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A Case Study

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Despite the broad and substantial impact of the computer on the Western World in recent years, the practical effect of the use of computers on the format of the typical college course has been nil. Even most Computer Science faculty continue to use the lecture model for most courses, although some courses do have a hands-on computing component, and some instructors bring the computer into the classroom for demonstrations. Outside of Computer Science programs, and courses that directly involve computer skills, such as computer-based graphics arts courses or computer-aided design, the use of computers has been minimal. In this paper I will discuss the use of computer-based class discussion.

The Course

In fall 1990 I taught Computers and Society for the first time. Computers and Society is an interdisciplinary course, designed by members of the Computer Science and Sociology Departments and currently offered by the Computer Science Department. The course looks at the application of computer and communications technology and considers its impact on social institutions such as the workplace, the family, and
society as a whole, as well as considering the ethical dimensions of computer use. About fifteen students completed the course, roughly half of them Computer Science majors, the others from departments as diverse as Life Science, Economics, and Secondary Education. Students were expected to have a background in computers at least equivalent to that provided by our Computer Literacy course. Computers and Society was built around reading and discussion. The primary text for the course was *Computers in Society*, a collection of readings from popular and academic sources, published by Annual Editions. The text was supplemented by additional articles chosen by the instructor or, in some cases, the students. For each class meeting, two of the students were assigned to present a summary of each reading and begin the discussion with two or three questions. Of course, every student was expected to read the materials in order to prepare for discussion. The discussions were supplemented by video tapes, demonstrations, lectures, and guests from other departments and off campus. In addition to these traditional course components, I thought it would be both useful and relevant to the course topics if the students were to participate in an ongoing discussion via the computer.

*Communications Software*

While there are many variations of the software available for individuals to use to communicate directly on the computer, most of it can be divided into two categories: electronic mail, or "e-mail" software, and conferencing software. E-mail software is based on the paradigm of the letter sent through the mail. An individual can compose and send a letter to one other individual, or send the same letter to a list of others. Conferencing software works more like a slow-motion conversation or a bulletin board: one individual "posts" or enters a message, and anyone else participating in the conference can read the message and post a follow-up message, or communicate privately with the poster via e-mail. While there is certainly substantial overlap between
these types of software, the e-mail paradigm is based on private, one-to-one communication; the conference is designed for group communication.

E-mail was available to, and used by, students in the course, but the purpose of this paper is to discuss the use of conferencing software to create an ongoing class discussion via the computer. We used a program called VAX Notes, running on our VAX with the VMS operating system. Students were able to access the computer via terminals in Robinson Hall, or in some cases by using home computers and modems.

Objectives
I had the following objectives in mind for computer conferencing:

1. The students would get practice in writing
2. The questions would stimulate the students to think about the issues raised by the course
3. The students would directly experience the impact of the computer on a social institution, in this case, the classroom
4. Students that, for social or personal reasons, find it difficult to speak out in the classroom setting, would have an alternative way to express their opinions

Assignments
Fifty percent of the student's grade in the course was based on class participation. The rest of the grade was based on a term paper. The syllabus stated that participation in the computer-based discussion would be a required component of class participation. In addition, it was pointed out that students who found it difficult to participate in the classroom would have the opportunity to improve their overall participation grade via the computer.

Since some of the students had never used the VAX before, and none had used VAX Notes, the first assignment was to
access the conference, look for a message from the instructor, and respond appropriately. The following message was posted:

Post a reply to this conference, answering the following questions:
1. What is your name?
2. Where were you born?
3. Have you ever had a pet? What was its name?
4. Have you bought any CDs, tapes, or records in the past six months? If so, what was your favorite?

Here are a couple of sample replies:

Hi! My name is C.B.,¹ and I'm a Senior economics major (math minor) here at GSC. I was born July 29, 1969, in Camden, NJ. I have a dog named Lance at home, but pets aren't allowed in Mansion Park so my parents take care of him. The last tapes I bought were the B-52's Cosmic Thing and the Cure's Disintegration album. My favorite groups are U2 and the Police.

My name is P.L.D. I was born in New Mexico. Yes, I did have a dog when I was very little and his name was Midnight. The latest tape that I have bought is "A Tribe Called Quest," which you may or may not have heard of.

Some of the replies were quite a bit longer than this. This assignment not only assured that the students got a chance to get familiar with VAX Notes, but also helped the participants to get to know each other. Following this initial assignment, some students began to communicate with each other via e-mail.

Of the half dozen or so topics posted for discussion during the semester, the one that resulted in the most interesting exchange was one directly related to the use of computer conferencing. The class had just read several papers on
Community and Social Participation, including a description of France's national videotext system. France's system, commonly known as the Minitel, was originally intended primarily for distributing information, e.g., providing an online telephone book. It has achieved both popularity and notoriety as a medium for interpersonal communication, some of it of a sexual nature. Inspired by the Minitel and our course discussions, I posted the following assignment:

Respond to the following:

It is a hoax to think that human interaction and communication can actually be improved through computer networking, as asserted in some of this week's readings. People who interact through computers will become increasingly isolated and unable to cope with other human beings. The success of systems such as the French Minitel are a symptom of a sad and lonely world, not a cure for the alienation of modern society.

Here's a sample of the replies to this posting:

Yes, I believe that it is a hoax. If face-to-face communication becomes less and less necessary, then nearly all the needs an individual requires to live could be received without ever leaving the home through the use of a computer network. The world would be filled with agoraphobics... everyone isolated and fearing the outside world. The society would not improve, it would fall. So turn off your computer and run into the street screaming!

I disagree that communication by computer networking will lessen human interaction. If anything, I think that it will help people who are shy and not as outgoing to communicate by computer with others, and eventually bring about an interest in meeting others. I also think that you would be missing out on life if you were to become isolated by computer networking.
There is nothing inherently wrong whatsoever with "networking." Communication of any type can lead to disastrous consequences, but one or the other type should not be singled out as being so much more possibly corrupting than all the rest.... Perhaps it is that we fear that there may be some less fortunate among us who will rise to obtain some notoriety when offered this powerful new forum for their ideas. Someone, after all, may try to step out of his society-assigned class-roles!... Well-adjusted, socially interactive individuals will prosper with the introduction of this far-reaching medium. No longer will individuals isolated by crippling handicaps and disease be so isolated—those who were once inhibited from social interaction due to fears of reprisal... will now be able to test out new ideas, and introduce them into areas where they are more effective....

People who do not want to communicate face to face will not. People who want to will. The computer can be a marvelous tool for someone who perhaps lacks the social skills or perhaps will be hindered in the social world. A disfigured person would be an extreme example but nonetheless a good one. People who have difficulty interacting socially will benefit greatly and will not become lonely but meet many new people that otherwise would be beyond their social reach.... I find it hard to believe that by expanding the number of people I come in contact with I will become isolated and unable to cope with other human beings. One must remember, even while I am typing this, I am talking NOT to a computer but to all the members of the class. And yet I'm becoming isolated...? I think not!!!

I feel that computer networking is good for people who are not very outgoing in society. They have a chance to speak what is on their mind without the fear of public
harassment. I myself, who don't like speaking out, love to communicate with other people through computers. Eventually, people who communicate a lot through computer terminals will start to speak out better in society.... they will become more confident in their ability to speak out.

A person that desperate to try to meet somebody by the computer is a hermit... a person like that should go see a shrink....

When I was in high school, I used to call a computer system called Diversi-Dial. It was a nine-person chat system. You would be able to call and talk to people all over the area.... Another user who was my age who went by the handle Astral Traveller was truly different. I never actually spoke to him, but on the screen he seemed like a cool, normal guy. He talked about sports and girls and computers like everyone else. He didn’t like people to know what he was hiding behind his IBM. He was handicapped and was in a wheelchair. The core users on the system became very close on screen, and some off.... Astral had an older sister who would chat with us once in a while. One day I went online on his system and the first thing on was a note from her. It said that Pieter, Astral, had passed away the night before. I don’t really know too much of his personal relationships, but I do know that except for his very close friends from the system, no one else was ever welcomed to his home. He hid behind his screen, never talking about his disability. Most of us never really had a chance to say goodbye. So I agree that too much computer interaction, and not enough personal is detrimental.

These are some of the other discussion questions used in the course:
Suppose you are on a committee for a labor union, responsible for negotiating workplace conditions. While you would prefer to outlaw “computer monitoring” of your employees, you have decided that it is inevitable. However, to protect your employees, you plan to attempt to achieve a set of written standards for the computer collection of employee performance data and for its interpretation. What would you wish to include in such a document?

Looking at it from the point of view of the company, would you be willing to accept such restrictions, and if so, which ones?

Many experiments and demonstrations are described in “The Media Lab” by Stuart Brand. Of those described, pick the one that:

1. Is most likely to be in common use by the year 2000;
2. If it were to be adopted would have the greatest impact on society.

(This could be the same experiment or two different ones.)

Explain and support your answers. For #2, discuss whether the impact is likely to be positive, negative, or some mix of the two, and why.

1. Considering all the functions of government (the military, tax collection, government regulation of industry, health and human services, etc.), make a list of things that you believe the government has a legitimate interest in keeping secret. For each one, explain in a sentence or two why each type of information ought to be kept secret.

2. Give an example of a type of information that you believe the government keeps secret that should be public information, and explain why you think so.

Analysis of Objectives

Overall, the use of computer conferencing met and exceeded my objectives:

Writing: The students did quite a bit of writing in the process of responding to the discussion questions. It should
be noted that the process of replying to a computer-based discussion leads to a different style of writing than the expository essay. Computer conference entries tend to be informal, conversational, and sometimes rambling. This tendency was reinforced by the VAX Notes software, which didn’t make it easy to go back and rewrite an entry. Better software would help, but the conversational nature of computer conferencing will continue to encourage an informal style.

*Stimulating thought about the issues:* Based both on the quality of many of the entries, and on comments from the students, I do believe that computer conferencing was useful in encouraging students to think about the issues raised by the class. Instead of spending one three-hour session discussing the readings and the rest of the week working by themselves, the students had a chance to interact, discuss, debate, and think during the week.

*Experiencing the impact of computer conferencing:* The students certainly did experience it, although in retrospect I wish I had made this the last topic of conversation: How did the VAX Notes conference change the class for you?

*Participating in computer conferencing:* Some of the quietest students in class had interesting and valuable contributions to make on-line. Others were voluble in class and voluminous in their conference messages, and some seemed to find it difficult to find anything to say either in class or on the computer. Several students told me that they much preferred stating their ideas on the computer to presenting them in class.

*Student Reactions*

At my request, three of the students sent me their reactions to the computer conference. Here are some excerpts:

It gave me a chance to read others’ thoughts, though I think it should be set up so you cannot read what others have said until you first comment.
I'm not an outgoing person, and I do like to think about what I'm going to say before blabbing. Given the option, I'd have taken the class using the Notes system alone. It was useful in that I was able to voice my full opinion without time constraints, and without argument or interruption.... I think it would've been better if all the topics that were going to be discussed were already in place. Instead of assigning particular Notes responses, maybe having the topics in place, and having each student post three messages under each topic would have served.

I really liked using Notes. I felt that it was sometimes easier to write your opinion than to speak it. I also enjoyed reading other people's responses (there were some pretty original ones). The opinion questions seemed to generate the most interest and "conversation." The questions which did not seem to work as well were those which either required research or looking back to the readings....

*Thoughts and Suggestions*

Now that I've completed one semester using this system, I have the following thoughts and suggestions for instructors considering the use of computer conferencing:

1. Get the best software interface you can get. VAX Notes was kind of clunky, and at times I could tell the students were wrestling with it. This is an unnecessary distraction. I'll probably end up using the same software again, however, because it's adequate, and I don't have easy access to something better.

2. Short, opinion-based discussion questions work best. If the student has to leave the terminal to answer the question, it probably makes more sense to hand the questions out in class. (Of course, once more reference materials are available on-line, the range of questions that would work well on-line might be broader.)
3. Encourage the students to read each other's replies so that a real discussion gets going rather than just a response to the instructor's initial question. The students that took the time to read each other's comments seemed to get the most out of the discussion. I may design some of the assignments next time to require students to read and react to each other.

4. I chose not to react directly to any of the students' comments. Generally, I allowed the students to carry the discussion. This seemed to work well, and the students (at least some of them) seemed much freer in their comments on-line than in class.

Conclusion
Computer conferencing can be a valuable adjunct to a course. It can help those who have a hard time speaking out in class. It can provide writing practice. And it can reduce the isolation of class members outside the class meeting time. I would encourage instructors in any discussion-based course to experiment with computer conferencing.

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Notes
1 Students' names are omitted. I have also corrected obvious typing errors in some of the entries.
3 In this context, "networking" refers to interpersonal communications tools such as e-mail and conferencing software.
4 A "chat system" is like a computerized party line—the users' communications occur immediately as they type on their terminals. In computer terminology, this is called "real-time" communications.