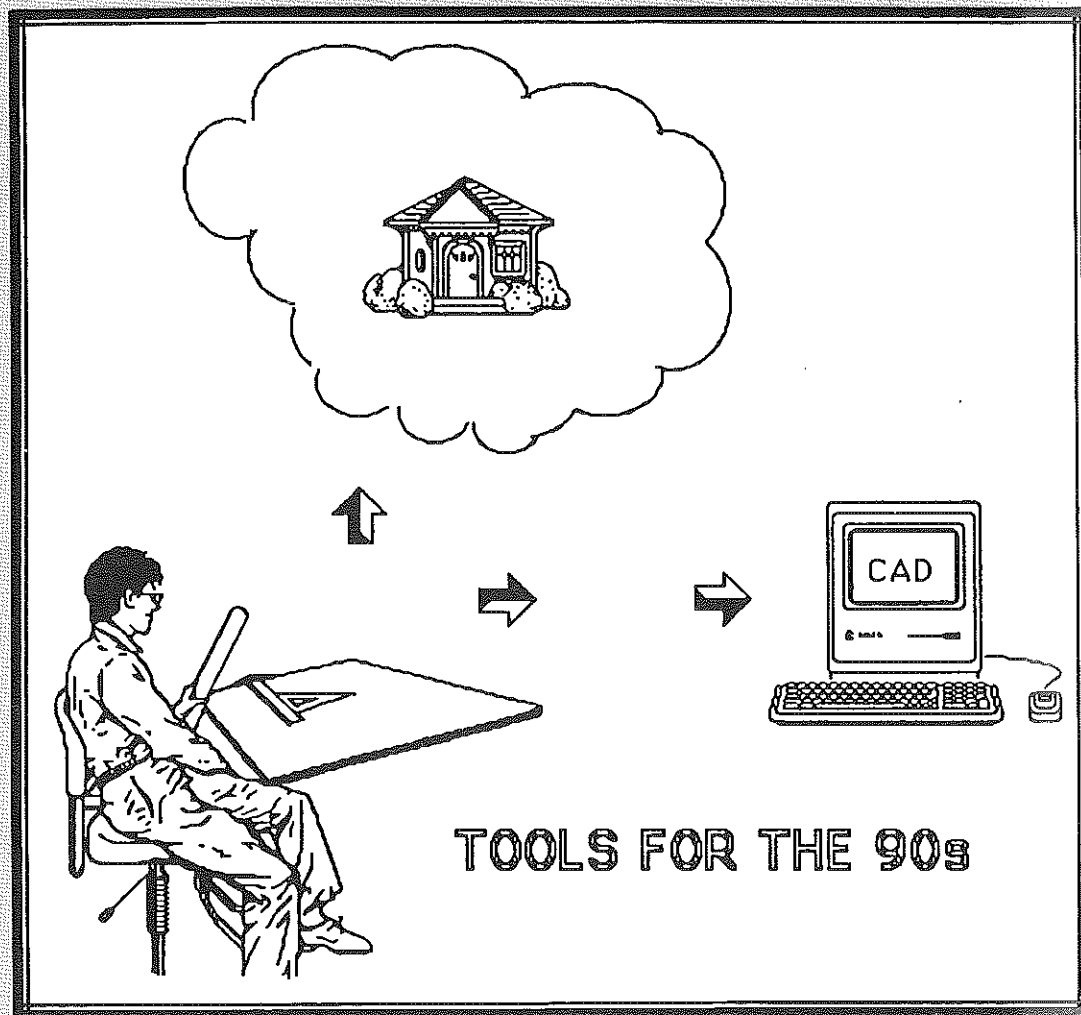


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Number 9



THEME: Computerizing Instruction

THE AGRICULTURAL EDUCATION MAGAZINE



March, 1991

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It Takes Guts To Clear the Ruts!

It seems to be a human frailty to allow oneself to get into a pattern of behavior with which we seem comfortable. Such a pattern can become a habit which is nearly impossible to alter or break. Further, we have the tendency to rationalize such behavior even when we know it is not desirable or good for us. Often, we fall back on such patterns of behavior and thinking to deal with new problems and change even when they are not appropriate. Such patterns of behavior or thinking can easily become ruts that guide a person's every move or thought. Intelligent human beings often sophisticate such thinking by calling it philosophy or a value system. Just like the deep ruts developed in a muddy dirt road can entrap an automobile and direct its movement without any guidance from the driver, so the human ruts guide our actions unless there is super human intelligence and effort applied.

A strong philosophy can be a desirable attribute allowing one to respond in a consistent and predictable manner. It allows for the steering of a steady course in the face of "ill winds" that might otherwise divert one from a mission or purpose. In the course of human events, "ill winds" are not necessarily evilly contrived, but more commonly are driven by emotion. Emotions often spawn "ill winds." Emotions directed toward doing good; rectifying a wrong; or jumping on a "band wagon" so as to give the impression of being progressive are genesis for diverting attention from a mission.

As with so many things in life, the key is knowing when and how much of a good thing to use. Too much of a good thing can be just as destructive as none at all. Blindly applying a philosophy in an inappropriate situation is nearly as ruinous as having no philosophy at all. Agricultural education is being crucified by both types of individuals, those who blindly cling to an outdated, narrowly defined philosophy and those who have no philosophy at all. The latter individuals are, in all likelihood, the most ruinous to educational programs as they flounder about with no direction or course. Typically, these individuals are known as "good old boys" who are always jumping on any cause or program that happens to be popular at the moment. They simply fall in any rut they encounter and blindly promote the cause without even realizing where it is taking them or their programs. Further, leadership is often accorded such "cheer leaders." Is it any wonder that education in this country is so slow to respond to meaningful change?

Those individuals that stubbornly apply an outdated philosophy to a new situation stand squarely in the path of change and forestall progress. These "defender of the faith" champion themselves as martyrs while digging the ruts



BY PHILLIP R. ZURBRICK, EDITOR

(Dr. Zurbrick is Professor, Department of Agricultural Education, The University of Arizona.)

deeper and narrower. It is amazing that both the "martyrs" and the "cheer leaders" perceive themselves as promoting agricultural education, while in reality they are both providing excruciatingly slow and endemic reaction in a fast moving world.

What is sorely needed in education and agricultural education are visionary, dynamic leaders. Individuals who have the wisdom and intestinal fortitude to rise above the ruts and elevate agricultural education to a new, higher level of service. Typically, these individuals are deep, independent thinkers who do things differently and who are generally on the periphery of the mainstream. Needed are individuals with a solid foundation who know where they are going and are willing to accept and adjust to change. We need LEADERS who perceive change as an opportunity for progress rather than those who fear it, fight it or fail to sense it entirely. The term enlightened leadership comes to mind.

How can enlightened leadership be developed? Certainly, there is no dearth of qualified individuals with the characteristics listed within the agricultural education family. We simply need to provide the opportunity for professional growth and leadership development. A "think tank" providing the opportunity for visionary growth and the identification of basic bedrock values needs to be established. Perhaps a National Agricultural Education Academy supported through the National Council could develop a society of learned leaders capable of providing enlightened leadership. This could be the mechanism for developing the guts to clear the ruts!

About the Cover

"You think, let the computer do the work."

Line drawing prepared by Dr. Barbara M. Kirby using Hyper Card on MacIntosh SE System.

Computerized Instruction — Practices For the 90s and Beyond

Look around your classroom, your office, and your home. How many computers or computerized devices do you see? We program our cars, microwave ovens, televisions, VCRs, house lights, room temperature, and finally, as Dr. Miller and Mr. Tipton point out, we are even at the mercy of a computer when we try to get money out of the bank through the Automatic Teller Machine. In our classrooms and offices, we are using computers as tools — managing professional, personal, and student information, supplementing instruction with computer aided drawings, simulations, games, and tutorials; communicating with others through our electronic networks.

This issue focuses on how computer instruction has become part of the high school agriculture program, the adult education program, and the post-secondary program for teacher preparation in agriculture. **COMPUTERIZING INSTRUCTION** means that we are using the computer as a tool to teach about technology, manage information and processes, and present information. We also need to keep in mind that computer applications in agriculture reach far beyond the school environment. For a number of years, extension agents have carried portable computers to the field as they assisted clients at their homes and literally recorded data in the field. In many states, the extension agents and faculty as well as members of agricultural organizations were among the first to use electronic mail. Dr. Miller and Mr. Tipton provide information so that all of us can move into a world of electronic communications. It's a world we have stayed away from, particularly because of its expense and "unfriendly" nature.

Over the past 20 years, we have moved through a hierarchy of seven levels of concern with regard to the use of computers. Our initial awareness left some people apathetic and unconcerned. Surely this "computer thing" would be a passing fad! The curious moved on to an **information** stage, learning through self-instruction, workshops, and courses. As Mr. Perryman and Mr. Sherman indicate, we need to continue to seek information to upgrade our skills. The challenge is to stay at least one step ahead of the students who are completing required keyboarding classes in the elementary school. Our knowledge base has grown just like the microcomputer has grown from 48 kilobytes of memory to laptop computers (12 square inches in size) with 20 megabyte internal hard drives. As soon as we feel comfortable about what we know, it is time to learn new information about how the latest model or most recent software version can serve us.

How does computerizing instruction personally affect me? The Computer Technology and Computer Software special



BY BARBARA M. KIRBY, THEME EDITOR
(Dr. Kirby is Assistant Professor, Department of Agricultural Education, North Carolina State University.)

editors have shared with us many ideas as to what works best and how incorporating these ideas into the curriculum can have positive results. Computerizing instruction will take time and money. **Management** is always a level of concern. Sometimes we experience frustration and anger as we wrestle with upgrading hardware and software to more efficiently manage information. Mr. Richardson and Mr. Atherton have helped students manage their time, dollars, and massive amounts of information with the aid of a computer. Word processing programs, databases, and spreadsheets continue to help us manage our information.

The consequence of using computers in our classrooms must be to benefit students. If in fact 80% of the students in school will technologically manipulate data by the year 2000, the instruction must be relevant. According to research conducted for the National FFA Organization (1989), nearly 73% of the agricultural education programs have access to microcomputers. By the year 2000, every department should have at least one microcomputer available. So many opportunities exist for students to solve economic problems in agricultural business, to simulate farming operations, to design very sophisticated landscape plans, to experiment with robotics and so on. Dr. Powers focuses on computerized instruction for institutions of higher education. Agricultural educators must take advantage of integrating computer instruction in the pre-service courses. Future teachers, extension agents, and agricultural communicators must feel competent in using new technologies if they are expected to use the technology in the profession. Teacher educators have a responsibility for delivering "cutting edge" in-service to extension agents and teachers. Programs like Harvard Graphics, Power Point, and desktop publishing software permit educators to professionally organize and present information. Students and teachers at all levels find these programs challenging and the computerized products impressive.

(Continued on page 7)

Computer Applications In the High School Curriculum

In the 1930's, mechanical power was well on its way to replacing the mule as the primary source of power on the farm. In the 1940's, chemical fertilizers were quickly being adopted on the farm. During the 1950's and 60's, herbicides and insecticides were becoming commonplace on the farm. In each instance, vocational agriculture was at the forefront of providing instruction and encouraging the adoption of these technologies. In the 1990's, computers are the new technology that must be adopted on the farm and in the agribusiness if these businesses are to compete. Vocational agriculture must again be at the forefront in providing instruction and encouraging the adoption of this technology.

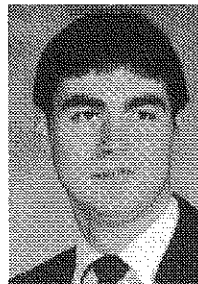
The Computer As A Tool

Computers are used in agricultural business and industries as tools to help in record keeping and decision making. Government agencies such as the Agricultural Stabilization and Conservation Service use them as a help in conducting agency activities. In production agriculture the increasing utilization of computers helps the farmer keep records and make important financial decisions. It has been estimated that "80 percent of students currently in school will technologically manipulate information in their work by the year 2000" (Valdez, 1986, p. 5). Computing skills are now needed in most agricultural occupations, and it is now essential that every high school vocational agriculture student be equipped with the skills to put the computer to use in the business. Instruction in the use of computer applications must keep up with what is being used in business and industry or instructors will not be fulfilling their roles as vocational educators.

Computer Education and Skills

Computer education in the high school classroom has consisted primarily of teaching students programming skills; fully 50 percent of the computer time spent by high school students is in actual programming (Becker, 1987). While programming skills can be important for certain applications of the computer, programming skills are not the skills necessary for a secure future in the workplace. The computer skills needed by today's high school students are those skills that will make them more productive and efficient.

An effective way to use computer technology for the purpose of becoming more productive and efficient is by using the computer as an aid in decision making and problem-solving. To accomplish this task, teachers must move toward using specific applications software to the type the student will encounter on the job. Tools such as spreadsheets, data base management software, word processors, and accounting programs must be integrated into the curriculum.



By JONATHAN C. ATHERTON

(Mr. Atherton is Farm Business Planning and Analysis Instructor, Trumbull Co. Joint Vocational School, Warren, Ohio.)

Affording the Tools to Do the Job

How can we afford the cost of acquiring the software necessary? Quality, inexpensive software is available through a number of sources. Public domain software, available through several sources (Jaeggli, 1990), is free software, donated into the public domain for use by anyone interested. Shareware is software that may be distributed free of charge, but the author asks a small fee (usually \$10-\$40) if you adopt the software for use. Often, small gems can be found in public domain and shareware software. An additional source which should not be overlooked is the Cooperative Extension Service. In some states, this software is free while in others it is sold; in either case, this software may be very good for use in the classroom.



The collection of software used in the agriculture classroom has broadened to include communications and CAD programs.

How, you might ask, do we integrate computerization into the curriculum and continue to teach everything we presently teach? The answer is already with us. The supervised experience program that every student has should be managed using the computer. After all, this is the primary

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Times Are Changing: Computers Out Rank Pick-up Trucks

At a recent conference on "Together We Can" the statement was made, "The agriculture teacher has more resources available to him/her than any other subject area teacher." In that, I agree. At the same time, agriculture teachers are, in all probability, the most guilty of all teachers in utilizing the lowest percentage of our available resources. That is not to say that we are lazy or blind. We have to remember that we are involved in the world's largest and most diversified industry. One of the most important resources an agriculture teacher cannot afford to ignore is computerized instruction. It is one of the best things to hit agricultural education since Public Law 740. When asked, as an agriculture teacher, what are my most important resources, other than students, I often respond with three items. In order from top to bottom they are, my wife, my time, and my computers. My pick-up truck runs a close fourth. Any successful, married agriculture teacher must have an understanding spouse. That spouse must have an understanding of the time required away from home to run a successful program in agricultural education. With that understanding, time is then made available to expand your instructional program. The third source of computers, does not have the understanding ability of your spouse but sure is helpful with time management. The computer does not create more time but helps you effectively use what time you have to manage and expand your program.

One of the most beneficial results of computers in the classroom is the doors they open to good, practical, real life instruction. The teacher does not have to create a tremendous sales pitch to today's students on the importance of computers to all aspects of society. A number of students are probably required to use computer skills in supervised agricultural work experience programs. If students are alive and breathing, they should be keenly aware of the importance of these skills in the job market.

Motivating The Learner

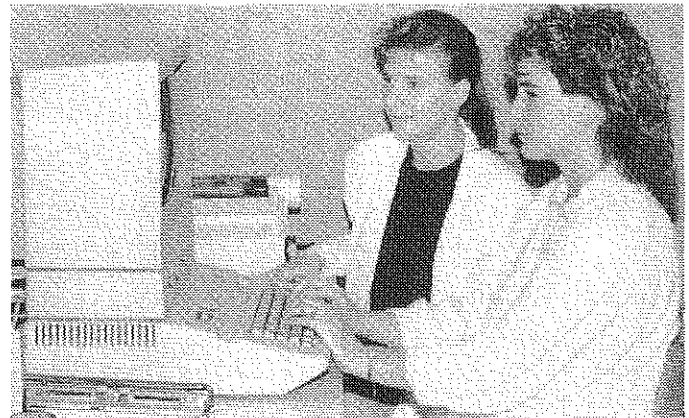
Computerized instruction, from the viewpoint of the agriculture teacher, should be geared toward creative, practical application for the teacher and the students. The teacher should not be overly concerned about or feel responsible for teaching the student basic computer skills. Allow students to acquire these basic skills from other sources. These sources could be business classes designed for such instruction, time spent in computer labs with other students, home computers or from independent study created out of "the desire to know." This facet of education will be discussed further. Remember, we teach agriculture and not computer science. After-school hours could be made available for independent study computer time. For independent study, get students started, give them a manual and then leave them alone until they call for help. After all, we are



BY GLENN ALLEN PERRYMAN AND BRUCE SHERMAN

(Mr. Perryman is Teacher of Agriculture, R.T. Reynolds High School, Winston-Salem, NC; Mr. Sherman is Program Specialist, Vocational Education, Winston-Salem, NC.)

supposed to teach students to read, think and be creative. It's like teaching someone to ride a bicycle. The student cannot learn if you are on the seat, holding the handlebars and doing the pedaling. Remember your first experiences with computers? You probably could not wait until the instructor turned you loose to experiment on your own. Give students that same opportunity.



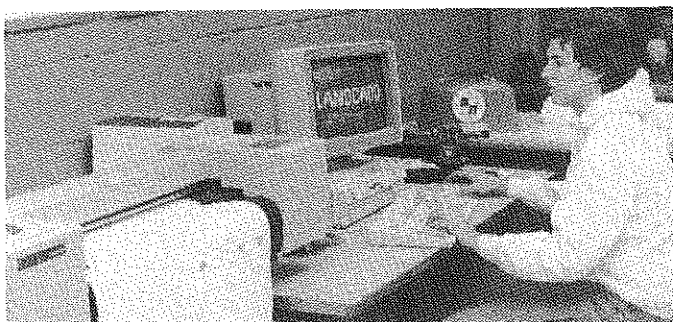
Two students work on the Apple Computer. The data base for our fruit sale is kept on this computer.

Remember that phenomenon mentioned earlier called "desire to know?" Developing that desire is the hardest part of any form of instruction. This is where the role of the effective teacher enters the picture. A day rarely passes without us (the students and I) stumbling across a practical computer application in our classroom discussion or FFA activities. Totally unplanned, we race to the computers. You notice that I say computers, as in two. (One Apple IIE with Imagewriter printer and an IBM with a plotter). I make it

a point to get there last. Why? A student should be the one punching the keys or moving the mouse. Having only two computers should not be considered a hardship. There is much to be said for a group effort when developing ideas. When teacher and students take real life instances and apply them to computerized instruction during class time the inevitable occurs. The inevitable occurrence is the independent application of learned skills on the part of the student. This is not to say that all computerized instruction should be coincidental.

Classroom Computer Instruction

With selectivity, investment and equipment on your minds, let us consider hardware and software possibilities. Most beginners should probably start out with basic educational hardware equipped with software capabilities of word processing, data base, and spreadsheet. Some additional graphic software would be helpful. How about the FFA written contests such as American Degree, Proficiency Awards, and Chapter Awards? It is hard to believe how much easier the job of completing those applications is with these software packages available from the supply service. Be advised, teachers do not need every software package that hits the market. Be selective. Ask around. See what other teachers are using.



Greg Parris at work on the IBM computer. He is preparing to work on a landscape design.

Once the basics are mastered, state of the art equipment awaits on the horizon. The beauty of computerized technology is that opportunities for application never end. The user is the only limitation to the application of computerization in most cases. The computer can be a great equalizer for students. An example of this would be creating a landscape design on the computer versus a drawing board. An understanding of how to manipulate the software is all that is needed as opposed to knowing all the tools and techniques required to draw on a drawing board. One cannot imagine the endless possibilities of a CAD (Computer Assisted Design) system until he/she has one. Drafting plans

and designs take on a whole new look in the agriculture program. These CAD creatures are applicable in so many ways above and beyond what their basic design is intended. Landscape design software can be applicable to most, every area of study in the agricultural education curriculum — FFA activities, adult education, and public relations. Once the word is out, everyone will want to see what it does and how it operates. Creation of curiosity in prospective students is one of the best recruitment tools for an agricultural education program. I have yet to see a student walk by a CAD system in operation and not stop to look and ask questions. That immediately eliminates the idea, "I thought farming was all one studies in agriculture." There is no way to develop a finite list of possibilities because the list of CAD applications is not finite. As stated, the mind and creativity of the user is the only limitation.

Learning Opportunities: A Must For Teachers

Open-mindedness is of the essence on the part of the agriculture teacher. If the local director, program specialist, state educational consultant, or community college of LEA (local educational administration) provides opportunities for teacher education in computers, take advantage of the situation. However, one has to be realistic with (here it is again) time constraints and whether the subject matter being presented in such opportunities is going to be of benefit to the local instructional program. Be selective, in other words, when choosing among training opportunities. One must also accept the fact that the payoffs for this extra effort should not be expected in terms of extra pay. Sometimes the personal satisfaction of having the knowledge is better for the individual. After all, these skills can be applied to the instructors personal use as well. Also, it is easier to ask the LEA for hardware and software if the LEA personnel knows the instructor is trained to use the equipment. Invest in yourself.

Summary

There will never be a substitute for books, pencils, and paper in America's classrooms. And no matter how effective computer technology is, there will never be a substitute for the personal touch of the classroom teacher. The horse drawn plow played a vital role in early agriculture. That plow is still drawn by horsepower of a different type. Modern man started out recording information on paper and the processing of this information occurred in his brain. There is one big difference between then and now. Today, there is increasingly more information to be considered in the same, if not less amount of time. All people in the workplace need the skills and knowledge of computerized technology. The agricultural education teacher and his/her students should not be the exception.

Computerizing Instruction — Practices For the 90's and Beyond

(Continued from page 4)

Collaboration and sharing is vitally important. Mr. Pitzer willingly shares with us a synopsis of projects conducted by the Computers in Agriculture Award winners. Students are leading the way by assisting teachers, extension agents, agribusinesses, and fellow students. Personally, I believe that

the 1991 winners should demonstrate automated processes with robotics. I hope that in the next computerizing instruction issue, we will read more about how agricultural educators are using interactive video, computer generated visuals, scientific visualization, data scanning, photo digitization, robotics, and automation. We are challenged to refocus and raise our levels of expertise in order to deliver appropriate instruction which meets the needs of students in the 1990s and beyond.

Keyboard Captives: Computer Can Capture Student Interest

Some FFA members will spend hours working on a speech or preparing for a judging team. Others work endless hours on their SAEP. Once they discover a strong interest in a particular topic or field there's an insatiable urge to get more and more involved.

The major objective of the FFA Computers in Agriculture award program is to recognize members who have made the greatest progress in utilizing computers in agriculture and agribusiness. Emphasis is placed upon the practical applications of the computer and software programs in agriculture/agribusiness rather than upon the programming of the computer.

This student recognition program encompasses three basic skill development areas:

Awareness skills — The student learns how to identify those areas of agriculture and agribusiness enterprises which are impacted by computer and computer technology.

Selection skills — The student learns how to select computer technology most applicable to areas of operations identified as being suitable for computerization.

Application skills — The student learns how to use computers and computer resources as a technological tool for success in agriculture.

The 1990 Computers in Agriculture program recognized the dedication and enthusiasm of students who have gotten themselves totally involved in the information age.

There were 35 state winners submitted for review by a national judging committee that selected eight national finalists. Judges were state FFA supervisors and executive secretaries, plus agribusiness leaders. Each chapter gets an application form and is encouraged to submit a local winner to the state. Then states may determine a state winner.

At the national convention, the finalists were given an opportunity to make a 10-minute presentation to a panel of judges. Members explained their activities and accomplishments regarding computers to the panel. Following their presentation, the judges had five minutes to ask questions.

Judges for 1990 were Tom Leonovicz, ValCom, Inc.; Tom Ogle, Missouri Department of Elementary and Secondary Education; Ann Billotti, AgriData, Inc.; and Dr. Joyce Winterton, National Council for Vocational Education.

The award program is sponsored by the National FFA Foundation general fund. The eight finalists each received a \$250 travel stipend from the Foundation and were recognized on stage in the Thursday morning session with a certificate from the national officers.

The 1990 national winner was Karla Williams of Joliet, Montana.



BY JACK PITZER

(Mr. Pitzer is Senior Editor, FFA New Horizons, Alexandria, VA.)



Karla Williams was named national winner of the Computers in Agriculture award program and presented her trophy and \$500 cash by national officers Donnell Brown, left, and Bill Henricksen, right, at the convention in Kansas City.

Karla has used computer applications to prepare a database for the Montana Vocational Agricultural Teachers' Association and developed a spreadsheet to track income and expenses for the organization. She also designed and produced a state convention newspaper.

Her major agricultural application, however, was to assist three county agricultural agency officers in integrating computer applications to their operations. She actually met with county officials and discussed their needs and projects, then offered suggestions as to how computers could help them with their work.

For the Soil Conservation Service, Karla compiled show survey data collected at 18 sites from 1935 to 1988. These data were then converted into bar graphs for review and water table studies.

The county extension office had a computer but needed help to use it for fair registration and sale operations. In the

end Karla developed a system that made it easier for extension staff to sort and compile each class, lot and individual and to pay premiums on time. Also, livestock sales buyers could be billed the same day.

The county weed district wanted to know if a computer would be a good investment for their operation. Karla's work created a computer filing system to store and sort daily reports for each spray truck for the county weed district. Also she created a spreadsheet to do calculations for financial analysis and produce final summary sheets for each truck and the locations sprayed.

As a freshman Karla used the Apple IIe. When she was chapter treasurer she advanced to using IBM to keep chapter records. Now she also uses MacIntosh equipment with a scanner, laser printer and a variety of software packages. She actually scanned the CIA application, filled it out on PageMaker, and used a laser printer to produce the copy she submitted.

The 1990 runner-up was Rob Johnson of Platteville, Colorado.



Rob Johnson was named runner-up in the 1990 CIA program and was presented his clock trophy and \$250 cash during the Thursday morning session on stage at the national convention.

Rob has used computer applications to develop a spreadsheet for the FFA treasurer's book as well as placing FFA award applications on computer. He also developed a record book template for this Valley FFA Chapter's use.

His primary agricultural application was to transfer a record book system into spreadsheets and databases. He made a manual to go with it that describes how to activate the numerous macros and the menus. This allows other members to computerize their records and learn how to operate a computer with ease.

"My advisor and I have incorporated the computerized record book into the curriculum and I teach members how

to utilize both Microsoft Works and the templates that I have created. All of the chapter's computers are linked via a Novell Network System which I helped install and maintain."



Karla told the judges about her work for the county weed district and how she helped organize their spraying program and figure routes for the trucks.

Here are the stories about the other six finalists.

Melissa Hath, of El Nido, California, has used computer applications to successfully track her family's dairy herd records, which helped to increase milk production. She has also developed templates for her chapter to use to simplify award application procedures. Melissa is a member of the Merced FFA Chapter.

Domonic Salce, of Springerville, Arizona, has used computer applications to create accurate records for inventory, income, expenses and net worth as well as producing graphic design work. He is in the process of developing an extensive record keeping system for a major cattle guest ranch. Domonic is a member of the Round Valley FFA Chapter.

Kevin Herrick, of Roslyn, South Dakota, has used computer applications to help create an emergency sign identification database that is placed in every rural residence in Day County. He was also elected manager of S&D Computing, a computer programming business conducted in his agriculture tech class to market computer programs. Kevin is a member of the Roslyn FFA Chapter.

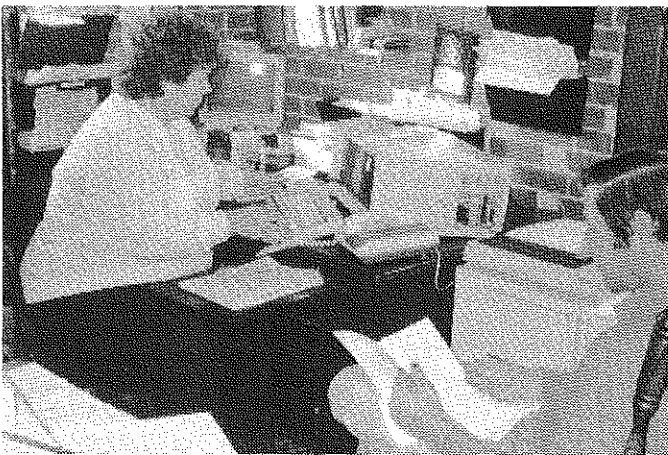
James Jacquier, of East Canaan, Connecticut, uses computer applications to record herd information for his family's 500-cow enterprise. He also keeps track of his own dairy animals with a profit/loss application as well as recording information on his corn and hay fields. James is a member of the Housatonic Valley FFA Chapter.

Clay Britt of Nichols, South Carolina, has used computer applications to develop a production plan for the school

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Computers In Farm Business Management Education

Computers are used directly or indirectly by each of the more than 5,000 farmers enrolled in the Minnesota Farm Business Management Education Program. Management education means learning how to make management decisions and evaluate alternatives. The computer has replaced the pencil, pad of paper and calculator in accomplishing these objectives. Good management decisions can be made only if the farm business has an accurate set of records. Some farmers are still using the Account Book to record their transactions by hand, while many others are using a computerized recordkeeping program to keep track of their transactions. People who have made the switch have found that the time used in entering the transactions is about the same with both systems. But once entered, the computerized programs can do so much more in quickly calculating the results.



A farm couple makes use of a computer at home to keep their records up-to-date. (Photo courtesy of Dan Hoffman.)

A few farmers enrolled in the program have their own computer. Some of the programs rotate a portable computer from farm to farm during the month. All programs have computers in the school on which the work is done by the instructor or an instructional aide. The annual end product each farmer receives is an enterprise analysis of his farm business. This is a computer generated report done in a central location from which area averages are derived. The farmer then knows how his figures compare with the averages for the area. Enterprise strength and weakness can easily be spotted and serve to call attention to areas of possible correction for improving the farm business.

There is no question that the farm manager of today must be able to collect data and process it into information. The success of the farm business depends upon the operator's or manager's ability to handle financial and production



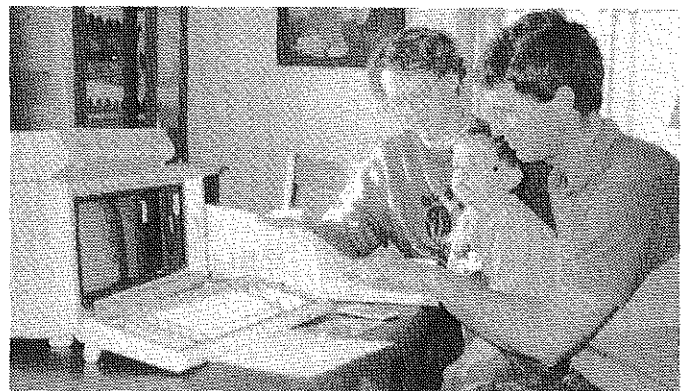
BY VIC RICHARDSON

(Mr. Richardson is Area Agriculture Coordinator, Austin Technical College, Austin, MN.)

figures and make decisions. The computer is helping farm managers to become more knowledgeable and more effective in controlling their business.

The extent to which the Minnesota Farm Business Management Education Program uses computers with farmers is for accounting and management. When used for accounting, the computer replaces the ledger book. When used for management, programs are used to organize data and assist in making the best management decisions possible.

The computer is used extensively for farm accounting in keeping track of daily transactions. Monthly reports can easily be generated to show actual figures to date. Some programs allow the projected cash flow to be input so the actual figures can be compared with the projected figures. This can serve as an early indicator of pending trouble. The computerized accounting programs also allow for greater ease in tax planning and management because of the readily available totals to date. A computerized depreciation schedule is a good companion to the accounting package for efficient tax planning. Most farms currently have items being depreciated under four distinctively different depreciation systems. This is confusing and difficult, at best, to handle manually. The computerized depreciation schedule can deal with it accurately and expediently.



Computers are rotated from farm to farm to permit the use of computerized accounting (Photo courtesy of Dan Hoffman.)



A farm management instructor assists a farmer with a computerized decision aid. (Photo courtesy of Dan Hoffman.)

Some of the management areas in which computers are used in the Farm Business Management Education Program include the following:

- **Cash Flow Planning** — A projected cash flow is a useful and necessary document for all farmers. A cash flow budget includes only cash receipts and cash expenses. It is constructed on a monthly basis for one year to show the timing of the receipts and expenses and the monthly cash surpluses or deficits. It calls for production and market planning and allows the farmer to determine what the financial pulse of his business is like. The computer allows for quick changes to be made and corresponding results to be observed.
- **Financial Long Range Budgeting** — As business structure and financial conditions change, anticipated results are good to know. The financial long range budget allows for modifications in enterprise scope and mix, and projects the corresponding financial condition of the business. Farmers must decide what enterprise or combination of enterprises offers the best long-term potential, how big the business should be, the amount of debt that can be handled, and how to ensure adequate profit from the business. Financial long range budgeting on the computer allows the farm manager to analyze the anticipated results of organization or restructuring. It's the next best thing to having an actual crystal ball!
- **Enterprise Budgeting** — Farmers like to know how changes in input prices and market prices are likely to impact enterprise profitability. Enterprise budgets are constructed from the records of the entire farm business by allocating the income and expense items for the whole farm to individual enterprises. The computer can easily collect the data and project the expected profitability. This type of information is most useful in making management decisions.
- **Income Tax Planning** — The management of a modern farm business requires the handling of a large volume of money for current expenses as well as large investments in capital improvements. As a business

becomes larger, the tax considerations become more important in decision making. Income taxes, like other farm costs, can be reduced by good management. The computer allows the farmer to input year-to-date actual figures, projected figures for the balance of the year and to do some analyzing of the impact of selling more produce or prepaying some expense.

- **Ration Balancing** — Feed represents a large part of the total cost of producing livestock and livestock products. Feeding a balanced ration will provide the most economical results. The computer helps us out in putting the proper ingredients together in a balanced fashion.
- **Various Decision Aids** — Each year the government program changes and with it the decision to participate or not. A computer template is most useful in analyzing the likely result of participation or non-participation. This is helping the management decision in determining the effect of participation on farm profit.



Instructional support staff keys in data for a projected cash flow. (Photo courtesy of Dan Hoffman.)

The land next door is available for rent. The question is asked, "What is the most I should pay for it?" Another computer template can be used to show what varying levels of rent will do to expected profitability. This kind of information is vital in making sound farm management decisions.

Even though the use of the computer is a prominent part of our Farm Business Management Education Program, the individual farmer is still the bookkeeper. When the computer print-out sheet gives incomplete or inaccurate information, the farm management instructor must communicate with the farmer and explain in detail what must be done to correct the situation.

When this is done, a farmer may begin to question the capabilities of the computer accounting program being used. However, the real problem is that the bookkeeper has failed in his task. This is where farm management instructors fit into the picture. The bookkeeper needs some prompting or retraining.

(Continued on page 15)

Computer Applications In The High School Curriculum

(Continued from page 5)

way computers are being used in business. Every student must be required to develop budgets using an electronic spreadsheet. An electronic spreadsheet is essentially an electronic ledger which is used to perform mathematical functions. The spreadsheet is the ideal tool for developing budgets. The student can easily modify the spreadsheet to reflect various production levels, expenses, and prices. Every student sets goals, plans, and agreements for each enterprise. A word processing program should be used to record these statements. They can be updated as necessary throughout the course of each individual project.

In many vocational programs, students maintain a list of competencies gained. A data base management program, which is used to track large amounts of similar data, is an ideal tool for the student to record these competencies, along with the date the skill was demonstrated. Finally, an accounting package must be used by each student to record all income, expenses, capital purchases, and depreciation associated with the enterprise.

The student should be provided with access to the computer during regular lab time. This should be sufficient to allow the student to keep records up-to-date. Monthly printouts would be required and kept with each student's record books.

Keyboard Captives: Computers Can Capture Student Interest

(Continued from page 9)

greenhouse. He has also maintained revenue and expense records and utilized the computer to maintain agriscience projects. Clay is a member of the Green Sea Floyds FFA Chapter.

John Bullock, of Red Level, Alabama, has used computer applications to write a program that controls meat inventory in the grocery store where he works. He has also recorded the chapter's fruit sales on computer for future reference. John is a member of the Hillcrest FFA Chapter.

The following other state winners competed for the National finalists ranking:

Arkansas - Christopher L. White, Lavaca FFA Chapter;
Florida - Corey Parks, Sarasota Vo-Ag FFA Chapter, River-view High;
Idaho - Patrick Stowell, Homedale FFA Chapter;
Illinois - Steven Vache, Franklin FFA Chapter;
Indiana - Blane B. Butler, Jr., Clinton Prairie FFA Chapter;
Iowa - Eric R. Long, Central Lee FFA Chapter;
Kansas - Donnie L. Seeger, Hill City FFA Chapter;
Kentucky - William McIntosh, Scott FFA Chapter;
Louisiana - Matt Fannin, Weston FFA Chapter;
Massachusetts - Tracy Pappalardo, Essex FFA Chapter;
Michigan - Curt Ratajczak, Standish-Sterling FFA Chapter;
Minnesota - James Kruize, Elbo Lake FFA Chapter;
Missouri - Corey R. Hall, Clark County R-1 FFA Chapter;

The FFA can also be used as a way to teach computer applications. The secretary should use a word processor to record all meetings minutes; the reporter should write news articles using the word processor; each committee chair should also use the word processor to write committee reports. The chapter books should be maintained on an accounting package by the treasurer. When new officers are elected and committee chairs selected, the retiring officer or committee chair should be responsible for teaching the new officer or committee chair on the use of the appropriate software for the office.

Summary

Integration of computer applications into the curriculum is critical for meeting the needs of the student and the employer. Computers have entered, or soon will enter every aspect of agriculture. If vocational agriculture is to be relevant, every student must be prepared with computer skills necessary to compete in business, on-the-job, and in education. Not integrating computers into the curriculum is the equivalent of teaching a student to plow with a mule.

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Nebraska - Brad Tonniges, Centennial FFA Chapter;
Nevada - Amy Fahsholtz, Ruby Mountain FFA Chapter;
New York - Scott M. Aubin, South Jefferson FFA Chapter;
North Carolina - Paul J. Shelton, Madison FFA Chapter;
North Dakota - Sheila Wanner, Wishek FFA Chapter;
Ohio - Mark Schumm, Crestview FFA Chapter;
Oklahoma - Kevin Fruendt, Guthrie FFA Chapter;
Oregon - Hollis Miller, Union FFA Chapter;
Pennsylvania - Marybeth Hassler, Twin Valley FFA Chapter;
Texas - Kim Henson, Franklin FFA Chapter;
Utah - Corey Richins, North Summit FFA Chapter;
Virginia - Ronnie Dunn, Park View Senior FFA Chapter;
Washington - Jennifer Hodges, Mabton FFA Chapter; and
Wisconsin - Jeremy J. Kox, Green Bay East FFA Chapter.



Each of the finalists brought their hardware and demonstrated the software they use in major applications of computers. Judges were also given a chance to review the written applications before the interviews began.

Computer Instruction In The Preservice Program

Planning and implementing instruction for students are standing and traditional roles for the agriculture teacher. The agriculture education program has traditionally been developed around needs of the local students, community and state. This had been and continues to serve as a source of pride for agriculture education teachers and planners. Changes in technology, program structure, and delivery modes have challenged agriculture teachers to continue to develop programs that will satisfy the needs of current students and prepare them for present and future careers. According to Naisbitt (1984) we are in an information society and consequently society has developed an expectation of the school relevant to information technology. Electronic, communication, and computer technology have become an integral part of school curricula all across the United States. Local communities expect the school to take responsibility for teaching their children current technological practices, concepts and ideas. If the agricultural education program is to remain current, teachers must develop a minimum level of competency in computer technology and the expertise to communicate it to their students. If teachers are to develop computer skills, the universities must take the responsibility for helping them develop the skills required. The following narrative presents some ideas and suggestions for implementing computer instruction in the preservice program for prospective agriculture teachers.

The first commercial computer was sold in 1952 (Adams, Wagner, and Boyer, 1983). Today more than 1.5 million small and large computers are in use. If agriculture teachers are to provide computer experiences for their students, they must develop an appropriate understanding and mastery of computer application. The suggestions presented in this paper are plausible under the following conditions:

1. The teacher has a minimum level of computer skills/competency.
2. The teacher has access to computers that may be utilized for instruction.
3. The teacher has support from local school administrators.

Infusing Computer Skills in Agricultural Education Curricula

Computer skills may be infused into the agricultural curriculum by following a four step process: (1) establish the goal for computer instruction and review current curriculum, (2) identify and select appropriate software and hardware if needed, (3) mesh computer assignments with current class structure and (4) integrate computer assignments into the evaluation system for students.

Current research suggest that computer technology is far ahead of proven and established theoretical foundations



BY LARRY POWERS

(Dr. Powers is Assistant Professor, Department of Agricultural Education and Extension, North Carolina A&T State University.)

identifying or supporting the most appropriate methods/techniques that may be utilized for computer instruction. However, computer literacy is a generally accepted goal for educators. Teachers do not need to be computer specialists in order to teach these skills to their students. Athey and Zmud (1986) stated:

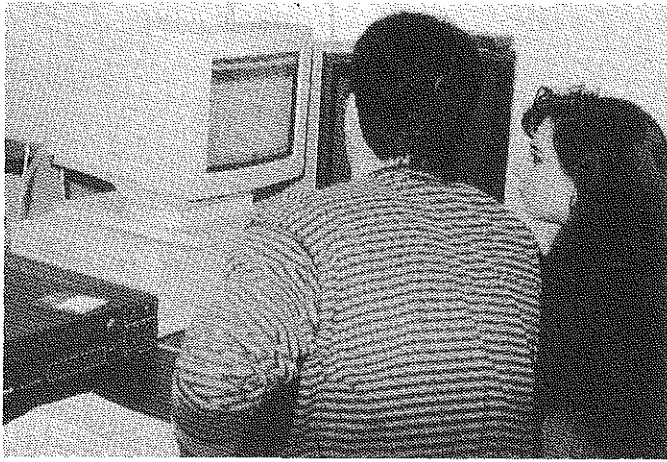
"While you do not need to be an engineer to drive a car, you do need to know the "rules of the road" and feel at ease while driving. Computer literacy is the ability to use computer as a tool to enrich your personal and professional life. Computing literacy — not computer literacy should be the educational goal for most students."



Traditional computer applications — word processing, data base management and spreadsheet development are typical course assignments. (Photos by B.M. Kirby, N.C.S.U.)

Determining Methods and Procedures

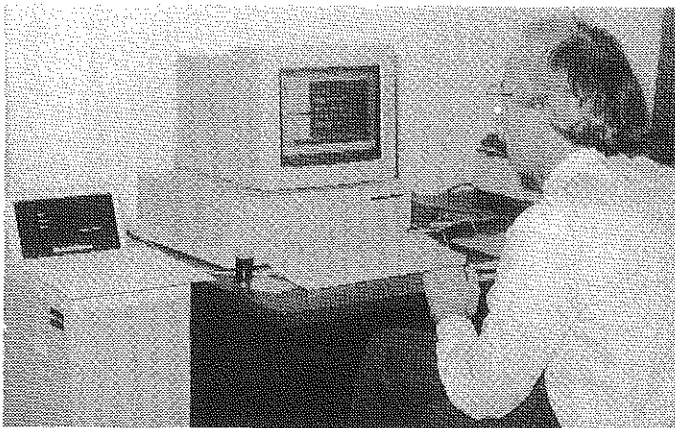
Once the goal is determined and understood by all that are responsible for present instruction the preservice curriculum should be reviewed to determine methods and procedures that may best facilitate computer experiences for the



Elective courses are available to agricultural education students. They may choose to learn more about interactive video or scientific visualization. (Photo by B.M. Kiry, N.C.S.U.)

students without altering or changing content or learning goals. This approach requires minimum changes and increases the propensity that it will be accepted by agricultural education faculty. The mechanics of the curriculum review involve studying each course syllabus and identifying specific assignments and experiences that may facilitate effective use of the computer. These assignments and/or experiences may not necessarily be new — they may be ongoing learning activities as part of the course. Teachers of a particular course are usually the best judge of the content, methods, and teaching strategies required for a particular class. Therefore, the curriculum review is best handled by securing a computer specialist and have this individual work with each instructor to determine the most effective use for computers in specific classes.

The university instructor needs to be a role model. If we are computerizing instruction, then the university instructor needs to use the computer as a teaching tool. Students in the class need to do presentations via computer projection systems. Students need to evaluate the effectiveness of computer programs used as games, simulations and tutorials if they are expected to use computerized instruction in their own classroom.



Agricultural presentations should look professional. The computer in combination with "SlideWriter" generates an attractive, informative slide show. (Photo by B.M. Kirby, N.C.S.U.)

Selecting Hardware and Software

Step two involves the selection of software and/or hardware, if necessary. Computer tabs with hardware capable of running current versions of occupational application software, CAD/CAM packages, Desktop Publishing software, and if possible, communications software. In order to teach potential agricultural educators about current technology, it is necessary to acquire the most recent versions of available software. It does not make sense to teach students about the futuristic computer technology and use antiquated hardware and software.

What is the most appropriate software and/or hardware that can be purchased to satisfy instructional needs? This question can best be answered when the curriculum has been reviewed and specific computer experiences and activities have been identified. The basis or driving force for software selection is for the user to determine what he/she would like the software to do. Following is a basic guide for the identification, selection and purchase of software/hardware:

1. Identify the software application you need before purchasing hardware.
2. When making software selection note the size of memory it requires to execute.
3. Educational vendors should be the first choice when purchasing software and hardware. Note: They usually provide educational institution discounts.
4. Shop around and compare prices before making final selection.
5. When selecting hardware, make sure it has enough memory to serve your software applications needs.
6. Make sure your software and hardware are compatible.
7. Investigate the following items concerning the products you are considering:
 - a. durability-communicate with others
 - b. products utilized by peers and colleagues
 - c. maintenance contracts (cost)
8. Always specify the exact disk media that you require, 5¼ or 3½ disk (prices vary depending upon disk (format))
9. Select products that can be modified to satisfy future needs (Barksdale, 1990).

Infusing Computer Concepts and Skills

Step three involves meshing computer experiences into the existing curriculum. This process should be gradual, planned, and systematic. The basic premise for step three is that — instructors are NOT asked to change their current structure or content but in concert they work with a computer specialist to determine how the computer may best be infused into already existing learning experiences. The underlying philosophical view is that the computer is not used to guide instruction; instead it complements and supplements current learning activities. Step three may take the longest period of time, but when this step is fully implemented, the goal of "Computing Literacy" will be well underway. University instructors also need to take advantage of information from other departments, particularly computer science and agricultural engineering. A field trip to a robotics laboratory or to visit a computer sensor controlled irrigation system is as important for future teachers to experience as learning to develop a spreadsheet.

Evaluating the Process

Step four involves the integration of computer assignments/experiences into the total evaluation system of each course where such experiences are provided. Students are like adults with respect to work. They do not like busy work. If the work is deemed important then the students must be rewarded. Students should not be expected to grasp all activities in short periods of time. Therefore, the evaluation system should be commensurate with time (computer exposure) and nature of the assignment or activity.

Summary

Computer technology has become an integral part of educational institutions and systems. Teachers are expected to be "computer literate" with the expertise to communicate the same to their students. Given the present circumstances

and conditions, universities should take an active role with respect to preparing preservice teachers with the necessary computer skills/competencies. The goal should not be to make preservice agriculture teachers computer specialists but to help them to become competent in delivering computerized instruction.

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Computers In Farm Business Management Education

(Continued from page 11)

The many uses of the computer in our programs has created an interest in computer ownership by some of the enrollees. The exposure has generated more confidence in the documents produced and knowledge of what the computer can do to make the job of proper management easier. The computer is a tool that many farm managers can utilize for improving the decision making process. The benefits from a computer often take a lot of time and much thought to get high quality results. Farm managers must view the computer as a machine that stores numbers and evaluates where the business stands and where it needs to go next.

Farming has never been more dynamic and competitive than it is today. Each decision a farm manager makes — or fails to make — can have a significant impact on the business. A decision can affect the production cycle of one enterprise or the business of an entire farming operation. The farming business today is changing fast and is subjected

to high risk. Computers can play an important role in helping farm managers make critical decisions about their farms. The Farm Business Management Education Program uses the computer to assist in making these decisions.

The many uses of the computer in the Minnesota Farm Business Management Education Program have resulted in greater accuracy of records and more sound farm business management decisions. This has permitted instructors to effectively work with more farmers and has instilled a greater feeling of trust by farmers in computer generated reports. The exposure of the many uses of the computer in assisting with farm management decisions, has created a higher interest, by farmers, in having their own computer. The benefits of owning a computer are not obvious until the farm operator becomes familiar with the many uses of a computer. This familiarity is best learned when a portable computer is passed from farm to farm every month, as some of our programs do. This hands-on experience makes the computer a personal friend rather than an inanimate foe. The key to success with computer technology is education and training.

Book Reviews Teaching Adults and Career Planning

(Continued from page 20)

in agriculture/agribusiness. The authors provide objectives for each problem area, definitions of terms and an illustrative narrative of the information needed to meet the objectives. Additional student references are also identified.

Part II provides the reader with descriptions of occupations representing each of the eight instructional areas of agriculture/agribusiness, plus international agriculture careers. The occupational briefs include a description of the employment outlook, nature of work, qualifications and requirements for entry and advancement. The authors suggest that this should not be the only source of information and they provided additional sources to meet this need.

This student resource unit is directed to high school students as a text. It is designed to help the student understand themselves and the world of work. This is a valuable unit to include for any introductory class in vocational agriculture for helping students make career decisions. If you are not including instruction already in this area this resource would be an excellent way to get started. Salary and wage information are not included because of the wide variations geographically and the changes in the economy. It is suggested that students contact local employment agencies to obtain current local information.

Dr. David Howell, Coordinator

Adult & Occupational Education, UNH

Durham, New Hampshire

TELECOMMUNICATIONS: Window To A New World of Information

Telecommunications! The word sounds threatening enough on its own merit; why would you want to pursue it further? Besides, as an agriculture teacher you have a hundred things to do and a couple of dozen directions from which to be pulled. On top of that, you're expected to find meaningful and innovative ways to integrate the computer into your curriculum. If these sound like your sentiments, then this is the article for you!

Some of you may not know what computer telecommunications is all about. Others may have tried it a few years ago and decided that it was not worth the frustration, or the expense to purchase and operate, or both. Even if you fall into one of these two categories, read on — you may be pleasantly surprised by what you'll learn.

Definition:

First of all, let's get past the threatening sound of the word. The fact of the matter is that you use telecommunications every day. They play a role in everything you do, from watching television to using cellular phones. For example, many of you probably have an ATM (Automated Teller Machine) card through your bank. If you need cash, you place your card in the slot, push a few buttons, and, "voil'a," the machine provides you with the requested amount of money. You might think that because the ATM was attached to the wall of the bank, your transaction naturally took place there. But more times than not, your request was routed many miles away to a remote computer and then back again. Even though you may not have known it, this feat was accomplished through the use of telecommunications. Now that you can see that you are an old pro at telecommunications, we are going to discuss other ways in which you can use them.

Why should I involve myself in this?

A few years ago, it might have been very prudent to question your involvement with telecommunications. With the exciting options that are available today, however, it might be more prudent to ask, "What kind of opportunities am I failing to provide my students by not integrating this kind of technology into my program?"

Not so many years ago, the price of modems was very high, and "user friendly" terminal communications software was a contradiction in terms. Furthermore, few information systems were available, few if any were tailored to the needs of agricultural educators, and the existing systems were very expensive to use. Well, the good news is that times have changed! First, computers and modems are much less costly. Second, software packages are easier to use and have flexible capabilities and applications. Third, there are now available many on-line databases, BBS's (bulletin board services), information exchanges, and information services.



BY GRANT M. TIPTON, III AND W. WADE MILLER

(Mr. Tipton is Research Associate and Dr. Miller is Associate Professor, Department of Agricultural Education and Studies, Iowa State University.)

On-Line Databases:

An on-line database is very similar to a stand-alone database program, except that you access it via modem and the telephone lines. These services may be free, or they may have a user fee. As an example, many libraries have their card catalogs computerized and available for remote access through telecommunications. Therefore, you could contact their computer, access their database of references, and determine if they had a particular book of interest to you. There are many types of commercial databases providing information on a wide variety of topics. The only real problems are determining if a database has been developed for your specific need and then locating a telephone number for it.

Information Services:

Information services are almost always fee based and provide up-to-the-minute information on constantly changing topics. Typically, they will provide information on weather, the stock market, the futures market, national or international news wires, etc. They can also allow you to pay bills or to purchase goods or services such as airline tickets, motel rooms, and retail store merchandise, to name a few. You are billed for the actual time that you are on-line, or for being a subscriber of the service, or for both.

BBS's:

BBS's are mostly recreational, and are often run by hobbyists who sponsor an electronic bulletin board. These boards develop a clientele who tend to be very loyal to that board with regard to their user activity level. Bulletin board services are generally hosted by someone in a local community, and their patrons communicate with each other by leaving electronically posted messages for other users. These systems usually have a "files area" to store public-domain and shareware software for people to download. Downloading is a term applied when someone transfers a

copy of a piece of software from the computer they have contacted, through the phone lines, and into their own computer. Many businesses are now seeing the potential public relations value in these systems and are starting to sponsor some of their own.

Information Exchanges:

Information exchanges are very similar to BBS's in that they have both message and file areas. Often, they are using the same "host system software." The main difference between the two, however, is that information exchanges target themselves to a particular audience, whereas BBS's are open to a general audience who form independent user-groups called **conferences**. Because of the decreased costs of such a system, there has been a tremendous increase in the number of educational information exchange systems developed across the country. The sponsors for these systems range from state departments of education to area educational agencies and individual classrooms in schools. As you might expect, these systems tend to develop around **central themes**: science education, art education, student-teacher support, vocational education, teacher-support services, etc.

The bottom line in this discussion of telecommunications opportunities is that **they exist!** The difficult part is finding them. Places to begin asking for the identity and availability of such systems in your geographical area might be your state department of education, professional agriculture associations, local computer stores, and local computer user-group clubs. An interesting point that we have discovered about locating various telecommunications services is that the more we investigate, the more systems crop up.

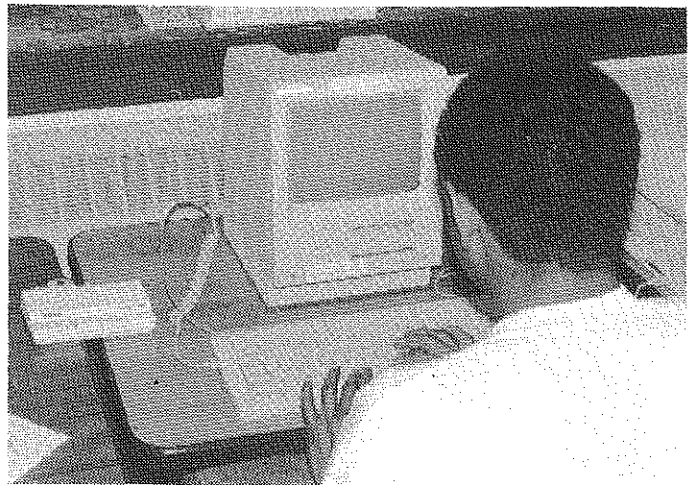
What is necessary to make it work?

Computer telecommunications, as with most computer applications, require both proper hardware and proper software. The hardware, or the necessary physical electronic machinery, includes a computer, a modem, and a telephone jack. As we have stated earlier, your main goal is to communicate with a computer in another location. The local telephone company provides the network through which your computer communicates with the other computer, and the modem (modulator/demodulator) provides the means by which to connect your computer with the telephone system (See Fig. 1).

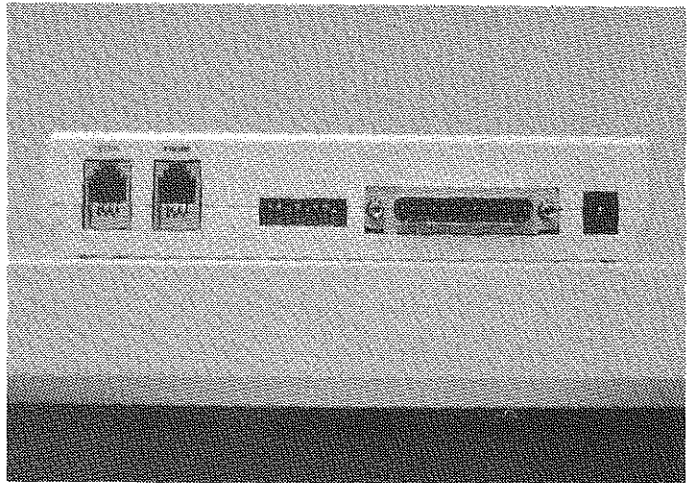
YOUR COMPUTER <-- MODEM -- PHONE LINES -- MODEM --> THEIR COMPUTER

Figure 1

Modems can be either internal or external. External modems, as the name implies, reside **outside** of the computer. The advantages of the external modems are their not producing additional heat inside your computer, their being easily connected and disconnected, and their usually possessing status lights that constantly inform you of what the modem is doing. The main disadvantages of external modems are that they constitute another piece of hardware with wires cluttering the top of your desk, and that they usually require the installation of some type of interface card inside your computer.

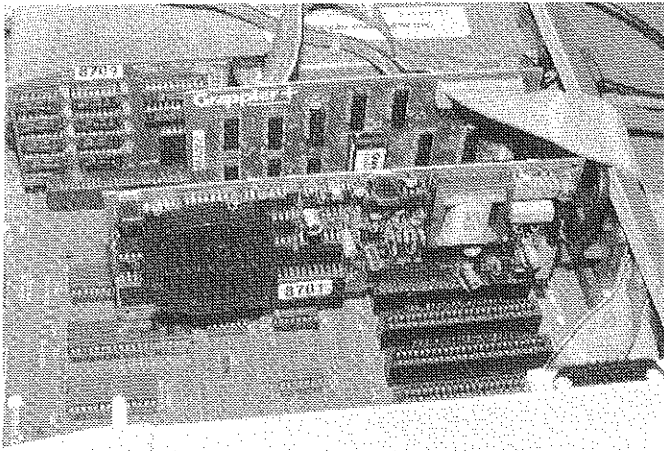


External modems allow the user to see status lights which inform the user as to what the modem is doing. However, the user will have to find clever ways to hide the unsightly wiring that comes out of the back of the external modem, namely; the power wire, the modem connector cable, and the telephone wire.

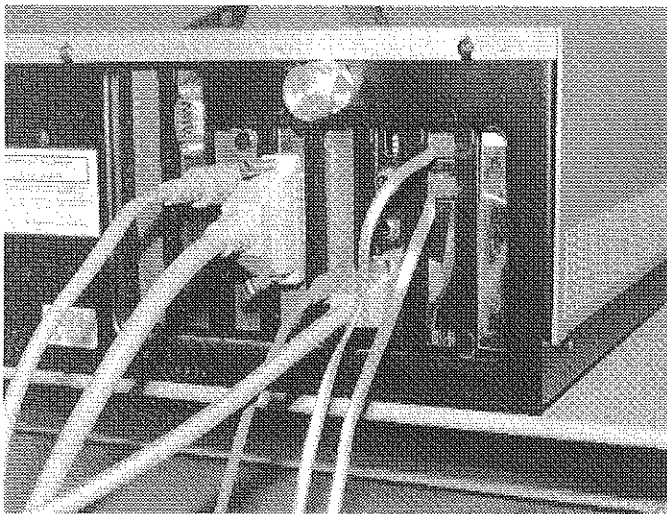


External modems come in a wide variety of shapes and sizes. They will always have a power supply jack, a modular telephone jack, and a DB-25 connector for a modem cable. They may also possess an additional modular phone jack (for your telephone), and a volume control (not shown). Dip switches may be external (shown), or internal.

Internal modems, reside **inside** the computer. IBM compatibles are one of the few types of computers with this capability. The obvious advantages of this style of modem are that there are fewer messy wires and one less peripheral sitting on top of your desk. The main disadvantages are that they tend to create additional heat inside your computer and that you cannot visually see the status of the modem's operation. Modems will plug directly into a standard modular telephone jack, and they are capable of working on both tone and pulse telephone systems.



Internal modems are more convenient in that they reduce the number of mandatory wires from three (3) to one (1). They also prevent one additional peripheral from cluttering the user's desk. They do, however, require one of the computer's expansion slots, and they do contribute to building heat inside the computer.



Internal modems need only one wire attached to them in order to access the telephone wall jack. They may also provide an additional jack to attach to a telephone, and may provide a volume control knob (not shown) as well. Internal modems make for a very clean hardware addition.

In concluding this section on modems, a couple of suggestions are in order. When purchasing a new modem, make sure that it is "Hayes-compatible." This is essential. Just as IBM has set the industry standard for the MS-DOS type of microcomputing hardware, so Hayes has set the industry standard for telecommunications hardware. Virtually all hardware links and telecommunications software are based upon this standard. The next consideration to look at when purchasing a modem is **speed**. As you might expect, the faster you want to go, the more it is going to cost you. We would recommend that you purchase at least a 1200 Baud (the measurement of speed) modem. Many BBS's and information services will not allow you to use their system if you use anything slower than 1200 Baud. A 2400 Baud modem offers a very nice cost-to-benefit ratio. If money is not a concern, then it should be noted that the telecommunications world is rapidly setting up the 9600 Baud modem as the new speed standard. A key thing to remember

here is that the faster your modem transmits data, the less expensive your long-distance access calls will be. The payback on investing in a faster modem can be fairly rapid, depending upon how much you use it.

Finally, attaching an external modem to the appropriate computer port is fairly simple. If you aren't much of a computer technician, however, it is possible for you to severely damage one or more components if you incorrectly install an internal modem or an internal interface card. If you have any question as to your ability, you should have your local computer service center install any internal components.

The last thing you need to make your computer communicate through your modem is a special type of computer program called **terminal communications software**. This software is the interface between you and your modem, and because the modem is "ignorant," and can be commanded only by bizarre codes known only to electrical engineers, this piece of software can be the difference between a good experience and a disaster. Terminal communications software is another place not to scrimp financially. You want this package to be easy to use and understand. It should be menu driven and should allow you to quickly and easily configure the system format for your particular modem. It should possess good documentation that is also easy to understand and provides step-by-step procedures. The brands of software packages to consider when purchasing depends upon the make of your computer.

Conclusion

Computer telecommunications are a regular part of our lives. This technology surrounds us in our daily existence. It possesses some tremendous educational opportunities and potential, and many are coming to the realization that if we are in fact training our students in "life and/or employable skills," this had better be one of them.

Telecommunications technology has become less expensive over time, and the availability of useable services has increased dramatically. There are now so many free services available, that long-distance charges are often the only operational costs incurred. Too often we have limited the educational exposure of our students to the confines of the walls in our classrooms. If we take the risk of integrating computer telecommunications into our programs, we will provide our students with a unique experience. The screen of their computer monitor will become their window to a whole new world of information.

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Harvard Graphics Goes To School — "Show & Tell" With Computer Slides

Are you still lecturing the dull-fashioned way? Why not prepare a simple slide show using Harvard Graphics to emphasize "key points." The presentation of proper audio visual teaching materials can be a rewarding activity, that includes the important feature of adding to your personal experience and knowledge.

The development of computer slides with Harvard Graphics software traditionally started within the Business and Industry sector. However, with increased technology growth to our agricultural education classroom, this teaching technique has added another dimension to the classroom presentation.

Uses of Computer Slides in the Classroom

An innovative agricultural instructor can utilize computer slides in a variety of ways. Some of these uses are:

- Classroom presentations, (definition of terms, brief statements about individual teaching topics).
- To summarize a lesson.
- To display charts (Ex: pie, bar and line graphs).
- To develop quizzes to evaluate the expected learning outcomes.
- Seminars and workshops.
- To add graphic images to your classroom notes.
- Create overhead transparencies.

Equipment/Tools

To become successful in your classroom presentation, you will need the following equipment:

- Personal computer (IBM or compatible) with one floppy diskette drive and a 20 megabyte hard drive.
- Color or monochrome display/monitor.
- Pointing device such as a mouse (optional).
- An overhead projector.
- A projection panel (this device connects the computer and sits on the projector which projects the image from the computer onto the screen.)
- A printer (letter quality or laser) for producing hard-copies to give to students if desired.
- Harvard Graphics Software by Software Publishing Corporation.

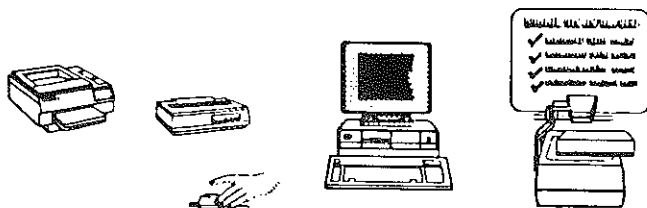
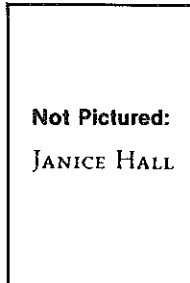


Figure 1



Not Pictured:
JANICE HALL

BY HOWARD R. GORDON AND JANICE HALL

(Dr. Gordon is Professor Floral Design and Marketing/Horticulture and Dr. Hall is Faculty Support Analyst, Florida Community College at Jacksonville.)

With Harvard Graphics and your personal computer, you can create charts which can contain words, graphs and special images — to get across your point.

Procedures in Creating Computer Slides with Harvard Graphics Software

Now that the equipment is in place and you've prepared your outline, here comes the fun. You will need to decide what information should be on each slide and how much to prevent overcrowding your screen. Your first step is to create each slide:

Step 1 — Select the free form design from the menu (this gives greater placement of text.) (See Figure 2.)

| Text Chart Styles | |
|-------------------|---|
| Title chart | 1 |
| Simple list | 2 |
| Bullet list | 3 |
| Two columns | 4 |
| Three columns | 5 |
| Free form | 6 |

Figure 2

(Continued on page 22)

BOOK REVIEWS

Teaching Adults and Career Planning

This month's book reviews will focus on teaching adults and career planning. For those who want a practical point of view for planning a formal or informal adult education setting, the book "Planning Instruction for Adult Learners" reviewed by Thomas Piekarski would be a good place to begin. Mr. Piekarski is currently an Agriculture Extension Advisor and has taught agriculture at a technical college and at a high school. His review is valuable to those working in adult education.

As editor I enjoy reviewing books from time to time and found the book "Careers in the Science of Agriculture" a timely update. As a high school agriculture teacher I included a unit on careers in agriculture for my freshmen. Today at the University of New Hampshire I have a career exploration course which fills every semester with students trying to find a major and a rewarding career after college. Our students are searching to find a direction for their lives and we can offer them assistance by including a career unit as a part of our instruction. If you aren't teaching a unit on careers or need an update check this resource.

PLANNING INSTRUCTION FOR ADULT LEARNERS, Patricia Cranton, Toronto, Ontario, Canada: Wall & Thompson, 1989, ISBN 0-921332-24-6, 215 pp., \$24.95.

Planning Instruction For Adult Learners has taken the broad domain of adult education and puts it into eight well written and succinct chapters. Chapter one, *Principles of Adult Learning*, introduces the succeeding chapters with a synopsis of their content and presents the general theories of instruction and learning. *Considering the Audience* provides insights into for whom instruction is planned by integrating learner characteristics, such as, age, gender, educational background, intellectual characteristics, affective/personality characteristics, and perceptual and motor characteristics. *Objectives* goes into the basic types of objectives, levels of learning, and objectives of the adult learner. *Sequencing Instruction* dwells on how to determine which order topics should be taught. *Developing the Instructional Strategy* centers upon instructional situations, and general characteristics of effective instruction. *Evaluating Learning* concentrates on various evaluation approaches, whether instruction is in a formal or informal setting. *Evaluating the Instruction* focuses on planning the evaluation procedure techniques for collecting, setting criteria, and summary of the research on the evaluation of instruction. In closing, *Adult Educators: Who Are We?* brings into focus the future need and problems associated with adult education.

The future need and role of adult education is evident by this observation in the book, "By the year 2020, in only 30 years, the median age will be about 50 years of age, and one-half of the population will be under 50 years of age.



BY DAVID L. HOWELL, SPECIAL EDITOR
(Dr. Howell is Associate Professor, Department of Vocational-Technical and Adult Education, University of New Hampshire.)

Forty years ago, the median age was 16. Simply, there are and will be many more adult learners than ever before."

Planning Instruction For Adult Learners is written in a way to develop strategies and answers the why in adult education, not to be an absolute or final authority on how to teach adult learners. In order to reach and help fulfill the adult's desire to learn and grow mentally, adult learners are not often self-directed and need to move from dependence to self-direction.

One should best approach this book not as a textbook to be read, but rather to be adopted as a guidebook. There are many tables which supplement the chapters. These tables help to consolidate the information and make it adaptable to various educational situations.

Planning Instruction For Adult Learners has that versatility to help and encourage adult educator practitioners and newcomers alike. It gives the adult educator practitioner solace that he/she has been doing things right and to give new points to consider when interacting with adult learners. To the newcomer it presents a solid base to understand adult education (andragogy) not just from the theoretical standpoint, but from the practical point of view. Anyone that deals with adult learners in either formal or informal educational settings will find this guide book invaluable.

Thomas J. Piekarski
Extension Adviser, Agriculture
University of Illinois Cooperative Extension Service
Mercer County, Aledo, Illinois

Careers in the Science of Agriculture, by Mary Beth Bennett and Samuel Curtis, University Park, PA. The Pennsylvania State University, 1989, 178 pp., price \$8.00.

This is a student resource unit divided into two parts. Part I contains five problem areas related to career concerns. This includes: 1) The importance of planning a career; 2) your personal qualities for the world of work; 3) occupational requirements and sources of information; 4) instructional areas in agriculture/agribusiness; and 5) planning a career

(Continued on page 15)

Computer Technology Resources

Putting Portable Computer Power to Work

If your computer had legs, where would it want to go? With you, of course! It would want to be where all the action is taking place. Making friends, solving problems, recording results or teaching class. A portable computer allows the same flexibility and problem-solving you've come to expect at your desk to travel with you as well. In this article I explore how portable computers can be harnessed for use by agricultural educators.

I take my portable computer with me on project visits. In a database I keep directions on how to get to a project site, when I was there last, specific problems encountered and other information about the project. It also contains a variety of "software tools" I use for implementing solutions. You might use the computer on the spot to determine a feeding ration or analyze the future return for a crop. You might use the computer's modem to call the local weather database to get the latest evapotranspiration information that is needed to develop an irrigation schedule.

During class a portable might allow you to be more extemporaneous. Overheads and slides often lock you into a planned session. With the proper presentation software and LCD overhead display, a set of class notes can be expanded, graphics added and changes made either by you or the students during class. Your portable computer could also become the portable grading interface for both you and your students. Grades can be entered at the time they occur in class by you or an aide, printed and then posted. Dr. Glen Miller of The University of Arizona uses a portable computer in his laboratory class to record not only the grade for a project but also comments and suggestions for improvements.

For years many of us have struggled with hand tabulation of local, regional and state FFA contests. Now, fortunately, there are a variety of programs written to improve the way we do this part of our job. I have used programs for Apple and DOS compatible computers to achieve results that are accurate and timely. A variety of reports can be printed and compiled for the "Advisors' Tabs Book." A portable can be taken to the soils or farm power contest without needing AC power.

At the AVA convention I observed a variety of committees at work. Preparing and revising resolutions doesn't seem like such a big deal until you are faced with the prospect



BY NAT JAEGLI, SPECIAL EDITOR

(Mr. Jaeggli is Instructor, Department of Agricultural Education, The University of Arizona.)

of preparing one that meets all the parameters of the participating members. With a portable computer and an overhead display panel, a committee can quickly and accurately create or modify their resolutions. The "unfinished product" can be printed and ready for distribution before the end of the meeting. The alternative is waiting two to three weeks and then finding that the members who were tasked with preparing a final draft missed an important point or didn't quite capture the flavor of the committee's sentiments.

As a committee secretary taking minutes, you may have experienced the panic many weeks after a meeting of finding that your notes are incomplete. Keying in the minutes as the meeting occurs allows revisions to be made and errors corrected. I have sometimes taken a printer and used it as a copy machine to duplicate items for a meeting that occurred away from the office. Agendas and other materials can be revised on the spot and distributed.

These are just a few of the ways a portable computer can be used to improve the way we work. Once you've become "friends" with a portable you'll discover many more of your own. I'm sure there are some of you saying, "Did this guy drop out of orbit to write this column, like I've got all of the money and time in the world to implement these crazy ideas?"

As a profession we continue to espouse the ideals of a high-tech profile of "Today's Agriculture," how we need to improve our image and prepare our students to take their places in the age of information technology. Yet tasks that could and should be completed on computer go untouched. If we are to make the technological impact we intend on our students, we must model that technology in the way we work ourselves.

Harvard Graphics Goes To School — "Show & Tell" With Computer Slides

(Continued from page 19)

Step 2 — Type the title and subtitle (if applicable). Next type data. You can bold text by using the F5-Attributes key and/or size and justify (ex: center) text by pressing the F7-Size/Place key. (See Figure 3.)

| Free Form Text | |
|---|--|
| Title: TERMINOLGY FOR LANDSCAPE DESIGNS | |
| Subtitle: Definitions | |
| Footnote: FALL1990 | |
| <p>Simplicity - accomplished by repeating specific plants throughout the design.</p> <p>Balance - In theory, it puts the landscape on a seesaw and requires that each side have the same visual weight.</p> <p>Focalization of Interest - Recognizes that viewer's eye wants to see only one feature as being most important within any any given area.</p> | |
| F1-Help F2-Draw chart | F5-Attributes F7-Size/Place F10-Continue |

Figure 3

Step 3 — Pressing the F-2-Draw will draw or display your chart in presentation form.

Step 4 — The F-10 Continue key will take you back to the Main Menu.

Step 5 — The final step is to save your chart, giving it a name that can be readily identified. (See Figure 4).

| Slide Show Menu | |
|------------------------|---|
| | |
| Create slide show | 1 |
| Edit slide show | 2 |
| Add Screenshow effects | 3 |
| Display Screenshow | 4 |
| Select slide show | 5 |

Figure 4

Step 6 — From the Main Menu, select Slide Show Menu, Create slide show. At the Create Slide Show overlay, type a name for the slide show. Once a name has been given, Harvard Graphics adds the extension. SHW to the show name. (See Figure 5.)

| Create/Edit Slide Show | | | | |
|------------------------------|-------------|----------|-------------|-------------|
| Filename | Ext | Date | Type | Description |
| PLANT | .CHT | 10-01-90 | CHART | |
| FLORAL | .CHT | 10-02-90 | CHART | |
| NURSERY | .CHT | 10-11-90 | CHART | |
| Show name: AGRICU.SHW | | | | |
| Order | File | Type | Description | |
| 1 | PLANT.CHT | | | |
| 2 | NURSERY.CHT | | | |
| 3 | FLORAL.CHT | | | |
| Show description: | | | | |

Figure 5

Step 7 — Move the cursor to highlight each chart you want to include in the show and press enter key. The top half of the screen lists the files in the current directory that you can include in your show. The bottom half displays the charts you have selected to include in your show and the order that they will appear.

Step 8 — After creating the list, you can choose how it displays and moves from slide to slide, and how long each slide should remain on the screen. You can also control slide by using the mouse to advance each slide.

Step 9 — Let the show begin! Select from the Slide Show Menu, Display Screenshow and begin your slide presentation.

Advantages of Computer Slides — Harvard Graphics Software

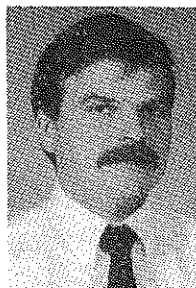
- Less frustrating to produce when compared with other methods of producing slides, (ex.: 35 mm camera).
- Adds to the effectiveness of the presentation.
- Can make you much more secure in the sense that you accomplish your instructional objectives.
- More color and graphics flexibility.

Conclusion

The possibilities are so endless that agricultural instructors should take advantage of this teaching technique. If you do become equipped to do an efficient job in creating quality computer slides, then your understanding will come to the realization that the possibilities are boundless and the rewards are well worth it.

Making The Choice

During the last 60 years, the educational system of our nation has been driven towards the idea that there is one best system for public education, with little regard to cultural or economic differences of communities. This idea has caused great changes to occur in the rural communities across our nation. The number of school districts have been reduced from approximately 128,000 in 1930 to 36,000 in 1960 to under 16,000 in the 1980's. Most of these losses were in the rural community. This, in the search for the "one best system of education," can be associated with the decline of the rural community.



BY JIM H. THIES

(Mr. Thies is Teacher of Agriculture, Howard County R-II School District, Glasgow, MO.)

Many rural communities that have kept their schools still find themselves at an economic loss, particularly in states that require schools to support themselves heavily on local property tax. We take two valuable local resources, the tax dollar (capital) and add value to our children (the future) through the educational system. One of the problems with this process is that we generally make no effort to capture our investment. Both evidence and beliefs have supported the idea that students must leave the community to succeed. Graduates are perceived as successful if they leave town, with nearly a blindness to their destination. The net result is that rural communities, through their investment in education have contributed substantially to subsidizing economic growth elsewhere. The statement, "You have to have a good education to get anywhere," needs to change. In reality it must read, "You have to have a good education to enable you to have the choice to stay here," if we want rural communities to survive.

Educating rural students to enable them to leave home and get jobs elsewhere became the dominant mission of the rural school. For the most part, curriculum has evolved into a textbook driven college preparatory program, ill serving those who are not college bound. Because budgets are limited, rural curricula is limited, offering primarily college-prep courses and ignoring the needs of the non-college-bound "forgotten half." Rural people generally have less formal education and lower income levels than their urban counterparts. Despite these disadvantages, rural people are generally more satisfied than their urban counterparts with their quality of life.

In the 60's, manufacturers came to rural America for a source of low cost production systems. Now, lower cost systems can be found in other countries. Today's rural job market does not include the assembly line personnel as was

the case 20 years ago. The new employment growth sectors tend to be more education intensive, smaller scale, more oriented toward customized production, and largely based on entrepreneurship and innovation. Because of this shift to service employment, the location of raw materials or the access to surface transportation are no longer the major basis for employer locationing, but rather such factors as community, lack of crowdedness, good public services, and low crime rates.

Rural communities may bolster sagging economies by "adding value," selling services along with the goods produced by farmers. But doing so will require innovation, human capital, and entrepreneurship.

The Vocational Agriculture programs across this nation are the ideal source to gain "The ability to choose to stay in Rural America."

Traditionally, we have been practicing entrepreneurship through SAE programs before this "buzz word" became so popular with the press. We have instilled upon our students those work habits needed to become successful in production agriculture. It is these same skills of goal setting, planning and evaluation that are needed in rural entrepreneur education.

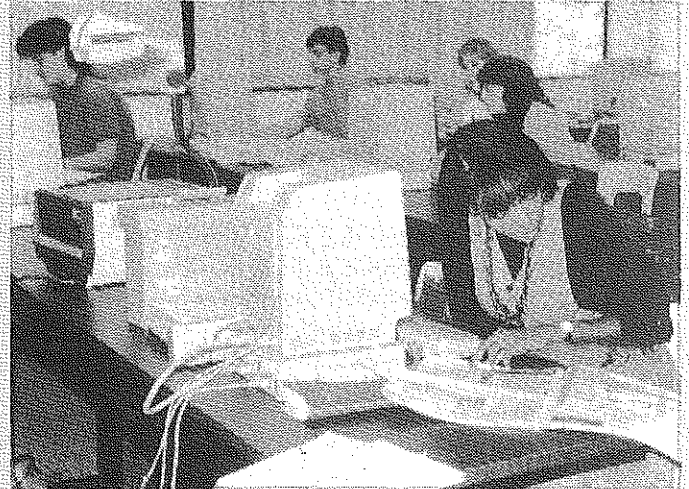
We find ourselves caught up in trying to sort out what is agriculture and what is non-agriculture in our rural communities, when in reality we should look at what the word community means.

If we continue to separate segments of our rural communities, we will find ourselves in a situation where there will be no need to educate our students to choose for there will be no options to choose from.

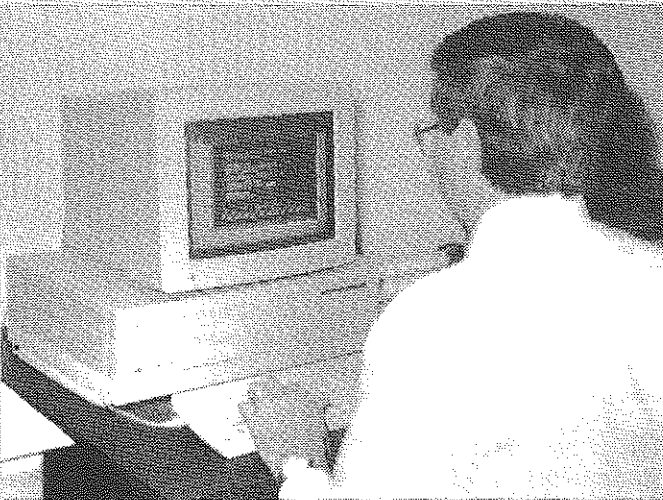
Stories in Pictures



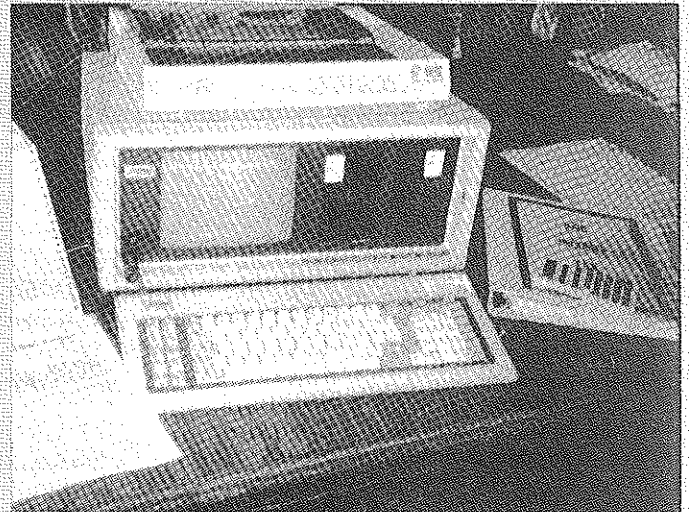
Melissa Hahb gave each judge a booklet of handouts that were reproductions of the fine print on her monitor. Then she referred to each chart or page in it as she made her presentation. (Photo by National FFA Organization.)



Future agriculturalists develop public relations brochures with the aid of desktop publishing programs. (Photo by B.M. Kirby, N.S.C.U.)



Instructors deliver creative, interesting lessons when their visual aids clearly communicate the information. (Photo by B.M. Kirby, N.C.S.U.)



Tax planning for adults and working high school students is simplified when done on the computer. (Photo courtesy of Dan Hoffman.)