times a mystery; but with proper foresight and planning the future of agricultural education appears far brighter than the future presented to Scrooge. The Academy's report is not a message from a ghost, but a well conceived plan to enhance education in and about agriculture. Let us heed the Academy's message, change our ways, and thus look forward to a long and prosperous future.

Software Sampler

Using Agricultural Software

Many times our instruction falls short because students are not provided with an opportunity to put what they have learned to use. Those of us in agricultural education have lauded our efforts to take learning to the application stage. However, an analysis of our success in using the microcomputer as an aid in this endeavor might be disappointing.

Typically, microcomputer instruction has provided basic computer literacy with emphasis on the use of application software (word processing, data base, spread sheets) to facilitate management tasks. There has been a much more limited use of the microcomputer in agricultural applications.

Success in business is dependent upon competent and knowledgeable management and decision making. Use of microcomputers has become commonplace in agribusiness. Technical and professional occupations in agriculture require more than just computer literacy. Knowledge of how to use the microcomputer and agricultural software to enhance management efficiency and ultimately increase profit is highly sought after in the agriculture industry.

As teachers of agricultural education we are managers of an important business, that of educating future leaders and workers in agriculture. As such we must take every opportunity to use available tools to increase our efficiency and improve our product. Incorporation of agricultural software into instruction in agriculture will allow us to take students to the application stage, using the technology and skills found in the agriculture industry today.

There are many different types of instructional software available for use in agricultural education. Instructional software generally falls into the categories of drill and practice, simulations, problem-solving, and testing and review. Early users of the microcomputer in agricultural instruction faced a lack of quality software. Over the last five years the development of agricultural software has blossomed. The problem faced by teachers today is no longer one of availability, but how software can be incorporated into instruction.

How can a teacher use agricultural software in the instructional process? Here is a plan you can follow.

Step 1: Identify software that could be valuable as an instructional tool.

Step 2: Purchase or otherwise secure the identified software. Be sure a company from which you secure software has a review and return policy. See the February, 1989 issue for software sources.

Step 3: Review the software. Become familiar with its use and operation.

Step 4: Evaluate the appropriateness and ease of use. If you have difficulties operating the program, your students probably will too. Determine if the software will provide



By **KERRY S. ODELL**, SPECIAL EDITOR
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instruction in a more effective or efficient manner than other instructional alternatives.

Step 5: Plan for instruction. Incorporate the software into the instructional process just as you might a work sheet, film-strip or supervised study. Identify all the information and data students will need to utilize the software. Provide this information prior to using the software. Duplicate diskettes (check copyright and policies first) and provide data diskettes for each student if needed.

Step 6: Develop task sheets or other aids for the lesson, especially the computer segment. This will facilitate student learning and speed up instruction by reducing problems students experience while using the software.

Step 7: Make a dry run yourself. Try to identify areas where students may experience difficulty and shore up these areas. Once this is done, be sure that all software and hardware is operational before beginning instruction.

Step 8: Provide the instruction. Identify areas of difficulty. Remedy as many problems as possible. Don't expect your first try to be without problems. Hardware and software difficulties seem to spring up when you least expect them.

Step 9: Evaluate the instruction and make modifications in the process.

Here are a few examples of agriculture software available today.

Tutorial/Management
Common Cents Conservation
Tractors
Oats Production
Aglime
Sexual Plant Propagation

Available from:
Agri-Education
815 Shakespeare
P.O. Box 456
Stratford, IA 50249
515/838-2785

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Using Agricultural Software

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Problem Solving/Management

Ag Pac — Farm Management Programs

Available from:

Wisconsin Microware
4506 Regent Street
Madison, WI 53705
608/233-4459

Financial Management
Feed Formulation
Machinery Management

Available from:

Ag Disk
Harris Technical Systems, Inc.

624 Peach St.
P.O. Box 80837
Lincoln, NE 68501
402/476-2811

Testing and Review

Agri-Quiz Series

Available from:

Mid West Agribusiness Services, Inc.
6739 Glacier Drive
West Bend, WI 53045
414/629-5302

Micro Tutor Series

Available from:

Mid States Agri-Technology Associates Ltd.
801 Barberry Place
West Bend, WI 53095
414/334-2974

Misoneism and Agricultural Education

(Continued from page 6)

Technology Project. The student develops and implements an activity that demonstrates or utilizes new technology. Examples are: A.) Using a tissue culture chamber for plant propagation, B.) Writing an agricultural computer application, C.) Transplanting an embryo, and D.) Computerizing livestock production records. This project would be equal to a supplementary project.

FFA. The FFA is considered sacred by many agricultural educators, yet it has undergone numerous changes in the past. The expansion of the degree program to allow agribusiness students to obtain the State and American Farmer degree was opposed by some. The decision to allow girls into the FFA was vigorously opposed by many. These changes have not hurt the FFA; the opposite is true.

Other vocational youth organizations have changed their names recently to reflect their current mission. The American Industrial Arts Students Association is now the Technology Student Association. The Office Education Association is now the Business Professionals of America.

We could change the FFA to the Federation of Future Agriculturalists. The changes in the past to the FFA have been beneficial; the changes suggested in the future should also be beneficial.

Summary

Misoneism does not have to be a fatal disease in agricultural education. When one realizes that agricultural education has gone through numerous changes in the past and these changes have had a positive impact, the changes recommended in *Understanding Agriculture* should not be feared. The noted writer, Isaac Asimov has stated "Things do change, the only question is that since things are deteriorating so quickly, will society and man's habits change quickly enough?" We can rephrase Asimov's question to ask "Since agriculture and education are changing so quickly, will agricultural education change quickly enough?"

REFERENCES

- National Research Council (1988). *UNDERSTANDING AGRICULTURE'S NEW DIRECTIONS FOR EDUCATION*. Washington, D.C.: National Academy Press.
- United States Department of Agriculture (1902). *EXTRACT OF THE 7TH REPORT OF THE COMMITTEE ON METHODS OF TEACHING AGRICULTURE* (Circular No. 49). Washington, D.C.: Office of Experiment Stations.

1989 THEMES

The Agricultural Education Magazine

Theme	Theme Editor	Due Date
Focus on Teaching	David E. Cox University of Arizona	May 30, 1989
SOE for the Future	Gary Briers Texas A & M University	June 30, 1989
Leadership Development	Edgar P. Yoder Pennsylvania State University	July 30, 1989
The 80's in Retrospect	Gary Moore Louisiana State University	August 30, 1989

New Focus For Agricultural Education

Yes, it's Saturday morning. There is a special legislative meeting being held by the local Farm Bureau and Grange with representatives from the national, state and local government to consider agricultural legislation. You ask yourself, is it necessary for me to be there. Yes, there are things that need to be done here and I have an FFA activity scheduled. Decisions! Decisions! If you plan to have any impact on the future of your program and agriculture, you better be there because you are an important spoke in that wheel. Your voice is important. You can make a difference. You may think others will speak for you, but you had better be there to make sure that Agricultural Education is a part of that discussion and accurately depicted.

Yes, each local agriculture teacher must help create the impetus for change outlined in the National Academy Report — *Understanding Agriculture: New Directions for Education* released in September, 1988 by the National Academy of Sciences, and co-sponsored by the United States Department of Education and the United States Department of Agriculture.

At the national level under the auspices of the National Vocational Agricultural Teachers' Association, efforts are ongoing to formulate the foundation of the future for Agricultural Education. These efforts will most certainly impact local programs across the board.

There are a few surprises in the National Academy Report on Agricultural Education in the United States. The need for education in agriculture has changed because of many social and technical innovations and developments. The description of what a good educational program in agriculture requires has changed, therefore, the definition of Agricultural Education has changed for the 21st century programs.

Agriculture is important to all Americans. Therefore knowledge about agriculture is a critical component of education for all youth and adults. Vocational Agriculture has a long history in American education. It remains one of the most widely praised secondary school programs in the nation. The report calls for agricultural literacy to include familiarity with food and fiber production, processing, marketing (domestic and internationally) and sufficient knowledge about nutrition and health so people can make informed diet choices.

The report discusses the current vocational agriculture curriculum, program quality and recommends the inclusion of science, technology and business of agriculture in quality programs. Vocational agriculture and the FFA have historically fostered a positive image. The NVATA considers the recommendations of the National Research Council report as challenges which could improve and strengthen programs. Specifically, the following actions need to be undertaken:

1. Strong agricultural education leadership should be developed at the local, state and national level and their action strengthened and implemented through legislative support at the appropriate levels.



BY CARROLL L. SHRY
(Mr. Shry is Past President of NVATA.)

2. NVATA needs to seek ways to assist and assure that states and local school districts appropriately revise curriculum.
3. Uneven program quality will give all programs the reputation of the lowest common denominator. Each state needs to develop and implement an evaluation system to strengthen and/or eliminate poor quality programs.
4. The curriculum should be continuously revised to be relevant and current and should address the broad spectrum of the agricultural industry.
5. Supervised occupational experience is a cornerstone of quality vocational education. It should be a requirement of any student enrolled in a program preparing for entrepreneurial or employment endeavor. The SOE program is highly recommended for all students in agriculture.
6. The FFA's image must be changed to tie more closely to classroom activities. An FFA contest should be tied to the curriculum being taught. The FFA must change to fit the curriculum. It is one of the most effective teaching aids and window to classroom instruction. The FFA is an integral part of the instructional program.
7. Agricultural education is a local based program. Supervision and teacher education exist to support the local teacher and their program. Local teachers have the responsibility to deal with legislative positions and leadership issues of the profession.
8. NVATA should seek to forge new ties to the organizations that have similar interest for education in agriculture.
9. To survive, agricultural education needs to look forward, rather than back, at the many things the programs have done well, the bottom line is what you are doing rather than what you did last year. Agricultural education is evaluated on that basis and must position itself so as to answer in the positive and demonstrate that our profession is dynamic and remains on the cutting edge of education and technology in agriculture.

The NVATA should endeavor to make widespread "agricultural literacy" classroom materials and instruction available through partnerships with both the U.S. Department of Education and Agriculture, agricultural organizations, agribusiness industries and others with agriculturally related interests, and cooperatively promote the infusion

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AGRICULTURAL MECHANIZATION

Agricultural Mechanics is a Science

There is a very important concept I have to deal with when writing this column. The concept being that from the time I write a particular column to the time when you get a chance to read it, approximately five months, things are going to change. An important topic of discussion this month may be of little concern in a very short period of time. Change is the way things happen. Change itself is not a problem; what creates problems is the means by which we deal with change. The agricultural education discipline is experiencing change and some problems are being created. Some of these problems are being generated by those individuals who perceive change as a narrow, "one-shot-will-fix-it," process. Remarkably, to some in our profession, they have decided that now is a time for change in agricultural education. The perception being that agriculture has changed. Well, no wonder agricultural education is in a state of turmoil, agriculture has been changing since Cato the Elder, who was born in 234 B.C., wrote his book on farming. The most serious problems facing agricultural education are not the changes occurring, but rather the strategies, or more clearly the lack of strategies, we are pursuing to facilitate change.

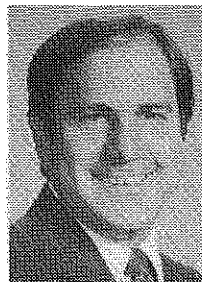
The particular situation facing agricultural education which has led to the writing of this column, is the sudden realization that agricultural education is based upon science. That agricultural education is more than vocational education and change must occur. Agriculture has always been much broader than some people have been able to recognize. However, to merely suppose that a change from a vocational emphasis to a natural science emphasis will solve our problems, is not a well planned strategy.

In an attempt to get a firm grasp of the concepts it is important to first get a clear set of definitions (taken from *The Second College Edition of The American Heritage Dictionary*, 1985):

1. **Science** — 1.a. The observation, identification, description, experimental investigation, and theoretical explanation of phenomena. 4. Knowledge, esp. knowledge gained through experience.
2. **Natural Science** — A science, such as biology, chemistry, or physics, based chiefly upon objective quantitative hypotheses.

The natural sciences obviously are an important component in the study of agriculture. However, in many of the discussions regarding science in agricultural education, the biological sciences seem to be the only ones discussed. This narrow perception of the natural sciences is not an effective strategy, just as viewing agricultural education as only vocational education is not an effective strategy.

It appears as though many in our profession have taken a very narrow view of science in agriculture. Maybe all the recent attention given to the exciting, and rapidly growing



By JOE G. HARPER, SPECIAL EDITOR
(Dr. Harper is an Assistant Professor,
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University of Nevada-Reno.)

field of biotechnology has caused some people to focus upon the role of the biological sciences in agriculture.

3. **Biotechnology** — The engineering and biological study of relationships between man and machine.

The definition implies much more to agricultural education than we as a profession are perceiving.

Many of the other sciences play an equal, if not more important, role in the future of agriculture. First, let's consider the role of the physical sciences in agriculture. In order to gain a better perspective on the physical sciences, I looked up the courses offered by our Physics Department. The courses not only included physics, but also meteorology and environmental studies. Agriculture is just as dependent upon these sciences as it is on the biological sciences but not everyone in agricultural education seems to recognize this point. This past summer was a clear indicator of the impact of these sciences upon agriculture. The lack of adequate water supplies throughout a large part of this country was a clear indicator of the impact of meteorology upon agriculture. Furthermore, the future holds little promise if we provide agricultural education which disregards the study of the environment.

Second, let's consider the role of the computer sciences in agriculture. The future of agriculture is clearly based upon the ability of agriculturalists to work with computers. Expert systems in agriculture are a reality. Computerized sensors are already in existence in production agriculture and agribusiness. Agricultural education must broaden its perspective regarding the instruction and use of computers. Instruction will need to go beyond the use of "canned" programs. Students will need to be educated not only in the concepts of programming and computer language, but also computer hardware. Studying only the biological sciences will not help you much when your computer just killed your greenhouse full of plants because the temperature sensor failed.

Finally, the most disturbing component of this situation is the sudden, probably fatal, disregard of the role of agricultural mechanics in the sciences of agriculture.

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The Council

The Summit: The Challenge of Change

Agriculture continues to change at an increasing rate. Global markets are becoming more competitive with the spreading of technology throughout the world. Policy makers and leaders are addressing many issues involving international markets and competitiveness. New technology is constantly on the rise.

At the same time enrollments in vocational and technical education in agriculture are declining at a greater rate than the decline of the student population. Emphasis in basic skill preparation and the ensuing increase in graduation requirements have increased the competition for the declining student population at the secondary level.

Success in the future will be directly related to the ability of the profession to lead, manage and execute actions which will effectively and efficiently address new and emerging trends which are prevalent in contemporary business and society. It is with the goals of increasing effectiveness and efficiency of agricultural education leaders, organizations and groups that the National Council for Vocational and Technical Education in Agriculture (The Council) called for a National Summit on Agricultural Education.

The objectives of the Summit were to:

1. Develop a strategic plan for agricultural education which includes the mission, goals, objectives and action plan for aggressively and cooperatively pursuing the improvement of agricultural education programs (kindergarten through adult).
2. Improve the effectiveness of national leaders by providing training in the skills necessary for managing change and exerting leadership in contemporary times.
3. Lay a foundation for an effective communication and marketing plan for agricultural education.

These objectives are to be accomplished during two meetings in 1989. The first meeting was held February 22-24, 1989, in Washington, D.C. Elected leaders from all entities of agricultural education participated in this meeting entitled "Leadership and the Change Process in the Information Age." This was a two and one half day meeting that provided leadership training and awareness for the development of a strategic plan. Specific learning objectives of this meeting included:

1. To explore and understand the global change process and its impact on leadership today.
2. To evaluate the changes that are occurring among individuals and organizations today.
3. To examine the changing role of today's leader and worker in agricultural education.
4. To examine how successful organizations and corporations create new images and vocabulary that facilitate



BY JOHN POPE, SPECIAL EDITOR
(Mr. Pope is Executive Assistant to the Chairman, The Council.)

shared vision, collaborative energy and system wide team work.

5. To examine how the leadership's abstract vision can be translated into concrete terms that provide a common focus and goal structure for agriculture education.
6. To examine how today's leading organizations have learned how to "fail forward."
7. To examine how and why positioning is a critical factor in determining an organization's effectiveness.
8. To understand how organizations (and individuals) are artificially controlled and/or limited by their own self image, self esteem and comfort zones.
9. To experience proven techniques for expanding the organizations (as well as the leaders and workers) comfort zone to meet the demands of the ever changing market place.
10. To examine proven techniques for capturing and maintaining the profession's collective imagination.
11. To examine the why and how of acquiring the six characteristics shared by excellent, high performance organizations:
 - (1) missions that motivate
 - (2) purposeful activity that contributes to the mission
 - (3) self observation and analysis
 - (4) team building/empowerment
 - (5) course correction (navigating a critical path)
 - (6) change management (anticipating and adapting to major change)

The second meeting of the Summit is scheduled for May 10-13, 1989. At this meeting entitled "Organizational Renewal in Action," a strategic plan or a "blueprint" for agricultural education will be developed. All individuals involved in the February meeting are scheduled to participate in the May meeting with the following objectives:

1. To gain a deeper understanding of the statement: "People must be aligned around a purpose if they are to achieve it. This alignment is first personal (e.g. originating with the leader) and subsequently organizational."

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Instructional Materials

A Development Philosophy

As state departments of education adopt and initiate the recommendations of the National Research Council, curriculum development centers can play an important role. The development and distribution of current, up-to-date curriculum materials allow teachers to spend more time with other aspects of the agricultural science program. They can teach more information in the allotted time and make the subject matter more interesting to students. Students have the opportunity to develop learning skills, study a wider variety of materials, and gain greater confidence.

Reform Aided by Development Centers

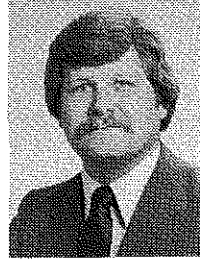
Curriculum centers can serve as a catalyst for curriculum reform. Teachers are now more receptive to curriculum reforms, including the offering of new courses and course content, when well-written, well-illustrated, and technically accurate curriculum materials are available. Educational researchers have stated that as many as fifteen years are required to adopt and apply education reforms in some states' secondary schools. The availability of high quality curriculum materials often influences school administrators and teachers to adopt educational reforms in a much shorter period.

Dissemination of New Knowledge

While there are many ways to disseminate new knowledge, an adequate number of curriculum specialists, and the use of computer inventory controls, internal printing, collation, and binding enable curriculum centers to revise and reprint materials frequently. These are the principal factors in the rapid dissemination of information.

Curriculum Centers Successful

The curriculum centers have made a valuable contribution to agricultural education in a very cost-effective manner. The generation of a large part of their operational expenses through sales attest to their success. Their continued operations are dependent upon their development of high quality curriculum materials and the subsequent sales.



BY BILL T. TOMLINSON

(Dr. Tomlinson is Coordinator of Instructional Materials Service, Texas A&M University.)

Linkage Between Teachers, State Staff

As a result of a reduction in state staff personnel within the last few years, curriculum centers have assisted in filling the void by keeping teachers informed of program changes, goals, and policies. Center personnel who serve on curriculum advisory committees with the state staff and teachers are able to give and receive input. Additionally, they conduct teacher in-service workshops, exhibit curriculum materials, and use newsletters to inform teachers. Most center professional staff members maintain close professional relationships with the teachers they serve.

Conclusion

Today, the science of agriculture is constantly and rapidly changing. Food and fiber are basic necessities. Agricultural products and technology developed in the United States must compete with those developed elsewhere in the world. In order for the United States to remain competitive, it must have a well-trained work force. The staffs of curriculum centers play a major role in helping teachers and students stay abreast of current technology on a level especially designed for students.

As one agricultural educator recently noted "So goes the curriculum center, so goes the agricultural science program." A number of factors — dedicated teachers, administrators, parents, and students — influence the quality of agricultural education. Curriculum development centers can produce quality materials that produce a quality work force.

New Focus For Agricultural Education

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of agricultural literacy into the classroom instruction K-12. This might be implemented by having some teachers assigned as resource faculty members. The AVA Agricultural Education Division Policy Committee should also be a leader in this movement. The Policy Committee should consider:

1. Working to change teacher preparation programs to include the infusion of agricultural literacy in elementary, intermediate and secondary schools, as well as special methods for work with a new age group. Teacher educators must focus on methods of teaching and in-service training.

2. Developing curriculum materials on a nationwide basis and making them available to individual teachers in the school system through the local agriculture instructor.
3. Securing development grants through legislation and/or from major corporate sponsors to assist in the development of a systematic K-12 agricultural literacy program.
4. Assuring education in agriculture includes instruction about agriculture now and for the future.

REFERENCE

National Vocational Agricultural Teacher's Association. (1988). THE NVATA POSITION PAPER ON THE NATIONAL ACADEMY STUDY. Alexandria, VA: NVATA.

The Summit: The Challenge of Change

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2. To gain a working knowledge of the benefits incurred by creating a "value driven" organization in a rapidly changing world.
3. To learn with a proven process a value clarification as it relates to both personal and organizational effectiveness.
4. Participants will articulate a set of prioritized values for agricultural education through guided group consensus.
5. Participants will develop an organizational mission statement for agricultural education based on the above mentioned set of values.
6. Participants will develop goals, objectives, and action steps in order to carry out the mission of agricultural education.
7. To learn with "critical path" methods of implementing objectives, goals and action plans which carry out the mission statement.
8. To learn the practical ways in which a focus on purpose and vision will enable agricultural education to sustain a cohesive long term perspective within which to determine short term goals.
9. To learn techniques for building group cohesion, empathy and trust.
10. To learn techniques for creating an organization wide atmosphere that sparks the type of creativity and entrepreneurship necessary to compete in today's world.
11. To experience a method for implementing and managing large scale organizational change through participative leadership.
12. To see how today's high performance organizations are able to access a greater proportion of their members personal energy, zest, enthusiasm and loyalty.
13. To access various components of the organization (e.g. products, convention, curriculum, communications, promotions, etc.) and experience ways of making them internally consistent and congruent with organization's mission and purpose — an integrated whole.

Upon completion of both Summit meetings, the participants will have completed a written strategic plan for agricultural education complete with goals, objectives and action steps for implementation. In addition, participants will have gained personal leadership skills that will assist them and their respective organizations in implementing the plan.

For more information concerning The Summit contact The Council at P.O. Box 115035, Alexandria, VA 22309. Telephone: 703/360-8832.

AGRICULTURAL MECHANIZATION

Agricultural Mechanics is a Science

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Agricultural mechanics is very soundly based upon the natural, physical and computer sciences. As a case in point, we only have to look at the recent National Agriscience Student award recipients in the FFA to see the obvious connection. The Agriscience Student of the Year recipient, Gary Todd of Union, Nebraska, built a two-row working model of an electrostatic sprayer. Note the following definition of agriculture and consider the term "agriscience."

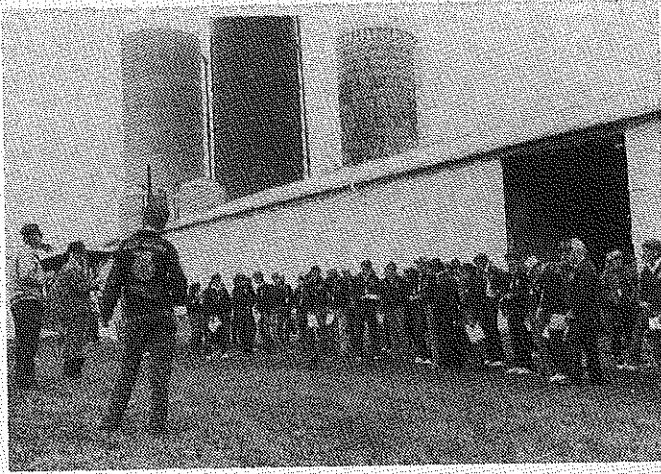
4. **Agriculture** — The science, art, and business of cultivating the soil, producing crops, and raising livestock; farming. (Lat. agricultura; ager, land + cultura, cultivation.)

Our agricultural mechanics laboratories have been and should continue to be learning environments where we teach present and future agriculturalists about the sciences of agriculture. When we are teaching students electricity, hydraulics, building construction, metals fabrication, and

irrigation, to mention a few subjects, we are teaching them the application of sciences in agriculture. Many teachers of agricultural education have been doing this for years. We as teachers of agricultural mechanics must not allow this important component of our instruction to disappear. Now is the time to emphasize the instruction of the natural, physical, and computer sciences in agricultural mechanics instruction. If we fail to do so, agricultural education will fall victim to the narrow focus of the biological sciences and subsequently fade away. The following definitions point out the serious deletion we are about to make if mechanics is no longer a part of agricultural education.

5. **Mechanics** — 1. The analysis of the action of forces on matter or material systems. 2. The design, construction, operation, and application of machinery or mechanical structures. 3. The functional and technical aspects of an activity (from *The American Heritage Dictionary*); and **Mechanics** — 1. a branch of physical science that deals with energy and forces and their effect on bodies, 2. the practical application of mechanics to the design, construction, or operation of machines or tools (from *Webster's New Collegiate Dictionary*).

Stories in Pictures



Agricultural tours have and will continue to be an effective means for educating students about and for agriculture. (Photo by West Virginia University.)



Mathematical skills are important in educating students about and for agriculture. (Photo by West Virginia University.)



Semester specialty class will assist students wanting information about agriculture. (Photo by West Virginia University.)



Retail meat identification assists students in becoming better consumers. (Photo by West Virginia University.)