Innovative Teaching:
Sharing Expertise through Videoconferencing
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Instructors in higher education commonly arrange for guest lecturers whose areas of expertise are related to the course content to give presentations to their classes. In doing so, the guest provides a perspective that differs from the on-site instructor's view and further enhances student knowledge. However, these experts are dispersed around the globe, and most university teaching budgets limit such invitations to those opportunities occasioned by the expert's coincidental proximity to the institution. Despite these geographic and financial obstacles, we believe that expanding the practice of inviting researchers and practitioners to share their expertise with students should be an important feature of teaching in the 21st century.

New advances in communication technologies, which have already begun to have an impact on education at schools, colleges, and universities (O'Sullivan 2000), hold the promise of overcoming such obstacles. Collaborative learning, an increasingly utilized educational approach to teaching and learning that builds knowledge through interaction, is supported by new and emerging network collaboration technologies that have been promoted by many educational institutions (McInnerney and Roberts 2004). In the Department of Tourism Studies at Brock University, Canada, we were particularly interested in a technology solution that would permit guest speakers, often on another continent, to lecture to a local class. One such technology that we evaluated was communication through videoconferencing. Extraordinarily positive feedback from fourth-year Tourism Studies students, following an ad-hoc videoconferenced lecture from New Zealand in 2003, led to our decision to make videoconferencing a regularly scheduled event for some courses. Thus in the following fall and winter terms, one such event was scheduled for each of the four courses taught by Professor Lück during the 2003-04 academic year.

Additional motivation to pursue this course of action arose from our desire to find a cost- and time-efficient protocol for these guest lectures, particularly given one part of the mission of this institution's teaching support center: to facilitate faculty members' engagement in the discourse and deployment of educational technologies. Enabled by our personal and professional contacts at the University of Otago in Dunedin, New Zealand and Napier University in Edinburgh, Scotland, we initiated an exchange of lectures via videoconference. Internal funding from our Instructional Development Committee permitted us to engage a student research assistant who would assist us in defining, developing, and deploying the necessary technologies. Finally, a pre-existing university research and development partnership with a Canadian technology company provided an opportunity to engage in the "marriage" of remote collaboration with smartboards, videoconferencing, and data-conferencing.

This article will illustrate our process of developing videoconferencing as a tool for international collaboration, with consideration of the technological and pedagogical challenges we faced as well as the advantages this tool holds as a cost-effective means of enhanced student learning.

Development and Progress: Striving for Excellence

On April 2, 2003, our initial videoconference during the course Contemporary Issues in Tourism featured researchers C. Michael Hall and Dr. James Higham, both of the University of Otago, who presented and discussed current issues in the field with a group of fourth-year students at Brock University. The timing was suitable for Professor Hall to incorporate discussion of issues such as the events of 9/11 and the worldwide outbreak of SARS, both of which had major implications for the tourism industry that were pertinent to our course content. In turn, Higham introduced students to a newly-developed management plan for Doubtful

Sound in New Zealand, an area that was still relatively pristine but likely to suffer environmental damage from a predicted increase in tourism. In particular, the resident bottlenose dolphin population was at risk, and the proposed management plan addressed this problem.

Our initial foray into synchronous technology-mediated instruction proceeded very well from the students' perspectives, and their evaluations clearly revealed the strengths of attending such a lecture. Their comments were mostly related to the "interesting topics" and "fresh ideas from out-of-class sources." Yet the video and audio quality of these lectures, while acceptable, was not ideal. We experienced some packet loss throughout this lecture that affected the video quality and, to a lesser extent, the audio quality. Three technical support personnel worked to ensure that the local network support was adequate, the videoconferencing system functioned properly, and the electronic whiteboard was configured to present a local file containing the remote presenters' slides. Shortly after the initial event, two additional instructors, Elizabeth Carnegie and Martin Robertson of Napier University in Edinburgh, Scotland, joined this initiative as presenters and recipients of videoconferenced lectures. This resulted in three additional opportunities to test and develop the remote collaboration protocols, in this case with a European partner. At the time of this publication, eight lectures, via videoconference, have been exchanged in various courses between Brock University, the University of Otago, and Napier University, including five incoming lectures in which a colleague overseas taught Brock students (the sources for data in Figures 2–7), and three outgoing lectures taught by Professors Lück and Fennell to students in New Zealand and Scotland.

Several applicable principles of "good practice in undergraduate teaching" (Chickering and Ehrmann 1996) were implemented in this lecture series, including encouragement of contacts between the instructor(s) and the students, involvement of active learning, and respect for diverse ways of learning. Particularly during Videoconference Two, which dealt with museums and heritage tourism, the instructor actively involved students throughout the lecture. Prior to the event, students were asked to bring a small item that was important to them, and during the videoconference they had the opportunity to show the item and explain its significance; the guest lecturer then discussed why certain artifacts are important to people and why some of these items are displayed in museums. Chickering and Ehrmann (1996) also suggest that good practice in teaching should involve prompt feedback. Thus immediately after the videoconference, we asked students to help us by filling out evaluation forms for the event; the majority of students participated and completed the forms. Based upon our own debriefings of each conference as well as the results of the student evaluations, we sought to improve technology deployment and lecture organization; Figure 1 illustrates the manner in which this project unfolded in response to student evaluations of incoming lectures.

We also worked closely with our research partner, Smart Technologies (Calgary, Alberta) towards the development of two technology solutions that would serve to improve the ease of sharing presentation materials as well as to reduce the complexity of management of the videoconference event—perhaps even to the point where onsite IT support personnel would not be required. The technologies we collaborated on were BRIDGIT and ConferencePilot, both of which were developed and subsequently released to the marketplace during the period of this videoconferencing project. Equally important to the success of this initiative was our understanding of the nature of broadband network collaborations. Further information about the role networks played in our project is provided in Exhibit 1; a chronological journey through the technological aspects of our year-long project is provided in Table 1.

The technologies that were developed during this lecture series can facilitate the sharing of video and data between participants in an online collaboration. For example, the presenter's computer display, a graphic of a tourism model, can be shared over the network with the remotely-located class. Either the presenter or the recipients have the ability to annotate, highlight, or add identification labels to the graphic, thus facilitating enhanced clarity in both the presenter's lecture and the learners' questions. The lecturer controls the presentation of the slides on her/his local computer, with an anticipated delay of one to two seconds at the remote location(s). More recently, the authors collaborated toward integrating more sophistication into BRIDGIT, resulting in the ability of remote participants to engage in desktop application control sharing and share webcam displays during desktop-to-desktop collaborations (Exhibit 2).

Evaluations: What did Students Think about the Videoconferences?

After each incoming videoconference, students were asked to complete an evaluation form (Exhibit 3). Students were asked to rank several questions on a five-point scale, ranging from Excellent to Very Poor. A total of 87 students in 5 videoconferences participated in the survey, as shown in Table 2. Several questions addressed students' learning experiences. Most students agreed that the clarity of the material presented was good or excellent (Figure 2). Several students suggested that handouts of the PowerPoint slides before the commencement of the conference would have helped them understand the content as well as prepare questions for the presenter. Because there were limited ways to prepare and because the lecture topic was sometimes somewhat afield of the course content, students sometimes—particularly in the first two sessions—had difficulty connecting the topic of the videoconferenced lecture with their coursework, particularly in the case of Videoconference Two (Figure 3). Even so, interaction proved to be the critical factor in students' assessment of the session. Most sessions followed a conference presentation format: presentation and then time for questions and discussion. Occasionally, this question period was shortened due to facility and equipment bookings. The student evaluations clearly show evaluative differences for those lectures with limited time at the end and those which allowed ample time for discussion, with Videoconference Three receiving a relatively lower rating than the other videoconferences and Videoconference Five receiving the highest rating (Figure 4).

Several questions addressed technical quality. Despite a relatively good quality video feed, the second, third, and fifth videoconferences suffered from occasional poor connectivity, which is clearly reflected in the student evaluations (Figure 5). The previously mentioned problem of packet loss, where the picture froze but the sound remained stable, was a slight annoyance. Qualitative comments reflected these problems, but students also recognized it as technical glitch that would improve over time. Students assessed audio quality as good (Figure 6), and some of their comments about sound tended to reflect the presenter's accent instead of the audio feed quality. The main problems with video and audio transmission occurred because of network traffic or connection losses.

For most students, these videoconferences were their first encounters with this technology, and they described it as "exciting," "interesting," "special," "fun," "excellent," "awesome," "amazing," and "informative"; overall ratings of the videoconferences were high in the evaluations (Figure 7). They found presenters to be knowledgeable and passionate about their topics, and many students mentioned that they would love to have more such events as a part of their courses. Perhaps of greatest importance relative to our interest in expertise-sharing, students stated that it was interesting and important to hear about issues from the viewpoint of other academics around the world.

We took our students' feedback seriously and attempted to improve the weaker points with each subsequent videoconference. While there was minimal opportunity to influence the network performance at our partner universities (for example, New Zealand did not have a national research and education network), we were able to improve the user-friendliness of the videoconferences by introducing BRIDGIT, a networked data-conferencing application that could be shared by our remote partners. This application allowed the presenter to share his or her desktop with the class at the receiving end and thereby gave presenters total control of their PowerPoint presentations during the lectures.

Pedagogical Challenges

We also addressed several pedagogical challenges that were discovered through the informal evaluations. The evaluations, as well as personal conversation with students, revealed that even mature and outgoing students felt intimidated by two aspects of these lectures. First, students felt uncomfortable conversing with such well-known researchers. Although all of the faculty members involved were very relaxed and informal, for students it still seemed to be a barrier to actually talk to someone who is one of the best known tourism researchers in the world. This experience suggested that it takes a lot of courage for students to pose questions following the presentation. However, once the ice was broken, often a vibrant discussion evolved,

which was clearly evident in the student evaluations of Videoconference Five (Figure 4).

This sense of discomfort was also exacerbated by the often novel situation of "talking to a camera." Some students felt intimidated and uncomfortable speaking to a microphone or camera without having the addressed person in the same room. During the first videoconference, as a courtesy to the presenter, the camera zoomed in on the student asking a question. The local display of the lecture was also accompanied by a smaller "picture in picture" display of the class, which was later revealed to have made students extremely uncomfortable. While we continued to use the "picture in picture" technology in subsequent videoconferences, zooming in was discontinued in favor of a full class view for the remote professor.

As noted earlier, most lectures were designed such that the presenter first introduced himself or herself and then gave a lecture of approximately one hour, followed by time for questions and discussion. As noted above, Videoconference Two was a notable exception, with its having plenty of interaction throughout the presentation. Some student feedback suggested that listening to a lecture via videoconference is tiring if there is no interaction throughout the presentation. Thus we will encourage future presenters to consider revising their lecture style in order to create a greater degree of interaction (e.g., discussion activities) into their presentations.

Benefits of Sharing Expertise through Videoconferencing

The interactive conferencing technologies we employed permitted two or more people at remote locations to see and hear each other face-to-face, and in real time, while sharing all types of information including data, documents, sound, and graphics. As demonstrated through our eight sessions, videoconferencing puts us in the unique situation to have experts in certain areas of research speak to students; moreover, it provides students with the opportunity to learn about the presenter's most current findings, to ask questions, and to discuss issues regarding the respective topics. This not only enhances knowledge about the subject matter but also provides students with up-to-date perspectives of academics in other parts of the world. Videoconferencing offers new possibilities in higher education, such as guest speakers from the opposite side of the planet, multi-institution project collaboration, or research and administrative meetings with government agencies. The advantages gained by expertise sharing through network-based collaborations are summarized in Table 3.

Given today's fiscal realities, a reduction of guest lecturer honorariums and travel expenses is unavoidable. Although the videoconference cannot entirely replace meeting and interacting with colleagues face-to-face, there are numerous situations where departments can save significant money on travel costs, not to mention saving visitors' losses in productivity while away from their workplace. The total purchase price of the videoconferencing technologies employed during the eight lectures of this project was equivalent to one-half the cost that would have accrued had the presenters traveled to the host institutions (see Exhibit 4 for cost information). More significant is the fact that, across the project time span, the same video- and data-conferencing technologies were deployed by other university users during an additional 93 videoconferences. This technology's three-year warranty and projected five-year effective lifespan make it an attractive investment for any institution; moreover, the cost of such technology for any given institution may be offset further thorough group purchases with other collaborating institutions.

With these benefits it is worth noting that we prefer not to view videoconferencing as a replacement for face-to-face class time. Our deployment of these events saw them integrated into the syllabus of the class, and they only took place once per term for each course (i.e., they complemented other teaching techniques, such as group activities, Internet lab exercises, field trips, and many more). Thus, we do not believe that videoconferencing as such constitutes a new teaching paradigm. However, the use of such technology to build new communities by exchanging guest lecturers, and possibly promoting further discussion of research activities and graduate students' work, could allow for a new paradigm of collaboration in higher education.

Conclusion

The escalating use of collaboration technologies to support classroom instruction, while greatly enhancing the quality and breadth of our teaching, should occur as a supplement to rather than a replacement of face-to-face contact between students and instructors. Videoconferencing enables us, more than ever before, to expose students to perspectives and experiences of experts they might otherwise only encounter in publications. The provision of highly effective lectures, in terms of content, user friendliness, and quality of technology, demands considerable preparations and planning by all persons involved in such projects. However, we believe that the identified benefits, including the very positive feedback from students, justify the time and effort invested. Most students appreciated the efforts and views of the presenting guest speakers as well as the work invested by the hosting faculty members and technical support staff. Many of our learners expressed the desire to engage in more of these events in the future. Beyond the specific evaluations discussed in this article, a significant number of students mentioned the videoconference as one of the strengths of their overall learning experience in the end-of-term academic course evaluations. Furthermore, students and instructors viewed these events as providing an invigorating change of pace from the day-to-day class routine. The authors made significant strides, through collaboration with the corporate partner, towards minimizing the complexity of operating the technologies employed for these events. As evidenced by the ease of use experienced by faculty lecturers, we believe we experienced success in contributing to the development of a suite of effective and easily managed remote collaboration tools. This proved to be empowering for the presenter to achieve greater confidence in using educational technology with less dependence on IT support. Readers with an interest in learning more about remote collaboration over International Research and Education networks are directed to Video Conferencing and Network Collaboration at Brock University.

References

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