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June, 1995
Volume 67, Number 12

Business and Industry Partnerships

The Past and the Future Strength of Agricultural Education!

THE
AGRICULTURAL EDUCATION
MAGAZINE

June, 1995 Volume 67 Number 12

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Articles and photographs should be submitted to the Editor, Regional Editors, or Special Editors. Items to be considered for publication should be submitted at least 90 days prior to the date of issue intended for the article or photograph. All submissions will be acknowledged by the Editor. No items are returned unless accompanied by a written request. Articles should be typed, double-spaced, and include information about the author(s). Two copies of articles should be submitted. A recent photograph should accompany the article unless one is on file with the Editor. Articles in the magazine may be reproduced without permission.

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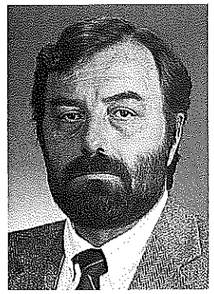
Who Are Our Partners?



BY LOU E. RIESENBERG

Dr. Riesenberg is professor and head of agricultural and extension education at the University of Idaho, Moscow.

If one were to ask a sample of Agricultural Educators for suggestions as to who they consider our partners, the forthcoming suggestions would equate in number to the number of educators in the sample. Substantial differences could be expected due to how the respondents interpreted the term 'partners'. Agricultural Educators are, by the nature of who they are and by the nature of what they do, very independent individuals and when compared to other educators, very self sufficient individuals. Please do not interpret these characterizations as derogatory. The characterizations are really the strength of Agricultural Education. How else would one explain the tremendous variations in Agricultural Education programs on a state, regional and national basis. Yet very few 'other' educational programs are as interdependent and associated on a state, regional and national basis.

Some traditional partners are the schools and communities to which our programs belong. Others would include members of our advisory committees and perhaps the businesses that supply our programs and those businesses that provide placement opportunities for our students. Many would consider the parents and supporters of our students as partners. Still others might suggest teacher education units and state departments of (vocational) education as limited partners. However, how many of us would insist that agricultural businesses and industries are and should be true partners with us in our Agricultural Education programs? And how many of us would suggest the partners identified above as limited partners to assist in funding various components of our programs? Surely none of us would suggest our programs have no partners. Perhaps the diversity of suggestions of partners is related to the definition of the term 'partners'.

Imagine the responses from Agricultural Educators with whom you are familiar to the request, "Please describe the influences on the direction and content of your Agricultural Education program that are directly attributable to your program's partners". Imagine the struggle some of us would have with that request! Why?

Or request the names and addresses of 'partners' such as, chairs of advisory committees and other school and communities leaders, for the express purpose of surveying those partners about the value of the Agricultural Education program in their communities; of course, indicate that responses to the survey will be reported in summary form only. Imagine the reaction some of us would have to that request! Why?

Ed Osborne (July, 1992), on the demise of the Lone Rangers among us, rationalized "Collaborative relationships require substantive joint ventures of mutual concern and benefit. As secondary agriculture programs strive to reconsider their purposes and expand into new areas, meaningful collaborative relationships will be crucial. The local program development work that needs to be done in agricultural education cannot be accomplished by an agriculture teacher working in isolation. ..."

In this issue of The Agricultural Education Magazine, thanks to the direction and hard work of Dr. Kotrlik, Theme Editor, the Theme Articles describe some real partnerships developed for the benefit of the clientele of our Agricultural Education programs - students. Many more such stories exist in Agricultural Education land waiting for someone to describe them. Thank you also to the authors of the articles in this issue. Happy reading. For us, it is on to Volume 68.

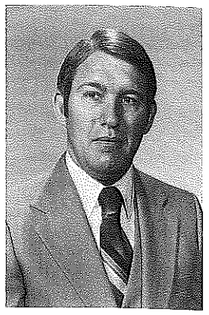
Reference

Osborne, E. (July, 1992). No more Lone Rangers. The Agricultural Education Magazine, 65 (1), 3.

About the Cover

Carroll, Iowa students are proud of their new Agricultural Education building and the organization of the new Carroll Area FFA Chapter; a magnificent example of a business and industry partnership with education. (Photo courtesy of W. Wade Miller.)

Business/Industry Partnerships: Growing Your Own



BY JOE W. KOTRLIK
Dr. Kotrlik is a professor of vocational education at Louisiana State University, Baton Rouge.

When I started out as theme editor for the Business/Industry Partnerships issue, my plan was to highlight ways in which agricultural education programs have cooperated with business and industry to develop the potential of local programs. As I received articles for the issue, I realized there are other ways to look at this topic. Not only can business and industry improve agricultural education programs, but agricultural education programs can enhance businesses, both educationally and financially. It is a two-way partnership.

The Goals 2000 Educate America Act and the School-to-Work Opportunities Acts highlight the need for all of education to work with business and industry to reinvent education in the United States. Part of this reinvention involves a major emphasis on partnerships between them. We've learned that schools can't do it alone—we must develop active and **PRODUCTIVE** partnerships with these sources. It shouldn't be difficult for agricultural educators, due to their long history of working with various community groups, and using business and industry for advisory committees.

Of course, our students remain the primary reason we should aggressively pursue partnerships with business and industry. It would be a gross understatement to say the workplace is changing. The following quote from K.K. Duvall emphasizes this point: "In the tiny space of 20 years, we have bred a whole generation of working Americans who take it for granted that they will never be out of a job or go a single year without a salary increase."

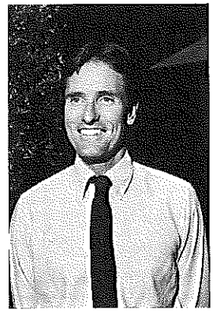
Times have changed! Today and in the future, students must start looking for and preparing for another job the day they are hired! The notion that many will work for the same employer for 40 years is outdated. Students have a better chance for succeeding in a highly transitory workplace when we cooperate directly with business and industry to upgrade and update our programs. It ensures that our graduates have knowledge and skills that are highly marketable.

No discussion of business/industry partnerships would be complete without revisiting our role in the global economy and how our graduates will take their rightful place in it through these partnerships. And for those who believe today's graduates will remain in the local or nearby communities, take a long, hard look at where your school's graduates from 10 or 15 years ago are now. As an example, I reflected upon my rural West Texas high school graduating class of 96 students. The year was 1966 and the town had a population of about 4,000. After twenty-eight years, almost half of those classmates live outside their home state and two live outside of the United States. Occupational mobility has increased immensely since 1966 and will continue to do so as business and industry respond even more aggressively to market trends and conditions.

Agricultural educators must actively pursue financial and education partnerships with business and industry. The advantages far outweigh the disadvantages. Business and industry can help us by providing financial support, technical expertise, program support, and sites for educational activities. They can assist us in seeking outside grants and other funding opportunities. We should also consider providing services for income-producing purposes.. Income production as a program goal is a concept that is unusual for many agricultural educators and somewhat controversial. Yet agricultural educators have always been hard workers, always willing to **GIVE** others a helping hand. Just as universities have used external grants and contracts to improve and expand their programs, they have also started charging for and generating funds from the educational and research services they provide. It may be time for high school and postsecondary agricultural educators to use the same strategy.

Andrew Carnegie may have provided agricultural educators with the best advice possible when he said, "J.P. Morgan buys his partners, I grow my own." In this time of rapidly advancing technology, taxpayer revolts, and educational redesign, maybe agriscience teachers should follow Andrew Carnegie's example and cultivate their own partners! ■

Involving Business and Industry in Agricultural Education Programs



BY JOHN MULCAHY
Mr. Mulcahy is an agriscience instructor at Peoria High School in Peoria, Arizona.

"If vocational education is the key to educating a viable workforce for the 21st century, then the involvement of business and industry in vocational education is surely the force that turns the key."

Every vocational educator, from the teacher in the classroom to the teacher trainer, would agree with this statement. Each of us recognizes the value of involving business people in our programs. We struggle with how best to make this happen. Advisory committees are formed, guest speakers are invited to address our classes, occupational experience programs are developed, and still, we are left with that nagging sense that we should do more.

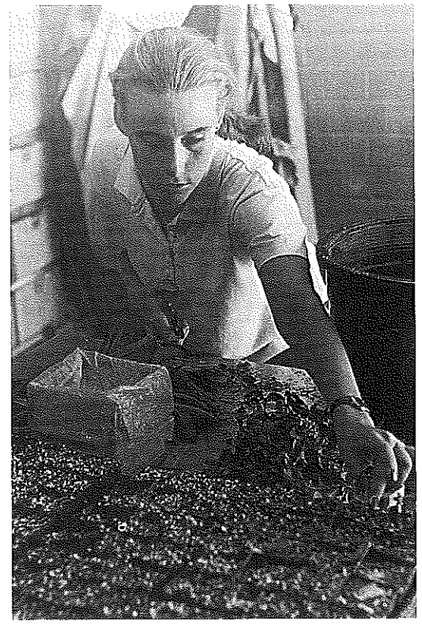
The author, like agricultural educators everywhere, has struggled with how best to achieve the goal of involving business and industry in an agricultural education program in a way that is meaningful. While advisory committees and occupational experience programs remain important, this author maintains that the best means of involvement is the formation of partnerships between vocational programs and local businesses.

Getting Started

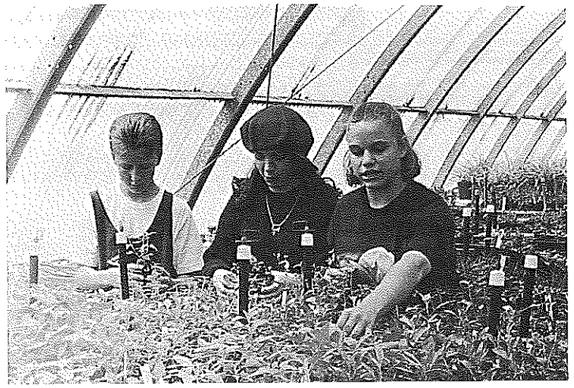
The opportunities for business/industry partnerships are unlimited. The process begins by identifying the instructional mission of your program, and then outlining how businesses can assist you in carrying out this mission, and conversely, how you can assist them in meeting their own goals. While we generally see our mission as principally to provide labor for local agricultural firms, there are often short-term business goals that schools can address. An example follows.

The author's program is a specialized horticulture program located on the northwest side of Phoenix. After determining that the intention of our instructional program should be to educate students for careers in horticulture, we set about the task of arranging business partnerships with local horticultural firms. While all of the businesses in question were interested in the eventual product of our program—trained employees—they were also interested in how we might work collaboratively to educate students and help them realize a profit.

Our first partnership was formed with a local nursery, Lone Mountain Nursery. We prepared a contract with the company, specifying that our program would grow selected shrubs, vines, and trees at the school greenhouse for their company under the direction and supervision of their employees. The company received the product at a price below market value and the school received supplies to grow the plants as well as 15 hours per week of assistance in the agricultural classrooms and laboratories. →



Peoria High School student, Jessica Madison, propagates plants for a local wholesale nursery. The nursery contracts with the Peoria Agricultural Education program to produce selected plants under the supervision of industry experts. (Photo courtesy of John Mulcahy.)



Students in the Peoria High School Agricultural Education program consolidate an order of plants to be shipped to a local landscape company. Landscape companies provide technical advice and financial support in return for a regular supply of quality plants. (Photo courtesy of John Mulcahy.)

The success of this arrangement quickly led to other contractual arrangements with local firms. A landscaping company indicated that they, too, needed plants and were willing to help us with the landscape design, installation, and maintenance phase of our instructional program. They provided us assistance on school landscaping projects and helped design teaching models. In return, they benefited from an ample supply of plants from us at a very reasonable price.

With the advent of technology, we found ourselves searching for how best to connect ourselves with an industry just in its infancy. A nursery on the other side of Phoenix contacted us and asked if we would tissue-culture a particular tree, *Prosopis chilensis.* In exchange, they agreed to provide all supplies, hire two students on a part-time basis to run our biotechnology laboratory, and provide the assistance of an employee on a regular basis who possesses a doctorate in horticulture. We were delighted to consent.

All That Glitters Is Not Gold

Of course, every arrangement has its problems. As any astute reader will suggest, some will arise from those companies not chosen to participate. Cries of unfair competition are likely to be heard in certain areas. While that is not yet a concern for the author's program, it is one that should be anticipated. Some sort of bidding or lottery process may be required in some school districts in order to select businesses for partnerships. Moreover, once a business person is educated about the realities of the school setting, they may realize that working with schools has a number of disadvantages as well as advantages. It takes a special business person to appreciate the routines of the school day, such as fifty minute periods and class interruptions, and to still remain committed to working in this environment. It is most important to provide potential business interests with a realistic picture of life at school prior to entering into a partnership.

It is also well to remember that once a partnership is established, some measure of control over the program is relinquished. Businesses expect quality products and services in a timely manner. One must be careful to ensure that educational goals are not subordinated by the production goals of the business interest with which the program is aligned.

Making Your Pitch

The advantages of a business partnership to the local agricultural education program are many. They include free supplies, expert advice, and instructional assistance. Some may argue that simple discounts on plants or services may not be adequate compensation to businesses seeking to work with a school. However, it is well to remember that schools are often heavily capitalized, a luxury not enjoyed by all businesses, particularly small businesses. The author's program has a large, well-equipped greenhouse and biotechnology laboratory. These capital investments represent a very real attraction to companies with considerable expertise but limited facilities and equipment. In making your pitch to local businesses, it is important to outline advantages such as facilities, equipment, and "free" utilities.

Parting Shot

Business industry partnerships *can* be a wonderful opportunity for the children in our charge. They provide a means of bridging the gap between school and work that does not require students to absent themselves from the school environment. Additionally, such partnerships put teachers and their curriculum in direct contact with business people, thus offering endless opportunities for teacher in-service and curriculum update.

Teachers are urged to start slowly. Evaluate the instructional focus of your program and consider how your program can benefit a local business. Don't neglect public entities such as city and state governmental agencies. They, too, may benefit from cooperative arrangements. Your own school district may welcome involvement in landscaping projects, construction projects and the like, and be happy to provide technical assistance from skilled maintenance personnel in exchange for your assistance.

Whatever the case, start planning today. Business partnerships *can* work. It's good business for industry and a wonderful educational tool for us. ■

Where There Is A Will, There Is A Way

BY W. WADE MILLER
Dr. Miller is a professor of agricultural education and studies at Iowa State University, Ames.

On the prairie in west central Iowa there is a growing city of about 10,000 by the name of Carroll. This city is the county seat of Carroll County (pop. 21,500) and the Carroll Community School District covers most of this county. According to the January 30, 1995 edition of *The Times Herald,* economic development fever has spread throughout Carroll County. The Chamber of Commerce has coined a phrase to illustrate their point: Growing First Class. This slogan is the Chamber's catchall phrase to describe the progressiveness of the area. It is not easy to classify the community as agricultural or industrial because it is such a diversified area. Manufacturing, service, retail, health care, agricultural industries, and farming are all represented in Carroll County. Across the county, one can see remodeling and new construction. This economic development fever, or "The Carroll Spirit" as some of the locals call it, is also prevalent in Carroll's public and parochial schools.

For many years the public schools (Carroll Community School District) and five parochial schools have served the area well. There are two excellent high schools: Carroll Community High School and Kuemper Catholic High School. From 1937 to 1955, there was a vocational agriculture program and FFA at the public high school. In 1955, the Kuemper Catholic High School opened. Most of the freshman and sophomore rural boys left the public school and enrolled in the new Kuemper High School. Shortly thereafter, the vocational agriculture program at the public school was discontinued due to low enrollment.

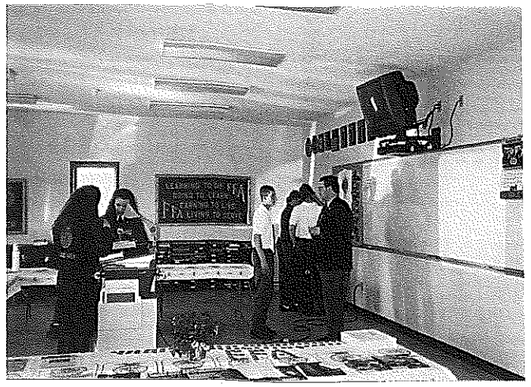
At Kuemper, a general agriculture program was offered and an Agriculture Club was organized. The club affiliated with 4-H since private schools could not have a public-financed vocational program or an FFA Chapter because of federal laws and regulations. The agriculture program and the club experienced great success over the years. Many of Carroll's leading citizens participated in the agriculture program at Kuemper when they were in high school. By the early 1990's, however, it was evident that the facilities housing the agriculture program had become inadequate and needed to be remodeled and expanded. Also, there had always been a desire to have an FFA Chapter so that the students could participate in FFA activities like the other high school agriculture programs in Iowa.

There were changes being made in the state legislature at about the same time. A new law was passed (S.F. 449) requiring all public school systems in Iowa to offer at least four vocational programs. Carroll Community School District (CSD) had only three. Many people in the community wanted the fourth program to be Agricultural Education. School boards and administrators in both school systems saw an opportunity to join forces to solve a common problem. Father Cleo Senjenns, Superintendent at Kuemper; Dale Proctor, Superintendent at Carroll CSD.; and Gene Vincent, President of the Carroll Community School Board, organized community leaders to examine the problem and propose a solution.

The solution selected was for Carroll Community School District to start a new Instructor program at a neutral site easily accessible to both high schools. Several articles written by Steve Haviland in *The Times Herald* and Duane Winn in *Carroll Today* provide some of the facts involved in starting the new program. This would be the fourth vocational program for Carroll CSD and Kuemper would send interested students to the new Instructor program for classes and the FFA. They would discontinue their general agriculture program at the end of the 1991-92 school year. After making that decision, the hard part began: It costs lots of money to start a new Instructor program. Resources would have to be found for facilities, a teacher's salary, supplies, equipment, utilities, and transportation.

The Carroll board passed a special levy of $111,000 to pay start-up expenses. Proctor →

Carroll students are proud of the organization of the new Carroll Area FFA Chapter; the result of business and industry partnerships with education. (Photo courtesy of W. Wade Miller.)



Carroll students are preparing their new classroom for the Agribusiness Breakfast and open house during National FFA Week. (Photo courtesy of W. Wade Miller.)

said that almost a year went by as the board decided the best way to proceed. He said that it was one of the biggest dilemmas the board had faced in several years. They wanted to obtain an existing building and remodel it for the new program. But, every time they found a building they were interested in, they would find that it would cost too much money to "bring it up to code." At times, they were tempted to abandon the idea of a new Instructor program, but the administrators, board members, and community leaders were committed to the idea. They were so committed that they decided to hire a teacher.

They attracted one of Iowa's most successful young teachers, Tom Paulsen. He has received the Outstanding New Vocational Teacher award from AVA and the Outstanding Young Member award from NVATA. He accepted the position because he was intrigued by the rare opportunity in Iowa to start a new agriculture program.

Four civic-minded business leaders came up with a solution for a building that enabled the idea to become a reality. These four business leaders formed an organization called "Clark Enterprises." This group, made up of Bob Badding, Martin Halbur, Jim Pietig, and Eileen Muhlbaurer, proposed to build a new agriculture building and lease it to the school. The District would enter into a five-year lease agreement with an option to buy the building. The District accepted the offer and a new building was constructed on the corner of 5th St. and Clark in downtown Carroll. The attractive 6,000 square foot gray metal building contains a large classroom, two offices, and a 60' by 50' shop. It is located about five blocks from Kuemper High School and two miles from Carroll High School. Students are transported to the facility by bus.

Two Carroll high school students at Greenland Greenhouse and Garden Center are examining geraniums their class propagated. (Photo courtesy of W. Wade Miller.)

The new Instructor program started with the 1992-93 school year. The Carroll Area FFA Chapter received its charter on October 30, 1992. Paulsen said that there was some skepticism on the part of students at first, but that it quickly disappeared during the first year. As per prior agreement, all students pay a small course fee which includes state and national FFA dues. The Instructor program has grown from 42 students the first year to 97 students during the 1994-95 school year. During the first year, the program had four contest participants, nine acres of crops in their land lab, and six courses were offered. This year there were 40 contest participants, 71 acres of crops, 10 courses offered, one District FFA Officer, and four State FFA Degree candidates. Students participated in numerous leadership activities and community service projects. They also started Project PALS with great success. The enthusiasm among the students is a good example of the "Carroll Spirit."

One of the courses offered in the new program is horticulture. A greenhouse was not included in the original building project, but everyone wanted horticulture to be a part of the new Instructor program. Another business in town provided a solution to this problem. Denis Schulte, Manager of Greenland Greenhouse and Garden Center, offered the Instructor program the use of their facilities to teach the laboratory portion of the horticulture class. Paulsen takes his horticulture class to the garden center to teach lessons such as seeding, transplanting, tissue culture, asexual propagation, and other skills. They do some landscape jobs in the community. They also help with the apple harvest and cider-making at the garden center in the fall.

The Instructor program was started to meet the needs of both Carroll and Kuemper high schools. It is a prime example of how business and community leadership can work together with schools to offer high quality Instructor programs at a price communities can afford. Proctor said that it was a perfect marriage for meeting the needs of both schools. Kuemper does not incur any tuition expenses for the students it sends to the Instructor program because Carroll is allowed by the state to count students

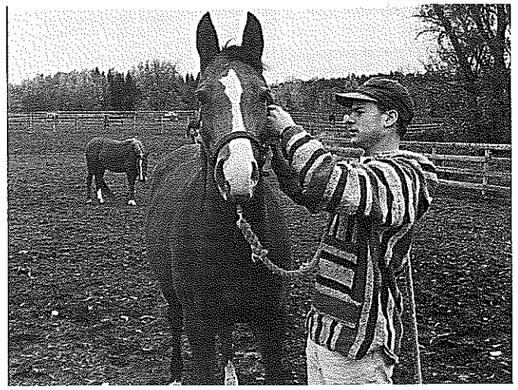
(Continued on page 11)

But We Don't Have Any Horses

BY SUSAN S. CAMP
Dr. *Camp is an associate professor of vocational technical education at State University of New York, Oswego.*

It seems that whenever a great idea for an Agricultural Education program is suggested, the "nay sayers" will have an excuse (or many excuses) as to why "we can't do that." The excuses didn't stop Burton Ramer 14 years ago when he was Superintendent of the Board of Cooperative Educational Services (BOCES) of Oswego County, New York. Dr. Ramer boarded his horse at a local stable and realized that there was, indeed, a need for trained workers in the equine industry. Whenever people entrust the care of their animals, pets or profit makers, to others, they expect professional care for the professional fees they pay.

There were many reasons why a new equine program shouldn't have been developed at the BOCES. The most apparent obstacle was not having the facilities, the horses, or the equipment. Facilities in upstate New York were extremely important. Oswego County borders the southeastern shore of Lake Ontario. The winters are fierce, and high winds and 200 inches of snow are not uncommon. Working with and teaching about horses in this outdoor environment is difficult, if not impossible. Horses can be an expensive proposition. This expense not only includes initial cost of the animal, but also grain, hay, bedding, veterinary services, and hoof care. Furthermore, owning the horses would have required care and feeding during short breaks and the long summer vacation. This is a responsibility that few school districts are willing to take on. Purchasing quality equipment and maintaining it is also costly and time-consuming.



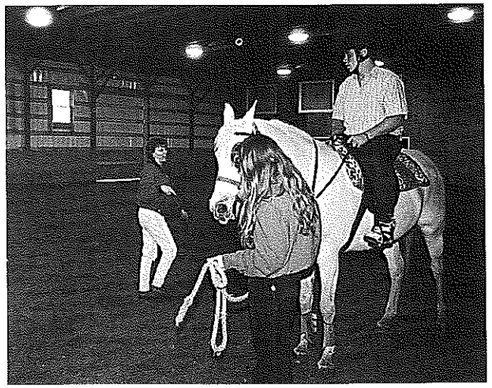
Students are able to work with horses from the Penroman Farm in real life situations; situations made possible by this industry/education partnership. (Photo courtesy of Susan S. Camp.)

The temporary solution was an Equine Industry/BOCES partnership. Fourteen years later the Burton Ramer Technical Career Center (BRTCC) is still involved with an excellent partnership that is serving the needs of 28 occupational and multi-occupational education students interested in careers in the Equine industry. In addition to learning about horses, these 28 students work with other Oswego County youth that participate twice weekly in the hippotherapy program (using riding to improve coordination, balance, and self-esteem of handicapped youth). They are exploring two occupational fields at once: Agriculture and Health Care.

The current day agreement is between James and Gail Pemberton of Penroman Farm of Mexico, New York, and the BOCES. The Pembertons supply the horses, horse handling and care equipment, space to store BOCES-owned equipment, and indoor and outdoor arena time. In addition, the farm manager, Cindy Caufield, works with the instructor, Renee Clark, to schedule horse and facility use, veterinarian and farrier visits, and to teach students about particulars of the farm and the horses. The BOCES pays for the use of the facilities and horses, supplies additional equipment, and an instructor and two teaching assistants. Both parties provide $1,000,000.00 in liability coverage.

The Equine Studies Program has been operating at the Pembertons' for four years and the benefits for both sides of the partnership are numerous. The horses, many of which are Arabian and Half-Arabian National Champions and Reserve Champions, become accustomed to many different people grooming, tacking, lunging, and riding them. The barn, heated classrooms, rest rooms, and common areas are kept clean by the students, just as if they were in a school laboratory situation. The Pembertons also reap benefits from the positive public relations that hosting the program has brought them.

The students are the true winners in this situation. A bus brings them five days a week, right to the front door of the modern, well-maintained, facility (approximately 1.5 miles from the BRTCC main campus). They keep their barn clothes in the changing rooms (both male & female facilities), change upon arrival, and report to the heated classroom com-→



Having access to the Penroman Farm indoor arena allows instruction to continue even during optimum skiing weather. (Photo courtesy of Susan S. Camp.)

pletely outfitted with projectors, video, chalkboard, posters, desks, and bookcases full of books and magazines. From the classroom, a 2 1/2 hour lesson begins. The present one-year curriculum encompasses all phases of equine management, including nutrition, grooming, ground training, leg and hoof care, and English and western riding. At the end of the 1/2-day lesson, the students change back into their street clothes and board a bus to return to their home schools (nine school districts are served by the BOCES). Students completing the one-year course receive four credits toward their high school graduation.

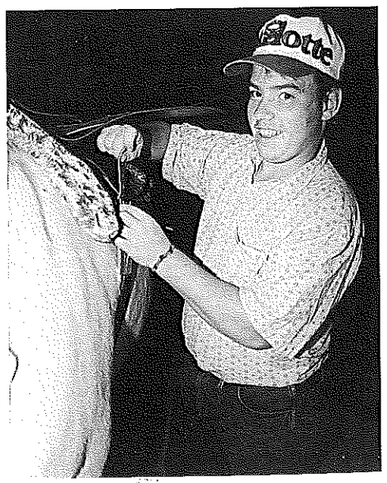
The instructor, in planning her lessons, coordinates with the farm manager as to which horses are available that day or week for the students to work with or practice on. The facility can house 24 horses, but often horses may have been shipped out for training, breeding, or veterinary work. Usually there are 18-20 horses available for class use. At present, only one horse is at the farm strictly for student use. All others are either in the breeding program, show string, or are veteran stock that the family cannot part with. All horses, including the young foals, are used in the program at some time. The farm manager may choose to remove a horse from the program for a short time to relieve the horse from the demands of inexperienced handlers and their inconsistency. This happens most often when the students are new to the program at the beginning of the school year.

Besides the instruction they receive from Renee and Cindy, a top priority when scheduling non-emergency veterinarian and farrier visits is to assign them so that students will be present for the sessions. Mini-lessons revolve around the work the veterinarian or farrier is to perform that day (e.g., spring immunizations, floating teeth, ultrasounding a mare, or making shoes for an English pleasure horse). In addition, students are sometimes present for foaling and a video camera is always on if the foaling takes place outside of school hours. A tribute to the quality of the program is that two of the three full time farm employees are program graduates, and the instructor, Renee, is also a program graduate.

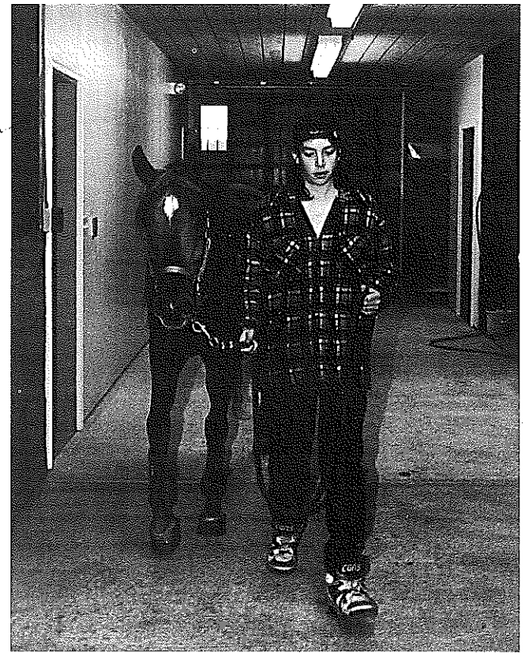
Near the end of the school year, all eligible students participate in a 2-week (minimum) internship at a farm or stable in the county. This year, the 15 occupational education students will intern at 14 different facilities. That's 14 Industry/BOCES partnerships! The BRTCC Internship Coordinator administers all the paperwork and visits all the facilities prior to student placement. The instructor visits the students on site at least twice during the experience.

There are several things to be especially mindful of when involved in a partnership. Students must be instructed and reminded that even though this is their classroom, they are guests. They must handle the horses and the equipment in a manner acceptable to the owners. They will learn about other ways, but they must follow the farm rules. Liability insurance is top priority. Horses, in and of themselves, hold an inherent danger and even the most experienced can be injured if their mind wanders or a horse is startled or hurt.

Flexibility from the instructor and the students is imperative. If a horse is sick, or not in the right frame of mind for beginners, plans will be changed. If the vet shows up to do an important procedure, the classroom lesson will be postponed for the more immediate learning at hand. If out-of-state buyers arrive during a riding session, those horses may need to be put up in order for the sales horses to be shown in the arena (remember, there may be 100 inches of snow on the ground). Because of the importance of scheduling to the overall success of ➞



Students enjoy and actively participate in real educational opportunities; educational opportunities made possible by an industry/education partnership. (Photo courtesy of Susan S. Camp.)



Even if an educational entity such as BOCES were able to duplicate some of the facilities and be able to afford some of the horses available to them from Penroman Farm, students would not gain the experience of working and learning at a "real farm". (Photo courtesy of Susan S. Camp.)

the program, it is a must that the instructor and manager sit down with the lesson plans, at least once a week, to schedule horses and facilities. It can not be overemphasized that communication among **all parties** is the key to the success of this industry/education partnership.

BOCES didn't have a barn or twenty national caliber horses, and they still don't. What they do have is a high quality program that benefits 28+ students a year, serves the labor needs of the farms and stables of Oswego and surrounding counties, and prepares many students for postsecondary study in Agriculture and Veterinary Science. ■

A student in the outdoor arena at the Penroman Farm developing competencies for a possible future career in the equine industry. (Photo courtesy of Susan S. Camp.)

WHERE THERE IS A WILL

(Continued from page 8)

from Kuemper in the formula for school funding. Paulsen said that there are approximately equal numbers of students from each school. When pressed, the only drawback Paulsen cites is that by having a separate facility, it is more difficult to maintain communication and collaboration with other teachers and subject areas. He would like to collaborate more with other high school programs such as science.

Other school districts in the state are taking a look at the Carroll Instructor program to determine if they can learn from this experience. They are looking at the example of cooperation between a public and parochial school and the ways business leaders can make this type of idea possible. Paulsen says that "you can't build a good program unless the community and business gets involved and helps out." Another secret to this success is that no one in Carroll accepted the phrase "can't be done." In Carroll, where there is a will, there is a way. ■

COMING SOON

JULY
The Changing Workplace

AUGUST
Promoting Integrity in Students and Instructors

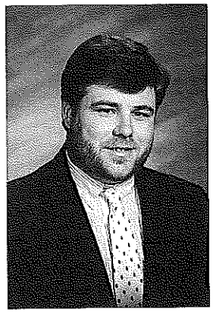
SEPTEMBER
Innovations in Teaching

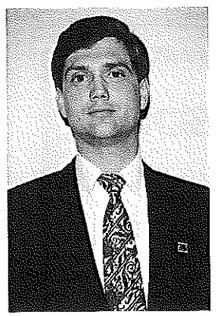
OCTOBER
Rural Education

NOVEMBER
Collaboration in Agricultural Education

DECEMBER
Cognitive Levels of Teaching and Learning

The Building of an AgriScience Learning Center Through Cooperative Efforts





BY RUSTY BLACK AND BRYAN L. GARTON
Mr. Black is an agriculture instructor at Chillicothe AVTS, Chillicothe, MO and Dr. Garton is an assistant professor of agricultural education at University of Missouri, Columbia.

Cooperation is one of the building blocks of agricultural education and FFA programs. One of the 12 FFA standing committees is charged with strengthening and expanding the local FFA chapter through cooperative efforts. Today, in an increasingly competitive world, cooperation is becoming more important to our students and to the local agricultural education program.

Cooperation and the development of partnerships are growing in the agriculture industry. These partnerships and cooperative efforts are being used by individuals engaged in agriculture in a number of ways. Some are using cooperative efforts to augment the economic development of a community while others are using cooperative efforts to enhance the competitiveness of small businesses and small farms. These partnerships can benefit everyone involved. It is on this premise that the Chillicothe Agricultural Education Program was able to create an agriscience learning center.

Partnerships have been a positive part of the Chillicothe Agriculture Program for many years. Each area of the program has had an active advisory committee whose members have also directly shared their time and expertise with teachers and students enrolled in the program.

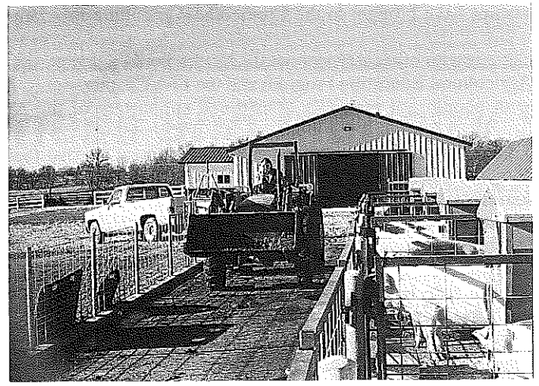
The largest community partnership to affect the Chillicothe Agriculture Program was initiated in 1988 with the secondary advisory committee. The committee began examining the need for students in the program to have a greater opportunity for "hands-on" learning experiences. Based on the work of the committee, a partnership with a local patron was arranged that provided a facility for urban students to house livestock for SAE projects. As a result of the project, the students' self-esteem and responsibility were increased.

Although the individuals involved may not have realized it at the time, this partnership built the foundation for creating a more permanent learning center. After four years of using the livestock facility, it was discovered that the facility would remain available only one more year. Therefore, the advisory committee began deliberating the possibility of purchasing property and constructing a school-owned facility to house livestock and other SAE projects.

As a result of the discussions, the advisory committee and FFA Alumni Chapter originated the groundwork to establish an agriculture learning center that could be used by students enrolled in the agriculture program. The initial funding for the learning center came in the form of a memorial in honor of a past FFA member. In addition, the FFA Alumni Chapter, in cooperation with the Green Hills Resource, Conservation & Development Corporation, wrote a proposal seeking $112,000 in grant support of the proposed learning center. Subsequently, the proposal was submitted to several private foundations for possible funding.

In the spring of 1992, the proposed learning center received funding ($75,000 plus $7,000 for each of the next five years) from a local foundation. With the help of a local lawyer, an accounting firm, and the National FFA Alumni Organization, the local FFA Alumni Chapter became a not-for-profit foundation for the purposes of managing the awarded funds. A learning center administrative board was officially organized to oversee the operation of the foundation. Members of the board represented a wide base of community members who believed in the project and what it could offer the community. The board spent a considerable amount of time working on goals, →

A student works with a local newspaper staff member to layout an article promoting the new AgriScience Learning Center. Through cooperative efforts with the local media the agriculture program can promote the goals and objectives of the program. (Photo courtesy of Rusty Black.)



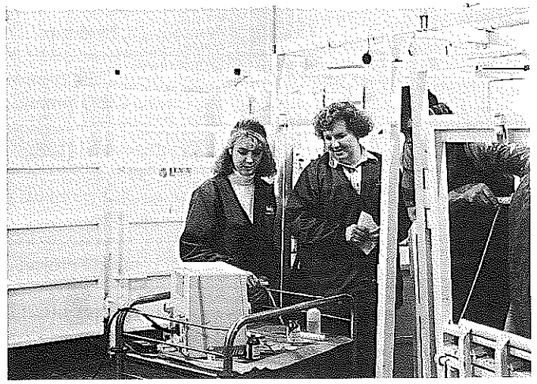
The AgriScience learning center has a swine feeding test facility that gives students an opportunity to run experiments on various feed rations. (Photo courtesy of Rusty Black.)

budgets, plans, and strategies to make the project a success.

After the initial funding for the center was accepted, the learning center looked at expanding the goals and making the center a community-wide project that would benefit community members of all ages. A new budget of $250,000 was established and property was located to build what is now referred to as the Litton Agri-Science Learning Center.

To raise the additional funds, partnerships were developed with teachers (K-12) from all disciplines in the school system, local conservation agents, and other community groups interested in youth and education (see Table 1 for a partial listing of partners and their contributions). After the budgets and plans were finalized, the Green Hills Resources, Conservation & Development Corporation contacted additional foundations and the learning center board selected a chairperson to organize a local fund raiser. The chairperson and the board then selected a fund-raising committee which established goals and selected helpers to acquire the funds to build the center.

Individuals involved in this stage of the project represented every facet of the community, including people that the agriculture program thought had no ties to agriculture or the FFA. The fund-raising committee officially began the drive in January of 1993, and by July of that year, the goal had been met. The enthusiasm of that group has continued to provide income to the learning center both in financial contributions and in-kind donations. The leaders of the groups stated that the project was easy to sell because the goals focused on youth and a strong support of the overall agriculture program. The goals were directed toward education, responsibility, leadership development, and entrepreneurship.



An agriculture student, an embryologist and a veterinarian use the AgriScience Learning Center laboratory to determine the sex of an unborn calf. (Photo courtesy of Rusty Black.)

Fifth and sixth grade students measure out test plots and identify vegetation in their experimental plots at the AgriScience Learning Center. (Photo courtesy of Rusty Black.)

Today, the Litton Agri-Science Learning Center is only in its infant stage and consists of a main building (42' x 130' with attached 36' x 30' classroom), swine finishing floor, 2.3 acre pond, wetland areas, gardens for elementary school students, and several identification plots (legumes to trees). An outdoor learning area has also been started. The facility is used daily by students from the agriculture program and school district. Furthermore, the learning center has fast become a meeting place for several groups and organizations in the community. Cooperation and community pride have made the Litton Agri-Science Learning Center a focal point in the Chillicothe community. The partnerships developed through the learning center have improved the educational programs and have given the agriculture program an improved sense of worth to the community (we need them and they need us). →

The benefits that the partnerships have brought to the Chillicothe Agriculture Program have been demonstrated through:

1. Increased positive school relations with other segments of the local school system.
2. Boosted awareness for the Agricultural Education Program and the FFA Chapter.
3. Developed relationships with people not normally considered supporters of the Agricultural Education Program.
4. Brought new enthusiasm to the instructors with a strengthened commitment to what their role is in the community and school.
5. Created a new sense of pride in students as they witnessed a greater commitment by the community toward them and their education.
6. Increased the opportunity for students to gain leadership skills through presentations and committee responsibilities.
7. A broadened teachers' knowledge base by increasing "hands-on" learning activities—teachers no longer just "talk about" the subject, but do.
8. Improved teachers' professional and personal lives.
9. Assisted teachers in becoming more active members in the community—not just within the agriculture community.
10. Expanded enrollments from 105 in 1984 to over 200 in 1994.

The Chillicothe Agriculture Program has received help from a variety of individuals and organizations from the learning center's inception. Every agriculture program can use partnerships to reach its goals and objectives. From these partnerships, students and the entire program will reap benefits. As agriculture teachers, we must remember that partnerships and cooperation must occur in two directions: All parties involved should benefit and the quality of life for the community and students should be improved.

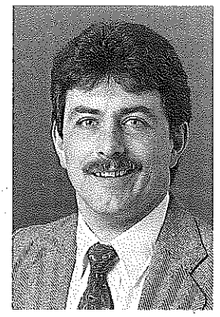
Note: The Chillicothe, Missouri, Agriculture Program is operated through the Grand River Technical School. The program currently serves 200 high school students, 12 postsecondary farm management students, 25 postsecondary farm and industrial equipment repair students, and 40 adults enrolled in a farm business management program. The program was recognized as one of the four National Winners in the 1994 NVATA Outstanding Agricultural Education Program competition.

Table 1

Partial listing of partners involved with the Chillicothe Agriculture Program in the creation of the Agri-Science Learning Center

Partners	Contributions
Green Hills Resources, Conservation and Development Corporation	Funding, labor, and advice
Local Businesses	Funding, labor, advice, tours, lab supplies, speakers, On-the-Job-Training, $5,000 of awards to FFA members
Local Farmers	Funding, labor, advice, field trips
SCS, USDA	Labor, advice, organization, design and completion of several projects, On-the-Job-Training
Local Soil & Water District	Funding, expertise, labor
Missouri Department of Conservation	Advice, labor, educational programs, complete projects, On-the-Job-Training
National Fish & Wildlife Service	Grants, labor, advice, complete projects
Local Newspaper	Funding, speakers, 30+ page FFA Week insert in paper
University Extension	Speakers, information, satellite dish, receiver, TV
Agriculture Commodity Groups	Funding, technical support, sponsorship of livestock shows

Business and Industry Skill Standards: Implications for Agricultural Education



BY GREG BELCHER AND N. L. MCMASLIN
Mr. Belcher is a graduate student and Dr. McCaslin is a professor of agricultural education at The Ohio State University, Columbus.

Since World War II, the US has steadily lost ground competing in the global economy. At one time, the US was a leading economic and industrial power, but now it is beginning to feel increased pressure from worldwide competition as many global trade barriers disappear. To remain competitive on a global scale, many experts believe that America must develop a more highly skilled workforce (General Accounting Office, 1993). In response to this need, a number of organizations, agencies, and legislative groups have called for the establishment of skill standards.

Skill standards have the potential for impacting what is taught, how it is taught, and how it is evaluated. Agricultural educators need to be aware of these standards as they plan and modify their programs for the future. Skill standards in areas such as agricultural biotechnology, welding, automotive, and electrical will affect the curriculum, instruction, and evaluation of agriculture programs.

Occupational Skill Standards

Skill standards identify what knowledge and abilities a worker should possess to successfully gain and maintain employment in the workplace. Successful demonstration of these skills results in a certification that workers have met these standards. There are many occupations such as doctors, lawyers, and accountants that have had standards for some time. These professionals also must pass tests to demonstrate their knowledge and skills (Hudelson, 1993). Standards not only help guarantee that these individuals have the necessary requirements in an area, but they also help individuals decide what level of skill they possess regarding their profession.

Past legislative efforts to establish standards have included the Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990, Goals 2000 Educate America Act, and the School To Work Opportunities Act of 1994. McCaslin and Headley (1994) reported that most states have developed performance standards and assessment techniques for vocational education as a result of the mandate of the Carl D. Perkins Vocational and Applied Technology Education Act Amendment of 1990.

Many skill standards currently used by the educational system were developed by educators. The development of these educational skill standards often had limited participation from business and industry. Therefore, the question remains whether these standards represent what is needed in the workforce. Business, industry, and education must work together to develop these standards and keep them current with technology after their initial development.

The Department of Education selected twenty-two different occupations for which standards were to be developed and funds were issued for this activity. The standards that were developed varied from occupation to occupation, and different definitions of standards were used. It is important to know how a particular industry defines standards. Some definitions were very broad in nature while others were very specific. There were four basic areas in which standards were set: technical skills, employability skills, related occupational knowledge, and academic skills. For certification, some industries used a mixture of these skills while others used only one type of skill.

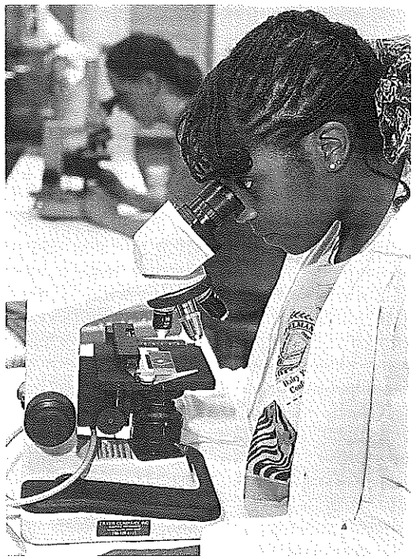
Skill Standards Related to Agriculture

If American agriculture is to maintain its productivity and remain viable in the global marketplace, the skills needed by its workers must be enhanced. For example, employees will need to be knowledgeable of topics such as: biological, physical, economic, and mechanical principles. This knowledge can be used to produce more and better food in ways that protect our environment (National FFA Foundation, 1994). Research in genetics, animal, and plant science will employ a number of these technicians. Other areas that could hire biotechnicians include animal care, field/greenhouse, and production/manufacturing.

Agricultural Biotechnology

One occupation, agricultural biotechnology, has already developed skill standards. The standards set for this occupation resulted from a collective effort between 23 industries, 13 academic institutions, and countless individuals such as technicians working in labs, greenhouses, and other biotechnical related facilities across the nation. The reasoning behind these standards in this field was to begin preparing students for the growing number of job opportunities in this area.

The driving force behind the development of these biotechnical standards was the National FFA Foundation with funding received from the Department of Education.→



Skill standards require that students have an opportunity to learn on and practice with state-of-the-art equipment. (Photo courtesy of Lloyd Lemmermann, Ohio Extension Service.)

The Foundation's first step was to bring people together from both industry and education. Through many meetings and workshops, these individuals developed a list of technical, related academic, and general employability skills that they thought agricultural biotechnicians should possess. From these lists, a questionnaire was developed and sent to technicians working in different aspects of industry asking them to rate the skills and competencies required of them in doing their work. With the information obtained from this questionnaire, the list of skill standards was produced. The development of these standards represented a major undertaking that involved many people. The main objective of these standards was to increase the competence of entry level workers, and also to give guidance to students preparing themselves for jobs in this industry.

Related Areas

There are other occupations that also have been in the process of developing or have set skill standards for their occupations. These skill standards could affect agricultural education because some agriculture programs teach courses related to these areas. For example, the National Institute for Automotive Service Excellence (ASE) certifies automotive technicians in eight different specialty areas (engine repair specialist, automotive transmission/transaxle specialist, manual drive train specialist, suspension and steering specialist, brakes specialist, electrical systems specialist, heating and air conditioning specialist, engine performance specialist). A criteria for any of these certifications is at least two years of related work experience. These ASE certifications are good for five years and then the individual will be required to recertify. This procedure helps insure that automotive technicians are staying abreast of new technologies in their specialty area. In another area, the American Welding Society (AWS) has a program for certifying welders. Welders are certified in all types of welding processes, positions, and procedures. These welders must be recertified each year by retesting or demonstrating related work experience (General Accounting Office, 1993). The National Electrical Contractors Association (NECA) is another area that is in the process of developing standards for entry level workers in the electrical construction occupation.

An important aspect of a skill standard system is for the development of standards for instructors that will be teaching in these occupational areas. The standards for the agricultural biotechnology technician included qualifications for the instructor. In the automotive area, the National Automobile Technician Education Foundation (NATEF) is the educational arm of ASE. NATEF sets standards for automotive training programs. If these standards are met, the program is certified by ASE. NATEF sets the program standards, and the competence of the instructor is a part of these standards. AWS also has a certified welding educator program for which educators are certified. This certification must be renewed every four years.

Benefits and Barriers

Skill standards offer many potential benefits, including greater work mobility and portability of credential; higher pay, greater job certainty and more job opportunities for workers; more efficient recruitment, screening and placement of employees by employers; clearer goals and educational pathways for students; more consistent, focused instruction and curriculum; greater accountability for schools, programs teachers and students; higher quality of products and services; and higher consumer confidence and satisfaction (Hoachlander & Rahn, 1994).

At a time when educational funds seem to be in short supply, accountability is important for the survival of programs. Skill standards also offer accountability for the: a) worker as a certified craft person; b) employer in evaluating performance level; c) teacher in defining exactly what industry demands of an entry level worker; and; d) administrators in providing a benchmark

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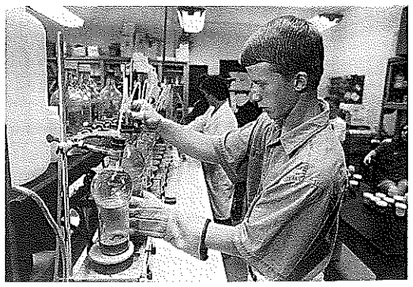

Skill standards require that students develop competencies based on standards used by the industry for which they are preparing. (Photo courtesy of Lloyd Lemmermann, Ohio Extension Service.)

Educational Partnerships with Industry

BY TERRI TONEY
Ms. Toney is an agriscience instructor at Covington High School in Covington, LA.

Do you want to fund an expensive new program for your Agricultural Education classes? Or do you simply need a few significant supplies for your welding shop or greenhouse but lack the funds necessary to purchase what your program needs? In many cases, local industries or businesses are untapped gold mines for the agricultural educator. Donations of cash, and especially surplus materials and supplies, are often readily available for the asking.

In my school's case, we determined that a commercial recirculating aquaculture system was economically out of reach, but a school-fabricated system was feasible, if the materials were donated.

Begin at your school, in your classroom. What would your students learn from this project? Will this new program actually improve instruction? Are you, as an instructor, willing to commit long periods of time to make this project a success? If the answers to these questions are "yes," then it is time to begin materializing your research.

As with most projects, the key to success is planning. Determine the amount and types of materials necessary to complete the project. Be specific, be flexible, but most of all, be accurate. Use this time to develop a "wish list." Corporations, industries, and businesses tend to be more willing to donate supplies and materials than cash, so a "wish list" will be invaluable.

Discuss the proposed project with your administrator. There are usually several legal documents that must be signed once a corporation/business commits to a donation. An understanding and supportive administrator is a must.

How does an agricultural educator go about getting what is needed for the project? You need to know what businesses and industries in your area do and the types of materials and equipment they have available that you might borrow or request from them. Although all corporations and businesses function differently, most have a similar underlying infrastructure and an established chain of command. When making donation requests, a precise well-thought-out plan is crucial. Make sure that the person(s) you contact is in the appropriate position to address your requests. Know these business well enough so you do not ask them for materials that they do not use in their operations.

Make your contacts. These contacts are better received if you make an appointment for a personal visit to explain what you plan to do in the project and what you are requesting. If possible, a typed sheet with objectives, the number of students to be involved, and the outcomes expected should be available for presentation at your meeting. Don't be shy in making your requests. You will probably be pleasantly surprised at the reception you receive.

These corporations and businesses will be future employers of your community and want the support of the local citizenry. They are anxious to help. Their employees are being urged by management to get involved with the local schools. Not only is involvement good for the corporate image, but in many instances, the materials and professional assistance rendered can be used as tax deductions.

In your meetings, be certain that you are able to answer all questions involving your proposed project. They do not want to invest materials and time with persons who do not appear to have a handle on what they are doing. As you discuss the project and its incumbent needs, you will probably find that a great deal of interest has been generated and the person you are talking to may suggest additional materials or help the corporation can offer.

Often company personnel will offer to help. There are many employees of corporations and businesses who would like to be involved with students but do not know how to initiate it. Their offerings of help with the project and your acceptance will enable them to interact with your students. This might be the most valuable aspect of the entire project. Outsiders can come into the school and work with your students, which can increase understanding on the part of both adults and students. Their support and what they convey about the school and students "back at the job" can gain public support for your school. When it's time for an increase in school taxes or teachers' salaries, you'll have gained supporters who have witnessed the need first hand.

As you receive materials, supplies, or cash, remember to keep the donors posted on what you are doing with them. Take pictures to send to the person(s) who helped you get the donations. Have students write letters of thanks describing what part they play in the project. Invite people from the corporations or busi-

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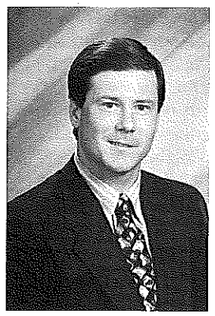
Improving Classroom Interaction Using E-mail



BY TIM MURPHY
Mr. Murphy is a graduate assistant in agricultural education at Texas A&M University, College Station.

Students in large, lecture-hall classes are often intimidated by the distance, both physical and psychological, separating them and the instructor. They ask very few, if any questions during class, even when called upon. Classroom interaction is a complex issue. Wardlow (1993) suggests that many factors affect the interaction between students and teachers. He believes that the background and experiences of both the students and the teacher come into play as well as the nature of the community in which the interaction occurs. Moore (1989) contends that there are three separate types of interaction occurring in a classroom. Beyond the interaction found between learners and instructors, he asks that we consider the interaction between learners and the content they study, as well as that found between learners and other learners. Still, most of us tend to focus on learner-instructor interaction. It is through this type of interaction that instructors "seek to stimulate or at least maintain the student's interest in what is to be taught, to motivate the student to learn, to enhance and maintain the learner's interest, including self-direction and self-motivation" (Moore, 1989, p. 2). Many instructors are aware of, and even concerned about, the lack of feedback received from their students. The methods described here have helped some instructors improve the level of learner-instructor interaction in their classes.

The Problem

As the number of students continues to rise, instructors find it more difficult to provide personal attention to each student. Several mechanisms have been institutionalized over the years to facilitate this process. Office hours provide students with an opportunity to ask you questions directly, but what percentage of your students seize the opportunity? If they do, are you faced with long lines of students waiting outside your office door, and the certain knowledge that some of them will simply give up? Students often linger after lectures to ask questions, the answers to which would benefit the entire class. In many cases, the methods currently used seem inadequate.

In very large classes, a significant amount of time can be spent watching paper being passed up and down rows. Effective instruction demands that students be given an opportunity to practice what they've learned and be provided with feedback as to their progress (Brophy & Evertson, 1976). Time spent in collecting and returning assignments is poorly used for learning.

How many times have you had students say they were absent and missed an assignment, or that they DID turn in their assignment on time and you must've lost it? Don't you sometimes think that there just has to be a better way to manage the flow of information within a class?

For a growing number of teachers, there is another way. According to an Association of American Publishers survey, "currently nine percent of college courses use e-mail for instructor-student communications" (cited in Slow Growth in College Computing, 1995, p. 2). These instructors have found a way to insure effective, convenient communications with a large number of students (O'Donnell, 1994; Levine, 1992).

Enhancing Communications with Your Students

E-mail provides another avenue for student-teacher interaction. E-mail has been described using a "fast food" analogy. The quality may suffer some, but it's ready whenever you are. E-mail is perhaps the most truly convenient form of communication available today. Much faster than the U.S. Postal Service, these messages generally take only a few minutes regardless of the distance involved. Unlike telephone calls, you choose when you wish to respond. E-mail messages never need interrupt your current activity. E-mail allows instructors to interact individually, and in a timely fashion, with many more students than would be possible any other way.

In my situation, requiring students to secure an e-mail account is perfectly acceptable as long as you make it clear at the beginning of the course. In my experience, many students have established an account before joining my class, and others will need one at some point in their academic career. One former student said, "I can't believe that our biochem teacher requires us to actively participate in the class using the e-mail network. Our first assignment was to establish an account and mail him a message. Thanks to you, this was no big deal at all" (Dakri Brown, personal communication, September 7, 1994).

Simply by making your e-mail address known to students, and encouraging them to use it, you will increase your interaction with students (O'Donnell, 1994). Additional time →

on your part will be required to respond to these messages in a timely fashion. Timely responses help students become accustomed to, and develop trust in, using the technology to interact with you.

The most efficient method of interacting with a large group of students using e-mail is through the use of a mailing list, or "LISTSERV." I have established a LISTSERV for my introductory Computer Applications In Agriculture class. The 120 students in this class are required to establish and maintain their own electronic mail accounts, and sign themselves onto the LISTSERV during the second week of class. By requiring students to have accounts and participate, I can transfer some classroom discussions to the e-mail list without fear of excluding students. To insure that all students get connected, I post all of the homework, as well as reviews for the exams and quizzes, on the system.

Why Use a Mailing List?

A LISTSERV is a program that automates mailing lists. Currently, LISTSERV software, from Eric Thomas of Lsoft, runs only on IBM mainframes (Engst, 1994). Like many technologies, this one too is moving down from the strictly mainframe environment. There are programs currently available for desktop computers that emulate a LISTSERV's functionality. Local school districts may be able to secure this service from their internet access provider, or provide it in-house on their own computer network.

In practice, operating a mailing list is quite simple. An "owner" or "moderator" establishes a list under his/her computing account. People may join the list by signing themselves on using any viable e-mail account. The LISTSERV accepts any message sent to the list's address, and sends it to all of the members of the list. As the owner of a mailing list, you have several options. There are security measures you can take to limit access to the list, and features which allow you to approve all messages before they are posted to the list. You can restrict who is allowed to join, and add or remove members from the list at any time. Your best resource in these matters is your local computer system administrator. If the local computer guru is not helpful, some instructors have found help from the campus librarians (O'Donnell, 1994).

Most of us find mailing lists easier to use than other electronic information services. Unlike Bulletin Board Services (BBS's) or Usenet newsgroups, a LISTSERV delivers information to your electronic mailbox as mail messages. You do not need to run a separate program, like a newsreader, to access or process this information. Most of us try to avoid learning to operate yet another software package. Using a mailing list, we can remain in our familiar e-mail program while accessing and disseminating extensive information.

Another reason to use a LISTSERV is accessibility. E-mail is now considered entry-level internet access. Many more people will have access to the information available on a mailing list than than is found on more sophisticated network configurations like a Netscape or Mosaic home page on the World Wide Web.

How Does it Work?

In practice, students use the e-mail system to ask questions of primary instructors, their lab instructors, or other students. Depending on the question, and my perception of its value to the class, I either respond directly to the student or direct my response to the mailing list. Housekeeping announcements concerning the course can be made to the list, freeing classtime for instruction.

Now, the only papers passed up and down the rows in the class are exams. All of the additional assignments are posted to the mailing list. Students send their completed assignments to the appropriate person, either myself or their lab instructor. When students have questions about the assignment, they address them to me, the lab instructors, and quite often, to other students.

Students are very intimidated and resistant at first, but by the midpoint of each semester, they grow comfortable with the technology. A typical message during the first week of a semester would be, "This was the most confusing thing I have ever done in my life. Is the rest of the semester going to be this confusing?" (Jennifer Allan, personal correspondence, September 2, 1994). One from near the end of the preceding semester indicates that the technology is being taken for granted, as another way to access information. "Where can I find PKZIP and PKUNZIP version 2.04 or higher around here? I have a file that is zipped and cannot use it until I get it UNzipped" (J. Payne, personal communication, August 31, 1994).

Why Use It?

By encouraging students to utilize computing resources, I believe they are better prepared for business and industry. More than one student agrees. "I was computer illiterate when I started this course, and now feel like I have the background to really learn more about microcomputers and utilize them in my new job. I feel like I am better prepared to face the business world" (Frank Crapito, personal communication, August 4, 1994).

Although this is an on-campus course, physical distance occasionally becomes a factor. This spring a student of mine who commutes 95 miles missed class because of inclement weather. Using e-mail, she was able to inform me of her predicament and download the materials she needed from the mailing list. While this could have been accomplished without using computer assisted telecommunications, it would not have been as convenient for either the student or myself.

A sure indication that students are accepting the technology is when they begin to use the →

list to make announcements to their classmates concerning extracurricular activities, meetings, and events. "We need everybody to come out for the next 7 days so that we can rebuild the bonfire! It won't get done without everybody's help . . . come out to the field and show the world how much Aggie Spirit we really have!" (Becky Matson, personal communication, October 27, 1994).

There is a strongly held belief by many people that learning requires a face-to-face meeting of teacher and student (Murphy & Terry, 1995). Other people believe that students find their voice in many different ways. They see learners as diverse: some very outgoing and confident, others shy to the point of being nearly comatose in a large classroom. Computer-assisted telecommunications can provide a forum in which all voices may be heard equally well.

Interaction with students is at the heart of why most of us do what we do. As class sizes grow, interaction on an individual level becomes more and more difficult to manage. At the same time, it sometimes seems that we are being bombarded with technologies. There's a new one every minute. Sometimes, even those of us interested in using technology to improve instruction become a bit frustrated. It seems that we're spending more time with the technology, and even less with the students. At the risk of adding yet another to that growing list of technologies, I recommend you use this one. With it, you can increase student-teacher interaction using the e-mail software you have already mastered.

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EDUCATIONAL PARTNERSHIPS

(Continued from page 17)

nesses to visit the school to see what is happening with the project. Managers want to be able to show their superiors what they have done to help the community. If you intend to continue this relationship, you must provide them with necessary information and pictures to ensure that support.

All this effort is worthwhile. You will have made new friends for your school, you will have given the students opportunities to meet people who are able to help them get jobs, and you will have better prepared them for the world of work. You will also have a teaching/learning project valuable to future classes. ■

BUSINESS AND INDUSTRY SKILL

(Continued from page 16)

to evaluate vocational programs.

To develop a skill standard system, many barriers must be overcome. The process of bringing all the stakeholders together from both industry and education to develop such standards is probably the largest obstacle. Another barrier is updating standards so they are current with changes in technology. The cost of developing, maintaining, and supporting a skill standard system until it gains national acceptance is yet another obstacle.

Summary

There are many advocates for a national skill standard system, along with many statements of benefits and barriers for this system, and the impact that it would have for the many different stakeholders involved. Agricultural educators, business, and industry representatives will need to work together to develop skill standards. Information will need to be collected regarding the effectiveness of these skill standards in improving the quality of the agricultural workforce.

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Agricultural Education in the United States: Numbers of Positions and Openings by Region and State

BY WILLIAM G. CAMP

Dr. Camp is a professor of agricultural and extension education at Virginia Tech, Blacksburg.

Since 1965, researchers from the Agricultural Education Division of the American Vocational Association have conducted an annual National Survey of the Supply and Demand for Teachers of Agricultural Education in the United States. The annual studies were conducted from 1965 until 1973 by Dr. Ralph Woodin, initially of The Ohio State University and later from the University of Tennessee, Knoxville. The study was continued by Dr. David Craig of the University of Tennessee from 1974 until 1984. Since 1985, Dr. William G. Camp from Virginia Tech has conducted the study except for 2 years when Dr. J. Dale Oliver, also of Virginia Tech, was responsible for the research.

This is the second in a series of reports to the profession on the results of the annual supply and demand study. For more details about the background of this ongoing study, and on the sources of the data, see the first article in this series, in the May, 1995 issue of The Agricultural Education Magazine.

Numbers of Teachers

The table which follows provides detailed data by state and by region on the numbers of teachers and demand for new teachers for school year 1993-94. The Southern Region accounted for almost half (n = 4,865) of the total number of teachers of agriculture in the United States (n = 10,119) at the beginning of school year 1993-94. By far the largest state, in terms of teaching positions was Texas (n = 1,450), followed by California (n = 547) and Ohio (n = 524). The smallest programs are Alaska with 7 and Rhode Island with 10.

The Southern Region also accounted for almost half (n = 308) of the new teachers hired (n = 663). Only 11 states reported any teachers still needed but unavailable at the beginning of the new school year. California reported the largest number at 6.

Numbers and Demand for Teachers of Agricultural Education, by Region and State [a]

State	Number of teachers September 1993	Number of teachers September 1992	Number of teachers moving between schools	Net new teachers hired for Fall 1993	Teachers needed, but unavailable September 1993
		Central Region			
Iowa	217	223	4	110	
Illinois	336	342	10	33	1
Indiana	241	239	3	12	0
Kansas	166	166	1	7	0
Michigan	144	146	4	9	0
Minnesota	203	201	9	17	0
Missouri	318	310	19	25	0
North Dakota	80	80	0	0	1
Nebraska	133	131	3	5	0
Ohio	524	524	6	27	0
South Dakota	87	85	2	11	0
Wisconsin	287	286	5	8	2
Region Total	**2,736**	**2,733**	**66**	**165**	**4**

Eastern Region					
Connecticut	64	62	0	2	0
Delaware	30	30	0	2	0
Massachusetts	73	71	0	9	0
Maryland	66	67	2	6	0
Maine	25	25	0	1	0
New Hampshire	34	36	1	2	0
New Jersey	72	74	0	3	0
New York	270	291	2	7	0
Pennsylvania	252	254	3	12	2
Rhode Island	10	10	0	0	0
Vermont	29	31	0	4	2
West Virginia	98	102	1	2	0
Region Total	**1,023**	**1,053**	**9**	**50**	**4**
Southern Region					
Alabama	372	375	5	13	0
Arkansas	259	261	5	13	0
Florida	402	295	3	17	2
Georgia	273	270	0	12	0
Kentucky	262	242	3	10	0
Louisiana	225	232	2	20	0
Mississippi	211	208	5	21	1
North Carolina	310	317	6	24	0
Oklahoma	447	442	16	28	0
South Carolina	124	127	4	3	2
Tennessee	237	226	4	10	0
Texas	1,450	1,436	57	119	0
Virginia	293	290	3	18	0
Region Total	**4,865**	**4,721**	**113**	**308**	**5**
Western Region					
Alaska	7	7	0	0	0
Arizona	71	70	2	9	0
California	547	545	20	40	6
Colorado	89	89	4	13	0
Hawaii	32	32	0	0	0
Idaho	85	85	2	9	0
Montana	74	74	0	3	0
New Mexico	79	75	5	8	0
Nevada	25	24	3	5	0
Oregon	112	113	3	13	0
Utah	69	70	0	3	0
Washington	256	244	11	29	2
Wyoming	49	46	1	8	0
Region Total	**1,495**	**1,474**	**51**	**140**	**8**
US TOTAL	**10,119**	**9,981**	**239**	**663**	**21**

a Actual reported numbers included fractions since some teachers are employed part time. The data reported here are rounded off to whole numbers for ease in interpretation. The rounding may have resulted in several cases where totals do not match perfectly.

Look for This

In the next article in this series, data will be provided on the racial, ethnic, and gender of teachers of Agricultural Education in the US. ■

Agricultural Education: Projections Through 2020

BY LARRY POWERS
Dr. Powers is an associate dean of education at North Carolina Agricultural and Technical State University, Greensboro.

Agricultural Education has been an integral part of the public school system in the United States since the passage of the Smith-Hughes Act in 1917. Historically, agricultural education has been offered by local schools as an elective and mostly to rural white males. Today, agricultural education is offered in both rural and urban areas to males and females from diverse populations. Since Congress passed the Smith-Hughes Act in 1917, there have been many social, economic, and technological changes in the United States that have directly affected schools and educational programs in public schools. In addition to the changes indicated above, the buzzword for education over the last fifteen years has been **reform**. Given the environment and atmosphere that agricultural education programs exist, the writer proposes to envision the nature and character of instructional programs of agricultural education through the year 2020.

In an attempt to describe and discuss the nature and character of instructional programs in agricultural education through the year 2020, it is important to discuss some current domestic and global trends, as the past and present provide the foundation for the future. John Naisbitt and Patricia Aburdene (1990) identified ten important overarching trends that will affect our lives as we enter the third millennium. The writer will discuss three of the ideas encompassed in Naisbitt's and Aburdene's discussion - the utilization of leisure and free time, technology and science and workers in the year 2020 - with respect to their impact upon the agricultural education instructional program..

Utilization of Leisure and Free Time

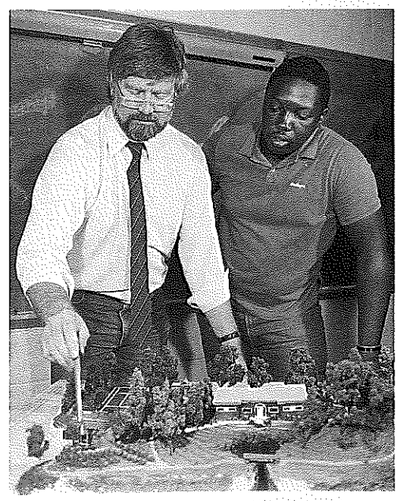
The future will be marked by more affluent individuals and these individuals will have more leisure time as compared with individuals of the 1990's. A society based upon information, technology, and science will call for fewer work days and/or a shift in the traditional work day as we know it. Many individuals will work at home and in many instances select the hours they are willing to work. Much of the work performed by individuals will be based upon small entrepreneurs. Skilled individuals will engage in contracts with small and large organizations for the delivery of goods and services including food and fiber.

Program Impact of Leisure and Free Time

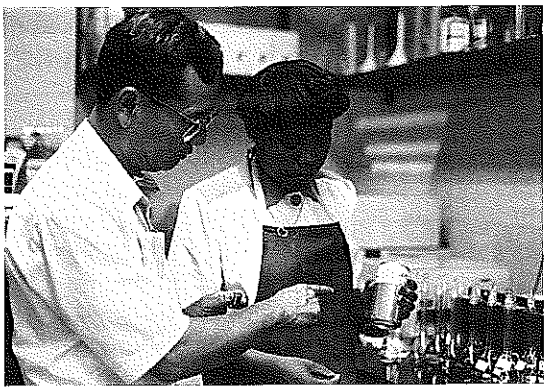
There will be many secondary specialized horticulture and landscape agricultural education programs throughout the United States and many specialized agriscience programs. The name agricultural education in the 2020 will long have changed. As more individuals become involved in less personalized work, the natural tendency to be close to nature or our spiritual roots will create a greater demand for more individuals with expertise in developing natural environments, e.g., flower gardens, green landscapes, etc. (Naisbitt and Aburdene, 1990). The focus of instruction will be on developing natural environments through technology and science by highly skilled and trained individuals. Less specialized programs will cease to exist, especially in urban areas.

Technology and Science

Electronic media and advances in science have irrevocably changed the nature of agriculture and our lives. The dynamic agricultural system in the United States has put many of those intended to be helped by technology and science out of business. The production of food and fiber will be done by large companies and corporations, therefore, essentially eliminating the small unskilled, unspecialized producer. Food will be more expensive but affordable to the middle class. Coates and Jarrat (1992) indicate that the future will create three classes of individuals divided along economic lines - the affluent, the middle, and the destitute. The latter is projected to have a limited food supply as well as health problems related to nutrition. The number of edible items will drastically increase as a result of advances in science and societal global orientation, especially for those who can afford it. →



Persons with skills for creating and maintaining aesthetic and/or green environments will be in high demand. Persons with such expertise will also be in high demand for jobs related to the conservation of natural and environmental resources. (Photo courtesy of Larry Powers.)



Individuals with specialized skills in the food and agricultural sciences will conduct research and manage agricultural companies for profit. (Photo courtesy of Larry Powers.)

Program Impact of Technology and Science

Production agriculture education programs will cease to exist as we know them, particularly in rural areas. The current production agriculture education programs will be replaced with a focus on food production (subsistence gardening) in both rural and urban areas and providing foundations training for individuals desirous of working in the agricultural food system. An integral component of these programs will be on protecting the environment, health as related to food and environment, and conservation. The demand for highly skilled persons in these areas will be exceedingly high. Large food corporations will contract individuals and companies with the expertise they require.

Workers in the Year 2020

John Naisbitt and Patricia Aburdene (1990) emphasize the fact that individuals will accept the doctrine of "individual responsibility." According to Naisbitt and Aburdene (1990), this is a philosophy where individuals will become full contributing players in their individual destiny and accept responsibility and consequences for their actions. The individual will become more concerned with the common good of all as well as being a player in matters affecting him/her and the global environment in which they live and work. Individuals will be vary skilled and will respond less favorably to leadership that involves them in cooperative and collaborative efforts. Individuals will become less loyal to companies and corporations and will adopt the philosophy of "have skills - will sell." However, the idea does NOT represent a philosophy of "every man for himself"; rather, it represents a society of individuals with clarity of issues and concerns that directly impact their lives with the willingness and ability to articulate their concerns and participate in matters affecting them and the common good.

Leadership training will be an integral part of the agri-science program and will become a full time teaching position serving the local school population and community. (Photo courtesy of Larry Powers.)

Program Impact of Worker Ideas and Philosophy

The youth organization FFA, as we know it, will have a primary emphasis of preparation of culturally and ethnically diverse workers for none traditional occupations in the food system. Many of the students in the youth organization will NOT necessarily be a part of the instructional program but will be customers that are a part of the large educational system that desire to learn and practice leadership skills that are being taught. Production agriculture will continue to be a part of the youth program, however, the primary focus will be on developing skills among individuals that will help them survive complex work environments that are culturally and ethnically diverse. The leadership component of the program will become a full time teaching position in the school and will provide leadership training and experiences for faculty and the school community.

Summary

No one can accurately predict the future but current evidence suggests that we can closely study our past and present and with some degree of certainty envision what the future will be like. The Kellogg Foundation has embarked upon a new project that utilizes "scenario writing" that involves personnel from Schools and Colleges of Agriculture in forecasting and predicting the preferred future for their institutions. These persons have consistently identified trends and issues they envision will impact their institution, such as, technology, economics, health and healthy living, environment, customer-driven services and programs, demographics and changes in attitudes and values.

The ideas indicated above and others have been eloquently addressed by Naisbitt and Aburdene (1990). The agricultural education program will definitely exist in the year 2020, but the nature and substance of the program as we know it, will not.

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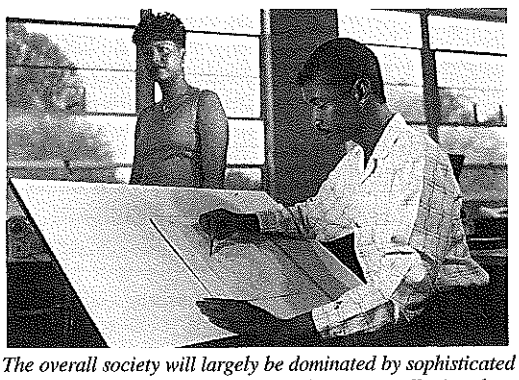

The overall society will largely be dominated by sophisticated individuals who actively participate in matters affecting them and the common good. (Photo courtesy of Larry Powers.)