

DEOSNEWS Vol. 2 No. 1.
 Copyright 1992 DEOS - The Distance Education Online Symposium

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DEOS was established with a grant from the Annenberg/CPB Project.

EDITORIAL

I recently read three interesting publications about distance education and computer-mediated communication. *Empowering Networks: Computer Conferencing in Education*, edited by Michael D. Waggoner (1992), is available from Educational Technology Publications for USD 34.95. The book comprises ten individual articles describing a variety of educational projects based on computer conferencing in the U.S.A.

Computer Mediated Communications: Bulletin Boards, Computer Conferencing, Electronic Mail, and Information Retrieval, written by Matthew Rapaport (1991) is published in New York by John Wiley & Sons. I paid USD 34.95 for the book in a local book store. It is a comprehensive, technical book, focusing on the gamut of cmc applications and their features. The book was especially appealing to me, since I six years ago designed EKKO, the computer conferencing software used for distance education at the NKI College in Oslo, Norway. I recommend the book to people who are responsible for purchase, design, implementation, or operation of cmc systems.

In June 1991, I attended an International Symposium on Computer Conferencing at the Ohio State University. The conference proceedings, *Applications of Computer Conferencing to Teacher Education and Human Resource Development*, is now available. While supplies last, it can be ordered from: The Center on Education and Training for Employment, Publications Office, The Ohio State University, 1900 Kenny Road, Columbus, Ohio 43210. Telephone (614) 292-4353 or (800) 848-4815. The cost is USD \$4.00. For more information, contact Aaron J. Miller (amiller+@osu.edu), editor of the proceedings.

This issue of DEOSNEWS focuses on the conference proceedings by presenting the e-mail addresses of authors who have agreed to respond to questions and comments about their articles; a list of the papers, and finally, Mark E. Eisley's paper "Guidelines for Conducting Instructional Discussions on a Computer Conference". Be aware that Eisley's figures are not included here.

LIST OF PAPERS AND E-MAIL ADDRESSES

Michael G. Moore <n0g@psuvm.psu.edu>. *Computer Conferencing in the Context of Theory and Practice of Distance Education*

Alex Cruz <acruz@magnus.acs.ohio-state.edu>. *An Introduction to Computer Conferencing: A Look at Software Available in the Academic World*

Donald R. McNeil. *Delivering Credit Courses By Computer and Other Observations*

Edward B. Yarrish. The Fully Electronic University; or, Mind Expansion without Drugs

Linda Harasim <linda_harasim@sfu.ca>. Teaching by Computer Conferencing

Mark E. Eisley <aiteisle@idbsu>. Guidelines for Conducting Instructional Discussions on a Computer Conference

Robin Mason <rd_mason@vax.acs.open.ac.uk>. Developing a Learning Community in Distance Education

Larry Hudson, Robert Paugh <76557.1057@compuserv.com>, and Phyllis Olmstead. Extending the RJ-11 Connection for Audio and Computer Conferencing

Constance Pollard and Valerie Akeyo. Telecommunications Networks in Action: An Inter-university Project

Paul E. Post <post.1@osu.edu>. Electronic Mail, Conferencing, and Student Teaching

James T. Roberson, Jr.<roberson@fordmulc.bitnet>. A Focus Group Report on Religious On-Line Education

Ronald M. Stammen <stammen@plains.nodak.edu>. Research and Development Activities Regarding Opportunities and Problems with Computer Conferencing for Rural America

Robert M. Torres <rtorres@magnus.acs.ohio-state.edu>, Wesley E. Budke, Charles M. Loyd, N. L. McCaslin, and Aaron J. Miller <amiller+@osu.edu>. Examining Computer Conferencing as a Technique for Enhancing Personnel Development Activities

GUIDELINES FOR CONDUCTING INSTRUCTIONAL DISCUSSIONS ON A COMPUTER CONFERENCE

By Mark E. Eisley
Boise State University

A Graduate Program Based on Computer Conferencing

Overview

Boise State University (BSU) offers an entire graduate degree through distance education, and more specifically, through computer conferencing. It is the M.S. degree in Instructional and Performance Technology (IPT). This is currently the only degree program offered by the university which can be completed either through traditional, on-campus classes or through an entirely nonresident option. In terms of its delivery method and scope, it is one of the first of its kind in the entire world.

Both the traditional and the nonresident IPT options prepare students for careers in the areas of instructional design, job performance improvement, human resources, training, and training management. Such careers exist in a variety of settings, such as business, industry, education, the military, and private consulting. Students learn how to design and evaluate both instructional and noninstructional interventions aimed at

improving human performance.

Time--and Location--Flexible Classes

Students all over the North American continent (and a few overseas) participate in BSU's IPT program from their home locations through distance education classes. A number of IPT students local to the Boise area also prefer to take the courses we once called "distance courses." The irony of "local" students taking "distance" courses led us to realize that the critical attribute of these classes was not the "distance," but their time flexibility and their location flexibility. Thus we had to coin a new term which more aptly describes the central element of these nontraditional classes. The term selected was time--and location--flexible (TLF) classes. The increased accuracy of this terminology does not, however, negate the fact that the majority of students enrolled in TLF courses do in fact reside far away from Boise. While they are sprinkled all over North America, most of our distant students live on the east coast. Four of them live in Canada (from British Columbia to Nova Scotia). From application to diploma, most of our students never set foot on the BSU campus. We are set up to grant diplomas to students whom we will never meet face to face.

TLF classes are conducted by computer conferencing (via personal computers and telephone connections). TLF classes are distinct from correspondence courses in many important ways. Two of these are: (a) each student in the class sees the questions and comments of all the rest of the students in a natural flow of normal class discussion; and (b) interaction between teacher and student and among peer students is much more immediate and natural than possible through mailing systems. Computer conferencing permits (and encourages) a high level of interaction among class members.

TLF classes are delivered through a combination of media in addition to the medium of computer conferencing. For example, for any given course, the media used might include printed materials, videotapes, audio tapes, computer-assisted instruction, other computer tools (such as authoring systems, data bases, etc.), slow-scan video, facsimiles, and personal telephone contact.

The distance option of the IPT program uses the same admission standards, instructors, and required courses as the on-campus option. However, the tuition is higher than for on-campus classes, and special equipment is required. The curriculum lends itself to students taking one or two courses per semester (including the summer session) in order to complete the program in two to four years.

In order to be admitted to the distance option, applicants must own or have convenient access (a minimum of 2 hours per day, 5 days per week) to a complete computer system which includes the following components: an IBM-compatible computer with at least 20 megabytes of available hard drive space and color graphics (EGA or better) capability; a Hayes-compatible modem (2400 BAUD recommended); either a 3.5" floppy drive or the means to convert 3.5" floppies to whatever size and density typically used by the applicant. Distance students are encouraged (but not required) to gain access to a fax machine for both sending and spontaneous receiving.

The distance option is fully accredited by the Northwest Association of Schools and Colleges (NASC). Distance students in the program have been enthusiastic about the rigor and value of their academic experience. The distance option clearly meets the needs of busy professionals who are seeking to increase their knowledge, skills, and credibility in the training profession, but cannot relocate to attend traditional graduate courses. (The appendix at the end of this report gives the comments of several students regarding the value and effectiveness of the TLF classes.)

Communication Architecture

Various types of communication software available on host computers enable participants to communicate with one another via text transmitted through modems and phone lines. These can be grouped into three major categories: those designed for E-mail (electronic mail), those designed for bulletin boards, and those designed for conferencing per se. All three forms of communication architecture operate asynchronously. That is, participants need not log onto the host computer at the same time in order to communicate. Senders' messages are stored on the host for later access by receivers.

E-Mail

Figure 1 illustrates how E-mail works in actuality. Each user is connected to the host computer by network cable or phone line. In distance education, the link is through modem and phone line. Participants are not linked directly to one another. Rather, they are all linked to the hub constituted by the host computer. However, as Figure 2 shows, it feels to the user as though there is a direct link with every other user on the system. (If Figure 2 were complete with an arrow drawn in from each user to every other user, the figure would be nearly illegible; but that would more truly represent the number of private connections felt by the users.) With E-mail, senders relay private messages to system users one at a time. The best metaphor for such a communication system is, as the name "electronic mail" suggests, mailed correspondence.

Bulletin Boards

Electronic bulletin boards are one step higher in the hierarchy of communication architecture, because in addition to private mail capabilities, bulletin boards are built for handling public communication. Let it be pointed out here that "public" communications are possible through most simple E-mail software programs, but the method of accomplishing such is laborious. A sender would have to either manually send a separate copy of a message to each user on the system, or make use of "mailing lists" if the software permits. The nomenclature and command structure of E-mail are not really designed to perform bulletin type communication.

Figure 3 illustrates how an electronic bulletin board, much like the physical one in the student union, can be divided into separate areas where various bulletins are posted. Such organization does help to reduce the otherwise overwhelming task of navigating through numerous unrelated bulletins. However, within each subject area, comments can be addressed randomly and do not constitute a serial discussion. Thus bulletins do not lend themselves ideally to emulation of classroom discussion. This is not to say that they cannot be used as a vehicle for integrated, focused, linear discussions--but to use them for such takes a great deal of management and discipline on the part of the users. Again, the software is really designed with a nomenclature, command structure, and function set which best meets the purpose of posting bulletins, not conducting discussions.

Computer Conferencing

True conferencing software is the ideal supporter of instructional discussions which "feel like" a real classroom discussion. In fact, the transcript of an on-line discussion reads just like a transcription of an audio recording of a discussion held among students and teacher meeting

simultaneously in the same physical classroom. The difference experienced by the computer conferencing participant is that the time required for the discussion to evolve is a period of days or weeks, rather than a period of an hour or so. For this reason, it is advisable to conduct several slowly unfolding discussions simultaneously. In this manner it is possible to hold the same number of asynchronous discussions within in the same semester time frame as are normally held by meeting in a classroom for an hour three times per week for synchronous discussions.

Figure 4 compares computer conferencing to a series of related letters to the editor in a newspaper. In such a series the sequence in which contributions to the discussion are made is important. Persons reading letter 3 will understand it better if they have read letters 1 and 2 first. The letters constitute responses to one another in a chronological order. Time (at least a day) elapses between each response. Several such chains of discussion can be unfolding in the newspaper simultaneously. The process is very similar to computer conferencing, except that the medium is electronic rather than paper. Another appreciated difference is that many contributions can be made to any given discussion in a day's time frame.

The special kind of software available to support a true conferencing environment contains features which lend themselves to concurrent chains of discussion responses. They also contain all the facilities needed for bulletin boarding and E-mail. The IPT program at BSU uses all three levels of features (conferencing, bulletins, and E-mail) in conducting TLF courses. The program does not make much use of the software's bulletin-type potential to do lecturing, mostly because students prefer paper-based readings/lectures which are more time-enduring, annotatable, highlightable, and physically referable. The program does make extensive use of the software's E-mail capability for private student interaction, personal concerns between student and teacher, submission of assignments and return of personal feedback on tests and assignments, etc. But for BSU, computer conferencing actually finds its highest and most distinctive application in conducting "classroom" discussions.

In the BSU program, discussions on several discrete topics occur during the course of a semester. Some of these overlap time-wise or occur simultaneously. Examples of titles for such discussions are given in Figure 5.

Making Discussions Effective

There are two key principles for effectively guiding the use of computer conferencing discussions for instruction:

1. Design the discussion ahead of time.
2. Manage the discussion in process.

If either of these steps is omitted, computer conferencing discussions tend to wander aimlessly. The resulting discussion may turn out to be interesting, but minimally productive.

Designing Discussions Ahead of Time

With regard to designing the discussion ahead of time, the following advice is given:

1. Tie discussion plans to your objectives.
2. Make sure your points get made.
3. Structure the discussion.

Tieing Discussion Plans to Objectives

Obviously, a first step in tieing discussion plans to objectives is to establish what you hope the student will learn. Libraries of material exist on this aspect of planning discussion, and do not need to be discussed here. It is sufficient to point out that once objectives are established, it is important to design your discussion plans around whatever purposes you have in mind. College instructors can easily be more topic-oriented than objective-oriented in conducting classroom discussions. The same is true in computer conferencing discussions, but the consequences seem to involve even more entropy than results in a traditional classroom. Just having students bring up any points they may in an on-line discussion to help "cover the topic" ends up being very low-grade instructional ore. In order to tie discussion plans to one's objectives, it is important to determine which of the "phases of instruction" the discussion is aimed at. Phases of instruction have been described in a number of ways by a number of authors. One simple schema contains the following five steps:

1. Preparation
2. Presentation
3. Practice with Feedback
4. Evaluation
5. Follow Up

Determining which of the phases of instruction you are trying to conduct using computer conferencing helps you to gain a clear view as to what you hope to achieve in the discussion. For example, if you are in the "preparation" phase, your goal will be to arouse interest, to review prerequisite material, or to tie the new discussion in with what has preceded it in the course. These goals are quite different from a discussion which is aimed at the "practice with feedback" phase for the same unit or topic. And so the way the instructor designs and manages the discussion will be quite different in different phases of addressing the same topic or learning objective.

Making Your Point

After first planning the discussion objectives, it then does become appropriate to focus a bit on content. One of the activities of the planning stage for an on-line discussion is, in fact, to plan what points you hope will be brought out in the discussion. Creating a list of these points does three things: (1) It helps you see more clearly ways you can stimulate students to bring out or discover those points without you having to spoon feed them. (2) It allows you to manage the discussion more efficiently. (3) While conducting a discussion, checking your list to see if all your points have been brought out gives you some clue as to whether to end the discussion and go on to a new one.

Structuring the Discussion

Structuring the discussion involves four main activities:

1. Focusing the content.
2. Specifying the format.
3. Avoiding structures which invite nonresponsive communication.
4. Avoiding structures which invite redundancy.

Focusing the Content

The introduction to a discussion tells students exactly what you want them to do. It is in your "kick-off" statement that you communicate the structure, format, and rules of the discussion. In an introduction, the boundaries on the content need to be fairly narrow, otherwise the discussion will wander. For example, "In this item, let's discuss self-esteem," would invite such broad discussion that there would be little direction or cohesiveness. A more content-focused introduction would be, "How does self-esteem affect the success of incentive systems? Please give examples."

Avoiding Nonresponsive Communication

It is all too easy to fall into the trap of giving an introductory statement which invites too much self-referenced communication. This means that the discussion inputs of each student will refer only to his or her own experience or viewpoint. Comments on their peers' contributions are minimized. Each response is independent of all others. It produces a nonresponsive environment which is a little akin to the bulletin board environment where there is no sequence or dialogue to the individual items posted. Sometimes this is desirable (such as with, "Each of you give an example of bias in interpreting data."), but more often it is not. An example of an introductory statement which almost demands that students be responsive to one another is, "Work together to propose a group recommendation on how to improve the feedback system in the EverRite case study."

Avoiding Structures Which Invite Redundancy

If in the introduction to a discussion you imply that each student should give an answer regardless of how redundant it may be with other students' answers, you set the discussion on a course for low productivity and boredom. For example, if you say "Each of you give a definition of efficiency," you are likely to get 20 repetitions of essentially the same definition. It would be better to say, "Each of you suggest a way your employer could be more efficient. Please comment on one another's suggestions regarding how well you think they would work and whether you have tried something similar."

Specifying the Format

Some of the discussion formats which you might wish to try are described below. These formats help to keep discussions interesting, focused, and productive. Rather than define the formats, they are identified with a title and then illustrated with an example of the type introductory statement that might be used.

The critique. "Here is a sample proposal for a formative evaluation study. Please point out its strengths and weaknesses. What would you do to improve it? Each of you make only one or two comments until others have also had a chance to respond. In other words, please do not try to do the whole critique yourself!

The group report. "Susan, Linda, Fred, Daniel and Jan: Please work together under a restricted conference and research the various methods of doing cost assessments for instructional programs. Summarize your results

and report them back to the group under discussion #24. Once you report, the rest of the class will be invited to ask questions of you five."

Twenty questions. "Pretend I am your client and you are an instructional designer. Please interview me in a group interview to try to narrow down what I really need you to develop for me. I will give you a first clue and then you should ask clarifying questions to arrive at what it is I really want. (This clue is a request I actually received once!) CLUE: We want you to make us a video tape on how to do maintenance work on our new line of printers."

The poll. "Each of you register your vote privately with me (use E-mail) on the following issue: Can you have efficiency without effectiveness? I will only reveal the poll results and will not reveal how specific individuals voted."

Timed disclosure. "In one paragraph, please defend why you do or do not think parties who are not paying for an evaluation should have a say in what the evaluation addresses. Send your justification to me by private message. At a certain point in time I will share all of the arguments and their authors, but I do not want you to be too influenced by what others are saying until you have all had a chance to respond. After I've received all your paragraphs, you'll have the opportunity to comment on one another's rationale."

The assigned debate. "John, Maxine, Larry, and Todd: please take (such and such) a position. Lucile, Corinne, Lee, and Frank: you take the opposite side. Now please debate the issue."

Free association. "I'm not going to structure this discussion too much--we're just exploring ideas to peak your interest in the topic of consulting. What are your thoughts and ideas on this subject?"

The hot seat. "Zach, your in the hot seat now! I want the rest of the class to ask you questions about why you selected naturalistic inquiry as the method for your evaluation proposal."

The Socratic dialog. "Class, we're going to bat this one back and forth. First I'll ask a question, then one of you answer. Then I'll ask the next question and someone else answer, and so on. Every other comment will be from the instructor (unless there's something you've just got to break in and say or ask!)"

The shot gun. "This discussion is to get you thinking about a lot of related topics relating to the differences between training and education. I'm going to raise them all at once and you answer which ever ones appeal to you personally: Ready? here goes:" This is then followed by a set of perhaps ten related questions.

Go around the circle. "Let's go around the 'circle' and each of you tell the class why you selected this major. After each of you has responded, we'll close this item and move on.

Guided discovery. "Class, rather than give you the conclusions Stumps and Grig laboriously came to about the use of CAI, I will tell you the first thing they learned and ask you to raise succeeding questions. Each time you hit on a question they raised and answered, I will give you the results of their research."

Blind man's bluff. "Since evaluation is primarily a technical process,

what part does politics play in evaluation?" In this case the initial premise is purposely misleading and students will eventually bring out the point that evaluation is only partially a technical process and that it is also largely a political activity as well as a human communications activity.

Managing the Discussion in Process

Once a discussion is appropriately designed, using the principles outlined above, it is also necessary in the implementation stage to manage the discussion. Entropy abounds in on-line discussion. It takes the constant addition of energy to the system on the part of the instructor to keep the discussion on course. Students are often not disciplined at following directions explicitly. They need to be reminded and guided. Management techniques such as the following may be required.

1. Reinforce good discussant behaviors by saying things on-line, like "Thanks for responding so effectively to Judith's question, Barry."
2. Request change in poor discussant behaviors by tactfully pointing out the preferable behavior. For example, "Class, I would like to reiterate my request that you be more directly responsive to one another's comments."
3. Spur participation when lagging by directly requesting it. For example, "I notice that not many of you have commented on this issue. Let's have a little more response in this discussion."
4. Move misplaced content. If a student makes a contribution under the wrong discussion heading, move it immediately. Many students do not bother watching what the original intent of the discussion was and may follow the errant lead of the student who misplaced their contribution.
5. Vary who participates by privately asking the overly outspoken to wait a few responses before contributing, privately asking less outspoken individuals to participate more actively, and calling on specific individuals just as a teacher might call on a student in a traditional class to respond.
6. Occasionally, have a student conduct the discussion.
7. Summarize occasionally throughout the discussion, especially if it is a lengthy one.
8. Handle tangents appropriately. For example, "Lynne, that's a great issue you brought up, but let's get back to the original topic. If some of you want to discuss Lynne's issue with her, please do so under the open discussion #27."
9. Give a decisive end to each discussion. Don't let discussions drag on after they have served their purpose, since doing so will distract from other discussions where students should be focusing.

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