the magazine **Agricultural Education**

May, 1996
Volume 68, number 11

# Agricultural Education and Distance Education

THE
# AGRICULTURAL EDUCATION
MAGAZINE

May, 1996 Volume 68 Number 11



## Table of Contents



**ARTICLE SUBMISSION**

Articles and photographs should be submitted to the Editor, Regional Editors, or Special Editors. Items to be considered for publication should be submitted at least 90 days prior to the date of issue intended for the article or photograph. All submissions will be acknowledged by the Editor. No items are returned unless accompanied by a written request. Articles should be typed, double-spaced, and include information about the author(s). Two copies of articles should be submitted. A recent photograph should accompany the article unless one is on file with the Editor. 

**PUBLICATION INFORMATION**

The Agricultural Education Magazine (ISSM 7324677) is the monthly professional journal of agricultural education. The journal is published by The Agricultural Education Magazine, Inc., and is printed at M & D Printing, 616 Second Street, Henry, IL 61537.

Second-class postage paid at Mechanicsville, VA 23111; additional entry at Henry, IL 61537.

POSTMASTERS: Send Form 3579 to Glenn A. Anderson, Business Manager, 10171 Suzanne Rd., Mechanicsville, VA 23111.

**SUBSCRIPTIONS**

Subscription prices for The Agricultural Education Magazine are $10 per year. Foreign subscriptions are $20 (U.S. currency) per year for surface mail, and $40 (U.S. currency) foreign airmail (except Canada). Student subscriptions in groups (one address) are $5 for eight issues and $6 for twelve issues. Single copies and back issues less than ten years old are available at $1 each ($2.00 foreign mail). All back issues are available on microfilm from Xerox University Microfilms, 300 North Zeeb Road, Ann Arbor, MI 48106. In submitting subscription, designate new or renewal and address including ZIP code. Send all subscriptions and requests for hardcopy back issues to the Business Manager: Glenn A. Anderson, Business Manager, 10171 Suzanne Rd., Mechanicsville, VA 23111. Publication No. 737246.





# Agricultural Education and Distance Education: The Time is Now

*By Tim H. Murphy*
*Dr. Murphy is an assistant professor of distance learning in the departments of agricultural and extension education and agricultural communications at the University of Idaho, Moscow.*

In a recent national survey, researchers found that the public now expects educational opportunities to be available off-campus (Christenson, Dillman, Warner, & Salant, 1995). In this same report, the researchers noted that, "land grant universities have an enormous advantage when compared to other higher education institutions; they have a long tradition of providing outreach, as well as offering the kind of continuous, life-long learning that is becoming essential to success in the information age" (p. 39).

The public's expectations are not without reason, and attempts are being made to meet them in a variety of ways. The Public Broadcasting Service (PBS) now enrolls over 350,000 students in distance learning courses, up from 55,000 ten years ago. Mind Extension University (MEU) was launched in 1987 as the first U.S. institution offering a college education via cable television. In 1992, MEU broadcast courses taught at 21 universities over 600 cable systems with an estimated audience of 18 million homes. The National Technological University (NTU) in Fort Collins, Colorado transmits the courses of 45 engineering schools (the University of Idaho included) to over 400 company sites around the United States. Finally, many land grant universities have established their own distance learning systems. Wisconsin, Iowa, Texas, and Washington are examples of states that have spent vast sums of money to establish distance learning networks based at their land grant institutions. Many other states are currently developing systems.

These growing expectations are driving many institutions to make decisions in haste. In order to illustrate what I mean by haste, remember that there were 170 years between the invention of the steam engine and first successful internal combustion gasoline engine. At least another 30 years passed before the adoption of the gasoline tractor could be called widespread. This change in technology covered at least 200 years. The application of electronic computing devices to the solution of human problems has occurred in the last 50 years. The networking of these machines to span geographical distance while solving these problems has occurred during only the last 25. Noting a few points of history in the areas of computing and networking helps to demonstrate the rapidity of this adoption process.

### Computing

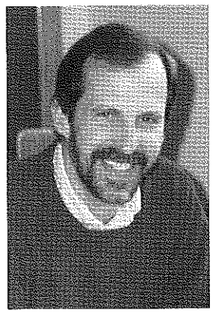
In 1946, the US Government gave Dr. John Mauchly and his graduate assistant Presper Eckert, both from the Moore School of Electrical Engineering at the University of Pennsylvania, $486,000 to construct the Electronic Numerical Integrator and Computer (ENIAC). Constructed to speed up the calculation of artillery trajectories for the military, the ENIAC weighed 30 tons, contained 18,000 vacuum, used 140,000 watts of electricity, and covered 150 square feet of floor space. Widely recognized as the first computer, this machine was programmed by manually setting 6,000 switches in such a way that a program would execute. Once programmed, ENIAC could execute 5,000 arithmetic operations per second. Because they used vacuum tubes, the ENIAC and machines like it are called first generation computers. Today's fourth generation machines, those relying on photolithography to "etch" circuits onto a thin silicon wafer, are startlingly more advanced. A 1989 486 DX2-66 used less than 8 watts of electricity to perform 45 million arithmetic operations per second. In discussing this advancement, John Naisbitt quotes Randall Tobias, "If we had similar progress in automotive technology, today you could buy a Lexus for about $2. It would travel at the speed of sound, and go about 600 miles on a thimble of gas" (1994, p. 99). This trend is continuing. The Pentium Pro processor, released in 1995, will perform over 300 million arithmetic operations per second while using less than 15 watts of electricity. Personal computers are predicted to achieve billions of instructions per second by 1998. If our cars had kept pace with our computers, it's obvious that our highways would be totally inadequate. While they have not kept pace, the "highways" computers use have made enormous advances.

### Networking

In 1972, the U.S. Defense Advanced

*(Continued on page 22)*

# A Technological Solution in Search of an Instructional Problem



*BY: BARRY WILLIS AND ALLISON J. L. TOUCHSTONE*

*Dr. Willis is the director of engineering outreach and professor of education, and Ms. Touchstone is a graduate student in the department of agricultural and extension education and an extension associate at the Idaho State 4-H Office at the University of Idaho, Moscow.*

**Introduction**

As we began to work on this issue of The Agricultural Education Magazine, we began reading each of the articles on distance education that had been submitted for publication. I noticed a trend in the reference section of several of the articles: they quote Barry Willis as an expert in the field of distance education. Since Dr. Willis is the Director of Engineering Outreach at the University of Idaho, we decided to ask his perspective on the roles, current trends, future trends, and technology issues that are involved in distance education.

**The Interview**

Will you give the readers a general overview of the field of distance education?

Distance Education is not a cure-all. It cannot do all things. It is like any other teaching tool, it does some things well, and it does other things quite poorly. Distance Education does not, has not in the past, nor will it in the future, replace the importance of face-to-face communication between teacher and student. Neither will it replace the importance of student-to-student interaction. It can be used in pieces and chunks to supplement curriculum, and in certain places, it can be used to deliver curriculum. This is one of the continuing dilemmas in every technology. We think it is going to replace everything that came before, and it never does. My personal view is that the more we get involved in distance education, the more, at least I realize myself, important face-to-face communication is at certain points in the instructional process. And, I think regardless of the sophistication of the technology, we are social creatures, and face-to-face interaction will continue to be important in the instructional process. Having done that, there is a role distance education can play. One is reaching place bound students, such as high school educators seeking recertification. These people can't attend a four year institution, and it is especially effective, I think for adult learners, folks like high school teachers in that situation who already know or value learning, know how to learn, and are highly motivated. Those are three pre-requisites to be effective at a distance.

For high school students, I think it can be most effective in supplementing curriculum by involving outside speakers, involving levels of expertise from other places that may not be available in schools. For example, a program out of Spokane, Washington offers programs in Japanese and Russian and these courses are distance delivered to places around the country as part of the Ed Star Schools Project. I know in my former position in Alaska, we had a lot of villages that didn't have a Japanese teacher, and the only way we could expose those students who needed or wanted that experience was through the use of technology. So, I think that in high school especially, I see it as more of an adjunct than as a way of replacing curriculum.

**Can you tell us a little bit about what Engineering Outreach does as far as providing courses to its students?**

We have between 400-500 graduate students each semester that are completing their graduate degree program in the eight engineering disciplines, such as Civil Engineering and Electrical Engineering, without ever coming to campus. The way this is done is, as these courses are being taught on campus, they are being taught in one of our studio classrooms. At the same time, they are being video taped, and we then send those tapes out to students and locations around the country and the world. We have about 500 students in 300 locations, about 40% of our students are in Idaho and the rest are spread out all over.

In addition to the video tapes, since one of the things we know about distance education is that interaction is important, we use Internet e-mail to facilitate teacher-student and student-student interaction. Some of our courses are live, and they are either delivered by satellite or by microwave. More and more, we are using interactive video conferencing as a way to provide an interactive component to those traditionally delivered classes. One of the dilemmas is that interaction is good, but it requires, by definition, real-time communication. Many of our students are in different time zones and in different parts of the world, making it impossible for them to take advantage of real-time communication. So, as effective as that is, oftentimes the video tapes→



become the foundation for the courses. And of course, there is a strong print component that has historically been mailed out to students, and in the future will be converted to Web pages, making the text available via the Internet.

**Would you compare the components of good teaching for a distance educator and the components of teaching in a traditional setting?**

I think that the basic components are the same. A good teacher in a face-to-face classroom setting will, most likely, be a good teacher at a distance once they receive some training. At the same time, a poor teacher in a traditional classroom setting will be down right horrible at a distance. In order to be a good teacher in class, and this is especially true in a distance education class, you have to be organized. That is critical. However, the most critical element is that you have to have an understanding of who your students are. This poses a number of challenges at a distance because, for one thing, you don't have that day to day contact and you don't share that community contact that you share with students who are on-site in a traditional classroom setting. It becomes a time consuming challenge to get a grasp of who those students are at a distance. But, it is the most critical piece.

One of the things we know about distance education is that it tends to make for a more effective traditional teacher. In other words, the planning, the understanding of students as individuals, and the organization required to be effective at a distance translates back to, and improves, the face-to-face classrooms.

One of the other key components is that every good teacher in a traditional classroom setting is constantly monitoring the reactions of the audience, and therefore changing their presentation of the content based on what is going on in the classroom. You can subconsciously get a glance at who is with you, who's not, who's bored, who's excited, who needs you to go faster, who needs you to go slower, etc. So, in a traditional classroom setting, you are constantly changing, not the content that is presented, but the WAY that content is presented, and who you target as you present that content. The challenge at a distance is different. Even if you use a very interactive technology, such as interactive video conferencing, just by virtue of the fact that the communication is filtered through technology interrupts and changes that dynamic to the point where it takes some getting used to. So, even the best traditional teacher will likely require a little practice to get comfortable at a distance, although my experience in both administering distance education programs and teaching through the use of technology at a distance for the last 15 years has been that you get used to it relatively quickly. But, the first few times, it is pretty intimidating, and that is why I always recommend hands on training, and hands-on support and mentoring throughout the teaching process. But, training is especially important before a course begins. This training is helpful for both the teacher and the students, who need to be trained as well to get used to the technology before they are expected to learn content.

I guess I would throw in one other thing, we tend to focus too much on the technology. It is important that we focus on developing faculty to use technology effectively, but it is just as important, or even more important, to help the students learn how to use technology effectively. Whereas the teacher is expected to teach content they already know well at a distance, the student has the added burden of trying to learn content they know nothing about through the use of technology with an instructor that they have little face-to-face contact with, and oftentimes, without the support of other students.

You have talked a lot about technology, will you give us your opinion on what technologies should or shouldn't be used or are better to use in a distance education classroom?

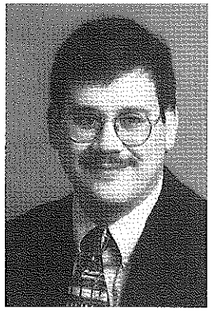
There is no technological silver bullet. Every technology has specific strengths and weaknesses, and the teacher's challenge is not so much to seize on one technology that will do everything they want it to do, but realize that to be effective, it will take a mix of technologies. For example, if there are visual components, you will obviously need some sort of a visual technology such as video. If interactivity is critical, you will need some sort of e-mail, telephone, fax, or video conferencing to provide the interactivity. And, a lot of it depends on what the students have access to. Not every student will have access to video conferencing at the desktop or in a conference setting, but oftentimes they will have access to e-mail. If they don't have access to e-mail, they will have access to telephones, so if you have an 800 number that's the way to do it. The key is that there is no one technology.

I would also add that print, although many do not consider it a "technology", regardless of how it is distributed whether it is digitized or sent out in the mail, is a critical component of distance education. Just because we are using more sophisticated technology does not negate the need for print. At the same time, it does not negate the need for face-to-face communication. So, again, I would focus on a web of technology, combining both old and new technologies.

Speaking of new technologies and the Web, I think there are some things coming that we will

*(Continued on page 9)*

# "Principles" of Distance Education: What's Really New Here? (and Why Should We Care?!)



BY: DONALD D. PEASLEY

*Dr. Peasley is a lecturer in agricultural, extension, and adult education in the department of education, Cornell University, Ithaca, NY.*

*"Instructors often comment that the focused preparation required by distance teaching improves their overall teaching ability and empathy for their students" (Willis, 1992).*

**A Quiz**

Here's a quiz. In the table below are listed two sets of teaching guidelines. Read these lists. Now, which of the following sets of guidelines do you think apply to designing distance education courses, and which apply to designing instructional experiences in any setting? Each of these lists were compiled by recognized experts in the fields of distance education and agricultural teacher education, respectively.

| Column A | Column B |
|---|---|
| **A Basis for Effective Teaching** | **Keys for Effective Planning, Design, and Implementation of Instruction:** |
| * When the subject matter to be learned possesses meaning, organization, and structure that is clear to students, learning proceeds more rapidly and is retained longer. | * Review existing research on the content. |
| * Readiness is a prerequisite for learning. Subject matter and learning experiences must be provided that begin where the learner is. | * Analyze the strengths and weaknesses of possible instructional approaches. |
| * Students must be motivated to learn. Learning activities should be provided that take into account the wants, needs, interests, and aspirations of students. | * At the start of class initiate a frank discussion to set rules, guidelines, and standards. |
| * Students are motivated through their involvement in setting goals and planning activities. | * Make sure classroom is properly equipped with proper equipment. |
| * Success is a strong motivating force. | * Learn about students' backgrounds and experiences. Discussing the instructor's background and interests is equally important. |
| * Students are motivated when they attempt tasks that fall in a range of challenge such that success is perceived to be possible but not certain. | * Be sensitive to different communication styles and varied cultural backgrounds. |
| * When students have knowledge of their learning progress, performance will be superior to what it would have been without such knowledge. | * Remember that students must take an active role by independently taking responsibility for their learning. |
| * Behaviors that are reinforced (rewarded) are more likely to be learned. To be most effective, reward must follow as immediately as possible the desired behavior and be clearly connected with that behavior by the students. | * Integrate a variety of techniques for interaction and feedback. |
| * Directed learning is more effective than undirected learning. | * Make detailed comments on written assignments, referring to additional sources for supplementary information. |
| * To maximize learning, students should inquire "into" rather than be "instructed in" the subject matter. Problem-oriented approaches to teaching improve learning. | * Use pre-class study questions and advance organizers to encourage critical thinking and informed participation on the part of all learners. |
| * Students learn what they practice. Supervised practice that is most effective occurs in a functional educational experience. | * Have students keep a journal of their thoughts and ideas regarding the course content, as well as their individual progress and other concerns. |
| | * Call on individual students to ensure that all students have ample opportunity to interact. |
| | * Develop strategies for student reinforcement, review, repetition, and remediation. |
| | * Realistically assess the amount of content that can be effectively delivered in the course. |
| | * Diversify and pace course activities and avoid long lectures. |
| | * Be aware that student participants will have different learning styles. |
| | * Humanize the course by focusing on the students. |
| | * Use locally relevant case studies and examples as often as possible to assist students in understanding and applying course content. |
| | * Be concise. Use short, cohesive statements and ask direct questions. |
| | * Personalize instructor involvement. |
| | * Relax. |



Now, match the letter of the columns (A or B) above with the following references:

Willis, B. (1992) Strategies for Teaching at a Distance.

Newcomb, L. H., McCracken, J. D., and Warmbrod, J. R. (1993). Methods of Teaching Agriculture.

If you matched column A with Newcomb, et. al., and B with Willis—you receive an A! If you had the choices reversed, don't feel bad. Clearly, there is a lot of conceptual overlap between these guidelines. But, what's the point?

Good Teaching is Good Teaching is Good Teaching . . .

The point I'm trying to make is that Newcomb, McCracken, and Warmbrod summarized the list in Column A to help teachers of agricultural education think holistically and systematically about designing their instructional programs. Likewise, Barry Willis summarized the list in Column B to help college faculty (from a variety of disciplines) to think the same way about designing their courses for delivery via distant education technologies (Barry Willis is a nationally recognized expert on the design and delivery of distance education programs—in particular, he has designed and consulted on a variety of engineering education programs). Irrespective of the context (agricultural education, engineering education, or ANY kind of education), there are certain principles that teachers should consider when designing their curriculum and teaching plans.

I'd like to qualify my thesis a bit. The strategies listed above are by no means the "end-all" of effective teaching strategies. Also, there ARE certain technical and communication issues one must resolve in a distant education setting compared to a "traditional" face-to-face instructional setting. These considerations are significant. Barry Willis also addresses these issues in detail in the publication I have cited here.

**Back to the Future**

As I consider the future (and it's clear that agricultural educators need to be cognizant of the development and application of distant education technologies in our future) of agricultural education, I find the rate of technological change to be somewhat overwhelming. However, I take solace in the fact that I have confidence in my ability to plan effective instruction in agricultural education. That confidence is based upon a strong sense of the effective principles of teaching and learning. To me, the challenge lies in applying these principles in creative ways as I participate in planning agricultural education programs for the future, using the most appropriate technology available.

We, in agricultural education, have always been in a unique position, operating from a perspective of a respect for our past and a forward outlook to our future. Our collective expertise in planning effective educational programs provide us with an important set of principles and knowledge for building the agricultural education of the future.

**References**

Willis, B. (1992, November). Strategies for Teaching at a Distance. ERIC Digest. Syracuse, NY: ERIC Clearinghouse on Information Resources. (ERIC Document Reproduction No. ED 351 008).

Newcomb, L. H., McCracken, J. D., and Warmbrod, J. R. (1993). Methods of Teaching Agriculture. Danville, IL: Interstate Publishers, Inc. ■

## A Star is Born!

*(Continued from page 10)*

or all of the other sites at the same time. He also has the capability of teaching to any of the secondary consortiums in the state, allowing secondary students to start taking college courses while still in high school, or while still living at home.

Another advantage is that with the number of IVN sites in the state, and with the redesign of graduate courses, current teachers don't have to quit teaching to return to campus for a master's degree. Teachers can walk down the hall to their local IVN room and attend courses which count towards advanced degrees. Butch Haugland, Agriscience Teacher in Crosby, North Dakota, completed his total master's degree without having to relocate to the NDSU campus in Fargo or even stop teaching during the day. Butch is one example of many who have taken advantage of the IVN system and advanced in their profession. The IVN system has course offerings from several different disciplines and technical areas. This allows graduate students to be selective in their choice of courses and still provides linkages to the home campus.

When people mention Distance Education, they must be talking about how it provides opportunities to small rural communities as well as large metropolitan cities. We have found that our IVN system does work, and it provides students with quality education without having to relocated or move from the family farm. It is an adventure much like a movie star's, sometime frightening, but the adventure of a lifetime. Distance education is not for everyone, but it has impacted the quality and availability of courses in North Dakota. If you have questions contact a North Dakota Agriscience Teacher or myself. ■

# Cows, Sows, Plows, ...and Fiber-Optic Networks?

BY: GREG S. MILLER
*Dr. Miller is an assistant professor of agricultural education and studies at Iowa State University, Ames.*

Technologies that link multiple sites for participation in educational programs and classes are becoming more common across the country. These technologies include television-based systems that allow live two-way audio and live two-way full-motion video interactivity among sites. Iowa began operating a state wide fiber-optic telecommunications system for educational purposes in the fall of 1993, which allows for the level of interaction described above. At least one specially equipped classroom in each county is connected to the Iowa Communications Network (ICN) (Miller, G., 1994).

How do high school agricultural education teachers feel about using these technologies to deliver agricultural instruction? Do they face obstacles that might inhibit their use of interactive communications networks? Should the opportunity to use such networks exist, what priorities would teachers identify for sharing expertise among existing agriculture programs? What agriculture courses might be offered to schools with no agricultural education teacher? A study (Miller, W. W., 1994) involving 102 Iowa agriculture teachers was conducted in the spring of 1994 to answer these questions.

At the time of the study, 23% of the schools represented by the agriculture teachers were connected to the ICN. None of the 102 teachers had ever taught on the ICN, but 9% had taken at least one course by ICN. Data provided by the teachers indicated that they held neutral feelings about the usefulness of ICN for teaching agriculture. The most positive feelings about ICN that were expressed by the agriculture teachers related to their belief that ICN would allow for the sharing of expertise, facilitate curriculum improvement, and reduce the need for teacher travel.

Teachers identified a number of significant obstacles that could inhibit their use of the ICN for delivering agricultural instruction. Many of the obstacles were associated with logistical issues and included scheduling problems, distribution of educational materials, and lack of support staff. Teachers also viewed lack of teacher training opportunities and the additional preparation time needed to teach on the network, as significant barriers. Perhaps the most problematic concerns related to difficulties in providing for the application of learning through laboratory activities and SAE.

In spite of the obstacles, teachers recognized the potential of this technology for sharing units of instruction between existing agricultural education programs and for offering agricultural course work to schools that do not have agriculture teachers. Teachers were asked to identify units of instruction that they would be most interested in receiving from other

*Telecommunications systems may be used to link students at various sites and allowing instructors with specific expertise to reach distant students. (Photo courtesy of Greg S. Miller.)*

existing agriculture programs through the ICN. Units related to agricultural economics were considered of highest priority followed by horticulture, animal sciences, agronomy, and aquaculture.

The agriculture teachers also listed titles of courses that would be appropriate for ICN delivery to schools without agriculture teachers. The teachers were not unanimous in their judgments of what types of agriculture courses were appropriate for delivery over the ICN. But, almost half of the course titles that teachers viewed as unsuitable for distance delivery related to agricultural mechanics.

Agriculture teachers in Iowa are open to the possibility of teaching agriculture at a distance but recognize a number of potential barriers. How do you feel about using television-based systems to teach agriculture? What are the most significant barriers that you would encounter should you become interested in

*(Continued on page 18)*



## A Technological Solution

*(Continued from page 5)*

be using more in the future. I think interactive video conferencing in group settings will continue to grow as it becomes more cost effective. I think that desktop video conferencing, once the transmission lines are available, will be used more. Right now it can be used over Internet, but it is pretty slow and archaic. Once they work out some of the bugs and speed it up, I think that will help. I think video tapes will continue to be a foundational element of a lot of distance education courses because we use ours widely throughout the country and the world. And again, one challenge is to use sophisticated technology that meets your needs, and the other is to make sure your students have access that is needed to make use of the technology. I think we will see more and more Internet usage, not just for interaction, but for the delivery of materials and entire courses.

The challenge with using some of these technologies is to begin to rethink the way we deliver traditional instruction. I don't think it is a good use of the Internet to take 3,000 pages of print and convert it to World Wide Web pages and dump it on someone's computer and say, "Here's the same stuff I've been doing for 10 years, only now it's available by Internet. Doesn't that mean I am creative?" No, it doesn't. As we use some of these technologies, we need to rethink why it is we are presenting the content we are and come up with more creative ways, not just provide the information, but to redesign the courses to meet the needs of these distant students through some of these technologies.

I think that there are three basic levels. First, print, phone, and fax will continue to be very critical. Next, I think e-mail access for just standard communication will be critical, coupled with video tapes and audio conferencing. And on the third level, I think there will be more and more Internet applications for courses, and interactive video conferencing, either in a conference setting, a larger classroom setting, or a desktop setting will be used.

**What is the future of distance education, specifically in the Western Virtual University that you have been talking about? What application might that have to universities and the teachers in our field?**

In December, the Western governors all got together and decided that, for various reasons, they wanted to connect the institutions in their states through a virtual university. This would, theoretically, allow a student to take courses at multiple universities within this area. Basically, you could take three courses from Institution A, four courses from Institution B, etc. and build these together into a program, and the degree would either come from this Western Virtual University, or the Western Virtual University would act as a broker (or warehouse) of courses. This would make these different courses available to students.

In order for this to happen, one of the things this Western Virtual University is focusing on is the idea of, not just the delivery of credits, but making sure students develop competencies. One of the things that led to this is a lot of business and industry people have been concerned that they need a better measure of what a student knows and doesn't know, other than that the student has taken X number of credits in a discipline. They want to know, specifically, what competencies the learners have gained, because more and more, as competencies change, business and industries need to look at ways of quickly training employees. I think that is one of the strategies within this concept is to begin a cultural shift within education out west, and really in general, focusing more on specific competencies and less on earning a basic degree in this institution. We are not sure what competencies the degree gives the learner, but we are certifying that this person has a degree in a broad area.

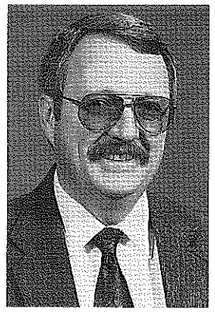
This provides a number of challenges. First, in terms of technology, how will people be able to access these difference courses? Second, which in the short run may even be a bigger issue, how do you get very traditional institutions to begin looking at non-traditional problems in non-traditional ways. Policies related to promotion and tenure etc., and just the way institutions run. Education, to this point, has been teacher/institution centered. You come to Institution A to get a degree, so the student adapts to the requirements of the faculty member or the institution. In the future, successful institutions will become capable of adapting to the needs of the student, as will faculty and course. Really, I think what led to this is a gradual realization that institutions need to be more student centered. This is good for business and industry, but it is also good for learning in general.

**Anything else you would like to add?**

The keys to success are: faculty development and training, student development and training, technology is not the answer, "Avoid technological solutions in search of instructional problems", don't negate the importance of face-to-face communication, and distance education is more about access than about saving money. Distance education costs money, it will always

*(Continued on page 12)*

# A Star is Born!



*BY: MICHAEL K. SWAN*
*Dr. Swan is associate professor and head of agricultural and extension education at North Dakota State University, Fargo.*

Lights... Camera... Acti... Hold on now! Didn't I come to college to become a teacher? Now, here I am in front of a camera, a classroom of students, and a whole group of smiling faces on Television from several others schools. I must be in a dream! This can't be happening to me I'm just the typical student interested in teaching Agricultural Education. What has teaching come to? Are we really serving our communities and students? The answer in North Dakota is YES! We are serving our students and communities, but in a different way than in prior years. What has teaching come to? It is bringing a different variety of courses to smaller districts and our more remote areas. Equality of educational programs is becoming a reality.

This may seem a little out of the norm for many states but in North Dakota this is the norm and an everyday happening. ND IVN is the acronym for the North Dakota Interactive Video Network. The system provides both audio and video for distance education and meetings involving persons in two or more locations. Today over 30 specially equipped telecommunications classrooms and conference rooms link the 11 North Dakota University System campuses, the state capitol, and tribal colleges in North Dakota. In addition, most K-12 schools in the state are similarly equipped to send and receive courses over the IVN system.

What has this done to the undergraduate program in Agricultural Education? The preservice training program is now centered around training prospective teachers how to teach at a distance. How to become a TV Star and a Teacher all rolled into one. NDSU Teacher Education Program has developed a simulated IVN classroom in which to train students how to be effective while using distance education technology. Students learn to develop effective delivery techniques while using Computers, WWW links, CD-ROMs, VHS tapes, slides, cameras, and televisions. These are the tools with which all graduates from our programs must become familiar because these are the tools being used in the field of teaching in North Dakota. We estimate today that we have approximately 55% of our K-12 schools have access to an IVN room within their school district. This translates into the need to know and be able to teach with the IVN system. It is not a luxury but rather a necessity in our state. The map shows the locations of the higher education IVN sites within North Dakota.

What about teachers losing jobs because of the IVN system? We have not seem this happen in our state, in fact we have seen an increase! Schools are sharing courses and hiring shared teachers between several districts. This equates to more teaching jobs and a greater opportunity for the students. In several research studies completed on the effectiveness of IVN, we have found students and teachers appreciate the additional opportunities afforded by the IVN system. When smaller schools don't have the resources to hire a teacher to teach a specific subject, i.e. agriculture, they don't offer the course(s) and students don't have the opportunity to learn, or be exposed to, the concepts. In North Dakota we have found a way around that lack of equal opportunity. As an example, let's look at Randy Cale, Agriscience teacher in Gackle, North Dakota. When Randy teaches Farm Management to his student in Gackle he is also teaching to three schools within their district consortium. Instead of having 8-12 students Randy now has 20-25 students. Randy teaches on the IVN system to students in four high schools yet never has to leave his home school in Gackle. This is providing students from three others schools, without an Agriscience teacher, the opportunity to take agricultural courses. This is just one example of what is happening at the secondary level, and I could site many that happen everyday just like this one.

At the postsecondary level, the same situation occurs all day long and well into the evening. When Dave Saxowsky teaches Agricultural Law he is not teaching to just NDSU students he has the capability of teaching to several campuses and several groups of students at one time. His home classroom is on the NDSU campus in Fargo, but he may be teaching to Dickinson State University or any

*(Continued on page 7)*





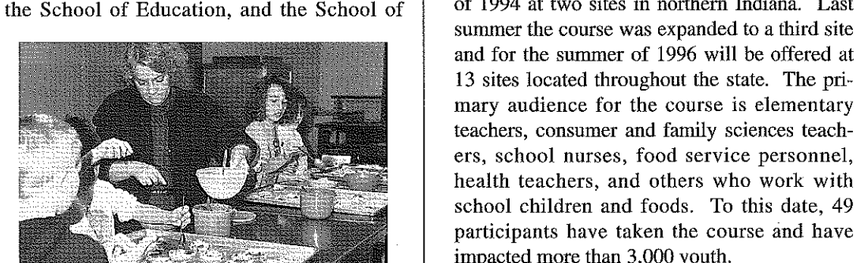
# Enrichment in the Classroom: Using Distance Education to Teach Nutrition

*BY: ALICE BLUME AND G. ALLEN TALBERT*
*Ms. Blume is the state 4-H youth program coordinator and Dr. Talbert is an assistant professor of agricultural education at Purdue University, West Lafayette, IN.*

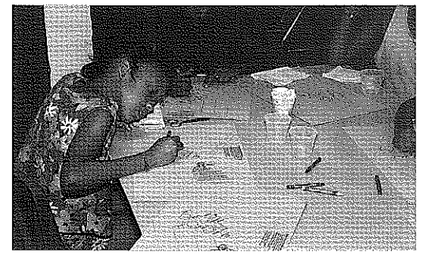
With the introduction of the new Food Guide Pyramid and revision of the United States Department of Agriculture (USDA) Dietary Guidelines in the fall of 1992, a need arose to provide accurate, current, and consistent nutrition information in a timely fashion to school-age children. School textbooks, which still displayed the four basic food groups, in particular, did not have this current information. The Purdue University 4-H Youth Expanded Food and Nutrition Education Program (4-H Youth EFNEP) developed curriculum to teach nutrition and basic health principles to youth in grades one through nine. The educational materials called "Exploring the Food Pyramid with Professor Popcorn and Hooked on Health" were pilot tested in the fall of 1993. The curriculum needed to be introduced statewide, so extension educators in the northern part of Indiana suggested that a long distance teacher credit course be established. The course would provide training in how to use the materials and would also help the teachers in meeting inservice requirements for teaching license renewal.

**How was the Course Delivered?**

The course titled "Enrichment in the Classroom: Foods and Nutrition" was an interdisciplinary effort. It integrated formal and non-formal educational systems, bridged extension field and campus staff, and formed a cooperative effort among 4-H, Foods and Nutrition, Child Development and Family Studies, Agriculture Communication Service, the School of Education, and the School of Agriculture. Other contributors were Purdue Admissions, Continuing Education Media Based Programs, the Indiana Dairy Council, and the Indiana Department of Education. The



*Exploring the Food Pyramid includes learning how to make delicious, yet nutritious, meals. (Photo courtesy of Alice Blume.)*



*Elementary students learned about good nutrition from Professor Popcorn. (Photo courtesy of Alice Blume.)*

course was taught as a six day intensive course using a one-way video, two-way audio telecommunications system with further instruction given on-site. For two hours each morning, the telecommunications system was used to deliver instruction from campus-based experts to the local sites. These experts did not have the time to travel to each site, while the participants in northern Indiana were not able to travel to the Purdue campus either. The two-way audio feature allowed for interaction between the experts and the participants. For the remainder of the day, on-site extension educators provided hands-on instruction, coordinated field trips, facilitated experiments, and demonstrated how the materials could be used in the classroom.

The course was first taught in the summer of 1994 at two sites in northern Indiana. Last summer the course was expanded to a third site and for the summer of 1996 will be offered at 13 sites located throughout the state. The primary audience for the course is elementary teachers, consumer and family sciences teachers, school nurses, food service personnel, health teachers, and others who work with school children and foods. To this date, 49 participants have taken the course and have impacted more than 3,000 youth.

**What Did the Teachers Say About the Course?**

"Great that we can correspond and get feed→

back immediately." "Great use of technology to make sites more convenient for those taking the class." "Informative and exciting program

*In the distance education course, teachers learn activities to help their students develop good eating habits. (Photo courtesy of Alice Blume.)*

about a subject that is sometimes dull to teach." These comments were made by elementary teachers taking the Enrichment in the Classroom course. On a standardized evaluation form, 97% of the participants stated that team-teaching was effectively used and 82% rated the course as one of the best they had taken. What other impacts has the course had on the participants? Before taking this course very few of the participants knew about the Cooperative Extension Service (CES). After taking the course, 100% of the participants stated that they had a better understanding of CES and planned to use CES personnel and resources for classroom enrichment. Teachers have reported incorporating the nutrition curriculum into all areas they teach. Some examples include: for math, calculating fat grams and calories consumed, for history, studying foods consumed by states and countries, for geography, discovering where foods are produced, processed, and shipped, for English, writing stories about food and nutrition, and for health and physical education, using exercises and activities involving nutrition and foods. Teachers are excited about the foods and nutrition curriculum because it helps youth to learn about nutrition and basic health principles in a fun manner and can be incorporated into what they already must teach. Teachers are excited about the distance delivery of this course because it allows them to obtain needed information in a timely and economical manner. The course format also allows for hands-on instruction and personal contact with instructors which is missing from many distance education programs.

**Summary**

Distance education is working in this instance to disseminate worthwhile curriculum materials and to provide training in those materials. Now that elementary teachers in the state have found out what advantages this method of instruction holds, they are asking for future courses in areas such as environmental education. The linkages established in the initial course will make providing future courses in other areas much easier.

From pre and post tests, testimonial letters, food diaries, and teacher evaluations, we know that elementary students are learning about foods, nutrition, and food safety. Because of this and other positive evaluations, the EFNEP materials were recognized by the Indiana Superintendent of Public Instruction as one of two nutrition education curricula for adoption statewide. For information on "Professor Popcorn and Hooked on Health' contact Alice Blume. ■

### A Technological Solution

*(Continued from page 9)*

cost money to keep up technology and infrastructure. But, what it can do is provide instruction and experiences to people who are not located near a campus. It is a way of providing access, but there are costs associated which either the consumer, the state, or the institution have to bear. ■

***"IF YOU COUNT ALL YOUR ASSETS, YOU ALWAYS SHOW A PROFIT."***

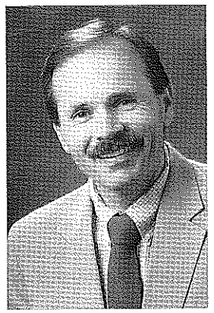
*ROBERT QUILLEN*







# Practical Applications For Distance Education Technologies In A Remote And Rural State

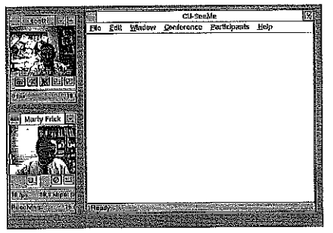


*BY: SCOTT DAVIS AND MARTIN FRICK*

*Dr. Davis is an assistant professor of technology education and Dr. Frick is an assistant professor of agricultural education at Montana State University, Bozeman.*

Challenges posed by distance education are countered by opportunities to reach a wider student audience, meet the needs of students unable to attend on-campus classes, and to link students who have a variety of backgrounds and experiences (Willis, 1992). In 1994, two program areas, Agricultural Education and Technology Education at Montana State University (MSU), decided to address the needs of individuals who could not attend campus to pursue a masters degree. A needs assessment involving agricultural and technology education teachers was completed to determine if enough individuals would be interested in pursuing a degree through distance delivery technology. Analysis of the data from the needs assessment led to the design of coursework that could be delivered with the use of telecomputing and compressed video technology. This not only meant the creation of new courses, but also adapting existing courses to utilize new distance delivery technology.

After consulting with colleagues who had been involved in distance delivery courses, it was decided that the first course offered should be one based on electronic research technology. This course was team taught using instruc-




*Marty Frick and Scott Davis using the CUSeeMe Program. (Figure courtesy of Marty Frick and Scott Davis.)*

tors from MSU extended studies, library media services, and education subject specialists. Acquainting students with the technology being utilized in subsequent courses was the main priority of this initial course. Eleven students signed up for their first experience in the distance delived coursework that would assist them in attaining a master's degree in either Agricultural Education or Technology Education. Of these eleven students, only one was located on-campus at MSU, and all of the students had computer equipment of the their own or used computers at their schools to participate in the class.

Since the initial course in the fall of 1994, three other graduate courses (History and Philosophy of Applied Subjects, History and Philosophy of Technology Education, and Technology in Curriculum and Instruction) have been offered through the use of distance education technology, and Program Planning in Agricultural and Technology Education will be offered in the Spring of 1997. Course enrollment has averaged 8-9 graduate students per semester.

The primary distance delivery technology utilized in providing these four courses were telecomputing and compressed video. In Montana, there are eight telecommunication centers that students can drive to in order to attend compressed video classes. In order to keep travel at a minimum only one or two compressed video class sessions were conducted every other semester, resulting in minimized student travel.

**Distance Delivery Techniques**

On a weekly basis, the graduate students responded to assignments utilizing telecomputing technology. Electronic dialogue between students was much like the classroom discussion that takes place in on-campus courses. Students were free to respond to each others answers all the while addressing questions or issues posed by the instructor. Students also provided resource information to each other or the group depending on the need. One other aspect that cannot be overlooked in the use of distance education technology is the fact the high tech does require high touch. Through the use of telecomputing software, students left personalized messages for the instructor, which was very important in addressing the needs of the students and making them more comfortable using the technology.

**Distance Technology & The Student Teacher—Other Possibilities**

Another application of distance education technology at teacher education institutions that could benefit students and faculty is in the →

area of student teacher supervision. Digital audio and video technology used on the Internet provides a viable alternative to student teacher supervision. When a student teacher is placed at a significant distance from the parent institution, alternative assessment means using distance education technology in order to keep the university supervisor in close contact with the student teacher and his/her supervisor. During spring semester 1996, a technology education student teacher was placed at Hailey, Idaho. Evaluation by traditional methods would have involved two days of travel for the university supervisor and would have cost approximately $300.00/trip not to mention the time away from the university. With the cooperation of the student teacher placement office, video conferencing technology was used to conduct one of the two required visitations of the student teacher.

On the day of the scheduled visitation, the student teacher faxed his lesson plan to the university supervisor at Montana State University, who then watched and listened to the presentation of the lesson. After observing the presentation, the university supervisor conducted a follow-up discussion with the student teacher and the student teacher supervisor. This was possible through Internet video conferencing. The video conference used an Internet connection and video conferencing software called CuSeeMe developed by Cornell University. CuSeeMe software incorporates the use of digital sound and video for Internet conferencing. The technology was tested prior to the day of the formal evaluation of the student teacher, and it has been used numerous times since then in order to discuss and answer any questions of the student teacher, his supervisor, and the university coordinator. This has resulted in more dialogue and discussion between the individuals. Other educational specialty areas at MSU (Educational Administration and Extended Studies) have also reviewed the CuSeeMe demonstrations, and expressed interest in using the technology. This form of distance education personalizes distance education, thus making it appealing to more individuals and institutions.

## Requirements For Video Conferencing On The Internet

Video conferencing over the Internet is a relatively new medium. Video conferencing uses the same Internet communication channels as many of us now use for e-mail. Video conferencing over the Internet requires adequate access to the Internet and a somewhat powerful desktop computer. Video conferencing is a great medium for experiences and interactivity when you consider the price. However, it is not quite as good as being there in person. There are, at minimum, three potential applications for video conferencing in the agricultural and technology education field: graduate level courses for students who don't have a campus accessible to their location, student teacher supervision, and teacher in-service. As we look for a reasonable, but adequate, way to deliver education through electronic means, video conferencing offers a great deal because of the relatively low cost and the accessibility of this medium by most schools now or in the near future. Remember, if you have an Internet connection with an Internet Protocol (IP) address in your school, you can probably get "hooked" up to video conferencing through some inexpensive or free shareware. As stated earlier, the free shareware, called CuSeeMe, was developed by Cornell University through a grant from the National Science Foundation and can be downloaded from the World Wide Web at the following World Wide Web address: http://cu-seeme.cornell.edu. The inexpensive, but enhanced version of CuSeeMe has been recently introduced for sale by White Pines Software Company.

CuSeeMe is a free video conferencing program (under copyright of Cornell University and its collaborators) available to anyone with a Macintosh or Windows and a connection to the Internet. You can use CuSeeMe in one of two ways - 1) Connect directly to another PC or to a Mac for a one-on-one connection. 2) Connect to a Reflector for a multi-party conference. By using a reflector, multiple parties at different locations can participate in a CuSeeMe conference, each from his or her own desktop computer. Reflectors provide the ability to send multicast but not to receive. Without reflectors, only point-to-point connections between two CuSeeMe users are possible at this time. The Reflector programs are located on UNIX computers. UNIX computers are most likely located at your state land grant university; however, this does not mean that a reflector has been established on one of the land grant's UNIX computer workstations. If you are not familiar with things like IP networks, reflectors and/or your particular network set up, ask the technology resource person at your school for some help. If you have no one at your school familiar with video conferencing, call a university close to you and ask to speak someone who works with the university's Internet system.

Because CuSeeMe uses simple but efficient video technology, it opens networked video conferencing capability to users of lower cost desktop computers, and enables broader participation in desktop video technology. In order to run CuSeeMe on your PC you need to be running→



Windows and have Internet connectivity using a Winsock TCP/IP stack. You can make an Internet connection through a dialup modem, although the speed will be minimal for CuSeeMe. With a Capture card and camera, you can send and receive video images. You can still receive images from other participants without a capture card. If you have an audio card that works with a Sound Blaster you can also send and receive audio.

White Pine developed Enhanced CuSeeMe for Windows to be used for business, educational and personal applications. It is priced under $100 and runs directly over the Internet or any TCP/IP network and users can communicate globally without expensive hardware and incurred costs. Real-time video and audio conferencing can be achieved with a 28.8k modem, and it works effectively over a 14.4k modem for audio-only usage. It comes complete with the WhitePineBoard which enables remote users to share documents and graphics, sketch ideas, and markup an electronic whiteboard.

Below are the basic requirements to run either video conferencing software packages using an IBM PC computer.

Basic Requirements:

Processor (These are recommendations only)

386SX —-Video receive only

386DX —-Video send & receive

486SX —-Video receive w/Audio

486DX —-Video send & receive w/Audio

Windows 3.1 or higher running in Enhanced Mode.

A Windows Sockets compliant TCP/IP stack, known as Winsock.

A 256 color (8 bit) video driver at any resolution (640x480, 800x600, 1024x768, or higher).

Besides the basic hardware requirements list, a few other peripherals will need to be added in order to effectively use CuSeeMe or White Pine video conferencing software. For the most part, the items described apply to both an IBM PC or Macintosh computer.

In order to obtain video, you need to purchase a QuickCam from Connectix which is a fully digital video camera that connects to your Mac's or PC's parallel port using the 5' cable supplied. Power is taken directly from the port, and the cost of the camera is only $99! It uses a state-of-the-art, black and white technology to accurately capture 6-bit grayscale video and still images. It can capture images that are about a quarter of a standard VGA monitor or up to 320x240 pixels.

According to the CuSeeMee Project you will need the following to send & receive audio:

A Windows Sound board that conforms to the Windows MultiMedia Specification.

(Sound Blaster or better). Full Duplex audio is very desirable.

Speakers (or headphones) and a microphone.

An Internet network connection or modem at 28.8kb/s MINIMUM. (Note: White Pine's commercial version of CuSeeMe will work at 14.4kb/s).

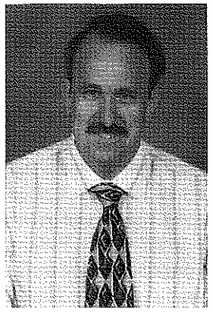
The list of resources to learn about this technology is phenomenal. People involved in all aspects of video conferencing are more than willing to help share their experiences to guide others on to the right path.

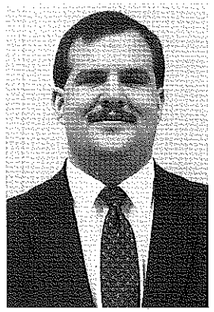
The demise of education, as we know it, has been predicted since the new communication technologies such as Internet access and video conferencing have arrived on the scene. But, by using the correct teaching methods for the medium at hand, agricultural and technology education can stay out in front of changes within their disciplines and enhance services to teachers and the students served by those programs. When used appropriately, a number of forms of distance education that include video conferencing can meet the needs of agricultural and technology education and help us keep pace with all of the new information available to us.

### References

Willis, B. (1992). Strategies for teaching at a distance. ERIC Clearinghouse on Information Resources, Syracuse, N.Y. (ED351008) ■

# FFA, Agricultural Education, and the World Wide WWW—New Ways to do New Things





*BY: B. DAVID HOLTON AND MICHAEL E. NEWMAN*

*Mr. Holton is an agriscience instructor at Sturgis High School, Sturgis, MS, and Dr. Newman is an assistant professor of agricultural and extension education at Mississippi State University, Mississippi State.*

The World Wide WWW (WWW) is the newest information service to arrive on the Internet. As a distance education tool, the WWW is at the top in terms of widespread access and potential for future growth. The WWW is a universal database of knowledge and information that is accessible to people around the world and links easily to other pieces of information that any user can quickly obtain. At present, over 24 million people use the WWW, with over 18 million of these in the US (Nielsen, 1995).

**A Little Background**

Hypertext or hypermedia, which is specially coded text- or media-based documents, is the technology upon which the WWW is based. The code used by the WWW is a process called HyperText Markup Language (HTML), which defines text, graphics, and links that are independent of the computing platform being used.

Individuals wanting to access the WWW must have a "browser" program on their computer to interpret the HTML code and format it in an understandable fashion. Three of the most popular browser programs are Netscape Corporation's Netscape Navigator®, Microsoft's Internet Explorer®, and the National Center for Supercomputing Application's Mosaic®.

Information on the WWW can be accessed in many different ways, but the two most common ones are: (1) entering the URL (Uniform Resource Locator), if known, in the go-to box, or (2) by using one of the "search engines" from the net search menu to locate the information by title or topic. For example the URL of the Mississippi FFA Home Page is: http://www.msstate.edu/Dept/AgEdExp/FFA/index.html.

Every stop on the WWW unfolds with a "home page," which is similar to a table of contents in a textbook or journal.

Home pages contain highlighted hyperlinks that mark where the users can move to other related topics on that particular site or to an entirely different site, by clicking on the highlighted hyperlink with the mouse (Raven and Settle, 1995).

Home pages dealing with agricultural topics are becoming quite common on the WWW. The Cooperative Extension Systems across the nation are placing many agricultural publications on the WWW. Colleges of Agriculture are placing information about their faculty, course offerings, and some course assignments on the WWW for prospective students and/or students. Any person in the world with access to a computer with a browser program can access this information without ever leaving his or her computer (Raven & Settle, 1995).

**WWW Uses For Agricultural Education And The FFA**

The WWW can serve at least four purposes in a high school agricultural education program: 1) as a source of instructional material to be used by the instructor in program planning; 2) as an instructional aid that provides research training for the students; 3) as a public relations tool that allows the placing of accomplishments and/or useful information on line for others to access; and 4) as a means for agricultural education programs and students to share information about what they are doing and learning.

**Materials for Instructional Planning**

Agricultural education instructors take pride in teaching the most current ideas and practices. Information on the WWW is the most current information available. For example, just a few days after Great Britian's "Mad Cow Disease" scare, the Animal Science Department at Oklahoma State had an excellent list of links to related information available on the WWW. To keep lesson plans on the cutting edge, try some of the following links:

1). CMS Agricultural Bookmarks: http://ad254-5.ag.ohio-state.edu/ocms/Agriculture.html

2). Matt Raven's Links to Agricultural Home Pages: http://www2.msstate.edu/~raven/ag.html

3). Agriculture Online: http://www.agriculture.com/index.html

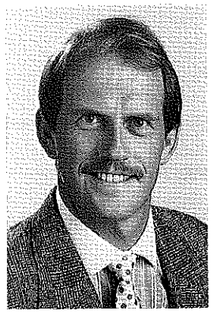
4). National FFA Online:

*(Continued on page 21)*





# Distance Education Classroom Design: Some "Rules of Thumb"



*BY: ERIK T. ANDERSON*

*Mr. Anderson is an assistant professor and telecommunications specialist at the University of Idaho, Moscow, and is currently on a leave of absence to pursue a Ph.D. in Adult Education.*

Distance education has become a hot topic during the past several years. One reason for its prominence is related to the tremendous advances that have been made in telecommunications technology. These developments not only have provided increased access to educational programs, but have also opened the door for many institutions to originate and distribute their own distance education programming. This technology will continue to evolve, and we will see more opportunities to use it to deliver education in the future.

There are numerous examples of effective distance education programs in post-secondary and secondary environments. For example, small K-12 schools in rural areas can receive specialized classes in disciplines such as science, math, and foreign languages that would otherwise be unavailable to their students. In some communities, high schools have established two-way, interactive video links with nearby colleges to receive college level courses for advanced placement students. At schools all across the country, K-12 teachers are taking advantage of distance education programs for in-service training and recertification purposes.

Distance education can serve a variety of instructional needs. If your school does not yet have a distance education classroom or dedicated distance education facility, it may have one in the near future. If you are proficient with technical systems such as computers, you may be recruited to help with the design and installation of a distance education classroom at your campus. This article will provide you with a few general "rules of thumb" that can help guide the design and development of a distance education facility.

There are far too many types of distance education facilities to allow us to provide specific design guidelines here. For example, a two-way, interactive video classroom involves a completely different design than a computer lab. However, based on our experience in designing and installing a state-of-the-art distance education classroom at the University of Idaho, we can offer several suggestions that will apply to most situations. Once your institution has made a commitment to install a distance education classroom, consider the following recommendations:

1. Conduct an internal needs assessment related to the potential uses of the classroom. Discuss all possible uses of the classroom with all interested users. It is all right to do some brainstorming or "blue sky" thinking during this stage because you will inevitably need to narrow the classroom's capabilities later in the design stage.

2. Develop a vision statement about the facility. The findings from your needs assessment will guide this process. The vision statement should create a sense about how the classroom will be used and describe the specific purposes it will serve. This document will provide guidelines for the design phase.

3. If possible, hire an expert consultant to assist you with the design process. Even a "low budget" distance education classroom can be a very complex technical system. Although there is a cost involved in working with consultants, professional designers and engineers who specialize in the construction of distance education classrooms can save you time and money in the long run. If you cannot afford to hire a consultant, try to recruit some outside "volunteers" to help with the project. You can find useful technical expertise in a variety of places, and some examples include:

a. Technical support people in your school district or at your state Department of Education.

b. Personnel at other educational institutions that have installed distance education classrooms. Visit the other campuses and tour their facilities. During the "show and tell," ask the managers to describe what works well in their system and to identify the parts of their original design that didn't work so well. Take a lot of notes with the intention to liberally "borrow" all the good ideas that apply to your project. Also, pay attention to the "mistakes" that were made so you can avoid recreating them.

c. Hardware vendors are an excellent source of information and assistance, some vendors can even offer a "turnkey" package→

where they can provide the equipment and the design and installation services. However, be wary of vendors who claim to have the perfect solution to all of your needs. Remember the adage: "if it sounds too good to be true then it probably is!"

4. Design your classroom to be as flexible as possible. Your facility will likely need to serve multiple purposes—it is possible that some of these uses will not even be realized until after the room is completed! Avoid the tendency to "nail things down" such as the use of fixed seating, where tables are attached to the floor. Also, consider installing additional controls for the room lighting so the lights in the front and the back of the room can be put on different circuits. A more flexible room can more easily serve diverse needs.

5. Use multiple technologies and delivery systems. In other words, be flexible in your choices of technology and avoid locking your classroom into just one system. For example, a live video signal can be transmitted in a variety of ways including via satellite, microwave, broadcast TV, cable TV, special high-capacity telephone lines, and even over the Internet. The key point is to keep your technical options open. The telecommunications industry is a very dynamic field—it is extremely difficult to predict which distribution medium will be the most cost effective in the future.

6. If possible, hire a full-time technician to operate and maintain the distance education classroom. If that is not feasible, designate one person to be responsible for the room. The classroom should not require constant technical attention, but you will need someone to be available to solve problems when they arise.

During the actual design phase, decisions will be influenced by several factors, particularly the limited availability of funds and local technical options. The goal is to design a facility within those constraints that can effectively meet the current and future needs of your institution. A well-designed distance education classroom will be flexible, cost-effective, and able to serve multiple instruction purposes.

Be aware that Murphy's Law prevails in the design and installation of a complex technical system like a distance education classroom! You should expect that some mistakes will occur (these typically tend to be minor errors of omission). However, careful attention to the design process will help you avoid making really costly mistakes!

The design and development of a distance education classroom will require a significant commitment of time, energy, and resources from several people at your institution. In addition to being challenging, it can be a very rewarding project. The greatest reward is to see the facility in full operation, successfully delivering instruction to students at a distance.

Telecommunications technologies are wonderful inventions that offer a great deal of promise to the field of education. It is important to remember, however, that these technologies are only a means to an end. The real purpose of any distance education project is education. ■

### *Cows, Sows, Plows,*

*(Continued from page 8)*

teaching agriculture at a distance? How might you overcome the barriers?

There is little point in arguing over whether students can learn in a television-based delivery environment. They can. With few exceptions, all of the objectives that teachers seek to achieve in high school agriculture programs can be achieved through distance education. The key question is: What purposes can be furthered through the prudent use of technology and how can these purposes most efficiently and effectively be achieved?

High school agriculture teachers should not become involved in teaching at a distance just because it is possible. Instead, technology should serve legitimate educational purposes. Technology can help us do things that we otherwise would be unable to do and can help us reach people who are interested in our programs but as of yet have not been served by us. I believe that the greatest advantage of distance learning technologies is that it can provide greater educational opportunity in agriculture. Agriculture teachers are a creative and resourceful lot. Many creative applications of distance education have already been developed and many others will be forthcoming.

What distance learning technologies are available to you? Have you considered how these technologies could be used to benefit agricultural education in general and your agriculture program specifically? Will you be a part of this technological revolution in agricultural education?

**References**

Miller, G. (1994). Usefulness of the Iowa Communications Network for delivering instruction in secondary agriculture programs. In M. R. Simonson, C. Schlosser, M. Anderson (Eds.), Encyclopedia of distance education research in Iowa (pp. 145-152). College of Education, Iowa State University, Ames.

Miller, W. W. (1994). The information highway in Iowa. The Agricultural Education Magazine. 67(2), 11,17. ■





# *A View from the Agricultural Mechanics Laboratory Egress Opening (Shop Door)*

Well, well, well...The Editor wants comments on *The Magazine*. Okay, he asked for it, so here it is. As a reminder for those non-professor types who do not commit the issues to memory, the theme for the February issue was Teacher Leadership Development.

First of all, I am not too sure that one can use the words leadership and education on the same page without one or the other slithering away. In 26 years of being employed in education, I have seen many good ideas come and go, but darn few of the good ones ever get off the ground. Now, I am not bragging, but Agricultural Education is one of the most inventive, progressive, and student oriented programs in the field of education. It is also one of the best kept secrets. Agricultural education instructors are leaders in their programs, leaders with their students, and often leaders in the community. Unfortunately, they seem to think that they don't have to sell their programs to the local administration and school board. So much for the pontification.

There is only one type of language that agricultural education teachers understand, and that is plain talk. That may be why some don't read *The Agricultural Education Magazine*—too much professor talk. That must be why I enjoyed John Mundt's article so much, he just tells it like it is. Now I'm not a professor talking, but an old fowl from way back.

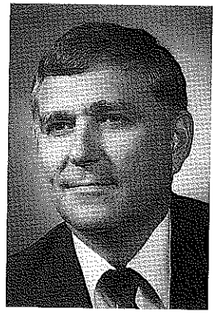
To be a leader in agricultural education, the first characteristic you must have is to like the kids. If you don't like kids, do everyone a favor and go sell computers or swath hay for a living. I can think of one example of someone who calls himself an agriculture teacher. One of his students was Star District Farmer and a finalist for Star State Farmer this year. Two other advisors helped her with her records and State FFA Degree Application, her "advisor" never looked at them. This individual also placed second in the state Public Speaking Contest this year and won the State Extemporaneous Speaking contest last year. When asked if he had a speaker this year, the "advisor" said, "I guess so".

The next leadership quality that an agriculture teacher must possess is that they must lead by example. In other words, it is easier to see who is tardy for class if you show up before the bell. Third, the instructor cannot demand respect, they must earn it. Fourth, a leader must be a master of communication. They communicate with parents, administrators, students, and the community before a problem develops.. I believe that the old adage (it is easier to fix airplanes on the ground than in the air) is appropriate in this situation. Fifth, as Randy Vlasin indicated in the February issue: you can't do everything, so do what you can, well. Oh, oh, I hear a bunch of laughter from the shop...I mean the Agricultural Mechanics Laboratory...so I better ingress through the egress and see what is going on. So, good bye, at least until someone else puts a burr under my saddle.

Till later,

Jim Barnack Sorensen
Kimberly High School
Kimberly, ID 83341 ■

# "Go to the head of the class if you ...



*BY: GARY E. MOORE*

*Dr. Moore is a professor of agricultural and extension education at North Carolina State University, Raleigh and historian for the American Association for Agricultural Education.*

Dr. Moore has agreed to author a new feature for The Magazine. He will prepare ten questions about some aspect of the history of agricultural education. Each set of questions will have some type of common denominator or theme (i.e. FFA officers, NVATA, federal legislation, etc.). His answers will be included in the next issue of The Magazine. GO TO THE HEAD OF THE CLASS if you know the answers.

What do you know about early FFA conventions?

1. The first FFA convention was held in Kansas City at the:

a. YMCA.

b. Baltimore Hotel.

c. Muehlbach Hotel.

d. Municipal Auditorium.

2. During the 1930s it was customary for FFA chapters to submit an ear of corn for judging at the National FFA convention. The champion ear of corn was then:

a. Fed to the grand champion steer at the American Royal.

b. Used in the Star Farmer of America ceremony.

c. Displayed at the entrance to the exhibit hall.

d. Hung above the secretary's station.

3. In the early years of the convention, a large banquet was held for the attendees. The food for the banquet was provided by:

a. Each state bringing some type of food item from their state.

b. The American Royal Livestock Show.

c. Kansas City Star Newspaper.

d. Hallmark Cards.

4. During the 1930s and 40's it was a common practice for the national FFA president to recognize a delegate from Georgia immediately after the convention was called to order. The delegate from Georgia then did something. What did the Georgia delegate do?

a. Pass out packages of peanuts to all the delegates.

b. Say a prayer to open the convention.

c. Present the president with a gavel made of wood from the farm of Dudley Hughes.

d. Lead the convention delegates in singing "Hail the FFA."

5. At the 1934 convention the delegates voted to buy something and send it to President Roosevelt (provided that it didn't cost more than $50). What was the item?

a. A prize winning lamb from the American Royal.

b. A set of specially designed FFA dishes.

c. An experimental motorized wheel chair.

d. A rocking chair made with wood from the farm of Dudley Hughes.

6. At the 1936 FFA convention, Maddux of Tennessee moved "...that the national organization furnish copies of the _____ to all FFA chapters." You can see framed copies of this document hanging on walls in agricultural education departments that have been around for a long while but you don't see this document in new chapters. What was the document?

a. General Order on Profanity Issued by George Washington in 1776.

b. The Aims and Purposes of the FFA.

c. The FFA Creed.

d. The Country Boy's Creed.

7. At the national FFA convention in 1941 "Lynn of Illinois moved that there be no _____ during the convention next year; motion seconded and carried." The item that was prohibited was:

a. The use of foul language.

b. The wearing of cowboy hats on the convention floor.

c. Placard waving.

d. Smoking.

8. During the 1942 national convention "Delegate Fair of West Virginia moved to go into committee of the whole for fifteen minutes to discuss the possibilities of the national organization buying a _____; motion seconded and carried." After discussing the issue for 15 minutes a committee of five was appointed to "...look into the matter thoroughly and report back to the convention as soon as possible." What was the national FFA considering purchasing?

a. A herd of Angus cattle.

b. A bomber.

c. A hotel in Kansas City .

d. A plot of land that was part of George Washington's estate.

9. The 1946 FFA convention was called the Victory Convention to celebrate the end of World War II. The national FFA Board considered buying 11,000 items for this convention. What was the item they considered buying?

a. United States Flags.

b. Sleeping Bags.

c. Victory T-shirts.

d. Commemorative coffee mugs.

10. The New Farmers of America held most of their conventions in:

a. Charlotte, North Carolina.

b. New Orleans, Louisiana.

c. Birmingham, Alabama.

d. Atlanta, Georgia.

The correct answers to the above question will be in the June, 1996 issue of The Agricultural Education Magazine. ■



MAY, 1996

## World Wide WWW

*(Continued from page 16)*

http://www.agriculture.com/contents/ffa/ffaindex.html

5).The Ultimate FFA Chapter List:
http://redskins.s715.ips.k12.in.us/star/ffalist.html

### Student Research

Another reason to use the WWW is that students get more motivated when they find something on the WWW using the computer. They can look up information using textbooks in anyone's class.

To find information, students can go to one of the pages listed above, or they can use WWW-based search engines and directories. If students are using Netscape®, they can click on the "Net Search" button to gain instant access to several search engines. From there, they just type the term they are looking for and let the search engine find links that are related.

For students who aren't sure about the exact term they want, several companies offer directories with well designed category-based search capability. Using Netscape®, all students have to do is click on the "Net Directory" button.

Public Relations

On August 1, 1995, the home page of the Mississippi FFA Association was placed on the WWW. Since then, the home page has provided information about Mississippi and the FFA to over 3500 individuals from 45 states, Australia, the Virgin Islands, Northern Ireland, the United Kingdom, Canada, Belgium, and Japan. The WWW will prove to be an even more valuable service as more individuals and schools gain access to the Internet.

A local agricultural education program can use a home page for several purposes. Publicizing activities of the FFA chapter, publishing a newsletter for alumni, and promoting agricultural awareness are just a few of the possibilities. Teachers can place media from their lessons on the WWW to show the public what they are teaching their students. (Wouldn't school board members be impressed?)

Sharing Information About The Program

One way to ensure that students are motivated to get involved in important projects is to provide a means of reward that has meaning to them. Imagine a student who published a report on the WWW having people from all over the world reading it and sending them e-mail about the report. The benefits in terms of self-concept to the student would be tremendous! The WWW is an excellent way for teachers to remind students that what they think and do is important and that they are valuable members of their families and communities.

Teachers can also use the WWW to provide instruction, giving students information to help them solve problems. This approach has improved achievement for college students and should work for high school students as well (Newman, Raven, & Day, 1996).

### Get On The Train

Because creating HTML documents is fairly easy, many people are starting to take advantage of the WWW as a way to get out the word about products and programs. In August, 1995, Mississippi became the first state to place an FFA home page on the WWW. Since that time, 12 other states have placed pages on the WWW that relate to the FFA. New agricultural information is being added to the WWW regularly. Technology for agricultural educators is changing rapidly. Now is the time to take advantage of these advancements for the sake of the students. There is much to be gained, for students and educators, by increasing our use of one of the greatest informational sources available, The World Wide WWW.

### References

Raven, M. & Settle E. (1995). Clicking Open a World of Information. The Agricultural Education Magazine, 67, (11), 10-11 & 17.

Newman, M. E., Raven, M. R., & Day, T. M. (1996). A comparison of world wide WWW instruction and traditional instruction on achievement in a technical writing in agricommunication course. Proceedings of the Southern Agricultural Education Research Meeting, 45, 289-98.

Nielsen Interactive Services. (1995) Internet surveys. World Wide WWW Document (URL: http://www.nielsen-media.com/demo.html). ■

## Education: The Time is Now

*(Continued from page 3)*

Research Projects Agency initiated research into computer networking. The result was called the ARPAnet. This precursor to the Internet was made up of 37 users, each paying $250,000 per year for the service. In 1983, Transmission Control Protocol/Internet Protocol (TCP/IP) became the standard, and the Internet was born. With 562 hosts, or machines, connected directly to it, it was still very much an exclusive club. Growth then became exponential. In 1988, Internet Relay Chat (IRC) was developed and released. The year ended with 56,000 hosts connected. In 1991, with 617,000 hosts connected to the Internet, The World Wide Web (WWW) was developed by Tim Berners-Lee and released by the Conseil Europeen pour la Recherche Nucleaire (CERN) of Switzerland. The National Science Foundation released control of the Internet in 1995 with 9,472,000 hosts connected. WWW traffic surpassed all other forms of data transmission in April of 1995. Estimates of the number of users, those connected to these host machines through dial-up or local area networks (LAN's), range from 25 to 75 million people and some expect the number to double in 1996.

Supporting all of this growth is being accomplished by a convergence of technologies, each advancing at astonishing rates. Fiber-optic technology allows 26,000 telephone calls to occur on a "wire" 1/20 the size of the former twisted pair telephone wire. The digitizing of microwave signals more than quadruples the available channels on both satellite and ground-based systems. Multiplying the effect of expanding bandwidth, the rapid compression and decompression of data has allowed much more data to be perceived than is either sent or received. These rapidly improving algorithms and processes allow interactive videoconferencing to occur at transmission rates that are 1/117,187 of what was standard 10 years ago. Today's digital videoconference systems typically use the equivalent of six digital phone lines (384K). Industry representatives are confident that the systems will perform as well or better on two digital phone lines (128K) by the year 2000. Even with the advancements in these two technological trends, increasing available bandwidth and using less bandwidth per operation, there is concern that the pipes between networks will remain the limiting factor as we move into the information age.

The distinctions between computing, networking, and telecommunications are becoming blurred, the technologies are merging. John Sculley describes the information age as a, "post-industrial promised land where four giant industries - computers, consumer electronics, communications, and information - will converge" (1992, p. 1B). Bill Gates reinforced this thinking in his 1995 book The Road Ahead. He expects the current distinctions between the telephone, the television, and the computer to become unrecognizable. His vision of information appliances accomplishing tasks currently carried out by all three of these devices will certainly carry weight in financial circles.

### Meaning to Agricultural Education

What are the implications for agricultural education? This rate of technological change places tremendous demands on our existing training models. In 1991, 1/3 of American workers had been with their employers less than one year, and 2/3 for less than five years. In the near future, constant training, retraining, job-hopping, and even career-hopping, will become the norm. "The growing sophistication of information workers will change the bargaining relationship between employers and employees, since for the first time in centuries workers will own the means of production (knowledge and information) and have broad access to the tools" (O'Hara-Devereaux, & Johansen, 1994, p. 28). We, in agricultural education, need to ask ourselves three questions, 1) Are we providing an education to students that will prepare them to compete in the economy as it will exist when they graduate? 2) Are we preparing our students to be life-long learners so that they can remain competitive throughout their working career? and 3) Are we prepared to meet the training and retraining needs of the agricultural industry as it will exist in the future?

Before you answer the first two questions, note the following trends. In 1991, for the first time ever, companies spent more money on computing and communications gear than on industrial, mining, farm, and construction equipment combined. The Administrative Development Institute reports that 71 percent of secretaries now perform duties previously performed by management. The Bureau of Labor Statistics reports the number of secretaries is down 521,000 since 1987. The Department of Labor estimates that by the year 2000 at least 44% of all workers will be in data services, gathering, processing, retrieving, or analyzing information. Are we helping students prepare for a lifetime in this increasingly technical, organizationally flattened workplace? You decide.

The answer to the third question is clearly no. It is estimated we currently have 1/6 of the capacity necessary if all worker retraining were→



to be carried out at institutions of higher education. It appears that much of it will be carried out by the corporations themselves, but there will certainly be a substantial number of people not served. A partial solution to this greatly increased demand for life-long training and retraining is to remove the restrictions of time and place. The trend is to provide learners with access to location-neutral, and/or time-shifted, organized instructional programs using electronic communications technologies.

### The Role of Agricultural Education

First, let's agree on what it is we're all talking about. "Distance education is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organizational and administrative arrangements" (Moore & Kearsley, 1996, p. 2). This definition implies much more than standing in front of a video camera, or faxing handouts to students. Instructors have many additional responsibilities, or roles to play, in these settings. One popular current model creates teams of people to address these responsibilities. Educators work with instructional designers, telecommunications specialists, and administrators to accomplish their instructional objectives. Each of these team members is crucial to the success of a distance education program, but each approaches the problem with different objectives and criteria for measuring success. Our role, as agricultural educators, it to insure that learning and teaching criteria are foremost in the evaluation of these new educational environments.

As agricultural educators, we have some insight into learning and teaching. We know the purpose of education is "the formation of careful, alert, and thorough habits of thinking" (Dewey, 1910, p. 58). We believe that this purpose is best accomplished through exposure of students to educative experiences. We know that in order to maximize their educative value, these experiences must be organized. We realize that learners are complex; that their motivations, experiences, and cognitive schemata influence how they will learn; that learning requires a change in the learner brought about through the internal organization of knowledge, and that this organization can be guided, but not compelled. Basically, we realize that learning involves more than accurately perceiving information. Believe it or not, this is not an obvious statement. To many of the people organizing distance education settings today, if the students can see and hear clearly then they must also be able to learn. Our role is to be advocates for the needs of learners, to support well-planned effective instruction whether it occurs on- or off-campus.

Technological change in our society and our workforce, as well as growing public expectations, insure that distance education is here to stay. Location-neutral, and/or time-shifted educational programs will grow, providing additional access to meet the needs of place- and time-bound learners. Agricultural Education should take the lead in this process. We should argue early and often that the criteria used to judge the effectiveness of these new educational environments contain variables like Bloom's (1976) factors of quality instruction, or Gagné's (1977) conditions of learning, and are not limited to the number of megabits per second transcieved, or pixels per inch produced by some telecommunications network. Given the rapidity of the development of these systems, the time for us to become involved is now.

In this issue, you will find eight theme articles that I feel organized themselves into three categories. The first four address the changing nature of agricultural education. The next three provide examples of distance education techniques that have been used in agricultural education settings. The last article describes a planning process used to proactively assess needs and develop a distance education facility to meet them.

### References

Bloom, B. S., (1976). Human characteristics and school learning. New York: McGraw Hill.

Christenson, J., Dillman, D., Warner, P., & Salant, P. (1995) The public view of land grant universities: Results from a national survey. Choices, 3. pp. 37-39

Dewey, J. (1910) How we think. Boston: Heath & Co.

Gagné, R. (1977). The conditions of learning. (3rd ed.), New York: Holt, Rinehart, and Winston.

Moore, M., & Kearsley, G. (1996). Distance education: A systems view. New York: Wadsworth

Naisbitt, J. (1994). Global paradox. New York: William Morrow & Co.

O'Hara-Devereaux, M., & Johansen, R. (1994). GlobalWork: Bridging distance, culture and time. New York: Jossey-Bass

Sculley, J. (1992, November 15). Beyond the PC: Apple's promised land. The New York Times. P. 1B ■

# CALL FOR APPLICATIONS

A committee has been appointed to solicit and review applications for Editor-Elect of The Agricultural Education Magazine. Individuals interested in applying for the position of Editor-Elect should submit:

1. five copies of their resume;
2. five copies of a letter of application telling why the applicant is interested in becoming Editor-Elect and describing any changes or innovations the applicant believes would improve *The Magazine*; and
3. five copies of a letter of support from the applicant's immediate supervisor indicating the applicant has the administrator's support in undertaking this professional responsibility and that the administrator will provide necessary secretarial, Student worker, and other assistance necessary to produce a high quality professional publication.

Applications are due July 1, 1996 and should be submitted to:

Dr. Joe W. Kotrlik, Chair
Editor-Elect Selection Committee
School of Vocational Education
Louisiana State University
Baton Rouge, LA 70803-5477

Potential applicants are encouraged to contact any member of the selection committee to discuss the Editor-Elect position and to obtain more detailed information on the support needed. The selection committee members are:

Joe W. Kotrlik, Louisiana State University (504) 388-5753 - FAX (504) 388-5755
Lou E. Riesenberg, University of Idaho (208) 885-6358 - FAX (208) 885-4039
Don Sliger, Oregon Department of Education (503) 378-3584 - FAX (503) 373-7968
MeeCee Baker, Greenwood High School, Millerstown, PA (717) 589-3116 - FAX (717) 589-7096
Ed W. Osborne, University of Illinois (217) 333-3166 - FAX (217) 244-7503