Branching Out:
A Win-Win Scenario for Agricultural Education and College of Education

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Introduction

Throughout the years, a collaborative environment has been formed between the Department of Agricultural Education and the College of Education at the University of Missouri-Columbia. Although the advising and major administrative work is housed in the Agricultural Education Department for its students, there are several courses that are housed within the College of Education that are requirements for all teacher certification students. Given this foundation, in a time of budget constraints and limited resources, the two academic units have entered into a unique collaboration to solve their problems. The graduate assistants from the Department of Agricultural Education serve half of their assistantships with the College of Education in their Education 200 and 201 courses (Inquiry into Learning I and II).

Methodology/How It Works

Out of a typical 20-hour graduate assistant schedule, the agricultural education graduate students will serve 10 hours with the Education 200 and 201 courses. Education 200 is taught in the fall semester and Education 201 in the winter semester. Therefore, half the graduate students funding is derived from the College of Education. For the Agricultural Education Department, this means that they double their assistantships and provide more opportunities to work within the department on teaching and/or research.

One of the major benefits for the Agricultural Education Department is being able to provide more assistantships. For example, instead of having funding for three .5 FTE positions, they can offer six .25 FTE positions. In addition, the graduates from the department leave the university with a broader range of teacher education experiences. In addition, since all agricultural education/teaching option undergraduates have to take Education 200 and 201, they have resources from their own department in helping to relate the content of the course to the agricultural education classroom. A broad overview of how the two units work together is illustrated in Figure 1.

For the College of Education, there are several benefits to the collaboration. First of all, they receive instructors who have secondary public school experiences. The instructors help, in bringing to life, the content of Education 200 and 201 to real life situations. Secondly, by adding agricultural education to their list of disciplines and experiences, the college now has a more diverse instructor base. Finally the quality of instructors provided by agricultural education has rated well. During the past year, all agricultural education graduate assistants instructing College of Education courses received “High Flyer” status for both semesters.

Receiving such status is measured by course evaluation ratings of 4.5 or higher on a 5.0 scale.

Results To Date

At present, the College of Education is funding four agricultural education graduate assistants to serve as instructors for their Education 200 and 201 courses. Presently, there have been conversations to place instructors in classes beyond Education 200 and 201, such as in the Education 304 course (see Figure 1). In addition, the ties between the units have strengthened because of the partnership. Communication between the units is more frequent because of the instructor cross-over.

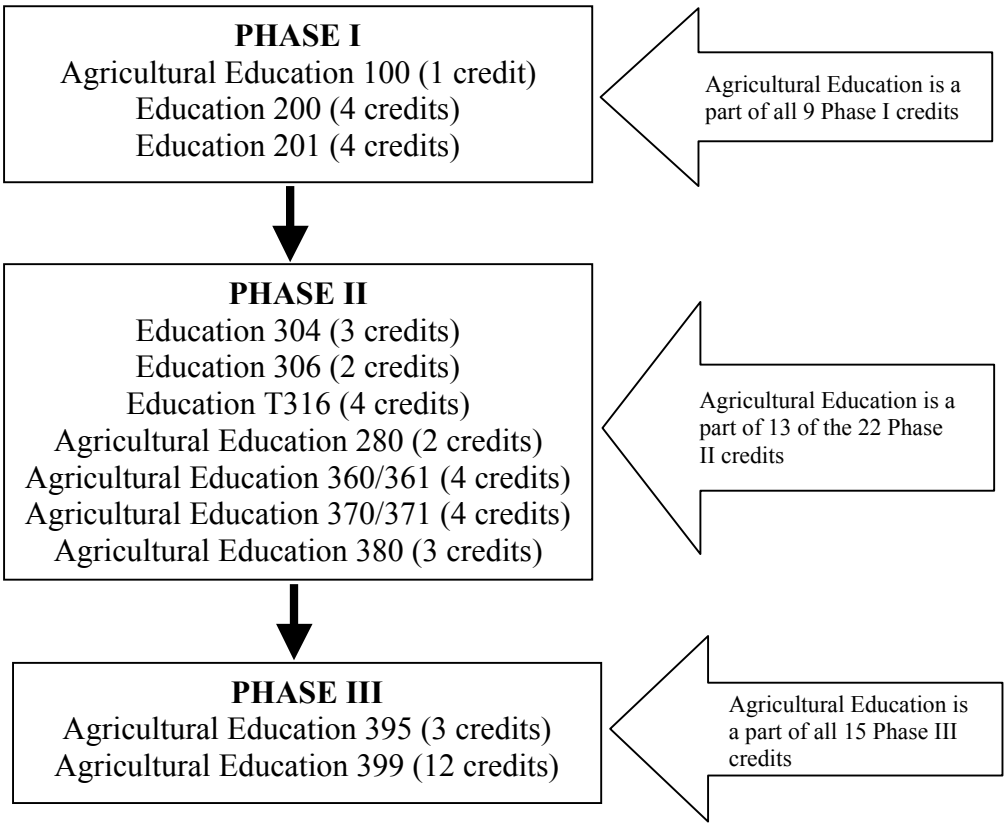

Figure 1: The Teacher Develop Program Phases in the Perspective of an Agricultural Education Undergraduate Student (adapted from *2002-2003 Teacher Development Program Instructor Handbook*)

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Houston… We Have a Program!
Space Agriculture in the Classroom 6th Grade Curriculum

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Houston… We Have a Program!
Space Agriculture in the Classroom 6th Grade Curriculum

Introduction

"If education is life, all life has, from the outset, a scientific aspect..." – *John Dewey*
"From the very beginning of his education, the child should experience the joy of discovery." - *Alfred North Whitehead*

Experiential learning has been a critical component of agricultural education since its inception. The concept of "learn by doing" is the underpinning foundation in agricultural curriculum development across the country. However, learning is best achieved when it occurs contextually; in a manner that allows students to see how knowledge fits into the world around them. To envelope the student in the learning process by engaging all of the senses, as well as to discover learning through the world at hand, is to capture the essence of what both Dewey and Whitehead so fervently believed.

The Space Agriculture in the Classroom (SAITC) project was derived from a concern that, with a growing urban population, reduced availability of agriculturally sustainable land, and fewer children possessing basic agricultural principles and concepts; the critical need for agricultural scientists, engineers, technicians, and producers cannot be met with highly qualified personnel over the next 30 years.

The goals of the Space Ag in the Classroom program are to:

- Increase awareness of the role and scope of local and national agriculture in the economy and society.
- Increase awareness and excitement in the space program.
- Excite students to learn with an academically sound program.
- Produce better citizens who support wise agricultural and scientific policies.
- Reach a population of students who may not otherwise get this material namely, urban, suburban and under-served populations.
- Train tomorrow's scientists, researchers, agriculturists, educators, engineers and explorers.
- Inspire students to stay close to the earth, and reach for the stars!

Program Phases

Space Ag in the Classroom focuses on helping sixth grade science students better understand agriculture using space agriculture as the context for learning. All curricula are designed to integrate middle school students into the nexus of space flight and into the environment astronauts occupy while on the International Space Station.

Three phases, in partnership with the National Aeronautics and Space Administration (NASA), Office of Biological and Physical Research, and the United States Department of Agriculture (USDA-CSREES), will be implemented:

Phase A: Develop, design and create sixth grade curriculum materials and teaching resources for distribution to sixth grade science teachers in four states for a targeted pilot program. Materials were sent to teachers to integrate into their curriculum and provide feedback on the usefulness of the materials.

Phase B: Based on the feedback from the sixth grade curriculum, those materials will be revised in format and/or in content, then disseminated to additional states as resources allow.

The second and third years of the project will follow a similar creative and distributive process with additional materials for seventh and eighth grades.

Phase C: During the first three years of the project, it is anticipated that as many as 20 states with an Ag in the Classroom program will be included in the distribution of these materials. NASA and USDA will continue as major partners in the creation and revision of curriculum during the three-year project period.

Results to Date

Year one of the project was the developmental stage for the sixth grade curriculum. An educational module was designed as the reading component for instructional lessons. Detailed instructional plans were developed to assist teachers in integrating more in-depth concepts with student learning activities. Content areas addressed in the module were crop production, biotechnology, resource recovery, and food safety. An SAITC project website (www.spaceag.org) was created to assist teachers and students in teaching and learning about agriculture and the space program. Major project materials have been translated into Spanish and posted to the project website.

A copy of the module was distributed to more than 4,000 sixth grade science teachers in Florida, Utah, New Mexico and Alabama, along with an invitation to obtain a set of class materials and instructional plans cross-referenced to national science standards. Teachers participating in the first year of the program taught a two-week unit on the role of agriculture in space, and vice versa, to over 40,000 sixth grade science students.

Future Plans and Advice to Others

The second and third phases of this program will be carried out over the next two years. Phase B of the program will target seventh grade students in four additional states. A second module, complete with lesson plans and instructional materials, will be produced. Phase C of the program will see the expansion of the program to all other states and will include both agricultural and science teachers.

To date, there were minimal challenges in developing the curriculum. Perhaps the most difficult obstacle was in university members ensuring the materials were age-appropriate for sixth grade students. Employing an expert panel of elementary teachers and students to evaluate the pilot materials surmounted this challenge and provided insight for subsequent curriculum development.

Costs/Resources Needed

The program was funded by NASA and USDA to cover costs of instructional materials development, management, delivery, and evaluation. Upon completion of the project, it is anticipated that program materials will be widely available for purchase at cost.

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Building Kentucky's Future: IFAL at the University of Kentucky

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Introduction/Need for the Program

The faculty, staff, and administration at the University of Kentucky's College of Agriculture, in collaboration with Kentucky Farm Bureau, offer an exciting five day leadership conference held on the UK campus in June. The College of Agriculture serves as the administrative unit and host, with event planning and financial responsibilities shared with the Kentucky Farm Bureau.

The basic purpose is "to develop an understanding of the nature and needs of the agricultural industry, including career opportunities; and understanding of basic and applied science in agriculture; leadership, social and recreational skills; and an awareness of emerging technical areas in agriculture and agribusiness" (Sparrow & McCants, 2003; p. 3).

How it Works

The Institute for Future Agricultural Leaders (IFAL) is intended for the mature, above average adult with interest in the agricultural industry. In order to apply, each county Farm Bureau nominates up to four high school juniors and submits to the state Farm Bureau office. Representatives from both Farm Bureau and the University of Kentucky evaluate the applications based on leadership demonstrated, academic record and potential for impact on the agricultural industry. Forty-five juniors are selected for attendance at IFAL. Five counselors, currently UK College of Agriculture students, are also selected to mentor theses high school students throughout the week. Selection criteria include: enthusiasm, responsibility, and leadership experiences demonstrated. A head counselor is appointed to serve as a co-coordinator with UK and FB staff, while the four other counselors (2 male and 2 female) serve as group leaders throughout the conference. Counselors are compensated as they receive stipends for their mentoring role. The conference activities are planned by the UK Director of Student Relations and assisted by the Farm Bureau Director of Young Farmers.

Each student is divided into rooms, groups and discussion areas. Within each, the participant is placed with new people in order to expand their acquaintances throughout the week. The program activities consist of leadership development activities, agricultural industry tours, career awareness, and social activities. Topics included in sessions were: ethics in leadership, transition from high school to college, ropes challenge course, lunch with UK College of Agriculture advisors, UK sheep and beef farm tours, congressional insight, and UK Campus Tour. The highlight of this leadership conference is the recognition program. IFAL participants share the highlights of the week with their parents and invited guests.

Even when participants return home, they remain in contact with new friends, counselors, staff and faculty they met in five short days. A list serv is established to encourage participants to stay in touch.

Results to Date/Implications

A total of 51 students were nominated by their local county Farm Bureau to attend IFAL 2003 at the University of Kentucky. Of these, 45 students were invited, accepted and completed the program. Of the 2000 IFAL participants, 43% (*n*=16 of 37) attended UK in 2001 for their freshman year. In 2002, 38% (*n*=15 of 39) attended UK after participating in the 2001 IFAL session. Forty-three percent of 2002 IFAL participants (*n*=17 of 40) have been admitted and advised to attend the 2003 Fall semester at UK in the College of Agriculture. Students can communicate and share experiences via a list serve established by IFAL staff.

Future Plans/Advice

Future plans include expanding the IFAL experience. A goal of the program is to increase participant numbers, in order that more students from across the Commonwealth of Kentucky may participate. Many of the students who were involved indicate that this experience made a positive impact in their lives. It also led to help them make a clear decision on college choices. Through increased participant numbers, more students will gain access to this unique experience; therefore each high school junior may increase personal growth, create contacts with their peers and develop an agricultural awareness.

Costs/Resources Needed

The Institute for Future Agricultural Leaders is a joint project sponsored by the Kentucky Farm Bureau and the University of Kentucky College of Agriculture. Primary expenses are housing, transportation, meals, entertainment, counselor's stipends, and Farm Bureau and UK staff members' time. Expenses total $8700 and are shown in Table 1.

Table 1
Cost/Resources needed for IFAL

Category	Explanation (per item)	Total
Housing	$27/room @ 2 per room	$3500
Meals	(student organizations paid for meals)	$2500
Counselor stipend	1@ $450; 4@$350	$1850
Snacks	(chips, cookies, pop, water, etc.)	$500
Entertainment	(movies, challenge course, Olympic games)	$200
Supplies	(nametags, keys, etc.)	$150
Total Expenses		**$8700**

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Sparrow, J. & McCants, J. (2003). *Building Kentucky's Future*. Institute For Agricultural Leaders (IFAL) Handbook.

Building Kentucky's Future: IFAL at the University of Kentucky

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LEAP into College - The Learning Edge Academic Program in the College of Agricultural Sciences at the Pennsylvania State University

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Introduction- The transition between high school and college can be a challenging one for students. The Pennsylvania State University's Learning Edge Academic Program (LEAP) helps to bridge the gap between high school and college. First-year students entering the University Park campus are invited to participate in LEAP (Learning Edge Academic Program, 2003).

AgLEAP, a LEAP program for students in the College of Agricultural Sciences, allows academically talented students to participate in a living/learning community that focusing on the science of the entire food, fiber, and natural resource system. Students earn six-credits toward graduation and participate in special activities associated with the program: five trips to government, research and industry facilities; weekly lunches with senior faculty members and administrators; a weekly lecture series with distinguished Penn State agricultural scientists; and several activities exploring future career and/or undergraduate research opportunities. In addition, students interact closely with the college's acclaimed faculty, who discuss academic goals, career opportunities, and research projects.

Program Phases-Each LEAP class consists of approximately 20 students. There are no requirements for students to enter except admission to University Park campus as first-year students. For the length of the program, the students live in the same dorm complex, attend the same classes, and conduct projects together during the six-week long summer semester. A team of faculty and staff support the program including a librarian from Patee Library, three College of Agricultural Science faculty members; one faculty member from the English Department; and a student peer-mentor who lives in the dorm complex and provides academic and social support.

The core of the LEAP program consists of three academic courses. The first course consists of two credits for *AG 150S, Be a Master Student*, satisfying a university requirement as a first-year seminar course. The objectives of the seminar include helping students reach their full potential while at Penn State. In *AG 150S*, students refine basic study skills, participate in numerous assignments to expand their communication and leadership skills, increase their awareness on university policies, learn to manage electronic media and library resources, explore the scope of career opportunities in agriculture, and analyze selected agricultural and societal issues. All first-year students in the Penn State system are required to take a freshman seminar course.

The second course consists of one credit for *AG 294, Research Projects*. Students learn basic principles for conducting research, and related issues of economics and the

environment to the specific research project. Students pair with faculty members in the College of Agricultural Sciences from a discipline related to their desired academic major. Students observe and participate in faculty research projects and present their observations in a formal setting where class members ask questions and complete peer assessments.

The third course includes a required freshman English composition course, ENG 15, Rhetoric and Composition. Students incorporate agricultural issues into their writing assignments. Faculty members from each course integrate and cooperatively and coordinate schedules, readings, writing assignments, field trips, ultimately integrating course materials.

Outcomes of this program include maximizing academic growth through integrated curricula that highlights critical thinking and team building in a cooperative team environment; strengthening students ability to adapt socially through the AgLEAP. Throughout the summer, the designated AgLEAP undergraduate mentor organizes social activities such as volleyball games, pizza parties, movie nights and study sessions.

Results to Date-The success of the LEAP program has been evident in the opinions of the students. For the past three summers, the instructors in the LEAP program have secured and implemented feedback, at the end of the summer program and during the fall semester from the students in order to improve and enhance the program. For example, based upon their recommendation a final examination was incorporated into AG 150S to provide students the opportunity to study for and take a "college" level final examination prior to their first fall semester. Furthermore, 100% of the students exceeded their predicted grade point averages at the end of summer semester and 80% exceeded their predicted grade point average at the end of their fall semester.

Future Plans-Plans for summer 2004 include incorporating the freshman seminar component into *AG 160-Introduction into Ethics and Issues in Agriculture*, a three credit course meeting a General Education Humanities requirement for Penn State. This course addresses ethical theories, concepts of critical thinking, and major ethical issues related to American agriculture. This change will provide students with three of the six required credits of Humanities coursework needed at Penn State. As universities continue to reduce the number of credits needed for graduation academic programs, this course satisfies two requirements without compromising the integrity of the curriculum.

Additional research will continue to track AgLEAP students for a longitudinal study to measure short and long-term benefits of AgLEAP.

Cost/Resources-Costs for the summer LEAP program are supported by Penn State University Office for Undergraduate Education and the Office for Undergraduate Education in the College of Agricultural Sciences at Penn State University.

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The Good Teacher: An Acquisitions Expert

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Introduction

In the fall of 2003 the student teaching program in the Department of Agricultural Education began looking for an efficient way for student teachers to share lesson ideas and information. Unfortunately, no mechanism existed whereby students could submit a lesson plan and accompanying information without the trouble of someone else having to sort it, rename it, and post it to the web. Fortunately, we discovered that one of our own graduate students had the necessary skills to develop such a website. Now student teachers, as well as others, are able to upload their own lesson plans, presentations, handouts, quizzes, etc. as well as view the files others have posted. The website is fully searchable and allows student teachers and teachers the ability to find prepared resources that they are then able to modify to meet their own specific needs.

Methodology

We began by designing a website that would allow students to upload up to six files related to one specific lesson, with the option of designating the file as one of the following:

- Lesson Plan
- Handout
- Work Sheet
- Quiz
- Test
- Presentation
- Other

Students are also able to choose from one of forty-two course titles as well as name their lesson descriptively. Once they "browse" to attach the necessary files and hit the "submit" button, files are automatically uploaded and viewable to others.

Students and others may also use the "search" function to search in three ways:

- Search by title of lesson
- Search by name of course
- Search by author/name of teacher

Visitors to the site may also simply view a listing of all the lesson plans and accompanying materials in one long list.

Results/Recommendations

Incorporating this website into the student teaching component has certainly added to the repertoire of materials available to student teachers while conducting off-campus student teaching. Additionally, it has given instructors the opportunity to require that assignments be posted to the website to diversify the materials available while acquainting students to other materials. Overall, student response to the site upon becoming a teacher has been excellent.

Upon changing servers the link was broken for a short period and several emails were received requesting that the link be updated so that materials could be utilized.

Instructors within the Department are also considering having pre-service students post assignments to the site to encourage them to do the type of work they would want to be viewed by other teachers.

Future plans

It is hoped that the site with continue to be utilized by teachers in the field and that they will not only "steal" from the materials provided, but continue to add to the materials from their own files. Further, we are considering the addition of a "feedback" button for materials so that materials can receive ratings (such as ★). This would allow visitors to also search by "most recommended" materials.

Costs

The primary cost involved in creating this site was manpower hours and technical knowledge, since the Department already had access to a server. It is estimated that 200 hours went into initial development of the site, however, little to no maintenance is now required to keep the site active and up to date.

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Georgia's Apprentice Teacher Technical Workshops for Aspiring Agricultural Education Teachers

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Introduction and Background

The first year of teaching agriculture can be an exciting time. Yet a teacher's first school term can become an overwhelming and frustrating experience, even for those who were properly prepared and who anxiously anticipated the onset of their professional lives (Joerger & Boettcher, 2000). Further, many new teachers soon realize they no longer have professors or mentor teachers watching their every move, and that realization may be daunting. Fortunately, Georgia has a program to help ease the transition from *agricultural education student* to *agricultural education teacher*; it begins with the apprentice teaching experience. The Georgia Agricultural Education, *Apprentice Teacher Technical Workshops* are delivered by the Georgia Department of Education, Agricultural Education Division in cooperation with the University of Georgia (UGA), Department of Agricultural Leadership, Education and Communications. Apprentice teachers receive five weeks of intensive technical training immediately prior to beginning a 10-week field-based, apprentice teaching experience.

How the Program Works

Students at the UGA complete a variety of teacher education courses to develop and enhance the pedagogical knowledge, abilities, and skills needed to effectively teach agricultural education. The courses are taken and completed prior to their apprentice teaching semester. Their pre-service preparation also includes technical support courses in agronomy and soil science, horticulture, forest science and natural resources, animal, dairy, and poultry sciences, entomology, and applied agricultural economics. The *Apprentice Teacher Technical Workshops* augment those curricula by providing students timely opportunities to refresh their knowledge base through hands-on experiences, to deepen their applied understanding of prior learning, especially, in the context of "teaching" what they have learned, while acquiring new skills, teaching tips, ideas, and instructional practices from experienced and "seasoned" Area Teachers.

The Georgia state staff for Agricultural Education includes five Area Teachers in each administrative region (North, Central, and South). Area Teachers have specific programmatic and technical subject matter expertise, including Agricultural Mechanics, Animal Science, Farm Business Management, Forestry, and Horticulture. They collaborate with Region Coordinators and the State Director for Agricultural Education, and with UGA faculty to plan the workshops. Then, working as teams, Area Teachers prepare and teach the technical workshops. During the workshops, special attention is given to the application and use of recommended curriculum, to the teaching of technical skills and appropriate industry standards for each subject matter area, to teaching practices that focus on the use of applied and practical methods, and to the relationship of curriculum and instructional practices for preparing students for FFA Career Development Events. Accordingly, apprentice teachers are armed with timely and useful teaching materials, an array of instructional ideas, valuable

knowledge and skills, and a large measure of self-confidence that they *can* perform successfully as an agriculture teacher.

Implications

Research indicates that nationally 50 percent of all beginning teachers leave the profession before completing six years of teaching (Joerger & Boettcher, 2000), which is a time when more support and assistance may have kept them in the profession. The university pre-service experience prepares students intellectually while broadening their perspectives and attitudes about a myriad of topics and issues. The *Apprentice Teacher Technical Workshops* complement those experiences and perspectives by focusing on the challenges of applying classroom learning and knowledge to real-life school settings. The workshops help to further develop cognitive, psychomotor, and affective skills that support the technical expertise and practical knowledge required for a successful apprentice teaching experience, and for the future transition of becoming an effective and successful agriculture teacher. Optimistically, frustration and the sense of being overwhelmed, feelings that frequently lead to poor performance, burnout, and career-change (DeMoulin, 1993), are reduced if not eliminated.

Collegial relationships are also established between Area Teachers and beginning teachers because of the technical workshops. Moreover, new teachers are assigned Area Teachers as mentors who can provide assistance with teacher and program needs during that crucial first year. So, novice teachers feel "comfortable" in calling on Area Teachers to assist with in-school instruction, adult classes, FFA CDE preparation, and other program-related activities.

Results to Date/Future Plans

Over the past four years, more than 80 University of Georgia, Agricultural Education Apprentice Teachers have benefited from the *Apprentice Teacher Technical Workshops*. To this end, one workshop participant stated, "I couldn't imagine going into a classroom without those introductory workshops" (M. Montfort, personal communication, November 9, 2001). Planning is underway to make future workshops even more productive and beneficial.

Resources Needed

The State FFA-FCCLA Center serves as the primary training facility for this program. Related field trips are taken to industry work places, university laboratories, and selected high school agricultural education departments, as well as to agriculture students' homes and work sites to observe supervised agricultural experience (SAE) programs and practices. Guest speakers from industry and education are other important features of the program.

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Making the Most of 0s and 1s: Effective Graduate Education through Use of Digital Technologies

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Introduction/Need for Idea or Innovation

In recent years, spending cuts have forced faculty at Clemson University to seek creative means to serve off-campus students without compromising the quality of their education. In addition, recent mandates by administrators that direct cooperative extension programs have specified deadlines for extension agents to earn a Masters degree. These changes created the need to pursue distance education activities in a state that has not created a cost-effective infrastructure that could serve small audiences. However, Clemson's Public Service and Agriculture organization has created an invaluable tool to join Research and Education Centers (REC) with high-speed networking throughout South Carolina, the T1. This high-speed digital access provided the opportunity for the RECs to join with Clemson University through the use of Polycom videoconferencing. Polycom is a relatively new videoconferencing system that uses a high-speed platform known as H.323 to provide cost-free quality videoconferencing. Since the year 2000, the new Polycom systems have been used primarily to facilitate course delivery from field-based faculty at REC sites to students in undergraduate programs in the College of Agriculture, Forestry and Life Sciences (CAFLS). Polycom quickly became a popular medium as it allowed field-based researchers to share their knowledge without leaving their facilities, many of which are located over 200 miles from campus.

With the success of Polycom use in undergraduate courses, consideration for extension agents to pursue a Masters degree using this method began. However, busy schedules of the potential clientele presented the challenge to seek a possible mixture of a-synchronous and synchronous delivery of course content. Realizing the sacrifice of face-to-face instruction for off-campus students, another challenge was to maintain the highest degree of interaction possible. Michael G. Moore, one of the most respected scholars in distance education, recognized the need for optimal interactivity in his theory of transactional distance (1980) and in discussions of the three types of interaction (1989). Transactional distance is referred to as the interaction that occurs between two variables - dialog and structure. Moore contends that in order to lessen transactional distance, interaction must be maintained between the student and content, students themselves, and the student and instructor. Videoconferencing through the Polycom units provides many opportunities for teacher-student and student-student interaction, but additional resources are necessary to promote student-content interaction as well as a-synchronous instruction. The solution, not without its own flaws, rested in Internet-based media, including the use of streaming audio.

How it Works

During the Fall 2002 semester at Clemson University, Ag Ed 812 – Development of

Supervised Agricultural Education (SAE) Programs was taught on campus to graduate students and to a remote site location attended by extension agents. The course was modified from typical SAE courses to also address 4-H project-related issues. Polycom sessions were mixed throughout the semester with a-synchronous online sessions based on Clemson's Collaborative Learning Environment (CLE). The CLE, a network-based system of folders and discussion boards, was used to provide course materials and the communication channel for the a-synchronous meetings delivered through streaming media. A cutting-edge program developed by Microsoft, known as Producer, was used to incorporate PowerPoint slides, audio, and video. This media created streaming presentations of instructor-narrated PowerPoint slides. The streamed presentations were augmented with related videos and audio files to enhance the lessons.

Results to Date

Student responses to the use of Polycom videoconferencing have been favorable overall. Considering the "independent" nature of the a-synchronous sessions, mixed reactions from students were expected. However, off-campus students have voiced overwhelming support for this format as it meets their needs while providing greater freedom in busy schedules. A quantitative assessment of the delivery modes and transactional distance will be taken at the conclusion of the semester and analyzed for discussion in this forum.

Future Plans

This past Spring semester, students in Ag Ed 801 – Systems for Technology Transfer, were also engaged in this mixed media format for delivery to on and off-campus students. Notes from the formative and summative evaluations of Ag Ed 812 were considered in the development and delivery of this course. Using feedback from Ag Ed 801 & Ag Ed 812, additional mixed-media courses are now in planning stages for the Ag Ed program. Other departments in Clemson's CAFLS are also considering the use of the streaming media to enhance distance delivery.

Costs

Since the T1 infrastructure is already established, the only real costs incurred were for the Polycom systems at each site. The Polycom Viewstation FX costs approximately $12,000, which includes a built-in bridge to allow conferencing at multiple sites. A small desktop version of Polycom, ViaVideo, can be purchased for $388. Microsoft's new streaming video program, Producer 1.1, is a companion program to Microsoft Office XP, which can be downloaded at no cost from the Microsoft Web site (http://www.microsoft.com/office/powerpoint/producer/).

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Roadmap to Effective Distance Education Instructional Design

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Need for the Innovation

Offering support for technology-based faculty training and development efforts is a key issue facing many institutions of higher learning. However, few institutions have invested in the training and development of instructional designers or educational technologists assigned to assist faculty develop distance education courses (Telg, 1995). A study of 14 land-grant universities (Irani & Telg, 2001) found that nearly two-thirds (61.5%) of distance education faculty training was conducted by staff instructional designers. Also, 64.3% of instructional designers actively working with faculty had had no prior training or knowledge of instructional design methods used in distance education before working at their universities. Twelve of the 14 respondents said they had learned distance education instructional design methods while "on the job." These findings raise the questions: *Who* provides the technology skills and instructional design training and support for faculty? And are these staff members *adequately prepared* to train and support the faculty? Instructional designers must be adequately prepared in order to assist faculty, so that faculty can effectively teach undergraduate and graduate distance courses.

In response to this need, six universities – University of Florida, Texas A&M University, Texas Tech University, the University of Idaho, the University of Missouri-St. Louis, and Iowa State University – are collaborating on a project titled **Roadmap to Effective Distance Education Instructional Design**. This project is funded by a U.S. Department of Agriculture Challenge Grant and seeks to develop effective materials and innovative approaches to better prepare instructional designers at land-grant universities and other universities with agricultural academic programs to support their universities' distance education teaching programs.

Program Phases

Collaborators meet via desktop videoconference once a month to discuss content and technical issues. Collaborators agreed to develop the project in three broad phases: *research design, implementation,* and *evaluation*.

- *Research design*: The research design phase was completed with a needs assessment of *Agricultural Communicators in Education's Distance Education and Instructional Design (ACE DE&ID)* special interest group and *ADEC: American Distance Education Consortium* members. The purpose of the needs assessment was to help identify key characteristics of this virtual training project.
- *Implementation:* The project is currently in this stage. A marketing and promotions plan took place in early 2003 to promote the project. A total of 106 people, representing 23 universities, registered to participate. The *Roadmap* theme guides participants in instructional design methods and delivery. Each of the six WebCT-delivered content modules (called *destinations*) is offered once a month, beginning in

September. Destinations incorporate text, narrated PowerPoint, videos, case studies, electronic bulletin boards, and other interactive techniques to demonstrate effective distance education principles. An exemplar database of exceptional distance education elements will be generated through participants' input. Another element of this program is to provide Web-based training materials on instructional design methods and technologies to the participants for use free of charge in the training of their faculty members. Upon completion, participants receive a certificate through Texas A&M's Center for Distance Learning.

- *Evaluation:* Although a summative evaluation will take place at the end of the program, assessments already are being done. An initial self-assessment of participants' distance education knowledge and abilities will be done during the orientation in September. Participants also complete short assignments for each destination and are evaluated on these assignments.

Results So Far

Response has been overwhelmingly positive from ACE, ADEC, and other technology professionals. Probably the best indicator of the potential of this project is in the comments of people who were on the initial waiting list to be participants. Several people included not only registration information, but also comments about how they foresee this program helping them in their jobs, for example, "(Your project) will allow me to expand my potential to effectively reach student groups." The need for training materials for instructional designers is great. We hope this project will meet those needs.

Future Plans/Advice to Others

Roadmap is currently going on. However, project collaborators have openly discussed the "next step," which may entail selling the online program to a publisher or seeking more grant funds to expand the content and scope. We advise people who are interested in similar projects to get started early and communicate frequently. The monthly face-to-face desktop videoconferences have been extremely helpful. And hire someone with excellent organizational skills to coordinate a multi-institution project. It is difficult for a faculty member to coordinate something of this magnitude.

Costs/Resources Needed

As noted, this project was USDA-funded at $250,000. The funds were adequate for this project. Our advice to others would be to not shortchange yourself. A six-institution project takes a lot of time and money to coordinate. Funds were used to purchase hardware, software, travel, and personnel (coordinator and graduate assistants).

References

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FFA® LifeKnowledge, Real lessons for real life initiative

Susie Whittington, The Ohio State University; Cindy Akers, Texas Tech University;
Brad Dodson, University of California at Chico; Rick Rudd, University of Florida;
Jack Elliot, University of Arizona

Introduction/need for idea or innovation

The Purpose of the FFA® LifeKnowledge Initiative is to provide quality instructional materials so high school agriculture teachers can infuse premier leadership, personal growth and career success into every facet of agricultural education

- Middle school
- High school
- Advanced

A second purpose is to provide high school agriculture teachers with additional practical learning strategies and corresponding instructional materials to empower agriculture students to live the mission of the FFA every day. These 275 lesson plans, available on CD-Rom address specific skills and knowledge, and will transform how premier leadership, personal growth, and career success are taught in agricultural education classrooms throughout the country.

How it works/ methodology/ program phases/ steps

Thirty-six writers from the field of education were hired to write lessons. Each lesson went through seven phases of review, including trial uses in actual classrooms by agriculture teachers nationwide representing a wide range of experience levels. In addition, nine university educators, 212 high school & middle school teachers and numerous National FFA Organization staff were involved in the development and evaluation process.

All lesson plans were built around the following principles for student learning: We learn best…
When the environment encourages respect and risk-taking.
When we have experiences that elicit or build upon prior knowledge and experience.
When the knowledge we acquire answers questions both meaningful and relevant to us.
When we rehearse or review knowledge in multiple ways.
When we assess growth and use feedback for improvement.
When we create products/services that add value to others.

In addition, the following was considered when determining strategies and activities for each lesson:
The most appropriate way to acquire/use knowledge.
Embedded concise directions and active processing questions.
Ways to rehearse the knowledge so that the learner gains competence.
Time, resources, lesson objective, teacher experience/comfort.

Instructional materials in each lesson plan include:
Learning objectives
Transparency Masters
Quizzes/tests
Vocabulary lists
Role modeling and scenarios

Age appropriate activities
Self-assessment or behavioral assessment instruments

A highlight of the lesson plans is that they can be used in various ways. Examples of some lesson sequences that have been identified include, but are not limited to:
Integrate key lessons into technical agriculture courses
Multi-week course on leadership, personal growth, and career success
Multi-week course on developing a program of activities
Multi-week course on service learning
Chapter officer training course
Fundraising unit
Goal setting unit

Results to date/ implications
Teachers and educators who have been involved in the development of the lesson plans have stated:

"As a high school agriculture educator, my number one goal is to be an effective classroom teacher. The FFA LifeKnowledge lessons have taken my teaching and the students' learning to a much higher level. The lessons are written in a way that allows me to learn new techniques while meeting the needs of every student in my classroom. This is the premier tool for any teacher wanting to change the lives of students while also improving the way they teach."

Agriculture Instructor, Ohio
1997-98 National FFAOfficer

"This project has the potential to have the biggest impact on improving agriculture education than any educational effort up to this point in time. I'm a very busy person and will not work on projects unless they can make a difference. This national effort is one of them."

Jack Elliot, PhD.
University of Arizona

Future plans/ advice to others
A minimum of 4,500 copies of the 3-CD-Rom set will be distributed for free to agriculture teachers that attend a training seminar.

Costs/ resources needed
- The 3-CD-Rom set will be available at nationwide trainings held January, 2004 – August, 2005, based on your state's preference.
- Collateral materials are not required nor paid for as part of the grant. There will be a fee for these enhancements, which is yet to be determined.

References
FFA® LifeKnowledge Initiative

USING WEB BASED INTERACTIVE VIDEO TO ENHANCE UNIVERSITY OF FLORIDA IFAS EXTENSION

Pete Vergot III,
Associate Professor, District Extension Director
University of Florida/IFAS Extension

Introduction

University of Florida /IFAS Extension faced with reduced budgets and increase demand for services from Extension clientele turned to the use of web based interactive video to enhance extension seminars, day to day communications, professional development for county extension faculty and enhancing administrative operations.

The purpose of using web based interactive video use was to reduce the amount of travel time for County Faculty, State Specialists and Extension administrators. Web based interactive video provides for increased State Specialist participation during county workshops, conferences and program planning and to reduce costs of training programs for county extension faculty.

Objectives of the project:

- County extension faculty reduced travel time and expense for attendance at professional development opportunities
- Increase the communication and reduce the cost of collaboration between state specialists and county faculty
- Increase the contact of Extension Administration with county faculty
- Reduce the time of travel of Extension Administration
- Increase multi-state Extension programming for clientele
- Enhance and increase “International Extension” activities
- Extension clientele will need only to commute to their local County Extension office and join with other clientele in their respective communities from across the state in simultaneous workshops, seminars, and discussions.

Methodology

- A review was conducted of other Extension systems use of interactive video
- A study was conducted of the types and costs of web based interactive video hardware

Results to date/implications/ recommendations

- The a review of other University Extension departments determined that equipment should be based on the H.323 standard
- Based on ease of use, quality and price the vendor “Polycom®” was selected to ensure continuity across the system

The current uses for Interactive Video via the web at University of Florida /IFAS Extension are:

- Professional development for County Faculty between campus, centers and counties
- Campus State Specialist joining in on program planning sessions held throughout the state
- Campus-based Administration becoming a part of County Extension Director and District Faculty administrative meetings
- Promotion and Tenure workshops held remotely for County Faculty
- Inter-District program planning between faculty located at Research and Education Centers and faculty located at County Extension offices
- District Extension Directors at three off-campus locations communicate during monthly Extension Administrative meetings held on campus in Gainesville Florida
- Interviews conducted for County Faculty positions between a county office and campus location
- Daily communication between all administrative locations reducing telephone costs
- International communication between District Director office in Florida and EARTH University in Costa Rica
- International training and teaching between the Gainesville campus at the University of Florida and EARTH University in Costa Rica

Future plans/advice to others

- Continue to add web based interactive video in additional County Extension offices, Research and Education Centers and Departments on campus for University of Florida IFAS Extension
- Expand current distance education on campus with similar hardware
- Review web based management software for managing online web based workshops, presentations and seminars
- Constant change of new and improved hardware and software specifications
- Add web interactive cameras to microscopes to enhance remote digital diagnostics

Costs/resources needed

- High speed internet minimum 384 K – cost vary based on current connections $120 - $200 per month at a County Extension office location and free to those connections with adequate bandwidth
- H.323 hardware and television or computer monitors - costs vary between $450 - $3300 per interactive video unit, depending on type

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Two Universities + One Urban High School = A Unique Experience

Brandon N. Mitchell UIUC, Neil A. Knobloch UIUC,
Jamie Cano OSU, Breanne M. Harms UIUC

Introduction

Pre-service agricultural education teachers and urban high school students came together to gain insight from different perspectives and develop programs for non-traditional agricultural education students. The meeting was driven by a philosophy that pre-service teachers must develop a diverse view of agricultural education. Working in cooperation with the Chicago High School for Agricultural Sciences (CHSAS), The Ohio State University (OSU), and the University of Illinois, Urbana-Champaign (UIUC), 17 UIUC students joined 23 OSU students on the last working farm in Chicago, CHSAS, with approximately 150 high school students.

Allowing the pre-service teachers to interact in a diverse setting fostered their development of diverse views and forced to them expand their awareness of agricultural education (American Association for Agricultural Education, AAAE, 2003; Bowen, 2002). Teacher interpersonal competency increases when teachers interact with minority students (Bell, 2000). Providing "culturally expanding opportunities" for teacher formation is the type of "proactive behavior" that higher education must emulate (Bowen, 2002). Having two university teacher education programs converge provided the opportunity for the pre-service teachers to mingle and share different styles of learning and leadership. Teaching at the Chicago high school provided opportunities for the high school students to ask college students questions and seek advice to their questions and concerns of entering higher education. Preparing teachers for a multi-cultural classroom should be an objective of teacher preparation programs (Bell, 2000). Our guiding principle is high school students and pre-service teachers must have real-life experiences in urban and diverse settings so that they will become leaders in the emerging global community (Bell, 2000).

Procedures

After a welcome speech from the CHSAS principal all participants were divided into groups: Scarlet, Gray, Blue and Orange; to help with the group rotation and lunch schedules. The morning session consisted of *focus group sessions* that allowed the pre-service teachers and high school students to ask questions and get to know each other. The four focus groups consisted of: (a) Anything you ever wanted to know about college, (b) How to attract non-traditional students to local agricultural education programs, (c) Diversity in Agricultural Education, and (c) ACES and FAES … Opportunities in Agriculture.

After the morning focus group sessions, the pre-service teachers taught lessons about agriculture and leadership to the CHSAS students. *Class presentations* consisted of leadership building activities, belief challenges and constructive thinking exercises. Upon the completion of the morning activities, all participants were divided into two groups: Scarlet & Gray, and Orange & Blue. While one group ate *lunch*, the other received a tour of the school led by student leaders. The *tour* of CHSAS included: gymnasium, natatorium, fitness facilities, 72 acre land laboratory, food science laboratory, greenhouses, floral design labs, mechanics and construction labs, animal science facilities, and the fresh produce stand. During the afternoon session the pre-service

teachers were paired up with a CHSAS student and together they accompanied two of the students to their regular classes. The *shadowing experience* allowed the pre-service teachers to see first hand the intricacies of an urban agricultural science school.

Results and Outcomes

In the overall evaluation of the different activities, 52% of the participants rated the focus group interviews as valuable, 70% thought the information session about college was valuable, and 77% rated the class presentations as valuable. The shadowing experience was rated as valuable by 70% of the participants. Responses from the pre-service teachers were generally positive and clustered around three themes. First, the preservice teachers were enjoyed their experience of meeting preservice teachers from another university and spending time with students from an urban agricultural school. The preservice teachers commented, "given the opportunity to interact with the students was inspiring," "our backgrounds were so different that I felt like it was an immersion experience," "it was a great experience," "it is good to meet some other students that are in the same boat as us," "the time with the students was the best part", "eating lunch together was a lot of fun; and interacting with the CHSAS students went surprisingly well, I was very surprised that we really seemed to have good conservations." Second, preservice teachers reflected on their own experiences as a high school student. Some pre-service teachers thought that their agricultural education "program back home was missing something." Third, preservice teachers acknowledged and appreciated their diversity experience. They gained "insight on how non-traditional students view agriculture" and "experienced the diverse cultures of others." This unique experience opened their "eyes to urban schools" and "developed an appreciation for the variability of Ag. Ed. Programs."

Conclusions and Recommendations

The opportunity for the pre-service teachers to immerse themselves in an inner-city, agriculture education program for a day was an experience that provided them "the opportunity to see what I could possibly do" as a future teacher in an urban school. Experiential learning in culturally diverse settings appears to be key to expanding preservice teachers awareness of agricultural education, developing interpersonal competency in diverse settings, and engaging future teachers to be reflective about their agricultural education programs in the emerging global community. Because this experience was so refreshing and rewarding, more real-life experiences in culturally diverse settings should be organized so that preservice teachers have more opportunities to interact with students and teachers in diverse, urban schools.

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We took the lead, so they could lead!

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Introduction/need for idea or innovation

Leadership development, in its finest hour, occurs in real-life settings during very real scenarios. That is exactly what happened to the Agricultural Education Society (AES) at The Ohio State University when the members said, "yes" to an opportunity.

"We took the lead". The agriculture teachers in District 2 of the Ohio Association of Agricultural Educators asked the members of the AES to provide the officer training to the district's newly elected FFA chapter officers—all 175 of them! We took the lead on this real-life experience by organizing a team of seven seniors who recently completed student teaching. This team became the nuclease of the endeavor. We wrote lesson plans following the teaching in our methods class and our experiences from student teaching. We became the communication link between the District 2 teachers and the AES. We chose partners who would be student teachers next year so articulation would be eased. The AES members at large then had an opportunity to sign-up if they wished to participate and those members were utilized in various capacities. We organized logistics such as meetings, timelines, deadlines, practices, and carpools.

"So they could lead". Our goal was to turn chapter FFA officers into leaders. Yes, we wrote lesson plans for, "How to be a chapter president", vice president, secretary, reporter, treasurer, and sentinel, but the real goal was effective leadership. Our plans incorporated Covey's seven habits and we made those habits come to life in the everyday workings of chapter officers. Thus, "We took the lead, so they could lead."

How it works/ methodology/ program phases/ steps

1. Organizing a team of seniors who recently completed student teaching
2. Writing lesson plans following the techniques acquired in the methods in teaching agriculture course
3. Communicating between the District 2 teachers and the AES members
4. Choosing partners who will be student teachers next year, thus providing for articulation from one year to the next
5. Engaging AES members at-large to register to help
6. Assigning AES members' roles

7. Organizing logistics such as meetings, timelines, deadlines, practices, and carpools
8. Presenting effective leadership lessons to chapter officers
9. Evaluating the process and the lesson plans
10. Proposing changes for the following year

Results to date/ implications

To date the AES has been asked by two additional districts to replicate the officer training. In addition, the AES has earned $500.00 toward their plan to buy plaques for all cooperating teachers in the state.

Future plans/ advice to others

In the future the AES will continue to modify the chapter officer lesson plans, prepare a new class of teachers each year, and thereby influence the leadership development of hundreds of chapter FFA officers each year.

The AES, submitting this activity, won the annual college competition for the outstanding new activity award.

Costs/ resources needed

Travel	(per session)	$120.00
Copies	(per session)	$30.00
Honorariums	(7 presenters)	$420.00
Postage	(per session)	$75.00
Total		$645.00

References

Covey, S. R. (1990). The Seven Habits of Highly Effective People. New York: Simon & Schuster.

ENHANCING PROFESSIONAL DEVELOPMENT FOR AGRICULTURAL EDUCATION STUDENTS

Rose Wise-Scherer and DaBeth S. Manns, Purdue University

Introduction

Today, more undergraduate agricultural education students are coming from non-agricultural education backgrounds. Furthermore, agricultural education programs in high schools are not always grounded in the approved practices outlined by the National FFA. Newcomb, McCracken, and Warmbrod (1993) suggest that if agricultural education students are to be successful teachers, they must see successful program practices modeled. However, university students have little time to participate in the types of night and weekend activities that would aid in their professional development. There is a need to bring agricultural education students together to provide instruction and practice for the professional skills, knowledge, and attitudes required to provide effective programs for their future students. Using text, graphs, and pictures, this poster will indicate major points, implications, and future plans for a course that has been constructed to that end.

Major Points

The course, EDCI 240-*Seminar in Agricultural Education*, is designed according to principles outlined in *Local Program Success* and *Chapter Planning and Recognition* (National FFA Organization, 2002). Specifically, EDCI 240 is: (1) a seminar-type course designed to address issues presented in the introduction; (2) offered every semester with students encouraged to take it for repeat credit throughout their program; (3) for 50 minutes once a week, students receive one credit and are graded on an A-F scale; (4) focused around the IAAE-Purdue organization (Indiana Association of Agricultural Educators) with points awarded for participation in clubs, committees, professional, leadership, community service, educational and social activities; (5) a rotating course content between Seminars and Committee/Club Meetings with each student a member of one of four standing committees; (6) complete with a Program of Activities developed each spring for the following year to guide committees; (7) utilizing seminar guest speakers that range from professionals in the educational field including Agricultural Educators, Extension Educators, National FFA staff, the state Superintendent of Public Instruction; (8) an alternating chapter meeting is chaired by the IAAE-Purdue president run by the class members and (9) sensitive to technology advances in the classroom.

Implications

There is a dual value to EDCI 240. First, students gain practical, hands-on experiences in the operations of a youth organization in a learning environment, where the instructors are facilitators. Secondly, the seminars offer learning from professionals in the field through networking, cultural diversity, and practical skills not found in other education courses.

Future Plans

Future plans for the course include: (1) faculty continuing to mold the agricultural education curriculum to meet the needs of the changing student population (i.e., appreciating and incorporating diversity); (2) both students and faculty continuing to develop plans for student activities that meet quality standards outlined in *Chapter Planning and Recognition* and (3) relying on the assistance of graduate students to provide student leadership and handle administrative duties. Lastly, obtaining and implementing feedback from students' course evaluations will be beneficial.

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Ag Mech Boot Camp: Preparing Pre-Services Teachers for the Trenches

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Introduction

In January 2003, 14 pre-service teachers attended the first-ever "Ag Mech Boot Camp" at the University of Missouri. The purpose of this program was twofold: to develop their skills in agricultural mechanics and develop their management techniques in the agricultural mechanics laboratory. The need was identified when students were not being exposed to laboratory-type instruction for agricultural mechanics skills through courses at the university. The last course of that nature was taught four years previous. Therefore, as a part of their student teaching experience, these pre-service teachers spent Monday-Friday, 8:00AM-5:00PM, developing their skills in agricultural mechanics and developing their management techniques in the agricultural mechanics laboratory.

Methodology/How It Works

The weeklong seminar emphasized developing agricultural mechanics skills and developing management techniques to apply to their field experience. The "camp" focused on hot and cold metal working skills and power tool operation. All instruction and application was set in the context of managing the agricultural mechanics laboratory.

The instructors for the week included faculty, staff, and graduate students in the Department of Agricultural Education and Agricultural Systems Management at the University of Missouri. The seven instructors had all been, at one point, agricultural education instructors at the secondary level, who had to manage an agricultural mechanics laboratory. Also, a guest speaker from Ahrens Steel Company brought in new equipment to demonstrate and to allow the students to experiment. Components were assigned to the various instructors, to either be taught individually or in teams.

Day one began with instruction on safety issues and laboratory organization and management. (see Table 1) Participants put their knowledge to work as they were asked to reconstruct a safe and effective learning environment. Using an existing but out of use Agricultural Systems Management facility, students evaluated and arranged the lab and corrected any safety issues that were present. Mid week targeted skill development as students spent the majority of time developing and refining their abilities in arc welding, oxy-acetylene welding and cutting, power tool operation, and project construction. Rotational instructional schemes, progress charts, and clean-up systems provided opportunity for the students to identify management techniques used in the lab. The week concluded with a capstone project. Each participant constructed a telescoping shop stand utilizing all of the skills of the week. This project required the demonstration of proficiency in the use of power tools, arc welding, oxy-fuel cutting and bending, drilling, measuring and marking. These skills had to be verified by at least one instructor throughout the week. Progress was

recorded on a chart. If their project was not completed by Friday, the students were to take their materials to their cooperating site and finish the work, which included painting the stands. This way, those whose development might be slower, could take the opportunity to use the facilities of their cooperating site and expertise of their cooperating teacher. Finally, each student was given the task of developing a scoring guide for assessment. Projects were scored using the student-generated scoring guide during their first student teacher seminar.

Monday	Tuesday	Wednesday	Thursday	Friday
1. Orientation to the week 2. Factors determining the Ag Mech Curriculum 3. Maintaining a safe lab environment 4. Lab clean-up systems 5. Correcting lab safety problems 6. Selecting & Purchasing lab tools and equipment	1. The arc welding process 2. Ag Mech Instructional methods 3. Arc welding 4. Individual Skill Development	1. The oxy-acetylene process 2. Oxy-acetylene Welding 3. Brazing 4. Plasma-arc operations 5. Individual Skill Development	1. Mig Welding 2. Power Tool Operations: ❑ Metal cutting o Abrasive o Cold Cut o Band saw ❑ Grinder o Pedestal Hand 3. Individual skill Development	1. Individual Skill Development 2. Capstone Project Construction

Table 1: Schedule of activities

Results To Date

As noted by the instructors, not only have their skills in the agricultural mechanics lab improved, but also the confidence of those skills has improved. Students noted throughout the week, their struggles and hardships, but by mere observation, one could identify strides of improvement by all participants. In evidence of this as well, each student had to pass a basic skill level in all areas prior to starting their capstone project, which was managed through the use of the aforementioned project chart. An unintentional, yet positive outcome of the week was watching students teaching their peers in terms of collaboration on projects and skills. The pre-service teachers demonstrated effective networking amongst their future colleagues.

After the week, many of the participants remarked about how good the week was in developing their agricultural mechanics skills. Several of the student teachers used the exact same capstone project for their own secondary students. Now that these pre-service teachers are full-fledged teachers, the real test of success will come with the first year of teaching.

Learning Styles and Career Development Events: Potentials for Success?

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Introduction

Texas currently has 1460 Agriculture Science Teachers with over 100,000 students and 56,000 FFA members. The model for Agricultural Science stresses the importance of classroom and laboratory instruction along with application through SAE, incentives, and FFA. Students are expected to participate in Career Development Events (CDE) to enhance learning. The importance of competition for students as a learning tool and the impact competition has on student self-esteem has been noted.

According to 2002 American Farm Bureau statistics, 86.8 % of agriculture producers use computers and 79.7% have access to the internet. Therefore it seemed logical that agriculture students should have opportunities to embrace this technology. Meeting the needs and goals of these students in the 21st century was an essential commitment of the Agriculture Science Teacher. Web-enhanced instruction was a viable means of promoting pragmatic experiences. Such innovative approaches allowed the opportunity to individualize instruction to accommodate differences in educational goals, abilities, and learning styles. Another appeal of web-enhanced instruction was the convenience of accessing information at any time and from any place.

Secondary agriculture students competing in the Nursery/Landscape CDE traditionally have been trained using live greenhouse plants, reference texts, and previous contest materials. A primary limiting factor was the lack of availability of certain plant species, due to seasonality, budgets, and other factors. For the new teacher especially, the availability of previous contest materials was also a limiting factor. While use of the internet in agriculture instruction at the secondary level has rapidly increased, it was still a relatively new practice. Consequently, there had been little research into secondary agricultural students' perceptions and learning styles relating to web-enhanced instruction.

How It Works

Website tutorial. A tutorial website was developed to assist secondary Agricultural Science students in preparing for the Nursery/Landscape CDE. The website tutorial included photographs of the 100 plants in the identification portion of the CDE, categorized by common and scientific name. Additionally, the website included the 200 questions from which the State CDE exam was taken; the answer key; a class of four landscape designs with accompanying site analysis, family profile, placing and justifications. A link to the website was posted on the Texas State Agriculture Department website: www.txstate.edu. Information regarding the website was made available to Texas Agricultural Science teachers via email and links from the Texas FFA website as well as the unified CDE registration website for the state. The use of the materials as primary or supplemental study aids was left to the discretion of each participating student or Agriculture Science teacher.

Instrument. Texas State University professors Michael J. Pierson and Christopher J. Frost developed the Ways of Knowing learning style inventory. The inventory included one

page of statements. Respondents rated each statement based on their perceptions of the way they learn. In addition, a section was added to the instrument to elicit responses from respondents regarding selected demographic information and perceptions toward using the website as a study aid.

Current Progress

The survey instrument was administered to each participant in the Texas State Invitational Nursery/Landscape CDE in March 2002. Respondents self-selected their inclusion within either the control or experimental groups, based on whether they used the website. Students in the experimental group used the website as one means to prepare for the CDE. Students in the control group prepared for the CDE without exposure to the website. Analysis of variance was used to determine if differences were present between the control and experimental groups.

Results

A relatively small percentage of students (30%) reported using the website from one to seven times in preparation for the CDE. Other reported training materials used by students included textbooks (51.7%), garden centers/greenhouses (83.3%), and videos/slides (91.7%). The top three placing teams all reported using the website in preparation for the CDE, and five of the top 10 individuals, including first through third, reported using the website in preparation for the CDE. Mean event scores of students who trained using the website were higher compared to scores of those who used traditional training methods, though the difference was not statistically significant. Female and male respondents used the website equally. Respondents who were abstract learners, based on the learning style inventory, were more likely to use the website and were more successful in the CDE.

Future Plans

Two additional websites, Floriculture and Agricultural Mechanics, are in development to assist in preparing for Career Development Events. As the Nursery/Landscape website moves into its second generation, one goal is to include an interactive test format as well as materials relating to the national event. Web-tracking software will be added to the site to allow tracking of the access locations and times.

As the websites evolve, plans are to replicate the learning style assessment with future users, including both CDE participants and agricultural science teachers. Additional investigation will be conducted to determine if certain learning styles seem more conducive to success in the certain Career Development Events.

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Low Expense, High Return: A Bimodal Methodology for Internet Survey Implementation

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Introduction

Social science research has used survey methodology as a method of data collection for many years, but with the advent of the Internet, the process of survey implementation for social science research is changing rapidly. In a study of response rates to different modes of surveying, Hardin (2002) found that Texas agriscience teachers prefer answering paper questionnaires over Web questionnaires. However, she concluded that a bimodal method could reduce both costs and researcher time. She proposed a five-contact model that would allow respondents to answer the same questionnaire either on the Web or on a traditional paper format. She also recommended that the model be tested on populations that have e-mail addresses to determine if responses would be valid and if response rates would be adequate. Linder et. al. (2001) stated to improve research, we should, "periodically examine our methods and techniques." Testing this new model is an effort to do just that.

How it Works

Dillman's (1978) Total Design Method has been a widely accepted format for conducting social science surveys. Dillman states, "Repeated tests of this one-size-fits-all approach showed that response rates of 70% could be produced consistently for general public populations…" (p. 5). The latest edition of this method is the Tailored Design Method (Dillman, 2000). This method suggests the use of a five-contact model during a five-week period. It includes a prenotice letter, questionnaire, postcard, second questionnaire, and invoking special procedures. Hardin's bimodal model uses Dillman's original format with a few modifications.

The first contact takes place using e-mail to notify the individuals in the study that a questionnaire will be arriving in the next few days. This letter also stresses the importance of the information that will be collected. In the 25-day model, this is day one. On day four, the participants in the study receive a second e-mail. This reemphasizes the importance of the individual's participation and provides a hyperlink to the online questionnaire. As the participants begin to respond, they are deleted from the e-mail list used to contact the non-respondents. All data is automatically saved to a Microsoft Access® (Microsoft, Seattle, WA) database and can be easily exported for statistical analysis.

Day seven brings another e-mail reminder to all in the sample who have not yet completed the questionnaire, and then on day 11, all non-respondents are mailed a cover letter and paper version of the questionnaire. Included in this packet is a self-addressed, stamped envelope for the respondents to use when returning the questionnaire. The final contact occurs on day 15 by way of e-mail. This final reminder to non-respondents again

urges action and includes the hyperlink to the questionnaire. Following this contact, the data collection continues for 10 additional days.

Results to Date

The bimodal survey model has been used on three populations to date. Each population had valid e-mail addresses, which is one of the prerequisites of the model. The following averages were achieved for the three trials which totaled 497 possible respondents.

- 25% of the sample responded to the questionnaire on the first day it was available on the Internet.
- Within the first six days, over 46% of the sample had responded via e-mail.
- Within the 25 day model, 49% of the sample responded via e-mail while 22% responded using the paper version.
- The average response rate for the three populations was 71% within 25 days.
- Including late arriving questionnaires (seven additional days) improved the average response rate to 79%.

Also associated with the use of the Internet as a means of colleting data is the cost savings achieved by reducing the number of individual contacts through traditional mailing procedures. Traditional mailing costs would average $3.90 per completed response. By collecting a large portion of the data via the Internet, the bimodal model cuts the expense to $1.02 per completed response. This represents a cost savings of 74%.

Future Plans/Advice

As use of the Internet continues to increase as a means of collecting survey data, it is important for researchers to use a standardized methodology to prevent errors such as non-response error from adulterating the data. The researcher plans to continue testing the model on other populations to determine if response rates remain consistent. Other survey facilitators are encouraged to conduct their own tests of the model to further validate its legitimacy as an appropriate tool for researchers. While extensive software is not required to create the materials, some basic knowledge of web design and database management is a necessity. The rewards of lower costs and less time required for entering data offset the increased time, costs, and learning curve required the initial setup.

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Simulating a Town Hall Meeting to Address a Significant Issue in Agriculture

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Introduction

AGED 4003, "Issues in Agriculture," is a senior-level capstone course designed for students in the Bumpers College of Agricultural, Food and Life Sciences. The purpose of the course is to provide a forum in which students can integrate and synthesize knowledge acquired during their education, and to draw upon that knowledge to consider and evaluate real-life problems/issues facing citizens and scientists in our society. One group of issues addressed in the class during the Fall Semester 2002 dealt with "Environmental/Waste Disposal" issues. One class session was devoted to a discussion of a significant issue impacting both Arkansas and Oklahoma – that of the allegation by Oklahoma officials that the water quality in the Illinois River is being adversely impacted by Arkansas. Oklahoma officials indicate that water entering their state should contain no more than 0.037mgP/L to insure no adverse impact on the environment. Current information shows that the levels are approaching 10 to 100 times this amount. To meet the proposed limit, Arkansas would need to dramatically alter land application of broiler litter and fertilizer; wastewater treatment facilities would require upgrading; and septic systems would need to be more efficient. The issue was stated as this: Is the 0.037 phosphorous level in the Illinois River demanded by Oklahoma reasonable/obtainable?

Methodology

To address the issue, a consultant, Dr. Duane Wolf, Professor in the Department of Crop, Soil and Environmental Sciences, was asked to lead the discussion because of his expertise in environmental/waste issues in agriculture. In consultation with Dr. Wolf, it was determined that a simulated town hall meeting would be an interesting way to address the issue. Dr. Wolf prepared background materials for the students to read in preparation for the meeting and asked the class instructor, Dr. Herring, to assign roles for the students to play during the meeting. At least one student was assigned to the following roles: **Production** (Poultry Federation, Poultry Farmers, Arkansas Farm Bureau, Arkansas Cooperative Extension, Beef Farmers, Dairy Farmers); **Environmental** (Sierra Club, National Wildlife Federation, Nature Conservancy); **Regulatory** (Oklahoma Department of Environmental Quality, Arkansas Department of Environmental Quality, Arkansas Department of Health, Missouri Department of Natural Resources, Natural Resources Conservation Service, Soil and Water Conservation); **Wastewater Treatment** (Springdale Wastewater Treatment Plant, Fayetteville Wastewater Treatment Plant). Students were given an opportunity to choose the role they wished to play. Once roles were assigned, students were asked to find information on the internet or through other sources that would enhance their ability to defend their position.

Dr. Wolf agreed to serve as the moderator of the "town hall" meeting. Placards with each student's name and position represented were prepared. The room was arranged in a horseshoe configuration so that the moderator could move about freely among the participants and take the "microphone" to each person as they spoke on the issue. The session was videotaped to create the atmosphere of a town hall meeting with media present to capture the comments of each person. The class meets for 80 minutes, so "commercial breaks" were even included every 20 minutes or so to enable the moderator to regroup and to enhance the atmosphere.

- OVER -

Results

Dr. Wolf did an excellent job of moderating the session. To make a session like this work, the moderator is the key ingredient. Dr. Wolf was comfortable in the role and is enough of a "ham" to make it work. Most of the students were genuinely enthusiastic about participating and everyone seemed to get more and more into the discussion as the session progressed. All students did some preparation for the meeting; some did an excellent job of preparing (it was obvious which ones had done their homework). After the session, most students made positive comments about how much they enjoyed the experience and seemed to appreciate the opportunity to be a part of something different from the typical university class session.

Future Plans

Based on the success of this first "town hall meeting," the concept will definitely be implemented again next semester. A different "hot" issue will be used, but the town hall format will be similar. Students will be assigned roles earlier (at least a week's notice to enable them to prepare thoroughly for the meeting). A participation score will be awarded to each student as an incentive to be well prepared.

Costs/Resources Needed

Costs to conduct a simulated town hall meeting are minimal– the expense of duplicating advanced reading materials being the most significant. The department has the video equipment and personnel to operate it, so that was not an expense. Fortunately, we had an expert consultant in the College who was willing to serve as the moderator, so it was not necessary to pay for an outside consultant and travel expenses.

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TEACHER REFERENCE UNIT: COMPOSTING

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Foreword

Neither new to agriculture or technology, composting is as old as the earth itself. It is the very process that decays leaves and organic debris in nature. Man discovered composting and its benefits early in his relationship with agriculture. References to composting can be found in the Bible. Perhaps one of the first men to document composting was Marcus Cato, a Roman farmer and scientist. Cato utilized compost as a fundamental soil enhancer over 2000 years ago (The Compost Resource Page, 2002).

As a biological process wherein microorganisms convert organic waste materials into a soil-like material, compost today is viewed as the ultimate recycling process by homeowners, municipalities and commercial operations. As landfills around the country are filling up and garbage incineration continues to be a great source of air pollution, composting offers a partial solution to the issue of waste disposal. By addressing the solid waste issue, composting provides a way of instilling in students a sense of environmental stewardship (Cornell Composting in Schools, 2002).

Agricultural education teachers across Arizona have introduced bits and pieces of composting information to their students. As a teaching tool in the classroom or in outdoor land laboratories, composting provides an excellent hands-on tool for introducing Arizona Department of Education Plant Science and Applied Biological Systems competencies and agricultural industry skills. The rapidly growing population or urban Arizona demands an ever-improving system for handling waste. Composting offers a valid and practical solution to that challenge and can also provide new career and entrepreneurial opportunities for agricultural education students.

Purpose

The purpose of this project was the development of a Teacher Reference Unit (TRU) on composting. Arizona agricultural education teachers indicated that composting should be an important part of their curriculum. Utilizing the Arizona Model for Vocational and Technical Education in Plant Sciences, Level III and Applied Biological Systems, Level II the following specific competencies were addressed:

- Examine the interaction of biological systems within the environment (Level II, 4.0).
- Describe the principles of plant growth production (Level II, 5.0).
- Demonstrate personal and human relations skills (Level III, 1.0).
- Apply approved practices in purchasing/marketing to maximize profit (Level III, 4.0).
- Manage a plant disease control program (Level III, 9.0).
- Apply approved construction principles of plant science facilities (Level III, 16.0).
- Apply approved safety practices (Level III, 17.0).

Materials

The Instructor Reference Unit: Composting was developed to be an easily used tool in the modem day agriscience classroom. Concise, current, and effortlessly adaptable material is included on CD-ROM and instructors can quickly tailor the information to fit their own curriculum needs.

FeaturesTable of Contents
    - Understanding the history and benefits of composting
    - The composting process: How does it work
    - Identifying methods of composting
    - Selecting raw materials
    - Building an indoor composter
    - Understanding the value of farm/commercial composting
    - Building an outdoor composter
    - Composting and the world's environment
- Lesson Plans are detailed and comprehensive. Each lesson plan includes:
    - Instructional Goals
    - Major Purposes
    - Performance Objectives
    - Interest Approaches
    - Content and Procedures
    - Summaries
    - References and Resources
- Lesson Quizzes
    - Lesson Quizzes are designed to test the student using a variety of quiz questions. Each lesson quiz includes questions that are:
        - True or False
        - Fill in the Blank
        - Short Answer
        - Essay
    - Lesson Quiz Keys
        - Lesson Quiz Keys are easily identified and accurate.
- PowerPoint Presentations
    - Classroom presentations are entertaining and informative. Each presentation covers the objectives noted in the lesson plan, the testing material included on the quiz, and is imbedded with gold keys to alert the student and instructor to "key" information. The presentations also include photographs of actual students and instructors working with horses. Many students will volunteer to pose for additional photographs so that the instructor may customize his presentation to his population.
- Suggested Timetable and Standards
    - The suggested timetable will be valuable to any instructor using the curriculum. The standards are specific to the state of Arizona, although they are based on the National Science Standards that many states have adopted.

Summary

From an educational standpoint, composting provides real-world, hands-on opportunities for Arizona students to be introduced to competencies such as understanding plant and seed germination requirements, examining the interaction of biological systems within the environment and even managing a plant disease control program. The instructor who chooses to present the Instructor Reference Unit: Composting will be a wise and popular teacher. The program's adaptability is one of its finest features. The increasing use of technology in schools and teaching methods will allow the Instructor Reference Unit: Composting to become a custom curriculum for every agriscience teacher.

AGXACTLY:
AN INTERACTIVE QUIZ GAME
DESIGNED TO INCREASE LEARNER RETENTION

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INTRODUCTION:

A universal objective of education is the retention of knowledge by the learner. Some of the training implemented to meet this objective is considered boring and repetitive by learners. This is, in part, because students possess a variety of learning styles. Some may incorporate information best when it is presented in a visual format such as the written word, video, animation, or charts and graphs. Others learn best when spoken too. Still others may not incorporate information unless the topic is broached orally and worked through in small group discussion. Only by appealing to the widest variety of learning styles can we increase knowledge communication and retention i.e. training most effectively. AgXactly is an interactive quiz game which incorporates time parameters, point values, and teamwork as a means to temper concepts and knowledge. Its design and use lends itself to improved student retention of subject matter knowledge.

IMPLEMENTATION:

AgXactly was originally designed in 1998 as a means to improve training of certified crop advisors. It is Jeopardy style quiz game organized in a Microsoft Access® game shell. This shell allows the moderator to administer game pace, content and image questions. The computer acts as the scorekeeper, accountant, and timekeeper. It is designed to be compatible with most Windows based systems. The contestants use buzzers developed by Better Education Inc. (http://www.bedu.com/). These are similar to a remote control and emit an infrared signal that can be detected by a receiver positioned at the front of the audience.

As in Jeopardy the questions are arranged with columns representing categories and questions of increasing difficulty and thus increasing point values running down the columns. A Microsoft Access® database contains all answers to questions, which have been developed for use by students regarding a particular subject. There are three types of questions. Normal questions consist of true/false or multiple choice. Image questions briefly flash a graphic onto the screen and the following question relates to that image. Bonus questions allow the teams to bid various amounts of their point totals. These questions are answered via a word or short phrase.

Several other features of AgXactly enhance its effectiveness as a training and review tool. Whenever possible a short explanation is attached and many of the

questions contain web links where additional information on the subject matter can be found. A report is automatically generated so that participants can review questions and answers and informational web links from a given game session.

AgXactly's intrinsic nature as a game provides benefits. By making learning "fun" we increase motivation which leads to increased efficiency within the learning process. Teams interact both within the group and also between groups. This interaction at the seminar/session fosters increased interaction in the participants' profession.

RESULTS:

AgXactly was demonstrated at the 2000 Montana Ag Business Association conference and the participants then completed surveys as to their perceptions of the game and its usefulness. Feedback, on the whole, was positive. Recently Reeves Petroff the pesticide education specialist at Montana State University has used AgXactly in Pesticide Application Training conferences across Montana with success.

FUTURE DIRECTION:

The future applications of AgXactly within agricultural education are numerous. Because it is a shell, the game can be tailored to any specific field that lends itself to factual answers. Secondary agricultural education, post-secondary agricultural training, and agriculture industry can benefit from its applications.

In the secondary classroom, AgXactly can be used as a supplement to lecture or for review. Since AgXactly offers something new and different for classroom instruction, it can also be used as a reward or motivational tool. AgXactly gives the students the opportunity to direct their own learning experience within modified means via the process of allowing them to select questions within the game. Other classroom applications include teaching laboratory safety, introducing new topics in a novel manner, and offering students the opportunity to develop their own questions. FFA career development events, a considerable portion of the agricultural education experience, require significant amounts of preparation that AgXactly would be well suited for providing.

Within collegiate agricultural education, AgXactly offers the same above-mentioned benefits in the training process, as well as providing future teachers a useful tool for the classroom. Other courses in the College of Agriculture such as introductory animal science, crops, range and anatomy require the erudition of large amounts of factual data. This type of information is easily incorporated into the AgXactly database and works to engage college students in review of course content.

AgXactly is primarily meant for review in preparation for a test at this time. However, it is a future goal of the design team to modify the game so that the administrator could produce questions in a prearranged order for teaching new concepts. Introducing interactive games into learning environments has been shown to increase learner motivation and decrease instructional time. AgXactly offers instructors the flexibility of developing their own questions, and a format that appeals to students.

Growing Our Own: Arizona Agriculture Education Proficiency Model

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Rationale

The National FFA Organization recognizes the achievement of student members through the Proficiency Award program. "Proficiency awards encourage members to develop specialized skills that will apply toward a future career" (National FFA Organization, 2003). Members are recognized at the local, state and national levels through an application evaluation process. Proficiencies are related to career areas associated with the field of agriculture. Students may be involved in entrepreneurship (self-ownership) or placement activities (working for others). Recognition is earned through the validation of student attainment of skills and experiences associated with particular agriculture proficiency. There are twenty-eight different proficiency awards in placement and entrepreneurship categories. Many are related to livestock production, crop production, agriculture technologies, and agriculture business. No single proficiency award focuses on the career of agriculture education; the classroom teacher.

The teacher shortage in agriculture education is well documented (Camp, 2000). Several studies suggest why teachers leave the profession. What is the agriculture teaching profession doing to actively recruit new teachers from the secondary agriculture education classroom? Will the creation of a proficiency award for recognition student skill attainment in agriculture education have a positive effect on recruiting students to become agriculture educators at a state level?

Method

The Agricultural Education Student Internship program began in August of 2001. The project is funded through TRIF (Technology and Research Initiative Fund) to recruit and prepare agricultural science teachers in the state of Arizona. The program is designed to graduate 50 new agricultural science teachers in five years.

One of the activities of this grant is the internship program, which is intended to target junior and senior agricultural education students who are interested in pursing a career as an agricultural science teacher. The length of the internship program is a maximum of 100 hours per year for a maximum of two years. The student is paid $4.00 per hour once the internship is complete and an additional $4.00 per hour the 4th week of the semester once the student has enrolled in the University and has declared agricultural education as their major. The maximum amount that a student can receive having participated as a junior and senior is $1,600. The first half paid upon completion of the internship and the other half paid when the student has enrolled in the University.

The first step in the process is completing an internship application. Both the teacher and the student complete the application, which specifically identifies the competencies/skills the student

will develop or reinforce under the supervision of the teacher. The competencies must be directly related to teaching agricultural education. Examples of competencies/skills might include: Design and Delivery of a lesson plan, planning FFA activities, and accompanying teachers on student visits.

Along with specific competencies the student must outline the program of work. Once the application has been reviewed a letter is sent informing the individual as to whether their application has been accepted or rejected. When the agreement form is signed and returned the internship may begin.

Periodic phone calls are made to ensure that both the student and teacher are moving in the right direction. Each, internship is different depending on the competencies and the program of work outlined in the application. Once a student has completed his or her internship, copies of all materials and projects are sent to the department along with documented hours of the internship. Once all materials have been received the student is paid $4.00 per hour of the internship. The additional $4.00 is then paid once the student is enrolled in the University of Arizona and has declared agricultural education as his/her major.

Findings

In 2001-2002 we had six students participate in the student internship program. Five of the six students were juniors. The one senior is currently enrolled in the agricultural education program and three of the juniors have been accepted to the University of Arizona. This year we have ten participants in the internship program. Along with the student internship program the department is in the process of designing a state proficiency award for Agricultural Education. This proficiency award can be directly tied to the internship program. The internship can be used as a source of income in both the record book and state proficiency award application. The design of the proficiency award is another avenue that we can pursue in an effort to recruit teachers. Many of the FFA activities that students or even officers participate in would qualify.

Recommendations for the future:

Just one method is not enough to recruit the agricultural science teachers needed in Arizona. Our department continues to look at new an innovative ways to identify and target students in a variety of forms such as recruitment visitations and scholarship programs. Recommendations for the future include developing a Career Development Event for Agricultural Education that would tie directly into the internship program and the proficiency award, again providing a variety of activities for those students interested in becoming classroom teachers.

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