status. Hence the second question: Is it likely that each individual residing in a third-world country will be able to receive knowledge using wireless technology in the very near future?

Can We Piggyback on Medical Community Infrastructure?

Most importantly, and at the most basic level, what are the implications of wireless technologies for knowledge seekers in developing countries? Knowledge seekers in third-world countries will begin at the most basic level, where illiteracy can be overcome. Once younger knowledge seekers begin to see the importance in understanding, a more advanced learning can take place. Regardless of whether the knowledge opportunities are communicated in English or in the native tongue, there is a greater literacy potential through wireless technologies than through current hardwired infrastructures. In many instances a native-language format has been used successfully as a form of delivery for third-world medical assistance. For example, the World Association of Medical Editors (WAME) uses the World Wide Web to assist editors in developing countries and editors of small journals, who often face special obstacles such as difficulties obtaining high-quality manuscripts, lack of formal training in editing, limited finances, and limited access to publication expertise. Thus the third question arises: Is it feasible to exchange knowledge with third-world citizens by piggybacking onto the medical community technology infrastructure already in place?

Without having to hardwire developing countries, political leaders and educators can enhance knowledge opportunities through wireless communication technologies. Efforts by the various world communities can provide both the structure and the opportunity for knowledge sharing in developing countries. If literacy levels in reading, writing, computing, and telecommunications are raised, a confidence level will be born that will extend a renewed promise to all those who wish to communicate either synchronously or asynchronously with the world.

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Participation in International Teleconferences and Discussions: Implicit Assumptions

by Elizabeth Anderson, Jacques du Plessis, and Tom Nickel

□ Interest in distance learning is strong all over the world. The debate underway in developing nations and technologically advanced countries alike concerns the role distance learning programs should play in the increasingly complex task of educating a nation.

In the United States, the question can be explored directly through thousands of projects in industry, as well as in the universities. For developing nations, this kind of hands-on learning about new instructional delivery methods often is not a convenient option. The telecommunications infrastructure may not be in place to support it, or it may be prohibitively expensive to use. A measure known as teledensity (telephone lines per hundred people) tells the developing story—among countries the teledensity is 1.5, in Europe it is 45, and in the United States it is 65 (Ivala, 1999).

Until direct access is cheap and simple, strategic planning for institutions is much more difficult and demands greater creativity. In higher education, dialogue with peers who have easier access to technology can ever replace direct experience, but it still might play a useful role in planning for distance education in developing countries. Options for mediating such dialogue through technology are proliferating, making the process simpler and less expensive. With integrated services digital network (ISDN) links and the Internet, both teleconferencing and various forms of computer-mediated conferencing (CMC) have never been more conveniently available.

It is generally acknowledged that the first use of computers for discussions at a distance took place in 1970 through a system developed by Murray Turoff, of the New Jersey Institute of Technology (Hrasim, 1990). Turoff thought that education would be the key application for this technology, but after 30 years of development, CMC still is not a mainstream method of instruction or collaboration. As economic and technical barriers are removed, what other kinds of obstacles are still in place?

Collaboration Experiment

International collaboration among educators around distance education issues certainly seems to be a perfect topic for electronic conferencing, using the tools of distance education to discuss distance education—both implementation and pedagogical issues. That was the prevailing spirit during a recent satellite teleconference that brought together participants from South Africa and the United States: specifically, Border Technikon in East London, and Utah State University (USU) in Logan, Utah.

USU is a Carnegie I research institution with an enrollment of approximately 20,000 students. Border Technikon, in the Eastern Cape Province of South Africa, is smallest and most recently created of the 15 Technikons in South Africa. It has a current enrollment of 4,200 (1999–2000) and is somewhat equivalent to a community college in the United States (Eastmond, 1997). It was established in 1990 under the apartheid system to serve black students from the homeland of Ciskei.

Initiated at the request of Border Technikon, the teleconference was funded through the Tertiary Education Linkages Program (TELP) of the United States Agency for International Development (USAID), and drew on existing academic relationships. Professor Nick Eastmond of USU's Department of Instructional Technology had spent a recent sabbatical at Border Technikon, developing a Center for Academic Development. In addition, Wayne McKay, a graduate of the department's master's program, was working for this Center as an instructional technology specialist.

Professor Eastmond was able to assemble a select group from USU, which included appropriate University administrators (Provost's Office, Instructional Learning Resources Program, Faculty Assistance Center for Technology) and faculty members (Department of Instructional Technology), as well as on-line course developers and instructors. At the Border Technikon site, administrators were also well represented (Vice Chancellor, Rector, Principal), as were a number of academic departments (Education, Computer Studies, Broadcast Journalism) and services (End User Computing, Human Services, IT Services, and more).

Teleconferences and Discussions

Shortly before the teleconference, a memo from Border Technikon was forwarded to all of the invited Utah participants. It included a short list of very basic questions that would provide the framework for the event:

- How would distance learning support satellite schools?
- How should programs be produced and delivered?
- What about access and quality?
- What about faculty resistance?

They were the right questions, but they were also extremely complicated questions.

The depth and complexity of the issues raised by Border Technikon suggested to participants at USU that other forms of on-line collaboration could be used in conjunction with the teleconference. To them, it appeared that the live event could be a good way to begin the conversation, by providing a strong initial human connection, and some preliminary discussion of the strategic questions. Because both Border Technikon and USU are connected over the Internet, deeper interaction over a period of weeks could then take place in a threaded discussion forum, immediately following the teleconference.

An excellent opportunity was emerging to experiment informally with a new model for collaboration. The asynchronous nature of the online discussion was seen as a way to enable at least some of the people from both USU and Border Technikon to continue the interaction at their own convenience. The idea would have to be raised at the teleconference, at the beginning. In this way, participants from USU would also feel less pressured to address completely all the questions and concerns presented. They would merely be starting the conversation, rather than trying to make the definitive statement on the subject.

The Event

The teleconference was scheduled to begin at 9:00 a.m., Monday, May 15, 2000. The eight-hour time difference between Utah and the eastern coast of South Africa creates less than ideal circumstances. People were leaving work in South Africa at 5 p.m. as the USU participants were starting their day at 9 a.m. in the mountain time zone. The teleconference was to last 90 minutes, with brief video presentations from each side at the beginning.

During the actual event, technical difficulties right from the start decreased the available time. Video worked, but audio did not. By the time a good connection was made, there was only an hour left. Wayne McKay made a few introductory remarks from South Africa. Nick Eastmond responded from Utah, and also presented the idea of the follow-up discussion to be conducted on-line. The Border Technikon contingent seemed receptive to the plan, and with that, speakers from USU began addressing the questions:

- How and to what extent are *technology* and *technology enhanced classrooms* being utilized in the design, development and delivery of instruction at USU?
- Many people are concerned that technology is driving the vital element of human interac-

tion out of instruction. Is that a legitimate concern?

• In light of the high costs, almost immediate devaluation, ongoing maintenance expenses and eventual obsolescence of most technology, what sort of things do you do to help minimize or defray those problems?

Several senior faculty members were appointed to take the lead on each question; then others were free to contribute. There were no prerehearsed presentations. People spoke without notes, making general points and supporting them with an example or two. There were a few rejoinders from the South Africans, but not many. Overall, it was not a highly interactive conference. The points were addressed very clearly and openly, but there was a sense of being on a tight schedule that perhaps served to inhibit more back and forth communication.

In addition to senior faculty and administrators, a group of on-line course developers from USU was able to address a number of the questions from a front-line perspective. Having a variety of faculty representatives and instructional technologists in the group made for a richer presentation that kept moving rapidly down the list:

- To a large extent our lecturers, which I assume is typical most anywhere, are reluctant to embrace the idea that technology can enhance instruction. What has been your experience with this?
- Given the Border Technikon's low-tech, robust classroom environment, growing number of educationally disadvantaged students, and possible need to consolidate at the tertiary level . . . how can we: improve lecturer productivity? improve learner productivity? enhance exit skill levels?

With a little orchestration, the USU speakers were able to complete what was felt to be a "first round," just as the teleconference transmission came to its abrupt end. Although it was technically bumpy at first and less interactive than might have been anticipated, the USU participants had a generally positive feeling about the event. A few telephone conversations confirmed that Border Technikon people felt the same way.

The Non-Event

The follow-up on-line discussion was launched within a week by a group at USU. Names and email addresses were gathered from all of the teleconference participants. Forums were set up using the discussion tool, which is a part of WebCT, one of the on-line course management products used at USU. Three separate areas were established based on the questions and concerns introduced in the live event:

- 1. The Technology-Enhanced Classroom
- 2. Distance Education
- 3. Faculty Development

User IDs and passwords were created for everyone. Detailed instructions were produced and e-mailed. Moderators from USU posed the initial questions in the different forums, and then sat back and waited for the exchange to begin. But it never did. Several USU faculty members made initial posts, including Professor Eastmond. No one from Border Technikon posted a comment.

The group at USU attempting to lead the discussion reasoned that the format itself might be an inhibiting factor. To participate in an on-line threaded discussion, one must have the time to log on, get to the forum, make a post—but first, and most difficult of all—*one must remember to do all this*. It was end-of-semester grading period at Border Technikon, one of the ultimate academic distractions. In addition, on-line discussions are apparently not a routine matter among Border Technikon faculty and administrators, whereas at USU this mediated form of communication is used more frequently.

A variant on the initial discussion format was tried as a way to help overcome these potential obstacles. All participants were contacted via email and told to expect daily discussion activity delivered directly to them. In an e-mail discussion group, there is no need to remember to go to a particular uniform resource locator (URL). The discussion comes right to the participants, rather than the other way around. Respond to anything from the group and it automatically goes out to everyone. The new e-mail group was created using а free on-line service (http://www.egroups.com). All participants were informed and provided with a brief rationale for the change of venue.

The results, however, scarcely changed. A few messages from USU were distributed through the new mechanism, with one exchange from Border Technikon. Other hindrances were of a technical nature. There were technical difficulties involved in using the Internet as an ongoing collaborative tool at Border Technikon-including occasional brown-outs, unreliable e-mail servers, and a one-week period during which the overall system was being upgraded and access was not available at all. Yet, the question remains whether these issues mentioned were enough to explain the total lack of interaction.

What was the missing ingredient? Would it be helpful to identify one key individual at Border Technikon who could catalyze the process there? Wayne McKay, who had been very involved in the teleconference, was near the end of his stay and was not in a position to help stimulate the discussion. In order to get some idea of how things looked from South Africa, Professor Eastmond contacted Peet Roets, a former colleague and Director of End-User Computing at Border Technikon, who was also a participant in the teleconference. Roets responded the next day, optimistic about the possibility of some interaction.

And that is where the on-line discussion phase of the dialogue ended.

Approaching On-line Collaboration

No one assumes that the dialogue has ended forever. It stopped where it did because that was as far as Border Technikon participants wanted or needed to go at that time. The vastly different levels of opportunity for direct experience with instructional technologies create equally different attitudes and expectations about on-line conferences and discussions. In fact, the aspects of the teleconference that active on-line instructors at USU saw as most limiting were precisely what made it attractive to Border Technikon. According to Roets, "The people involved may have felt only a commitment to the video conference and may have been poorly prepared for on-

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going dialogue" (personal e-mail communi- cation, June 15, 2000).

Teleconferences are more casual and less rigorous than well-moderated on-line discussions. Discussions permit, and might even require, a much deeper and more serious interaction. Without exception, the Border Technikon participants were neither interested in nor prepared for a deep and serious collaborative exchange. They planned a casual and less rigorous event in the first place, not because they value deeper interaction any less, but simply because that is what was appropriate for their current state of technology implementation.

A good on-line discussion requires commitment. Border Technikon was seeking a one-time exchange, which could lead to more substantive collaboration in time. From their perspective, it was important to stage an event that specifically required minimal commitment. That way, individuals could attend and begin to identify themselves as supporters more easily. The teleconference served this function perfectly.

Why was there no stampede toward the discussion, just to see what the experience would be like? Probably because that kind of casual experimentation is a luxury that is not easy to afford at Border Technikon and many institutions of higher education on the other side of the global digital divide. Had anyone at Border Technikon felt a sense of urgency, something different might have happened. It is also worth remembering that the threaded discussion was a suggestion initiated at USU, on the day of the event.

Studies in educational settings indicate that emphasizing the relevance of computer conferencing has a positive impact on participation (Cifuentes & Murphy, 1997). For some of the USU participants the collaborative model itself, teleconference and discussion among educators in different stages of technological development, was not only relevant, but full of tremendous potential for convenient, rich, and low-cost interaction. However, for a number of reasons, distance education itself was not sufficiently relevant at that time to the participants from Border Technikon to stimulate the kind of commitment needed.

According to Hofstede's (1997) studies on

national cultures, South Africa ranks moderately high on his masculinity index, a measure of the dominance of "male values" and the lack of overlapping gender roles in the culture. Although his data are from Whites only, drawn from studies of IBM employees-with the exception of one faculty member, the Border Technikon teleconference participants were also White. Masculine values in the workplace include accomplishment and advancement, while feminine values focus more on the quality of relationships. In a society with a lower masculinity index, people might have been more likely to participate in an on-line discussion simply for the sake of building professional relationships. In South Africa, unless something productive would obviously come of it, there would be less inclination to engage in a collaborative activity.

An immediately productive outcome was unlikely for several reasons, but the most obvious was a temporary moratorium on the expansion of university distance education programs in South Africa put in place about that time by the government. Increasing private sector involvement in higher education through online programs is being stopped by the moratorium, "while government officials develop a blueprint for a wide-ranging reorganization of higher education in South Africa" (Vergnani, June, 2000). While it is difficult to imagine such a moratorium being imposed in the United States, the entry of commercial education service providers into the global marketplace for learning is affecting every country in the world. In South Africa, this development has provoked a governmental response that has inhibited discussion of distance education by limiting real world activity on the topic.

Implicit Assumptions

New tools for on-line collaboration, such as threaded discussions and e-mail discussion groups, carry implicit assumptions about the users. In a collaboration, selecting the right vehicle for communication means recognizing those assumptions and evaluating the fit for all parties who are potentially to be involved. A threaded discussion may well be a perfect vehicle for indepth strategic consulting between universities in different stages of technological development, but only if the reasons for participation warrant the usage of the medium and the tool.

It is becoming increasingly straightforward to assemble the requisite complement of hardware and software. But the more elusive dimension in a multistage on-line collaboration such as the USU-Border Technikon effort is the establishment of a clear commitment from the outset by both parties.

From the USU side, it was easy to make assumptions, because the idea of a discussion following a teleconference seemed like such a good collaborative vehicle. Those assumptions were far reaching, largely unconscious, and in most cases incorrect. The technological assumptions involved convenient access to the Internet. The educational system assumptions involved timeliness and the ability to implement new technology now. But perhaps most important was the assumption that interaction among colleagues in an on-line discussion would be seen as valuable regardless of a tangible outcome.

There were technical and possibly social deterrents in South Africa, which were largely overlooked in Utah when the threaded discussion concept was presented. These factors directly affected participation in the on-line discussion. Without a broad, shared consensus, the overall experience was almost certainly destined to be, at best, only a partial success.

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Distance Education in South Africa

by M. David Merrill

□ In February 2001, it was my privilege to travel to Pretoria, South Africa, where I was the guest of the Foundation of Tertiary Institutions of the Northern Metropolis (FOTIM). I presented a three-day workshop on "First Principles of Instruction"1 to 135 distance educators from 16 institutions of higher education. Following this workshop many of these educators requested that I visit their universities or Technikons (universities that stress practical application of skills learned). During the following week I visited 6 institutions: (a) UNISA (University of South Africa), (b) Technikon South Africa, (c) Potchefstroom University, (d) University of Pretoria, (e) RAU (Rand Afrikaans University), and (f) Technikon Pretoria. I was most impressed with the dedicated devotion of the educators there to helping provide education to the entire population of South Africa.

Apartheid was officially ended early in the 1990s. In the wake of this important political event the problems of insufficient education, poverty, and crime became increasingly apparent. We were warned that South African cities were dangerous to visit. We were told not to carry or wear any valuables when on the street because of the possibility of mugging. Walls, grills, and other devices to reduce burglary pro-

Cifuentes, L. & Murphy, K. (1997). Design considerations for computer conferences. *Journal of Research on Computing in Education*, 30, 177–202.

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^{1.} Information on this workshop is available on my Web site at http://www.id2.usu.edu under the heading, Does Your Instruction Rate 5 Stars?