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The Visitor

Devoted to the Interests of Agricultural Education in Minnesota Schools

VOL. LXXV

Winter, 1988

No. 1

AGRICULTURAL EDUCATION: A LOOK FORWARD

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This paper will address the relevant social and economic changes which have taken place during the history of vocational agriculture, vocational agriculture's response to those changes, and alternatives for the future of the program.

Social and Economic Change

Imagine the late eighteenth century in America. The young nation of a few hundred thousand people has a hard fought and newly gained independence, a new constitution, and a new system of government. Each of these was a part of one of the greatest experiments in sociology, where the peoples of a nation were themselves responsible for their manifest destiny. One underlying and unwritten premise was that those who ultimately make the decisions in a society, whether they be a few or the masses, must be educated, thinking individuals. Thus the value of education was integral to the great social experiment called "democracy."

While the young nation had fledgling industries in the crafts (silversmiths, boat building, etc.), the vast majority of its economic wealth was in its agricultural base. Agricultural products were the major export, and thus were the major source of international income. Well over four-fifths of the work force was engaged in production agriculture. Knowledge of agriculture was common.

During the nineteenth century the nation expanded rapidly. It grew in size geographically and in population. An increasing percentage of the workforce moved from the rural, agriculturally dominated communities to larger cities where a growing industrial base demanded a growing workforce. By the latter half of the 1900s the "industrial revolution" was beginning. Along with these social and economic changes came the realization that not only was change occurring at an increasing rate, but change was, in fact, inevitable.

New universities were established and existing ones changed from focusing primarily on a "liberal" education to include education for those who would apply new knowledge to the needs of the economic system of the day. The federal government established land-

grant colleges to educate the common people in agricultural and mechanical arts, agricultural experiment stations were established to discover new knowledge necessary to improve agriculture, and public elementary and secondary schools began to include instruction in the "practical arts" and sciences, including agriculture.

By the early twentieth century the industrial revolution was at its peak. A small but still significant percentage of the population was expected to produce agricultural goods for an expanding society, and vocational agriculture was being taught in rural schools across the nation in an effort to meet this need.

By the late twentieth century population growth in this country had slowed, productivity of the agricultural sector had increased dramatically, and the agricultural productivity of other nations (who were wealthy enough to be trading partners) had increased to the point where American agriculture was producing unmarketable surpluses. The conditions had changed since the inception of the vocational agriculture program.

The majority of occupations in agriculture today center around those industries which serve the agricultural producers. Non-production agribusiness has grown to include transportation, processing, marketing, supplies and research. Some estimates place the work force in agribusiness at around 20 percent of the total U.S. labor force while only some three percent are actual producers of raw agricultural products.

Changes in Vocational Agriculture

Thomas Jefferson believed that change was inevitable. He believed that "revolution" (his reference) in government should be a gradual evolution to insure the health of the nation. He believed that the most positive change comes from within and that if those within the system fail to initiate necessary change, change will be forced upon the system from outside. With the inevitability of change understood it seems appropriate to ask the question, "How has vocational agriculture changed?"

Vocational agriculture began largely as a program to train workers in in-

creasing agriculture production. Secondary objectives included leadership training and community development. Because the primary focus was upon production agriculture, the primary emphasis in the curriculum was on production agriculture topics. Although the needs of agriculture have since evolved to the point that needs for potential workers in agribusiness out-number the need for agricultural production workers by nearly seven to one, production agriculture remains dominant in the vocational agriculture curriculum.

This is not true of selected individual programs in vocational agriculture. One need not search long to find programs which include courses emphasizing the processing and marketing of agricultural products, or courses which emphasize aesthetic outcomes of agriculture like horticulture. But the number of these programs is a clear minority compared to those programs which continue to offer most courses in animal and plant production and mechanics.

How has vocational agriculture responded to changes in society and in the agricultural industry? The conclusion most easily reached is, "inadequately." Some in the profession will take offense to this conclusion. They contend that vocational agriculture has a rich tradition of success. This is indeed the case; vocational agriculture does have a rich heritage. However, the environment in which it was begun no longer exists. If it is to survive it must evolve.

To support the contention that vocational agriculture must evolve, several pieces of evidence are provided. Each has been or is currently being debated in varying degrees by the profession.

1. Decline in enrollments in vocational agriculture. These declines are most notable in "traditional" production programs; innovative programs focusing on non-production, science or agribusiness subject matter seem to have experienced fewer declines in enrollment.
2. Declines in funding levels for vocational programs in several states.
3. At least one national study of agriculture education to determine its mission.
4. The attitude of some colleges of agriculture administrators that high school vocational agriculture is of little value to students in colleges of agriculture.
5. A decline in concern among agribusiness persons that vocational agriculture is an important experience for prospective employees.

The Future of Vocational Agriculture

The future of vocational agriculture is anyone's guess. However, this author would like to present several alternative scenarios and the requisite changes and

likely implications of each. Some may not be desirable or even likely, but each is possible.

Alternative 1 - The status quo.

It is possible that change in vocational agriculture is not necessary. We can continue to operate programs which are largely production oriented and our clientele will be adequately served. It is a possible scenario, but not one which rational thinking will produce. The fact is, the industry of agriculture has changed. The needs are now more urgent in agribusiness. Further, the technologies of production agriculture continue to change rapidly. It would be naive to assume that enough time exists in the secondary school day to teach all the technologies associated with agriculture; and it would be naive to assume that schools have the necessary resources to provide for such instruction. Few students would be interested in enrolling in such a program if the focus is only on production.

Students have changed. Agriculture is held in low esteem by society by tradition. This has been the case since the industrial revolution when many rural youth moved to the promises of the city. It has been reinforced by the recent depressed economic situation of rural America. Parents of farm youths themselves are less likely to urge their children to pursue careers in agriculture. As a result, enrollments in programs are declining and schools are not likely to continue programs they cannot justify by an adequate enrollment.

A recent national study of agriculture education by the National Academy of Science focused upon the necessary changes of the program. Early information from the investigating body suggests that radical changes in the concept of education about agriculture may be recommended.

The momentum is building to shift away from categorical funding for secondary vocational programs to provide support for "innovative" programs for "work readiness." An underlying assumption is that skill training for specific vocational areas is being provided by the post-secondary system. The recent report of the Minnesota Commissioner of Education's Task Force on Education for Employment (Work Readiness, 1988) signals this change. In summary, the possibility that vocational agriculture program will continue as it has in the past is not likely.

Alternative 2 - Refocused programs of agribusiness.

A second scenario is that programs will diminish emphasis on production agriculture and increase emphasis on the business aspects involved in the agriculture industry. This scenario requires that fundamental knowledge of produc-

tion continue to be taught as foundational to working in the industry. However, the primary aim would be to train effective workers for the broader industry of agriculture in such content as finance, products processing, marketing of goods and services, and agricultural science and technology.

Within the constraints of the present educational system, this alternative might be the most easily implemented. It is the most easily accommodated, requiring little change within the school system. It centers around a major change in the curriculum - the materials from which the teacher teaches and from which the student learns. For this reason it is difficult to predict the success of implementing such a program. It requires a fundamental change in attitudes held by the teacher (and by state and federal leadership) in what should be taught in the curriculum. It may require retraining of teachers, which would require financial resources schools are unlikely to provide, or it may require replacement of teachers, which is neither politically nor legally possible.

Alternative 3 - A new structure for agricultural education.

This is probably the most radical of alternatives. It requires a total reconceptualizing of what education about agriculture is and should be, for whom it should be offered, and how and when it should be taught. Since it is such a radical departure from the present program, it is the least likely to be implemented.

Two alternatives really exist here. Either or both should be considered. One is what an as yet unpublished report by the National Academy of Sciences calls "education in agriculture" and the other is what it calls "education about agriculture" (Warmbrod, 1987). Education in agriculture would conceivably be similar to alternative 2 in content. It would focus upon the business and science of agriculture with the objective of seeking gainful employment in a related career. It calls for a rebuilding of the program on its traditional strengths and for the elimination of components which are no longer relevant.

The second alternative, education about agriculture, would teach a broad overview of agriculture as an important part of the historical, social, scientific and economic heritage of the nation. This concept of agriculture education offers the greatest potential to reach a wide student base. It is also the most interesting to conceptualize. If one were to rethink agriculture as a content area in education, we would eventually arrive at a program much like those in alternatives 1 or 2. However, if we were to rethink the concept of agriculture as a sociological phenomenon and to rethink the concept of schooling, we might arrive at a model of agriculture as a context for education.

We know from research in cognitive psychology that learning is a process of building on prior knowledge bases. When new information is processed in the mind it is stored within previously established contexts of the learner's conception of reality. We also know that learning proceeds best when the learner can see how the knowledge can be applied to real situations. Many rural children have acquired a rich base of rural sociological and agricultural-based knowledge by the time they enter school. It seems that learning would be greatly enhanced if this knowledge were not ignored in the process of teaching the entire school curriculum, but rather used as a foundation on which to teach even "the basics." The learning of many non-rural youths would be enhanced if their education were applied in an integrating context. In either case, agriculture becomes a context in which to teach rather than content to teach.

The concept is best illustrated by an example. To many students learning basic math facts can be a mundane chore at best. For these students, learning facts isolated from application is ineffective. However, many of these students are required daily to perform mathematical functions as a part of their culture, such as calculating the pounds of milk in a partially filled bulk milk tank. For many rural youths, that culture centers around the agricultural community.

Each of the "basic" subject matter areas from the elementary grades through high school could use agriculture as a context for learning. With agriculture as a context for education, many students would be exposed to it. It would provide a balance in a country where more is written about professional sports than is written about a portion of our society on which much of our heritage is based.

To accomplish this goal the entire K-12 curriculum would need to be revised to identify areas in which agriculture might be integrated as a context for presently taught content. Examples in the social studies include study of community development, or study of how assuming responsibility for parts of family business operations at an early age affects the attitudes and values of individuals. Examples in math and science include relating theory to problems of practice such as using the Pythagorean theorem to determine how many shingles to buy to reroof the house, or relating study in biology to growth and production of common plants and animals.

What are the constraints to implementing such a program? Although many teachers already provide common contexts for their teaching, many follow standard curricula which are often very generic in approach. Wide-scale implementation would require a complete restructuring of curriculum materials, a very costly program. It would require a

change of attitude by many education officials; an unlikely proposition. It would require that current teachers of vocational agriculture be allowed to act as "curriculum consultants" to others in the school systems; a promising possibility for them but unlikely to be politically feasible within the present educational system.

Some efforts have been made to move in this direction. The "Agriculture in the Classroom" project sponsored by the U.S. Department of Agriculture nationally and by the Minnesota Department of Agriculture in Minnesota is beginning to provide some leadership in integrating more agricultural content into the elementary school curriculum. This effort provides excellent exposure to agriculture by providing materials for elementary school teachers. However, if at these grade levels agriculture is being taught as an additional subject matter area, then this effort too becomes instruction in content rather than instruction using agriculture as context to enhance instruction in content areas. Vocational agriculture instructors could serve as consultants to elementary school teachers to achieve the integration concept, but any association between these teachers has been very limited in scope. Further, it is rarely encouraged by school administrators.

Alternative 4 - Program demise.

Each of the three previously mentioned alternatives is possible in the right environment. Alternative 1 is dependent upon an unchanging agricultural and rural economic base. Alternative 2 is dependent upon positive leadership from within and outside of the profession. Alternative 3 is dependent upon bold leadership and a general shift in understanding from the entire educational community.

A fourth alternative is just as likely as any. That being that agricultural education will not change and that the perceived need for programs of education in agriculture held by society and the educational community will continue to decline. This alternative results in the near total demise of agricultural education. A few programs which are deemed important by local communities will survive in a few pockets around the nation, but secondary school education in agriculture will not be a national concern.

How has the profession of vocational agricultural education contributed to efforts for substantive change? Many teachers of vocational agriculture have attempted to be responsive to the needs of their communities and their students, and have contemporary programs. However, many teachers and their programs continue to reflect the notion that agriculture is primarily production. These programs do not reflect the needs of either the students or the community, rather they reflect outdated needs of a

changing industry. While the public image of agriculture as a possible career area has not been highly positive in recent years, agricultural education may have a compounded image problem stemming from the perceived slow movement to change instruction to more relevant agribusiness needs.

Parting Thoughts

What does the future hold for agricultural education? That answer is dependent upon the abilities of each agricultural educator to maintain programs which are responsive to the needs of the individuals and the communities they serve. It is dependent upon exploring new rationales for and methods of instruction in agricultural education. It is dependent upon serving a new and expanded client base. It is dependent upon developing a positive image of agriculture as an industry and agricultural education as a necessary program in each local community. It is dependent upon each agricultural educator developing a new vision and philosophy of what agricultural education is.

The real question is whether the profession has the courage to face the challenges head on, or whether it will wait until some outside force determines its destiny for it. The answer to that question ultimately lies with each member of the profession. This author believes that there is a promising future for agricultural education. Some programs will be lost and others will change focus. But overall, agricultural education will begin to take on new focuses, one which includes agriculture as content for vocations and one in which agriculture provides a context for learning.

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Vol. LXXV THE VISITOR No. 1
Published quarterly during the calendar year in Winter, Spring, Summer and Fall by the division of Agricultural Education, University of Minnesota, St. Paul, MN 55108.