Collaboration in Agricultural Education
# Collaboration In Agricultural Education: The Future Is Now!

The theme "Collaboration in Agricultural Education" has brought a number of thoughts to mind, reflecting a boardroom of words being used in education circles today. Words that seem to be in popular usage are: integration, partnership, and collaboration - the word for the 1990's. Is there any difference in the meaning of these words? According to Morris (1978), the word integration refers to "making into a whole by bringing all the parts together, to unify, to join with something else, to unite, to make complete". The word partnership refers to "one who cooperates in a venture. A person associated with another or others in some activity of common interest. It implies a relationship equal status and a formal obligation to others". The word collaboration suggests "working together, especially in a joint intellectual effort". Hoyt (1991) defined collaboration as the sharing of expertise in which parties are viewed as "consultants" to one another, rather than being an "assistant" to the other. He also suggested that when educators work together with one another or with individuals from the private sector to help students, they must share responsibility, authority, and accountability. To this three-way sharing, he gave the label "collaboration".

As one reflects on these words, it seems that the future of agricultural education at the secondary, postsecondary, college, extension, or adult levels, domestically or internationally, depends on how well, or if, we are willing to collaborate. It also suggests that key elements literally require that we work together, assist each other, share responsibility, share authority, and share accountability. As a profession, we need to determine if we are going the next step and truly integrate, making the profession into a whole by bringing everything together. Should we choose collaboration, indicating that we are joined together in the educational endeavor but continue to maintain distinctive roles?

In one view, it would appear that agricultural education should become totally immersed in the educational process. From a collaborative point of view, distinct disciplines remain, but total effort is given to produce the overall desired outcomes in students. As statements continue to pour forth that the education system has failed, it is evident that now is the time to collaborate on numerous fronts, bringing school and work together. In this situation, agricultural education provides a dynamic context to the school setting. The use of animals and plants involved in everyday life represents reality. Though animals found in a zoo may be interesting, the everyday involvement with dogs, cats, fish, horses, cattle, sheep, and pigs brings an extremely valuable context to the school setting. In addition, the vast array of common household plants, landscaping trees, and shrubs plus the common vegetable and grain crops represent reality for students. Agricultural educators need to embrace the broader context of schooling because of all the unique realities that are associated with agricultural sciences.

While it is not uncommon to read about collaborative and integrated programs involving English, science, mathematics, and social studies teachers who have joined together, where are the vocational teachers? One needs to ask whether the context of work, reality, and practical applications is a valuable dimension to bring to the learning experience. With so much change occurring in the school setting at all levels, now is the time to position agricultural education as a viable option in collaboration with teacher colleagues, businesses, and community resources.

The authors of the articles in this issue

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Environment, Food, Agriculture, and Renewable Resources: The Missing Links in Science Education

By: Vernon B. Cardwell

Cardwell is a professor of agronomy in college of agricultural, food, and environmental sciences at the University of Minnesota, St. Paul.

Science is inquiry-based. Science is relevant. Project 2061 gives some recognition of food, agriculture, and renewable resources science, while no mention of agriculture and only cursory coverage of food and renewable resources occurs in the National Science Education Standards (to be officially released in late 1995). The lack of emphasis on agriculture, and renewable resources (EFAR) coverage in these national science education standards is symptomatic of the level of EFAR coverage in current general science education.

History of Agriculture, Education, and Science

Agriculture's origins are elusive in our history, but are thought to have begun some 10,000-12,000 years ago when plants and animals were first purposefully tamed for the benefit of human kind. Indigenous knowledge of the EFAR system was integral to human survival from the beginning of agriculture until the industrial revolution. During this extensive era, the majority of all cultures were engaged in food, agriculture, and renewable resource production and management. In the United States, 90% of the population labored and worked in rural areas at the signing of the Declaration of Independence. Thomas Jefferson, a founder of the constitution, was an agricultural as well as a political leader. His attitude toward the land and agrarian lifestyle helped shape the constitution. He was also one of America’s first scientists, designing and building his own windmill.

By 1880, more United States citizens lived in cities than rural areas, but the majority of the populace were only one generation removed from their agrarian roots. (See Figure 1.) The changes in agricultural production systems had changed little from the systems in place for the previous 10,000 years, but the seed of change had been sown. The attitude of “if you cannot do anything else, you can farm,” was couched in the understanding that common knowledge about agricultural systems permitted most Americans to subsist in agriculture and there were abundant government lands that provided many opportunities to become EFAR farmers. Today, less than 2% of the population is...
Corn Yields in Minnesota from 1920-1990

Table 1. Estimates of the U.S. Educational System

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
<td>50 million</td>
</tr>
<tr>
<td>Teachers and support personnel</td>
<td>3 million</td>
</tr>
<tr>
<td>Schools</td>
<td>90,000</td>
</tr>
<tr>
<td>School districts</td>
<td>14,000</td>
</tr>
<tr>
<td>Colleges and Universities</td>
<td>3,300</td>
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<tr>
<td>Scientific and Professional Specialist</td>
<td></td>
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<tr>
<td>with higher education in food and agriculture</td>
<td>300,000</td>
</tr>
<tr>
<td>Secondary school agriculture educators</td>
<td>10,000</td>
</tr>
<tr>
<td>Colleges of agriculture, renewable natural resources research centers</td>
<td>134</td>
</tr>
</tbody>
</table>

U.S. Egg Production from 1920-1990

Figure 2 demonstrates the change in corn yields in Minnesota from 1920-1990.

U.S. Egg Production from 1920-1990

Figure 3 illustrates the change in egg production in the United States from 1920-1990.

varieties, and the "super cow".

The impact of science on agriculture, food, and fiber productivity was reflected in the increased output per acre, per animal, and the development of food processing, preservation, and distribution, resulting in an ever-growing number of products on grocery shelves.

Figure 2 illustrates the change in corn yields in Minnesota from 1920-1990. This development of technologies to increase crop yields enabled exploitation of renewable resources, while liberating millions of people to follow other pursuits.

The biological enhanced era of agriculture began empirically with the selection of plants and animals and the array of varieties, genotypes, and traits that existed before the first European arrivals in America and before Darwin and Mendel. The sciences of biology and chemistry, agriculture and the agricultural worker, and the introduction of higher education in the United States.

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Louis Pasteur's (1876) work on silk worms, animal diseases, and beer-making lead to modern food processing and modern medicine. Gregory Mendel's (1866) work on pea plants is the field of genetics and modern plant and animal breeding, leading to commercial hybrid seed corn (1920). Rose, a pioneer scientist, was the "green revolution" of the 1950s, uplifted by the miracle rice and wheat strains, "flavor saver" tomatoes.

CREEF—Coalition for Education about Environment, Food, Agriculture, and Renewable Resources—has been endorsed by 38 scientific societies representing over 150,000 scientists and professionals from the environment, food, agriculture, and renewable resource communities since our food and renewable resource systems are increasingly a science and technology-oriented industry.

What has defined its responsibility to educate Americans about science? Where are the examples of the application of science and technology that use environment, food, agriculture, and renewable resources as the theme for communicating science? Where are the examples that show the relevance and importance of science and technology to us? What are the unique areas of knowledge about environment, food, agriculture, and renewable resources that every leader should know and understand to be a better-informed citizen, parent, or person? What does it mean to be an environment, food, agriculture, and renewable resource literate person? The education community is not asking these questions?

The gradual dehumanization of agriculture, food, and renewable resource management in our formal and informal educational settings parallels the shift in society's first-hand experiences with the land (see Figure 1). Our Land Grant institutions have served agriculture well for land regions. Where are the teachers of agriculture about this as a part of liberal education for all learners. The teacher educators are taught in state and private colleges and universities with little or no connection to the applied sciences of our food, agriculture, and renewable resource management. Further exacerbating the effect of separating abstract intellectual and practical intelligence prevalent in our educational system. Our regular classroom teachers and text-book writers have had little or no contact with the production aspects of the land and the industries providing our food and fiber needs which can be used as a context for communicating concepts.

If these questions are important, educators need our help. We must seek them out and join forces to create a wide-reaching program that can reach every student in every classroom in this country.
Learning Partnership to the Fourth Power

BY GEORGE H. COKA
Dr. Coka is a professor of agricultural education at the University of Minnesota, St. Paul.

W hat if there was an opportunity to raise the creative energy and resources for an agricultural education program by a factor of two? That may well be the case through four kinds of partnerships: (1) among agriculture and other subject matter areas within the school; (2) between agriculture in one school and other schools, (3) between agriculture in school and agriculture at home, and (4) between agriculture in school and agriculture in the community. Before turning to these sources of energy and resources for learning agriculture, the defining features, intensity, and motivations for learning partnerships are first explored. Following a discussion of the nature and contributions of the four potential partners, a set of principles is introduced as a basis for establishing and maintaining successful learning partnerships.

Defining Features

As summarized by Pose and Coka (1994), characteristics of partnerships include: (1) some level of cooperation; (2) shared goals, vision, or enterprise; (3) mutual respect and trust; (4) contributions of particular talents, experiences, perspectives, and resources; (5) shared power; and (6) shared accountability. These characteristics hold for all of the partnerships listed above. In the context of agricultural education, the partnership is aimed at improving the learning of agricultural competence for youth and/or adults.

Levels of Intensity

Can partnerships have different levels of association or intensity? Maurice (1984) developed a useful continuum within which to think about educational partnerships in agricultural education. His continuum contains the following levels, from lowest to highest association: (1) separation — no information or resources are shared, and each entity manages its own sphere of authority; (2) communication — entities seek information and advice from one another; (3) cooperation — entities are involved in each other’s activities and resources are shared; (4) collaboration — educational functions of both entities are considered, programs link the entities, but no major effort is made to modify either entity to accommodate mutual objectives; and (5) integrative — structures within entities are modified to accommodate mutual objectives, resources are managed in joint responsibility for success or failure is shared (p. 89). This continuum can be used to inventory and describe current partnerships and develop plans for needed changes in numbers and intensity of learning partnerships in agricultural education. To serve its needs, a particular program may have a portfolio of partnerships some at the level of communication and cooperation, while others are strategically targeted to be collaborative or integrative. At the higher levels of intensity, the partnerships will be more demanding of the program in resources and commitment.

Motivations

Partnerships can also be described from a motivational perspective. Jones and Maloy (1988) characterized the various interests in being in a partnership as three categories: "obliged to," "ought to," and "want to." In their view, "obliged to" partnerships result from top-down pressures such as court orders, funding conditions, or policy requirements. Sometimes advisory committees, as a form of partnership, fall into this category. "Ought to" partnerships are motivated by feelings of some yet undefined sense of benefit. "Want to" motivations link clearly to defined gains for joint activities. Each partner, for example, the agriculture program at neighboring schools, can be categorized using these motivational categories and they may not have the same motivations. Jones and Maloy conclude that the ideal situation for partnerships is "want to — want to" motivations among the partners and that "ought to — obligated to" relationships lead to problematic relationships over time. Again, this dimension of partnerships can be used for needs assessment and planning activities in troubleshooting and strengthening partnerships in agricultural education programs.

Functions

What can be shared by partnerships toward improving agricultural education programs?
According to a report of the National Alliance of Business (1987), partnerships can be built around sharing in the following activities: (1) partners in policy — involvement in policy development and resource allocation; (2) partners in educational improvement — involvement in planning, implementing, and assessing program improvement efforts; (3) partners in management — involvement in day-to-day coordination and operation of programs; (4) partners in professional development — involvement in education and training of program staff; (5) partners in the classroom — involvement directly in the teaching and learning process; and (6) partners in the community — involvement in short term projects. This listing is proposed as being in order of decreasing impact and investment by the partners. The hierarchy of functions may be useful as a way to think about the developmental stages of learning partnerships for an agriculture program. Partnerships with a business or family may start out initially as serving a short-term, special service and then be strategically developed over time to point of being a partner in policy formation relating to the program.

**Potential Partners**

Potential partners for the agricultural education program exist inside and outside the school. Some of the most important include: teachers of other subject matter areas, families of students, community-based agencies and organizations, and other schools (i.e., junior high school, other high schools, postsecondary schools).

**Teachers of other subject matter areas**

Partnership efforts with other teachers are now often termed as curricular integration and are gaining a greater attention in educational circles. Partnership might involve agriculture and other vocational subjects (i.e., with the business teacher in planning a school-based enterprise, with the family life teacher in a unit on food processing) and academic subjects (i.e., with the biology teacher in an ecology unit, with the world language teacher on the global economy). Joint efforts could include coordinating lesson plans, exchanging class sessions, team teaching two classes together, and using a common learning project among two or more subjects. Benefits to the partners include increased student motivation, attention to both theory and practice, linking to real problems outside the school, and increased variety and motivation for teachers.

**Families of students**

Students often identify parents and other family members as important sources of information and opportunities. Traditionally, this is not a new partner for agriculture programs, although the connection may have deteriorated in recent years. Families can be valuable partners in the classroom or community-based learning sites, mentors for learning at home, sources of information on community resources, and members of advisory committees. Close partnerships with families can extend the "time on task" and the curriculum for learning well beyond the time and content in school.

**Community-based organizations and agencies**

This group of potential partners includes businesses and industry, labor organizations, civic groups, training services, and religious groups. Again, these are not new partners for agriculture programs. Cooperative work experience programs and the community building activities of the FFA are part of the bedrock of agricultural education. Work-based learning in a growing discipline of vocational education in Kazakhstan, the southwest and is taking on new labels in the form of apprenticeship and internships. Through community-based partnerships, learning can be more practical, meaningful, and provide access to learning resources not available in the school.

**Other schools**

Sometimes overlooked are the partnerships that may be very useful with other schools. In business and industry, the reputation of a school on quality has to lead to linkages with and contributions to supplier firms as a way of improving quality. For high schools, the comparable suppliers are elementary and junior high schools; for postsecondary schools, it is the high school as supplier. The quality of an agriculture program may also be improved by partnerships with other same-level institutions (e.g., one high school with others, one postsecondary institution with another). These associations can increase the extent of specialized course offerings, improve efficiency by sharing equipment and increasing class size, and permit teacher specialization. Last, partnerships with the next higher (level of education (i.e., high school with two-year postsecondary institutions, two-year postsecondary institutions with four year institution or work-based training program) can make for a smooth and unadulterated educational transition, expand learning opportunities, improve instructional efficiency, and shorten the time to program completion.

**Guiding Principles**

A review of research and good professional practice suggests that successful partnerships are necessary.

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mechanization, e.g., it was normal to have one worker per 1.5-3 acres. As the privatization process has accelerated, many of these specialists have found themselves as private farmers; it has become increasingly obvious that they lack a broad agricultural knowledge base, have few transferable skills, have no farm management or accountancy skills that they have never been involved in decision making, and generally, are incapable of farming on their own. The implications of this are obvious with students and future training in the formal agricultural education sector.

What is required, for the majority of students, is a training curriculum containing those elements of agricultural practice, related to theory, that will permit them to perform the majority of tasks anticipated on the emerging, newly privatized, small scale Kyrgyz farm typically 12-40 acres. There may still be a need for some specialists, but there is little demand for employed labor on the private farms due to their size, the large size of the Kyrgyz families, and the present economic situation.

Meeting the Changing Needs: Process

From the constraints mentioned above it became apparent that collaboration was required if agricultural education was to develop in Kyrgyzstan. The TACS program first conducted a series of national seminars during the latter half of 1994 for all stakeholders in the field of agricultural education, including farmers, farmers organizations, and representatives of the three ministries involved in the formal agricultural education sector and the institutions involved in teaching agriculture at all levels. These seminars covered the complete scenario of what agriculture in the future and how formal agricultural education should respond to these needs. The seminars were extremely well-attended, and after initial reserve on the part of participants (who had never previously been asked their own opinions on such issues), they developed active participatory exercises where the problems were given a public hearing for the first time.

The participants were obviously as surprised at the need for change but didn't know how to approach it, lacked confidence in their ability due to a representative of the Ministry of Education telling the participants that nobody except the Ministry staff were capable of curricular development. Although that Ministry had no staff with any agricultural background or training[1], and were aware that the financial resources were not available to undertake the development work that was necessary. TACS arranged to provide the financial resources and technical assistance required to start the process of curriculum reform, and the seminar’s participants were charged with developing a needs assessment for their own student population and courses. This needs assessment process was enhanced by a needs assessment being conducted at the same time for the design and establishment of an agricultural extension service, also being carried out by TACS. A series of “seed sowing” seminars was then conducted in each area of the country during the fall of 1994 that included former TACS specialists as possible and to try to build confidence amongst the institutional staff and to get them to examine their own needs and future training in the formal agricultural education sector.

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The two departments taught traditional topics in biological and environmental arenas and were doing quite well. However, the school principal discovered funds were available for teachers interested in collaborative work, referred to as “Tech Prep”. He encouraged as to develop a course that could use the strengths from each department. After some preliminary discussion, we put on our thinking caps and went to work.

Mutual interest in the outdoors and the environment led us to begin developing a course we now know as Applied Biology and the Environment. Richard (Boich) Halterman of the biology department and I quickly learned of each other’s strengths, and began developing the course around him. Mr. Halterman was to provide the scientific processes involved in the given class topic and my role was to demonstrate the practical use for the information the students had learned. It was our intent that students come to only that which could be put to use. With that premise in mind, we went to work.

Developing the new course went rather smoothly because both instructors had clear ideas of what the new course should be framed. We found we could work together and respect each other’s point-of-view. A vision of the intended combined effort was necessary in order for us to be successful. We spent hours discussing potential topics, potential limitations, and how we could put the instruction to practical use outdoors or in a laboratory setting. Seven units were developed, key topics identified, and activities planned. From that point, we began to build lessons and try them out in the new course.

In the first semester, we were assigned over 40 students in a classroom designed for 25. We could have divided into two groups with Mr. Halterman teaching science principles and I teaching the application. However, we chose to stay together where the real advantage of team teaching revealed itself. As I would be...
Leadership Development Workshop: A Collaborative Event Conducted by FFA Officers

Collaboration is a trend and buzz word in education today. As educators, we most often think of collaboration between educators in our own building and local school districts, between colleagues (teachers or professors), between occupational and academic education, or between teachers and students. This story is about collaboration between student groups.

A primary goal of the FFA is to develop leadership skills in its members (National FFA Organization, 1991). This is accomplished through learning about leadership and participating in leadership activities. Agricultural educators recognize that to develop leadership, we need to practice skills by participating in a variety of activities. We also recognize that if we plan and teach a skill to others, our own skills are improved. Dorodny and Seever (1994) indicated that FFA members in a three-state area are actually implementing leadership activities more often than planning activities for leadership development. They recommended that to increase leadership life skills development, members should participate in planning and evaluating activities. The FFA chapter members of Lowry High School in Winnemucca, Nevada have recognized for quite some time a definite lack of leadership skills in the members of various clubs and organizations in their school. In particular, they noted that students elected to student body offices were lacking the leadership skills necessary to perform their duties effectively. As a result, students struggled with their assigned leadership responsibilities.

The Winnemucca FFA Chapter officer team decided to do something about the problem by sharing some of the leadership training they had received with other student groups in the school. All chapter officers had attended the State FFA Leadership Camp at least once, and all had attended one or more Made For Excellence Conferences, and all had attended the State FFA Convention. Each of the officers had competed in some type of leadership contest that requires interviewing or speaking to a group, such as marketing, creed speaking, star Greenhand, or prepared or extemporaneous speaking. These events provided an excellent base from which to draw hands-on leadership development activities to share with others.

The officers chose to collaborate with other student groups by conducting an all school leadership workshop for student body, class, club, and organization officers. The chapter officers knew they could rely on the leadership training they received in FFA to organize, conduct, and evaluate a meaningful workshop.

The first step in planning the workshop was to acquire approval from the school administration, and to obtain permission for school release time for the FFA officers and other students. The principal was very receptive to the idea and offered his full support. He not only granted the time requested, but offered to provide school transportation for all students to and from the workshop. An off school site was chosen to allow more freedom for group activities, particularly those that create noise, and to provide a setting different from the routine school setting.

A three-hour block of time was allocated for the workshop. In planning the activities, the officers divided the time into fifteen-minute segments in an attempt to keep things moving, participants interested, and to use the time wisely. Some of us may refer to such an activity that each officer wanted to conduct. In some cases, two officers worked together as a team to conduct their activity. When no one conducting an activity, officers served as assistants to their peers.

The leadership workshop program consisted of one activity to build team work where students were joined in a "human knot" and had to unite themselves through a team effort. A personal awareness activity consisted of students discussing desired personal traits. Another activity consisted of drawing a ship and discussing how certain parts of the ship may describe an individual's characteristics. Discussing officer duties and responsibilities, familiarizing participants with common parliamentary procedure practices, and discussions revolving around group leaders and officers were topics of other workshop activities.

(Continued on page 17)

By: Vernon D. Luft and Thomas George

Luft is an experienced teacher-educator in the college of education at the University of Nevada, Reno. George is an agriculture instructor at Albert Lowry High School in Winnemucca, NV.

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Mr. Brian Alberson is shown working with one of his students from Mountie High School, Mountain Iron, MN. (Photo courtesy of Brian R. Alberson.)

Irregular test. We felt that a test could show their recall ability, but did not truly illustrate how well they could apply basic knowledge to situations. Therefore, we found it better to have students prepare hand use summaries, perform water quality assessments, test soil, and write recommendations to the landowner. Agriculture students in the class quickly adapted to this performance style of testing while the traditional science students often found it more difficult to apply textbook knowledge to real life situations. However, by the end of the semester, there was no observable difference in all the students' abilities to complete the required tasks.

One great benefit to agriculture through this affiliation was the increased exposure of traditional college-bound students to the style and quality of instruction available in agricultural education. They observed and practiced "hands-on learning," "performance assessment," and "group interactions" on a scale not experienced before. The new alliances formed across typical class boundaries were beneficial for all students. This exposure has even led non-traditional students to take courses from our agricultural education department.

The new course is not without its drawbacks. It is essential when engaged in collaborative teaching that one establish a good open working relationship with your partner. Differences of opinion must be dealt with as well as differing knowledge levels from topic to topic. You must discuss from the beginning how each department's budget will be affected, sharing equipment and facilities between departments, and the division of classroom management responsibilities. We worked these things out by volunteering for things such as attendance, grade reporting, and arranging transportation. We also realized that in order to offer a new class, some thing else in the course offerings would have to give. In essence, you are eliminating an agriculture course from your program in order to make room for a new agriculture course. In many schools, this retooling will likely provide a "shot-in-the-arm" for registration. Consequently, this loss of a course should not necessarily be looked upon as a disadvantage.

The course was graded using a checklist system for each unit project as well as regular quiz scores. Both instructors have been trained in the new graduation rate being implemented in Minnesota. As a result, we chose to develop our grading system in line with the state agency thinking. We found that the scores adjusted to the scoring system, it was easier to score projects than it had been in our old grading system since checklist scoring is more objective and less prone to personal bias or viewpoints. The students enjoyed the checklist scoring system because they were given the exact scoring tool that will be used on their final project from the onset. Sometimes we handed out the score sheet at the beginning of a unit so that students could see how the classroom or outdoor lab sessions relate to the final project. We felt this made students more attentive to information shared in class, removed ambiguity in our notes, and forced us to remain on task with the students. Less time was wasted for us to spend more time performing "hands-on" tasks.

The course has garnered approval as a science course from the administration, and we are hopeful that post-secondary instructors will also recognize it as a science course. This course should not be viewed as one in which good grades are easily achieved. Student testimonials have reassured us that we are offering a challenging course that provides students one more dimension on how they can learn science.

From my perspective as a teacher of agricultural education, this collaboration and team teaching in applied biology was successful for several reasons. First, I had an excellent co-teacher with whom to work and a good working relationship is essential. Second, the content needs for the course were low—utilized all that we already had in our possession. Both instructors enjoyed getting the students in the classroom to teach principles. Had one of us not cooperated, it would have been a long semester. Flexibility in both teachers allowed some units to run over the planned length while others could be shortened without causing a conflict. You need to give and take anything else when working with a co-teacher.

The success of this class is in talking about

(Continued on page 17)
Looking For New Opportunities For Collaboration

A s agricultural educators, we need to look beyond our usual partners when seeking new opportunities for collaboration. We may also be able to tie in other issues of importance to agricultural education such as agricultural literacy.

Consider if you will, the opportunity to provide agricultural experiences for older adults. Elderhostel participation may be the collaborative effort that will fit your agricultural education program.

What Is Elderhostel?

Elderhostel is an educational program for older adults who are looking for something new. It is for individuals who want to continue expanding their horizons and developing new interests and enthusiasm. It all began in Massachusetts in 1975 with five programs and 200 participants. Elderhostel has grown to include over 2,000 host institutions in all 50 states and in 10 Canadian provinces. In 1994, approximately 250,000 individuals participated in Elderhostel (Elderhostel, 1994).

Elderhostel courses are usually one-week residential, educational programs with 30-40 tuition-paying participants. The programs take place at a variety of sites including college campuses, conference centers, and educational education centers. Tours and lectures and/or hands-on types of activities form the basis of the educational experience.

Agricultural educators could develop their own separate Elderhostel program or take the opportunity to collaborate with programs already existing in their area. The Cooperative Extension Service in Warren County, Mississippi chose collaboration, and county agent Terry Rector shares his Elderhostel experience.

One Agricultural Educator’s View of Elderhostel

"No ma’am, we don’t pick cotton by hand anymore."

"Catsfish are fed a high protein grain ration similar to that fed to poultry."

So go the answers to questions typically asked by Elderhostel audiences at Vicksburg, Mississippi. As county agent in Warren County, I have been speaking at the Elderhostel program hosted in Vicksburg by Mississippi College for four years. Most years, we will have two or three groups in the spring and two in the fall. My presentation is titled “Cotton, Catfish, and Chickens – Mississippi Agriculture Today.”

In Vicksburg, Elderhostel participants are treated to a lot of history - the 42-day Siege of Vicksburg during the Civil War, the local plantation of Jefferson Davis, antebellum homes, the Vicksburg National Military Park. Then there is the river — the Mississippi — and all its blessings and problems.

My job at Elderhostel is to tie together the river and its rich alluvial soils, history and modern agricultural production to give Elderhostel visitors a synopsis of delta farming. “Truth is, Eli Whitney probably didn’t really invent the cotton gin, but instead he borrowed the idea from a plantation blacksmith named Oglan Holmes.”

In some of the audience raise eyebrows when I throw in that little known historical debate. But I press on.

"Indispensable, though, is the fact that the first cotton gin less was built by a slave at Blakley Plantation here in Vicksburg in 1840."

Our Elderhostel participants come from all over the country. Most of them are somewhat familiar with tineer, livestock, corn, soybeans — all important agricultural commodities in Mississippi. So I concentrate on the things produced here that are not as widespread. Mississippi leads the nation in farm-raised catfish production, ranks third among the states in cotton acreage, and seventh in growing broilers.

In addition to a 1 1/2 hour presentation and question and answer sessions, the September and October “classes” are taken on a delta tour of cotton and rice growing, a cotton gin in operation, and a catfish farm at feeding time.

I made sure to inform the audience about the ever-growing response of agriculture to environmental issues. I told about our state and county programs for recycling pesticide containers, the Bull Wreel Irrigation program and reduced tillage and no-till farming. I take the opportuniy to share the history and concept of the Land Grant university system.

Our Extension Horticulture Agent also makes a presentation called “From Camellias to Kadzuri” that focuses on traditional plants of the South. Elderhostel is informal education at its best. Participants come to learn about the area and to see the sights, but not to face an overloaded schedule or be subjected to too many details.

Working with an Elderhostel program really offers an opportunity for those of us with educational roles in agriculture. As the percentage of people directly involved in agriculture continues to dwindle, here’s a chance to send new "ambassadors" back to mostly urban communities throughout the country.

It takes only a minimal amount of time to prepare for presenting a program. Remember, the goal is to merely highlight local agriculture. No soil chemistry, taxonomic names, or plant morphology is required. Presentations could easily be planned and presented by FFA or 4-H members.

Assisting with Mississippi College’s Elderhostel program has provided me a working relationship with the Department of Continuing Education at the college, which is a secular college located 30 miles from Vicksburg. As a result, the department has asked me to collaborate on a short course for elementary and secondary school guidance counselors from three states. My assignment is to discuss careers in agriculture.

I recommend working with Elderhostel audiences to agriculture educators. The "students" are mature, laid back, inquisitive, and open-minded.

What Can Elderhostel Do For You?

Elderhostel programs can offer a number of benefits to the participating organizations. Good public relations and increased agricultural literacy are certainly among them. An on-site Elderhostel program can provide income by making use of under-used facilities at conference centers and community colleges. The Elderhostel participants may also provide additional opportunities for collaboration in the future.

The most important benefit may be the opportunity for a rewarding teaching experience and inter-generational exchange. Young people can learn a great deal from the older adults while teaching them about local agriculture.

Where to Contact Elderhostel

If you are interested in finding out about Elderhostel opportunities in your state or how you might start your own program, contact ELDERHOSTEL, 77 Franklin Road, Boston, Massachusetts 02110-1944. Elderhostel activities are coordinated in each state by a state or regional director who can answer questions and advise those interested participating in the program.

References


When Two Worlds Meet (Continued from page 14)

other possible links that could be made in our school system. An English teacher is now interested in collaborating with agriculture, education and other departments to help with those units which involve writing and/or report giving in order to become stronger within the technical curriculum area. Mathematics teachers are being encouraged to join forces with the technical and vocational courses to make mathematics more practical and applicable for students. It is yet to be seen how much of this will come to pass, but the changes coming in education may help foster the idea of joining departments in a common goal of educating a student.

When two worlds meet, great things can happen. Collaboration in agricultural education and across the school curriculum has become a common theme for discussion and development.
Networking with extension: Give and You Shall Receive

In agricultural education, we seem to be programmed to return favors. If someone gives us something or does something for us, we feel obligated to give or do something in return, often of something of greater value in time or money. Social psychologists (Ciullo, 1984) call this the reciprocal principle and suggest that we take note of the human tendency to repay those who help us. If you are willing to give to others, you will find that they will return the favor many times over.

In this article, I am going to suggest several ways in which the reciprocal principle can work for agricultural educators who are teaching in public schools or are in various extension settings and other professional in comparable fields. First, the sharing of materials and personnel is helpful to both groups of agricultural and extension educators. Secondly, the use of educational research is valuable to both groups. Even though, from a practical view, we do not acknowledge its contribution to our work. Thirdly, networking between personnel at various levels can also function as a valuable collaborative means of providing educational and employment opportunities.

Sharing of Materials

Sharing instructional materials is one of the easiest ways to begin networking with others. Local extension offices have a range of materials including bulletins, videos, and computer programs. If you find a resource you would like to incorporate into your own instruction, don't be afraid to ask for an extra copy. Many of these are free or may be loaned or copied. The 4-H program has a wide range of project and leader manuals. Frequently, these materials are also available for use in a county.

There may be problems with some extension materials. Often, these are designed for adults in informal learning settings. They 'need to be adapted for high school or postsecondary audiences. Study guides and tests that are common for school settings are generally not a part of extension materials. 4-H materials tend to be designed for younger audiences and may need to be modified.

Sharing materials should be a reciprocal affair. Agriculture teachers also have resources useful to extension audiences. One example of this exchange is procedure and leadership materials. The Agricultural Education Club at Iowa State University has developed a "parliamentary procedure" program which 4-H groups have used in their training sessions for club officers. The ISU Agricultural Education Materials Service also has a resource packet for teaching leadership that is appropriate to extension groups.

Some materials have been developed specifically with both 4-H and FFA audiences in mind. One example is the Total Quality Management (TQM) Curriculum for Youth Producers (1993). It includes seven videos and an instructional booklet which focuses on food safety concerns. It was designed and produced by extension specialists in Iowa and Nebraska. In Iowa, agricultural extension officers received copies of the TQM materials as part of their summer instructional packet under a special arrangement with the state 4-H office.

Other instructional packets in recent years have included extension materials: two wine videos developed by Dr. James McKean, state extension veterinarian, and a set of six water quality videos produced by Dr. Tom Glavine, state extension agricultural engineer. These materials included a computer program and a set of questions in a game format to accompany the videos.

The Iowa Vocational Agriculture Teachers Association instructional materials committee is composed of teachers from each of the districts. They meet four times a year to review materials and make decisions on what should be contained in an annual instructional packet. The teachers make some of the contacts with extension specialists to arrange for development of materials. Currently, Jim Green, agriculture instructor at Riceville, is working with the Iowa Turkey Federation and a state extension poultry specialist to develop materials for use in the instructional packet.

Extension field days and Extension specialists are good sources of research-based information. (Photo courtesy of Jef A. Gamon.)

Extension specialists have been particularly helpful in providing materials for content accuracy before they are distributed to agriculture teachers. In all cases, they were eager to have the latest in research information accurately disseminated to teachers and were appreciative of the multiplier effect of teachers reaching future agriculturists.

Agriculture teachers were able to reciprocate to extension specialists by helping them test materials. Jeff Lorimer, an extension animal waste management specialist, currently is using agriculture teachers to try out draft copies of an environmental assurance program that he is writing. As teachers use the technical presenter's guide with their students, they can provide helpful comments to him that will enhance the finished manual. The teacher's background and experience in teaching methods will help him design a manual that will be useful, polished, instructional aid for anyone teaching about waste management.

Sharing of Personnel

Sharing of personnel is of benefit to both public school agricultural education and educational programs of cooperative extension. As a county youth agent, my first contact with the field of agricultural education was through asking agriculture teachers to judge 4-H exhibits and FFA presentations. I also worked with teachers as we scored livestock judging contests at the county fair. My extension colleagues and I met monthly with all of the agriculture teachers in the county. Later when I became a state 4-H specialist, I found that agriculture teachers were willing helpers for the state tractor contest, and now that I am on the other side of the fence, I find extension colleagues willing presenters at in-service activities for agriculture teachers.

Some states have experimented with one week job exchanges for extension agriculturists and agriculture teachers. The certification problem has been solved in several ways. Often the extension agent has a teaching background (in Iowa, close to a third of the extension agriculturists have at least one degree in agricultural education). Some schools have used substitute teachers in tandem with the extension personnel. In other cases, principals have monitored the agriculture classes while the regular teacher is gone. The exchanges yield benefits for both sets of personnel: Schools gain new expertise in the classroom. Extension benefits from a person with expertise in teaching methods and working with youth.

When lines of communication between extension educators and agricultural educators have not been strong, the following suggestions are provided:

- Get on extension mailing lists.
- Attend extension programs.
- Stay in touch with the extension office secretary.
- Discover the strengths and interests of extension specialists so that you can ask the right person for assistance.
- Contact extension personnel a long time ahead of the date you choose. Their calendars fill early.
- Arrange for several contacts during the semester or year. Two-day presentations allow for more in-depth coverage and rapport between students and the extension personnel.
- Prepare students ahead of time with an assignment built around the upcoming presentation by extension personnel. Afterward, have the students write reports as well as thank-you notes.

Educational Research

Research on leadership has been completed with both 4-H and FFA groups. When Scevens and Dormody (1994) studied leadership development activities, they found that both groups considered holding office and judging contests to be among the activities they felt contributed the most to their leadership development. 4-H members listed holding office and teaching younger members at the top (Scevens & Dormody, 1994). For FFA members it was judging contests and public speaking (Dormody & Scevens, 1994).
Hydraulic System Model for Teaching Fluid Power Principles

Introduction

Much of the "muck" required in modern agricultural production and processing is supplied by hydraulics. Virtually all tractors, combines, and many agricultural farm machines rely on hydraulics in some way. Also, hydraulic actuators (cylinders and motors) are found on much of the equipment used in processing agricultural products.

Because of the widespread use of hydraulics in agriculture, it is important for students to develop an understanding of the basic principles of physics that explain the operation of hydraulic systems. The purpose of this article is to describe an easily built hydraulic system model (Figure 1) that can be used to actively involve the students in studying hydraulic principles and applications. A sample learning activity for use with the model is also presented.

Leadership Development Workshop

The PFA officers felt the workshop was a huge success. They want to see the activity continued. Since the PFA officers had to work together in design and conduct the workshop, it served to bring them closer and to function more effectively as a team. As a result, the officer team has worked more closely than others in the recent past.

The leadership workshop provided many other benefits. PFA officers reported the event helped publicize the PFA, and it is now better understood by other students of the school. One officer reported that she felt other students learned that PFA is for more than just farm kids.

Students learned the value of teamwork and what can be accomplished by an organization if members work together as a team. One participant indicated that she learned how to be more involved and participate in group activities, and everyone realized team work equals success.

The workshop served to bring students of various interests, cultures, ages, and programs of the high school together. Participating in group activities taught students the need to work together, get along, and value each other. As a result, the event served to create more harmony throughout the student body during the remainder of the year.

In summary, a leadership development workshop with PFA officers collaborating with other students in a school was beneficial to many. PFA officers fine-tuned their own leadership skills while teaching others. Participants in the workshop were able to use the leadership skills to more effectively serve as officers of their organizations. All students involved learned the value of collaboration and how it enhances a program's success.

Basic Principles of Hydraulics

In 1653, a French scientist named Pascal formalized the fundamental law that explains the operations of all hydraulic systems. The law, which became known as Pascal's law, states that:

Pressure applied to a confined fluid is transmitted undiminished in all directions, act at right angles to the walls of the container, and acts with equal force on equal areas.

Pascal's Law can be illustrated using the container of liquid shown in Figure 1. A 1-lb. force applied to the frictionless stopper (having a surface area of 1-in.\(^2\)) in contact with the fluid will result in a pressure of 1-lb./in.\(^2\).

Hydraulic Model Construction

As shown in Figure 3, the hydraulic system model is constructed around two syringes. The small syringe acts as the input cylinder and the large syringe acts as the output cylinder. The syringes are connected by a length of clear
plastic tubing, friction-fitted to the end of each syringe. A gauge is connected in the tubing so that fluid pressure can be measured. The syringes and tubing are filled with water.

A measured input force can be applied to the small syringe using a spring scale attached to the second-class lever. The output force (load) consists of an object of known weight (5 to 10 lbs.) fitted to the large syringe. The syringes are supported by blind holes drilled into the wooden frame. Smaller pivot holes allow the tubing to extend through the bottom of the frame, while preventing movement of the syringes. The hydraulic system model can be built for less than 15 dollars.

Hydraulic System Learning Activity

The purpose of the hydraulic system model is to provide students with active, hands-on experience that allows them to learn the basic principles of hydraulics. The authors have found the activity presented in Figure 4 to be an excellent way of providing structure to students' use of the model.

**Figure 4: Sample Hydraulics Learning Activity.**

**Objectives:**
Upon completion of this learning activity, students should be able to describe the principles and applications of hydraulic power transmission, calculate the actual and theoretical mechanical advantage of a hydraulic system, determine the efficiency of a hydraulic system, and describe the relationship between force, pressure and area in a hydraulic system.

**Equipment & Supplies:**
- Hydraulic System Model
- Calculator
- Ruler or Vernier Caliper

**Procedure:**
1. Obtain necessary equipment and supplies from your instructor.
2. Place a load of known weight (5-10 lbs.) on the plunger of the large syringe.
3. Slowly pull downward on the spring scale and record the amount of force required to raise the load on the large syringe. Record your measurement here: ___ lbs.
4. Calculate the actual mechanical advantage of the hydraulic system using the following formula:

   \[
   \text{Actual Mechanical Advantage} = \frac{\text{Force exerted by large plunger} \times \text{Height of load} \times \text{Distance of small plunger}}{\text{Distance of large plunger}}
   \]

**Discussion Questions:**
A. Define "efficiency" as it relates to the performance of a hydraulic system.
B. How is efficiency related to actual mechanical advantage and theoretical mechanical advantage?
C. What factor(s) prevent a hydraulic system from being 100% efficient?
D. What is the relationship between force, pressure and area in a hydraulic system?

**Summary:**
Hydraulic power transmission is widely used in the agricultural industry. The hydraulic system and the learning activity presented in this article were designed so that students can learn the basic principle of hydraulics in a hands-on manner. As agricultural educators move to a more science-based curriculum, we must remember the importance of providing students with active learning experience. Hopefully this article will encourage teachers to share materials and activities they have found to be successful with their own students.
Learning Partnership
(Continued from page 10)

include attention to both characteristics of process and partners (Karls et al., 1992).

Desired characteristics of the partnership process include:
1. Written statement of common goals that is clear and concise and that is recognized and developed cooperatively.
2. Assessment of the talents and resources each partner possesses and is willing to commit to the partnership.
3. Provision of sufficient time and in-service training to plan, sustain, enhance, and evaluate the partnership.
4. Cooperative effort involving all key players that utilize the talents of the partners.
5. On-going communication that is inclusive of all individuals and institutions in the partnership.
7. Periodic evaluation of the partnership process.
8. Celebration of successes.

Desired characteristics of the learning partners include:
1. Belief in ability to bridge different cultures among partners.
2. Evidence of mutual respect and trust among partners.

3. Realistic expectations of the partnership, often built from small successes. (pp. G-47-48)

Partnerships thoughtfully planned and executed can raise the energy and resources for an agriculture program, no small matter in these times of funding constraints. Attention to the desired features, needed intensity, motivations, and functions of the learning partnership can result in a comprehensive portfolio of hard working and productive partnerships serving the unique needs of a program. The “fourth power” in learning partnerships in gained by investing in all four of the potential partner categories — reaping their benefits to improved learning by focusing on good process and partner principles.

References

About the Cover

The sciences of food, fiber, agriculture, and renewable resources have, traditionally, been viewed as applied disciplines related almost exclusively to farming. The result was the establishment of a food and fiber system unparalleled around the world. However, it has also resulted in the agricultural industry being considered the world’s greatest polluter, the most irresponsible polluter, and an irresponsible user of natural resources. This belief has stemmed from a changing society that has little regard for the food and fiber system and a great deal of suspicion about agricultural products. It is time to change. The future success of the food and fiber system depends on how we, as agriculturists, collaborate with all disciplines of education. Whenever people understand the food, agriculture and renewable resource system, there is at least a chance to develop a more positive perspective of the importance of this system. The time for collaboration is now!