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EDITORIAL

In the late 1980s we witnessed a flourishing growth of distance education courses taught via computer conferencing. Most of them attempted to replicate traditional teaching in a new medium, with little innovative use of the technology. Ideally, however, what we should expect is a paradigm change in distance education pedagogy, based on the opportunity to conduct asynchronous group communication. Some early articles discuss the pedagogical opportunities of computer conferencing (Davie 1989, McCreary 1987, Harasim 1991, Eisley 1991), but still much experimentation and research remains to be done. This literature review compiles some evidence for a future paradigm change, and additional sources indicate that there are more innovative and remarkable courses available.

INNOVATIVE COMPUTER CONFERENCING COURSES

By Morten Flate Paulsen

This article describes and discusses the following innovative examples of computer conferencing in teaching:

- The International Business Negotiation Simulation Course (University of Maryland), in which the term "virtual synchronous communication" was coined.

- The Introduction to Information Technology Course (British Open University), which enrolled more than 1,200 students.

- The Management Practices Course (New Jersey Institute of Technology), which integrated a Management Game with computer conferencing.

- The Living on Purpose course (Awakening Technology), which used computer conferencing to provide a safe and supportive environment for human relations.

- Roleplays, programming courses, and online multiple choice database (NKI Electronic College), which present experiences from Norway.

- Debate, audio conferencing, and online examination.

The following is an interpretation of these examples, based primarily on descriptive papers. I have, however, met all authors personally and have heard their presentations of the courses, so this article may be influenced by their personalities and enthusiasm, as well.

THE INTERNATIONAL BUSINESS NEGOTIATION SIMULATION COURSE

The following description is taken from James Rawson's (1990) paper "The International Business Negotiation Simulations (IBNS)." The IBNS course was developed jointly by The University of Maryland, University College and The University of Maryland, College Park. The simulations consist of three half-day workshops, each of which uses a computer-managed, text-based, teleconferencing-based simulation to teach business executives how to negotiate successfully in a specific cross-cultural business environment.
The IBNS setting comprises five nodes: 1) the U.S. company

negotiation team, at a U.S. site; 2) the overseas company negotiation team, located in the overseas country specified by the simulation; 3) the U.S. company headquarters; 4) the overseas company headquarters; and 5) the simulation manager.

Timing and stress are often important factors in negotiation. Traditional asynchronous conferencing can hardly provide a trustworthy simulation of these important negotiation factors. To ensure that these aspects of negotiation are addressed, the IBNS course uses "virtual synchronous" computer conferencing. The information is technically stored and retrieved as in traditional asynchronous conferencing, but the interactivity approaches synchronous conferencing, because the participants are present at scheduled hours and are urged to respond quickly.

OPPORTUNITIES. Computer conferencing has three important features that are especially valuable for this course. First and foremost, every piece of information entered into the system is stored, so both learners and instructors can review and analyze the negotiation process during and after the negotiations.

Second, carefully designed access control allows the four involved groups (two negotiation teams and two headquarters) to hold private conferences. The course instructor may, however, access all conferences, and by such access monitor progress and provide useful instruction. Finally, use of computer conferencing may be less expensive than other international, group-communication alternatives (such as audio- and video-conferencing).

OBSTACLES. Computer conferencing lacks many non-verbal cues that are valuable in face-to-face negotiation. Clues to the negotiators' emotions and personality are omitted. To overcome this obstacle, IBNS is based on role-plays in which each participant's role and personality traits are described in a curriculum vitae. Further, computer conferencing printouts lack the distinctive professional character of business correspondence. IBNS will, though, provide the learners with some start-up handouts furnished with letterheads, logos, etc. to make the course more realistic.

The use of technology may distract the negotiation teams from the core content of the course. For this reason, IBNS provide each team with a trained conferencing system expert to handle the technology. He or she speeds up the conferencing process and lets the team concentrate on the course work.

SUGGESTED IMPROVEMENTS IN THE COURSE DESIGN. Some cross-cultural differences may be hard to learn without face-to-face experience. Video-conferencing or video tapes may be viable alternatives for addressing some of these issues.

THE INTRODUCTION TO INFORMATION TECHNOLOGY COURSE

Robin Mason, in Mindweave, describes this course as being comprised of a print component of seven blocks of material; a course reader; audio and broadcast media; and supplementary materials . She states: "... in addition to these standard presentation media, this course is one of the first to require all students and tutors to have an IBM compatible micro computer in order to gain practical experience of the social and technological issues discussed in the written material. Four software packages are introduced on the course, some commercial, some specially developed at the OU: word processing, database management, spreadsheet analysis and communications. Altogether, this practical component of the course comprises 20% of the work, and the communications element is, therefore, a very small part of the whole." (Mason and Kaye 1989, 115)

OPPORTUNITIES. The medium provided an opportunity for increased communication between students, tutors, and course team; and also, the OU design staff was more accessible to tutors and students than in traditional OU courses. "The primary value of the medium was the opportunity it provided for increased communication:students found it helped overcome the isolation of distance learning and made them feel part of an educational community; tutors were able to give direct feedback to the central staff and to take part in decisions about course presentation; the course team were for the first time in contact with the "consumers" of their course, expanding on course themes, answering queries and coping directly with criticism and praise from students." (Mason 1990a, 57)

Further, computer conferencing allowed tutors to co-teach and take turns moderating conferences. Since all comments were stored, the tutors could easily catch up with prior activity.

OBSTACLES. The cost of telephone charges to students was a major inhibiting factor in increasing the role of computer conferencing in the course. A particular problem was the unequal charges across the country. Establishment of a national network with local dial-in nodes would solve the problem and give the students inexpensive and equal access to the OU system.

Technical problems and inexperience in organizing a conferencing system for a large number of students resulted in chaotic system management. Such chaos could have been anticipated, and it is difficult to understand how anyone would dare to launch such a huge project without any experience from smaller pilot projects. Once an OU course is designed, it is hard to alter it

significantly. Course evolution based on increased experience with computer conferencing is therefore difficult. Such institutional constraints negate one of the main advantages of computer conferencing in distance education: the opportunity to swiftly adapt the course to current events and information. The OU course design model rules out this opportunity.

SUGGESTED IMPROVEMENTS IN THE COURSE DESIGN. OU can be viewed as a very bureaucratic organization where improvements take considerable time to implement. The following suggestions may have been considered, but have not yet been implemented.

Computer conferencing was not the primary communication medium in this course. Most of the assignments were submitted by "snail mail." A much better solution would have been to let the students submit all assignments via the conferencing system.

Computer Conferencing was a minor part of this course. Just 10 of 400--far too few--study hours were apportioned to computer conferencing (Mason 1990a, 57). Computer conferencing should be integrated as a major part of several related courses.

Robin Mason mentions that the course team is working on a number of "value added" services, such as making optional assignments, consisting of group discussion as well as previous years' work available online (Mason 1990b, 272). It is surprising to hear these options mentioned as "value added" service, because it should be among the basic services provided in computer conferencing courses. Value added services in distance education computer conferencing should include: online libraries, documentation centres, multiple choice databases, computer aided instruction, accounting systems, grading systems, logistics systems, etc.

THE MANAGEMENT PRACTICES COURSE

This course, as described by Enrico Hsu (1990), integrated a Business Simulation Game with computer conferencing in a Management Practices course. The students were divided into six groups of four students. Each group represented a company, and each student was assigned a role as CEO, Financial Officer, Operations Chief, or Marketing Executive. These companies competed against each other in a Business Simulation Game through three phases of the companies' life cycles (start-up, growth, and independence). The game simulated nine years during nine weeks of the course. Each year, the students "employed" in each company established crucial input data such as: price, advertising, purchase, production, size of sales force, etc. The data were submitted to the instructor, who compiled it and executed the game. This process

resulted in a set of output data for each company, consisting of units sold, back orders, market share, operating income, income tax, net income, etc. The companies were evaluated based on the final results after nine years.

Each company was assigned a private conference in which the employees could discuss the simulation input and output data. In another conference, called Managers' Corner, the students could participate in management-related discussions.

OPPORTUNITIES. The conferencing system allows the instructor to monitor the decision-making processes in each company and to give appropriate feedback to the students. Further, the students have a unique opportunity to review "earlier years" arguments and to check them against the actual outcome of the simulation. The output data from the simulations were available to all students immediately after the instructor uploaded them.

OBSTACLES. The problem of decision-making is not discussed in the article. Experience shows, however, that asynchronous decision-making in groups is extremely difficult. A synchronous medium, such as telephone or face-to-face meeting, is suggested when decision making is crucial.

SUGGESTED IMPROVEMENTS IN THE COURSE DESIGN. Enrico Hsu's own suggestion (personal communication, 1990) that the employees evaluate the performance of their colleagues in the roles of CEO, Financial Officer, etc. represents a valuable improvement to the course.

THE LIVING ON PURPOSE COURSE

Peter and Trudy Johnson-Lenz have based their workshops on the philosophy: "Computer-mediated meetings are potential islands of safety, but safety is created by people, not technology. It occurs when people take the risk to express themselves, trust, and respect each other. However, while technology cannot create safety, it can support it. Groupware can join human potential and supportive technology into a creative whole." (Johnson-Lenz 1990, 304)

This course description appeared in the May 1990 - Summer Program of the Awaken Virtual Learning Community: "In collaboration with Chinook Learning Center (Whidbey Island, WA), we offer a month-long workshop, Living on Purpose. It includes self-discovery exercises and group sharing. Living on purpose is discovering what really matters to you and finding the courage to live it. It's a continuing, creative process, full of challenges, choices, and fulfilment."

OPPORTUNITIES. The participants... "sign a covenant with each other to "create a safe, supportive, and vital learning community together." We agree to keep each other's items confidential, participate regularly, and inform our group when we are absent for whatever reason. We also agree to accept and be patient with the parts of ourselves and others that are not yet clear, to listen with care and compassion to each other, to speak our truth as well as we can, and to remember and acknowledge everyone's personal wholeness and connection with the Mystery." (Johnson-Lenz 1990, 312)

The participants must answer--in the conferencing system---questions like: "What is important in your life?" and "What do you think of yourself?" It is obvious that the participants must scrutinize their lifestyles when they share their answers--in writing--with the group. Many people will find it less frightening to share their inner feelings and thoughts via computer conferencing than face-to-face. In this way, technology may facilitate valuable human relations between people who feel comfortable with the medium.

Peter and Trudy Johnson-Lenz have designed (and trademarked) a Virtual Circle that they claim is useful in some settings. "A talking stick" which represents permission to speak is passed around a circle. Each person speaks his truth in turn while everyone else listens with respect. The Virtual Circle concept encourages everyone to express opinions and avoid reticence.

OBSTACLES. Many people will perceive the technology in this course to be ill-placed. In Megatrends for instance, Naisbitt (1984, 51) wrote about high tech--high touch: "The more high technology around us, the more the need for human touch." In Naisbitt's description these are opposite qualities. Peter and Trudy Lenz will, though, use high tech (computer conferencing) to facilitate high touch (quality human relations). Each approach appeals to separate groups of people, so courses like "Living on Purpose" probably will draw many participants in the future.

SUGGESTED IMPROVEMENTS IN THE COURSE DESIGN. Input from psychologists on this course, and their participation in course design and instruction, would be valuable.

OTHER INNOVATIVE COMPUTER CONFERENCING COURSES

The following courses are, so far, not well documented in English. The intention is not to present a complete review of these courses. However, a brief overview may provide some useful ideas for future courses.

Roleplays, programming courses, and online multiple choice database. The following examples are from the NKI Electronic College in Norway. They are described by Paulsen (1989), Paulsen and Rekkedal (1990), and Paulsen and Soeby (1990). In the Fall 1988 Monica Johanessen taught an Information Systems course via the EKKO conferencing system. In a conference, she presented a case and assigned each student a role. The case described a company planning to invest in a new computer-based office automation system. The students were assigned roles as users, accounting officer, project manager, labour union representative, etc. Over a period of about fourteen days the students were expected to elucidate the different facets of this project, as reflected through the different roles.

Ragnar Boersum has taught programming courses every semester since the Fall of 1988. In the Pascal course, the students programmed in Turbo Pascal on their home microcomputer. The program source code was posted to the instructor or shared with the other students in the conferencing system. In this way the teacher and the students could download the programs, change them if they desired, and execute them on their local computers.

In the Cobol course he experimented with letting the students access the host computer's Cobol compiler. This was bothersome, but it worked. The important lesson was, however, that distant students can access host computer applications such as compilers, database systems, statistics software, etc.

Henny Lindland used the EKKO online multiple choice database as a part of the Introduction to Computer Science course, for the first time in the Fall 1989. The students could download a number of multiple choice questions, spend some time to figure out the answers, and then upload their suggestions and let the database score them.

Debate. Chris Clark organized an electronic debate about war protestors and freedom of speech in February 1991 as a part of the "What's in the News Telecomputing Project" (Clark in press). In his Electronic Debate Handbook, which was included in the course material, he says: "The debate centres on a proposition which states the issue to be discussed. The affirmative side supports the proposition and the negative challenges the affirmative. The object of the debate is to see which of the teams can do a better job of presenting the case. Before the debate, neither team knows which position it will be assigned, so each must learn as much as it can about both points of view." The Debate Handbook also includes rules and a schedule.

International audio and computer teleconferencing. Professor Michael G. Moore taught "International and Comparative Adult

Education" at Pennsylvania State University in the 1991 Spring semester. Students in four cities in Pennsylvania communicated with guest experts in seven telephone conferences. The guest experts participated from England, Eastern Germany, Finland, Canada, China, India, and Spain. Some guest experts were willing to communicate with the students via Internet to follow up the telephone conference. The computer communication was an optional experiment and not an integral part of the course. However, the combination of telephone conferencing and computer conferencing is an innovative way to communicate with international guest experts in a course.

Online examination. External examiners, faculty and, perhaps, co-students could participate in a 2-3 day online examination period. The students could prepare a hard copy or upload the examination paper to their challengers some time before the online examination starts. During the examination period, the challengers are expected to post questions about the examination paper which the students must answer in a plenary conference. The advantage of this compared with a traditional oral examination is that both questioners and answerers have more time to contemplate than in a hectic, one-hour face-to-face examination. The online examination is, of course, much more interactive than is a traditional written examination.

CONCLUSION

This paper illustrates some ideas of computer conferencing's potential in future distance education pedagogy and course design. There are three core features in computer conferencing which are utilized successfully in all courses.

First, interactive group communication is used as a means to create collaborative learning. As we have seen, this is made possible through negotiation teams, co-teaching, role-play, and islands of safety. This list can be extended with project work, study circles, seminars, and workshops. The opportunities for collaborative learning are abundant.

Second, conferences are divided into separate usergroups, giving instructors a unique opportunity to monitor and provide instructions to each group. In this way, educators can set up competing teams as in the business simulation game and the negotiation course.

Third, all communication can be recorded and reviewed, allowing students to participate independent of time, to check information presented earlier in a course, and to review the

learning process. In this way, for example, the negotiators can scrutinize their negotiation process and the employees can analyze their priorities in the business simulation game. Despite the development of several encouraging examples of innovative computer conferencing courses, course design and pedagogy still is an underdeveloped field. My modest hope is that this paper will trigger some innovative design of future distance education courses.

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