Computer Network Use Expands Teaching and Learning Opportunities

N. L. McCaslin and Robert M. Torres

Abstract

Colleges and universities are continuously challenged to stay abreast with an ongoing technological revolution. Many of the new types of technology available come and go with time. However, microcomputers have and will continue to make great strides in education. Now, microcomputers have made it possible to communicate electronically in enhancing the teaching and learning process. Three viable opportunities to use microcomputers and electronic communication are offered. Each is described and suggested applications offered. They include electronic mail, electronic bulletin boards, and computer conferencing.

As we approach the twenty-first century, the economic and social challenges facing colleges and universities have prompted them to consider the use of more innovative instructional technology. Increasingly, students who enter higher education as undergraduates come from homes and schools where technology of various kinds constitutes a dominating force (Lewis and Wall, 1988). One of these technologies is related to the use of microcomputers.

Microcomputers have added many dimensions to the teaching and learning process. Microcomputers have been

McCaslin is an associate professor and Torres is a graduate associate in the Department of Agricultural Education, The Ohio State University, 208 Ag. Admin. Building, 2120 Fyffe Road, Columbus, Ohio 43210.

used for word processing, computer assisted learning (CAL), computer based training (CBT) and supporting a variety of educational programs that are available in the marketplace. More recently, microcomputers have been used in conjunction with telecommunication. Through the use of microcomputers and telephone lines, users are able to communicate electronically with people within their institution or colleagues nationally or internationally.

Telecommunication has served the business community well and more recently has entered the education arena. This technology is unique in that it can dissolve conventional classroom walls, making geographical distances irrelevant and creating classrooms of tomorrow using curricula in place today (Goldberg, 1988). Of the variety of telecommunication available at colleges and universities, electronic-mail, electronic bulletin boards and computer conferencing are most common.

Electronic Mail

Electronic mail (e-mail) has become widely established as a type of telecommunication in private business, colleges, and universities around the world. The availability and the relatively simple operations are the motivation for its use. Often, it is provided free of charge to faculty, staff, and students. E-mail provides a means of communicating

socialized medicine. In this paper, each student was to take the position of a large integrated poultry company and address the concerns surrounding the specific issue. An example of a controversial question may address whether or not socialized medicine is good for the industry and how this relates to the current private insurance system.

The second paper was a business plan based on a spreadsheet analysis of a large layer facility (Firman and Remus, 1989). Students were provided with a spreadsheet template which was then filled in with formulas and criteria upon which profit and loss are based. Each criteria used, such as inflation rate, had to be researched and defended within the business plan. Once again outlines and a rough draft were used as evaluative criteria and were taken through a revision process.

Discussion

The WI experience can be successfully accomplished through a poultry production class. A gradual increase in
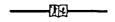
writing competency was noted in most students throughout the semester though, admittedly, this is a difficult criteria to quantitate. In many respects the critical thinking skills and procedures of how to write may have been more valuable to the students. One must also take care to allow for students individual writing style while correcting and questioning grammar, formats and conclusions. Time spent by the instructor is increased by 25-50% due to the writing portion of the course but will be rewarded with more adequately prepared students.

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electronically with other computer users through networks. Networks such as Bitnet and Internet are commonly used in a university setting. While e-mail has its limitations, users are allowed to exchange messages and other textual information to preselected individuals via the electronic networks using a microcomputer.

In a time cognizant society, e-mail has provided a new alternative for communicating with others. Memos, letters and even telephone calls often require much time in communication efforts. E-mail enhances faculty and/or student communication productivity, thereby reducing the time required for routine record keeping or communication. It is faster than the postal or campus mail service, cheaper than long distance and FAX calls, and easier to manage in an office or academic setting than frequent personal meetings with staff and colleagues. E-mail, can be thought of as a personal answering machine. Using a microcomputer, e-mail can be sent whenever you wish and it remains in the recipients "answering machine" until they read the message. The individual can then decide, at their convenience, what to do with the message. At this point, there are several options from which to choose. The recipient may reply to the message, forward the message to another person, make a hard copy, save the message on the computer or discard it (IRCC Newsletter, 1990). Robert Dixon, Director of the Academic Computing Services, at The Ohio State University (IRCC Newsletter, 1990) stated that e-mail is:

> "...quick, efficient, easy, practical, global and the future of communication. And if nothing else think about the paper e-mail replaces and the trees we can save. E-mail is an ecologically sound alternative-it's the communication tool of the '90s'."(p.6)

The electronic communication hardware requirements include a microcomputer (almost any kind), a dedicated telephone line or a "hardwire" system to the university computer center, and a modem if not "hardwired". The modem is used to translate text and data into audio signals that are passed back and forth. Communication software such as PROCOMM PLUS (for IBM computers or compatible machines) or RED RYDER for Macintosh computers is also required. Once the proper hardware and software have been obtained, the sign-on process usually involves subscribing to a communication system such as MAGNUS, CMS, DEC 20, or CompuServe and accessing that system by using a personal user identification name and a password to protect confidentiality.

Aside from its effectiveness, there are many potential uses for e-mail. The Ohio State University IRCC Newsletter (1990) identified the following:

- Faculty can correspond with colleagues anywhere, collaborate on manuscripts, and exchange files and data.
- Administrative areas can conduct daily business among staff, and/or committees.
- People working together on projects can arrange meeting times and share files.
- Students can send messages to their advisers any time of the day or night; advisers can read and reply to messages at their convenience.

- Instructors can send a message to an entire class at the same time; students can send questions to instructors and TAs who can respond when convenient.

Electronic Bulletin Boards

Electronic bulletin boards are another form of telecommunication. Similar to e-mail, faculty, staff, and students also can access this communication resource. Electronic bulletin boards are exactly what they sound like--a place you either post or read notices. They are much like the regular bulletin boards found in many offices and classrooms.

Electronic bulletin boards are popular forums for presenting news and information on a variety of issues and inviting interested individuals to respond. Several electronic bulletin board forums may exist on a system, but unlike e-mail, bulletin boards users do not receive personal response to their posted messages.

The notes or messages can be posted in the form of open or closed communication where users can read and respond to what is posted. With open bulletin boards, everyone who uses the system can read what is posted. Closed bulletin boards are limited only to selected users or subscribers.

Interested users can access a bulletin board system available at the university computer center or from a private company such as CompuServe. Electronic bulletin boards offer new opportunities for university faculty, staff, and students. Such opportunities for electronic bulletin boards include the following:

- Research libraries can post hours, provide information on new services, assist with online catalogs, and maintain user forums.
- Faculty, staff and students can post job vacant positions, personal item for sale, university workshops, new services/updates, upcoming events, etc.
- Student organizations can post minutes, agendas and other information related to the activities conducted throughout the year.
- Special interest groups can create forums in communicating information supporting their cause.
- Instructors and students can post discussion questions specifically set up for their class; any class member can participate by sending responses to the bulletin board.

Computer Conferencing

Computer conferencing is simply a combination of both e-mail and electronic bulletin boards. As the name implies, a conference includes many individuals. "Notes" or "items" are sent to a conference group where all individuals read and respond in a form of discussion. Unlike e-mail, out going notes in the conference do not have to be addressed to specific individuals. Each note is automatically labeled with the name of the writer and the time of the message. Anyone who "joins" the online conference will automatically receive the note. Messages can then be reviewed either chronologically or selectively.

Computer conferencing has been used in many capacities. Today, businesses often use computer conferencing to keep their specialists informed. Private telecommunication

companies such as CompuServe provide individuals, and businesses with this service. Research teams are also able to use computer conferencing to exchange ideas on topics of common interest. More recently, however, computer conferencing has provided new opportunities for distance education both at the secondary level and in higher education. Thomas (1989) suggested that computer conferencing is well suited for education because it provides the electronic equivalent of a face-to-face meeting, but does not require attendance at a lecture hall or a tutorial room at particular times or particular locations.

Distance education has long been part of the American educational system. Students involved in the traditional distance education received little interaction between the instructor and themselves often resulting in feelings of frustration and isolation. Norton and Stammen (1990) stated:

> "Computer conferencing allows students to enjoy an interactive classroom environment without having to leave home or work. Face-to-face classroom discussions are recreated on computer terminals. Communication devices called modems allow the course instructor and student to talk to each other electronically over telephone lines. The lecture portions of a course are replaced by individualized competency-based packets of materials students read and study at their own pace. Throughout the course, the instructor initiates and facilitates discussions by computer with one student or with a group of students, depending on what they are studying. At the end, students are given either a written or real world performance test." (p.26)

Lauzon and Moore (cited in Romiszowski and de Haas, 1989) envisioned computer conferencing as a fourth generation of technological delivery system in distance education. This innovative type of distance education has opened many opportunities for university faculty and students. At the British Open University, computer conferencing is currently being used to offer courses to more than 1300 undergraduate and graduate students (Mason, 1991). Some American universities also have been involved in computer conferencing such as University of Arkansas, University of Central Florida, Temple University, and The Ohio State University.

Computer conferencing is the most promising medium in distance education for capitalizing on electronic communication. By offering ideas and describing personal experience relevant to course issues, students are given the opportunity of integrating new material with existing concepts (Mason, 1991).

Computer conferencing requires a conferencing software system such as PARTI, CoSy, ELES, or CONFER. These forms of conferencing software are available to faculty and students at many universities.

Computer conferencing offers faculty and students a number of opportunities for improving teaching and learning experiences. The opportunities include:

- Distance education classes to students locally, nationally and even globally.
- Communication networks for specialty faculty working with industry personnel on common interests and concerns.
- Opportunities for part-time students employed full-time to continue their education, at their convenience, from home or work.
- Means for teacher and extension educators to supplement their in-service programs for public school teachers by incorporating computer conferencing to enhance further understanding.
- Opportunities for setting assignments that are based on students working cooperatively and contributing to both the presentation and clarity of assignments.
- Active, interactive and independent approaches to learning.

Summary

Cetron and Davis (1989) indicate that our present level of technical knowledge will only represent one percent of the knowledge that will be available in the year 2050. Seldom have we had such opportunities to rethink how we can communicate. In addition to the use of word processing, spread sheets, and data bases, personal microcomputers can be used as new instructional and communication tools. The use of e-mail, electronic bulletin boards, and computer conferencing are three exciting and innovative examples.

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