

Understanding Globally-Distributed Collaborative Learning Between the United States and South Africa

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ABSTRACT

This paper presents initial findings from a pilot investigation, comprising three six-month field studies, examining geographically distributed collaborative learning between students and faculty in developed and developing countries. The investigation focuses on an interdisciplinary seminar involving graduate students at two universities in the United States and two in South Africa. Each semester, students were randomly assigned to one of five global virtual teams, with no more than two team members from each university. A collaboratory infrastructure was developed for the seminar using a suite of commercially available web-based tools, and included a virtual seminar room, a collaborative file management system; and archived e-mail discussion lists. Over the course of a semester, each team was given a series of tasks (ranging from simple to theoretically complex) that required global collaboration to complete. Data for the study are drawn from surveys of seminar participants, e-mail archives, logs of software usage, and observer-observation. Key findings include the following: (1) while 61% of the participants had a preference for the physical presence of the professor during the lecture, 22% of participants had a preference for the lecture without the physical presence of the professor; (2) a majority of students (73%) enjoyed most or all of the lectures; (3) a majority of students (71%) would register for this or another seminar taught in this manner; (4) a majority of students (76%) saw their global virtual team as a learning community, with nearly all of the students (91%) seeing value in the pedagogical model used in the seminar.

Key Words: Globalization, Collaboratories, Collaborative Learning, Global Virtual Teams, US and South African Cooperation, Distributed Knowledge Work, Global Information Infrastructure, Global Information Society.

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Introduction

We are living in an age defined by globalization and the emergence of an information society. In this historical period, the knowledge, skills and abilities required for socio-economic development are changing rapidly and dramatically. With the application of information and communications technologies to the process of education and learning, it is possible to enhance human capacity around the world. However, while we have advanced our knowledge of technology-enhanced learning, there are still many outstanding questions, particularly related to globally-distributed synchronous collaborative learning and the science of learning that could emerge (The Learning Federation, 2000). This paper attempts to address these problems, by presenting initial findings from a three-year field study of a pilot initiative between universities in developed and developing countries to teach multiple students in a geographically-distributed collaborative learning environment using synchronous and asynchronous approaches.

Tiffin and Rajasingham (1995) suggest that the balance between *human-interaction and computer-interaction* is a critical factor in the success of a virtual learning environment. Brown and Duguid (2000) suggest that this balance is even more important when the learning environment becomes more complex, and geographically distributed. They also argue that learning is a social process, and that “peer networks” are an equally important resource to faculty and university resources (Brown and Duguit, 2000). Hiltz (1999) finds that “*collaborative learning*” enhances student ratings of virtual courses. Based on this theoretical perspective, the primary research question in this paper is as follows: “To what degree can a suite of commercially-available web-technologies be used to successfully create a globally-distributed, synchronous, collaborative, learning environment for advanced post graduate studies between South Africa and the United States?”

The Study

In order to answer this question, researchers at the University of Michigan School of Information established in 1999 a Collaboratory on Technology-Enhanced Learning Communities (Cotelco) with the support of the W.K. Kellogg Foundation (WKKF), the Alliance for Community Technology (ACT) and the United Nations Educational, Scientific, and Cultural Organization (UNESCO).² Cotelco is designed to facilitate research that enhances our understanding of the factors contributing to successful distributed knowledge work between developed and developing countries. Using a suite

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of commercially available web-based collaboration tools, Cotelco brings together faculty, staff, and students from the University of Michigan (Ann Arbor, MI), the American University (Washington, D.C.), the University of the Witwatersrand (Johannesburg, South Africa), and the University of Fort Hare (Alice, South Africa), to develop and conduct collaborative research, share data, and engage in distributed research team meetings. From January to April, Cotelco also uses this collaboratory infrastructure to deliver a weekly, geographically-distributed synchronous graduate seminar entitled “Globalization and the Information Society: Information Systems and International Communications Policy” between the participating institutions.

The *Globalization Seminar* is an advanced, interdisciplinary, graduate seminar addressing questions of international regime formation for the emerging Global Information Infrastructure and Global Information Society. Administratively, the project director, Dr. Derrick L. Cogburn, holds faculty appointments at each of the participating universities (with the exception of the University of Fort Hare) and was ultimately responsible for the seminar at each location. There was substantial institutional support at each University (University of Michigan: the Alliance for Community Technology; American University: School of International Service; University of the Witwatersrand: Learning, Information, Networking and Knowledge (LINK) Centre; and the University of Fort Hare: Department of Computer Science and Communications).

A computer lab on each campus was reserved to conduct the seminar, and a site coordinator was appointed at each location. Each lab also included a data projector to display a standard audience members interface to the global seminar room. The technologies used to support the *Globalization Seminar* involved a suite of commercially available web-based tools rather than a single, integrated package. The three primary collaboration technologies used to create the distributed learning environment were (1) Placeware Conference Center 3.0; (2) O’Reilly WebBoard 3.5, and; (3) Xerox DocuShare 1.5. Several other collaboration tools supported the seminar such as presence awareness packages (AOL Instant Messenger and ICQ) and web-based virtual reality (Active World’s EduVerse).

Method, Data and Analysis

Primary data for the study are drawn from seminar participants, who are required to complete an 80-question evaluation survey including (25) open-ended and (55) closed-ended questions. The questions are divided into six parts, which are as follows: (1) demographic data; (2) general perspectives on the seminar and the virtual learning environment; (3) the collaborative learning approach; (4) institutional issues; (5) student preparation; and (6) the collaboration technologies used in the seminar. The data are analyzed through qualitative and quantitative techniques, and case studies were used to evaluate the learning experience of each Global Syndicate.

At the beginning of the semester, all students are randomly assigned to a virtual team constructed as a *Global Syndicate*. Each Global Syndicate takes on a stakeholder identity as described above, and engages in a series of assigned and informal

assignments and tasks. Thus, these Global Syndicates are an important part of the environment for this research. The Global Syndicates were distinguished by the varied cultural backgrounds of their team members. Data on the students' cultural backgrounds were obtained from their introductory PowerPoint presentations delivered at the start of the course. There was considerable cultural diversity in the seminar with even the US students representing African-American, Caribbean-American, Indian-American, Peruvian-American, Armenian-American, and Arab-American cultures. At least four of the U.S. American students were born in another country and emigrated to the United States after spending childhood years overseas.

Findings and Discussion

The analysis and findings presented in this paper are still in the very early stages of development. Significant caution is urged when interpreting them. Our primary research question was: "To what degree can a suite of commercially-available web-technologies be used to successfully create a globally-distributed, synchronous, collaborative, learning environment for advanced graduate studies between South Africa and the United States?" To begin answering this question, we explored student satisfaction with the seminar, as measured by three variables, which are: (1) feelings about course lectures; (2) willingness to register for a similar seminar; and (3) willingness to recommend the course to a friend. Regarding the feelings about the course lectures, we found that a majority of students (n=33, 73%) enjoyed most or all of the lectures, with only a very small number (n=3, 7%) reporting that they did not enjoy most of the lectures.

In terms of *willingness to register* for another seminar taught in the approach of the Global Graduate Seminar, we found that a majority (n=32, 71%) of the students would register for a similar seminar, with a small number (n=3, 7%) qualifying that statement by adding "but only with this professor." Only one student (2%) indicated that they would not register for another seminar like the GGS. However, a much smaller number of students (n=25, 56%) would *recommend the course* "as is" to a friend, with a large number of students (n=14, 31%) simply responding unsure.

To explore further the question of success in the seminar, we examined the final grades in the seminar. Of those students completing the entire semester, a majority (n=37, 79%) received a "B-" or above, considered to be the minimum passing grade in U.S. graduate programs. An even higher majority (n=43, 92%) received a "C-" or above. However, these data are misleading because they only include those students that actually completed the semester. If one were to factor in those students that did not complete the semester (i.e., dropped out of the course before the end of the term), these percentages would be much lower. Nonetheless, from these measures of student satisfaction, we can begin to suggest that the Cotelco environment is a "successful" learning environment for the delivery of an advanced graduate seminar between the United States and South Africa.

In the *Globalization Seminar* we focused on creating a geographically distributed learning environment that was conducive to maximizing interaction between the

professor and the students, and between the students themselves. Our intention was to facilitate communication and feedback irrespective of the physical or virtual presence of the professor. In the final evaluation survey, students were asked what approach—physical, virtual, or gradations thereof—they preferred for the professor’s lectures.

A large number of the students (n=27, 62%) had a “definite” or “slight preference for the **physical** lecture.” However, a substantial number of students (n=11, 25%) had either a “definite” or “slight preference for the **virtual** lecture.” Also, we must note that the “physical lecture” in this case, is still a “virtual” lecture delivered simultaneously to students at all four locations. The “physicality” only denotes the location of the professor, whose primary means of interacting with students in that physical location is still via the computer interface (although they can see facial expressions, eye contact, and other forms of “body language”).

Interestingly, none of the students responded that “I didn’t really learn anything” when the professor was at another location. However, a large number (n=11, 25%) said that they only learned a little when the professor was away. A plurality of students (n=21, 48%) felt that they “enjoyed the experience, after getting used to it, and learned a lot.” Three students (one from each year, one with a final grade of A+, another with a final grade of A, and one with a final grade of C) felt that the *Globalization Seminar* was “sometimes better than being there” in the Stornetta and Hollen (1992) sense.

There is evidence that learning communities developed within the Global Syndicates in the seminar. The majority of students (n=34, 76%) reported that their GS became “a ‘learning community’ e.g. assisted each other with understanding the material and concepts in the seminar,” with a large number (n=13, 29%) even asserting that the GS was “a critical component of the learning. Further, a large number (n=9, 31%) said that “in addition to my GS,” other learning communities emerged in the seminar. Nearly all of the students (n=41, 91%) felt that the Global Syndicate approach was valuable, with a large number (n=22, 49%) of those students responding that there was “tremendous” value in the approach. A majority of students (n=28, 62%) believed that the Global Syndicates had helped them to understand the “challenges and opportunities of global virtual teams,” with several of those (n=13, 29%) responding that they felt “ready to participate in one” professionally.

When exploring the data, aggregated by Global Syndicate, there are some pretty interesting findings. In Table 1. presented below, boxes that have “shading” indicate the high for that category, and the boxes that have “lines” indicate a low in that category. On the “Learning Community” variable, the closer to “1.0” the greater the perception of the virtual team as a learning community, while the closer to “5.0” the weaker the perception of the virtual team as a learning community. On the “Understanding Virtual Teams” variable, the closer to “5.0” the higher the confidence in future participation in virtual teams, the closer to “1.0” the weaker the confidence in participation in future virtual teams. On the “Distance Education” variable, “1.0” would indicate significant experience with distance education, while “4.0” would indicate intent, but no experience, and “5.0” no experience.

Virtual Team	Grade	Seminar Score	Learning Community	Virtual Teams	Distance Education
GS1	B/B-	86.36	3.0	2.86	3.57
GS2	A/A-	93.13	2.0	4.38	3.63
GS3	B+	83.56	1.29	4.0	3.57
GS4	A-/B+	88.86	2.13	2.5	3.50
GS5	B/B-	82.13	2.13	3.75	4.25

From this Table, we see that GS2, representing “developed country national governments” scores highest on three out of five key variables. GS5, representing “non-governmental organizations” scores lowest on 3 out of 5 key variables. While all of the virtual teams had very low levels of previous experience with distance learning or technology enhanced learning, GS5 had the lowest aggregate level. We also see that no one GS was saddled with all of the negative aspects of the seminar. However, from this analysis, GS5 appears to be the most challenged virtual team; with GS2 being the most productive. This is interesting, because the stakeholder identity for GS5 is non-governmental and community-based organizations, consistently the most popular ideological perspective in the seminar; while GS2 represents developed country national governments, an ideological perspective that is consistently eschewed in the seminar (along with GS1, Global and Multi-National Corporations).

Conclusions and Future Research

In summary, this study reinforces the findings of the recently released year 2000 University of Illinois *Online Pedagogy Report* (written as a result of the discussions of sixteen tenured professors at the university), which suggests there are no differences based on gender and that there can be high quality learning online. The low number of respondents in the Global Graduate Seminar who preferred the professor’s virtual lectures to his physical lectures parallels student preferences reported in earlier studies (Webster & Hackley, 1997). These earlier findings show that students in remote sites are less involved with learning than those at the site where the professor is physically present (Webster and Hackley, 1997). This points to the need to continuously involve distant participants in the seminar discussions and a conscious mental shift on the part of the instructor to overemphasize the distant participants during a seminar session.

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