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# Computer-Mediated Communication in the Basic Communication Course

## **Cover Page Footnote**

This essay is part of the proceedings of a Speech Communication Association seminar held at the New Orleans convention: "Instructional Resource Innovations for the Introductory Communication Course."

# **Computer-Mediated Communication in the Basic Communication Course**

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***Gerald M. Santoro***  
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## **INTRODUCTION**

From 1987 through 1992, the authors employed computer-mediated communication (CMC) for delivery and support of a basic communication course in group problem solving. This course, SpComm-350, was one of the 101 winners of an EDUCOM Joe Wyatt Challenge award for successful application of technology to instruction.

The goal of the course was to teach students to participate in group discussion (committee work). It was an active participation course. We chose to use CMC augmented by video because 1) many courses of this sort are top heavy with theoretical lecturing and participation is kept to a minimum, and 2) individual contact with a senior instructor is difficult when more than 200 students are enrolled and 3) prejudicial aspects involved in instructor/student relationships often bias evaluation and critique. The inability of the professor to reach campus provided the initial impetus to think in terms of automated instruction. The course was administered in four sections of 50 each, nominally directed by a graduate assistant. Students were divided into independent task groups of approximately seven members each.

The approach used in the design and development of SpComm-350 has since been adapted to other courses, and

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today over 100 Penn State courses are using CMC to support course communication. One feature of this approach is that it is platform-independent. It is easily surviving the transition from mainframe-based systems to client/server networked systems.

The preceding paragraph is important. Many attempts at computer augmentation fail because the technology is beyond the grasp of the user. The term "user friendly" is often an excuse for trivialization. Our goal was to assist students in taking advantage of the most sophisticated aspects of computer mediated communication.

Our initial effort resulted from a rather practical problem. Declining health of the course Professor prevented him from commuting to campus and maintaining necessary contact with his students. Out of this problem we set our goals to explore ways to improve the effectiveness and efficiency of the basic communication course. It was easy for us to agree on the deficiencies specified above. What we learned is applicable to communication instruction (i.e., skills-based instruction) in general, as well as to computer-based instruction and distance education in other disciplines. Much of what we learned was from simple day-to-day experience, and is not yet grounded in empirical research. However, based on student/instructor feedback and student product, the approach generally succeeds in meeting its goals. We fully expect current and future research to provide bases for why it works, and in which situations it is applicable. At the moment, we see no reason why this form of instruction would not be useful in public speaking courses. There are, of course, hundreds of examples of its use in English composition.

We began development of SpComm-350 with a few assumptions regarding skills-based instruction. First, we determined that the effectiveness of the basic communication course comes down to a process of performance and critique. The student performs, criticism is provided by the instructor, and the student modifies performance based on the criticism.

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This results in the student developing a set of heuristics on which to base performance in various situations. We determined that communication theory, while useful in explaining how these heuristics work, is secondary to the task of helping the student develop the heuristics, and therefore the desired skill.

Second, we determined that the best use of instructor time is in evaluating performance and providing the student with thoughtful critique. Time spent lecturing, or rehashing the contents of textbooks, is largely wasted and would be better spent in direct performance evaluation with students.

## **SPEECH COMMUNICATION 350 — GROUP PROBLEM-SOLVING**

SpComm-350 involved approximately 200 students per semester, one Professor, two assistant instructors and a small group of graduate students. Students were assigned to small groups (5-7 persons each) and assigned a problem task. Their goal was to work as a group in the completion of the task. The task changed each semester, and tasks were intentionally selected to be vague, to force the groups to define and structure their work. Eventually, the groups had to produce a formal written report on some problem/issue as well as provide a review/critique of their own work. To do this, it was essential that they work in groups and assign tasks. In order for us to evaluate process and "trouble shoot" groups having difficulties, we regularly administered Bales and Cohen SYMLOG, so that we could spot factions, cliques, isolates, leadership, etc. and provide appropriate feedback to the groups. This could be done on line and did not require the biasing presence of an instructor monitoring the groups. Thus, the natural state of the group was not modified.

The course Professor addressed the students via videotape periodically, offering briefings on the task only. Briefings

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were terse, humorous, explicit. All theory (as warranted) was contained in the text. Graduate assistants served as traffic directors, referring questions to the instructor and helping students with Email problems. They also evaluated projects. The instructor was only available to the students through electronic mail. Group meeting logs, progress reports and other task deliverables were handled entirely through electronic mail. Questions regarding task specifics, and critique of deliverables, were also handled through electronic mail.

Assistant instructors handled recitation meetings with the students and provided some guidance on relating the textbook material to the problem-solving process. They, and the graduate students, observed group process and wrote logs which were also transmitted electronically to the Professor.

Reference 'experts' were available to the student groups through electronic mail. In some cases these experts were the textbook authors, in other cases they were persons with relevant expertise in some area related to the group task. Sometimes the reference expert was local, but usually they were at another University or institution hundreds or thousands of miles away.

Some task deliverables were shared with other groups by posting them to a private conferencing area. This conferencing area (based on Usenet NEWS) also provided for class-wide discourse outside of class meetings.

Overall, SpComm-350 was designed to simulate the way problem tasks are assigned to groups in industry. The groups were given a great deal of latitude in the completion of tasks, subject to the required deliverables and critique from the Professor and assistant instructors. The assistant instructors essentially played the role of middle management while the Professor played the role of a company CEO. Tasks were relevant to students' needs like recommendations for improvement of students health service, programming on the local university radio and TV stations, and design of literacy and remediation courses. Students were also required to devise a

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method for grading individual performance (criteria: 1/3 A, 1/3 B, 1/3 C) plus an appellate system. Students were evaluated on the systems they devised (even when they decided to "draw lots.") Individual grade represented 20% of total grade. Midterm on text also was 20%. The remainder of the grade was collective. All written work was graded by the senior instructor and the grad assistant in charge. The grad assistance was weighted 2/1 over the supervising instructor.

When SpComm-350 was first offered, CMC instructional support was a relatively new idea. Although electronic mail had been used in the sciences for years, this was the first large-scale attempt at using it to support a skills-based liberal arts course. Our biggest challenge was to make the technology as transparent as possible for the students. It had to be both easy and practical. It had to be a tool that empowered the groups to complete their tasks rather than being (as some feared) an impediment. Over the 6 years that SpComm-350 was taught with CMC support, the results showed that it was indeed effective. Student performance and group product showed a small, but definite, improvement over traditional group problem-solving instruction. Students and instructors felt that they had better interactions overall, even though they had no face-to-face contact with the Professor and little face-to-face contact with the instructors.

For example, over half of the students took advantage of regular contact with the Professor via CMC. Fewer than half of the students made any attempt to meet with the instructors during scheduled office hours. This demonstrated that students found CMC contact preferable to often inconvenient face-to-face meetings once they had achieved competency with the CMC client programs.

To test the efficacy of the course, written projects similar to those used in live-instruction courses were evaluated by outside panels of experts who agreed that the work in the computer-based classes was equal or better than that of classes using live instruction. The student populations in each

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case were the "same." (Or as "same" as possible in a university community.)

The majority of the students had no difficulty with the CMC client programs. This was due in part to our effort to use generic clients as much as possible. Rather than customizing the software, we put our efforts into training and support for tools that the students might have already had some experience with, or would be able to use in other courses. Workshops were periodically provided for those who wanted further instruction. Furthermore, each group was assured one "sophisticated" computer operator so they were not handicapped in their communication. The conferencing component of the CMC system obviated the need for unnecessary lectures. Important questions, and the Professors response, could be posted for classwide consumption. Issues could be addressed as they emerged and when they were relevant. When students asked questions relevant to the common good, they were posted to public bulletin boards.

## **CONSIDERATIONS FOR CMC USE**

When integrating CMC into any University course a number of issues must be considered well before the first class meeting. Some of these considerations will be 'givens' in the sense that they reflect the local computing environment. Other considerations will be design options affecting the format of the course and the specific uses of available technology. In most cases tradeoffs must be made between desirable functions and available services.

### ***The Bottom Line***

The most important initial consideration is what we term the 'bottom line.' This has to do with the reason CMC is being used in the course. In the opinion of the authors, CMC is

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appropriate for course support only when it either solves recognized problems with the course or when it adds significant advantages for the students.

Unfortunately, many applications of technology to instruction amount to solutions in search of a problem to solve. This is not surprising, since the technology is evolving more quickly than our understanding of its application. System developers are creating 'tools' to explore what 'can be done,' course designers must ask themselves 'why should we do it?'

A real problem occurs when technology is added to a course for its own sake. It may be glitzy and fancy but will it really help the instructional process? Even worse, could the technology become an impediment to learning rather than an aid? Every few years a new technology is touted as revolutionizing the instructional process. However few, if any, revolutions have really occurred.

An example is with hypermedia. No one would doubt that hypermedia provides a fancy interactive way of viewing related data, but it has not demonstrated that this improves the students understanding of course material. In fact, it has been suggested that the opposite may be true due to the difficulty of easily scanning and locating specific information in hypermedia systems. Anyone doubting this should spend some time browsing the World Wide Web.

Recent experiments with hypermedia show a consistent NSD or inferiority when compared to traditional methods of instructions. This may be attributed to the "creativity" feature claimed by hypermedia designers. Hypermedia is structured by its designers in ways not necessarily accommodating the natural human ways of thinking. Consequently, it cannot guarantee coverage of subject matter. Its use in skills training is yet to be evaluated, although it appears that some form of visual experiences could be used to show desirable models of performance skills.

## **Accessibility**

For CMC to be useful in a course, students and instructors must have convenient access to the CMC system. Students are unlikely to take advantage of CMC for course-related communication if it is inconvenient for them to get to a computer system and run the CMC clients. Likewise, instructors are unlikely to devote the time necessary to make use of the CMC system rewarding to their students if they do not have convenient access to a networked computer system. This situation becomes even more complex if hypermedia is used. The idea that the system cannot be the important feature of instruction is salient. If students are preoccupied with learning technology, they are distracted from the content of the course.

A number of approaches to the problem of accessibility have been tried. The most successful approach is one that provides at least 3 types of access. Public laboratories located conveniently across campus and open during hours convenient to the students will work for students who do not have their own computer systems. Building networks and faculty office computers provide convenient access for faculty daytime hours. At some universities these networks also include residence halls so student computers can be directly connected to the campus system. Dial-In systems offer remote access via modem and telephone lines for students and faculty to access CMC from the convenience of their homes.

Please note that the problem is not simply one of convenient access to 'a computer.' Given the rapid advancement in microcomputers and communications technology it is quite possible that students or faculty might not have access to the right type of computer or to the software necessary for CMC use. The best solution is one where the institution provides guidelines for computer system type and provides support for access to the networks and CMC services.

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## ***Institutional Strategy***

Successful integration of CMC with any course can depend in large part on the Institutional strategy for instructional technology. For example, some institutions provide electronic mail accounts for all of their students during their entire matriculation. Courses that utilize these systems as part of their CMC groupware have the advantage that students will not need in-depth training in use of the tools in each course they take.

One of the presumptions underlying recommended uses of hypermedia is that the hardware is accessible to the student users. Whether this instruction is offered through hypercard, toolbook, or Internet technologies like gopher, WWW, or Mosaic, for the foreseeable future, slow processing, complex systems, and inadequate on line resources promise to retard application of hypermedia to solution of classroom problems. Remember that our focus is on using technology to solve classroom problems rather than the more Procrustean task of fitting technology to the classroom whether it belongs there or not.

Institutions providing campus-wide information systems such as gopher and the worldwide-web can use these as delivery systems for course 'virtual libraries.' These libraries allow an instructor to provide CMC access to text, programs, graphics, and any other object that can be stored in a computer file. (See postscript for a live example of this application.) Please keep in mind the imperative of accessibility, however, before becoming excessively excited about this form of instruction.

Training, documentation and support for individual CMC clients can be centralized and standardized, removing this burden from the instructor. Custom documentation and training that is provided by the instructor can be focused on the functional use of the tools in the course rather than on the

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mechanics of the tools themselves. An ongoing dialog between instructors and the groups charged with providing centralized computer/network services and support can help to fine tune systems and procedures for maximum effectiveness.

This latter point should be stressed. Instructors seldom bother to provide computer/network support personnel with the information necessary to assist their students with system problems. When CMC is integrated with a course it also provides a splendid opportunity for the service and support providers to anticipate student needs. For example, course syllabi and project descriptions provided through a virtual library can also be available to support personnel, who then better understand how to assist students. We acknowledge the work of Profs. Lori Jackson at Cal Poly, Mary McComb at Marist College, and Robbie McKenzie at East Stroudsburg University of Pennsylvania in designing support systems, training workshops, and simple user documentation for our experimental courses, and refer you to them as consulting resources as you do your own designs.

### ***Major Instructor Commitment***

Early in the development of any course using CMC the instructor must lose the illusion that the technology will reduce their workload. In fact, for maximum effectiveness the instructor must make a major commitment to being a leader in the use of the system.

Planning for the course should involve the instructor working through all of the required exercises, using the same systems that will be available to the students. This way they will anticipate problems that their students may encounter. It is particularly important that a student develop faith that the instructor has experience with the same tools they are required to use in the course. This results in an empathy between student and instructor that can provide real encouragement for the student. Equally important is the recognition

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that the subject instructor may not be technologically sophisticated. Genuine harmony between the instructor and the technical specialist is imperative for success in this form of instruction.

It is also very important for the instructor to regularly check for electronic mail or conference postings from students and to provide thoughtful answers as quickly as possible. In the SpComm-350 case students often received replies to their CMC queries within minutes. This clearly reinforced their positive impression of instructional CMC. While instantaneous response is clearly not feasible, the instructor must at least make a commitment to checking for student queries on a daily basis. Nothing can be more daunting to the student than to gain the impression that the instructor doesn't use the system herself.

In another CMC-supported course one of the authors (Santoro) provided weekly 'virtual professor' sessions where students could ask questions through an interactive chat system. The setup was frankly hokey, and provided more for fun than for pedagogical advantage, yet some students were excited enough by the application to devote time to practice with the CMC tools. The impression gained by the students was of a strong instructor commitment, which resulted in greater effort on the student's part.

Basically, the instructor of a CMC-supported course should expect to put more time into the course rather than less time. However that time commitment will result in better contact with students, and in a more rewarding instructional process. If there is a very large number of students, a teaching assistant or assistant instructor can be employed as front line of communication. Conferencing systems can also be employed to address questions in a coursewide forum rather than through one-on-one electronic mail. This can help foster class-related discourse as well as peer assistance.

## **SUMMARY**

CMC, and other computer/communication technologies, have great potential for application to instruction. However, we need to think carefully about 'why' we are using technology. Will it really improve the educational experience or is it merely window dressing? In particular, we need to avoid creating problems for technology to solve simply because it is available.

Student acceptance of instructional CMC is key to its effectiveness. The degree of student acceptance is tailored by the design of the course and the instructor's commitment to it. Our experience has shown that CMC can improve the effectiveness and efficiency of the basic communication course.

## **POSTSCRIPT**

A live example of a virtual library is available for exploration. The library is for the authors LA-283 (Computer Applications in the Liberal Arts) course. You will need a gopher client or a WWW browser (such as Mosaic) to access this library.

If you are using a gopher client, point it at `info.psu.edu` port 70. If you are using a WWW browser, point it as `url gopher://info.psu.edu/`

Then, in both cases select the following menu entries:

- Information Servers at Penn State
  - FTP server `ftp.cac.psu.edu`
  - courses
  - la283

You will now be at the top level of the la-283 library disk. Send any comments to Gerry Santoro at `gms@psuvm.psu.edu`.