

# **WEB-BASED TECHNOLOGIES FOR DISTRIBUTED (OR DISTANCE) LEARNING: CREATING LEARNING- CENTERED EDUCATIONAL EXPERIENCES IN THE HIGHER EDUCATION CLASSROOM**

**LISA A. PETRIDES, PH.D.**

*Teachers College, Columbia University*

## **ABSTRACT**

The purpose of this paper is to examine the ways in which a higher education classroom that used Web-based technology as a supplement to a regularly scheduled classroom-based course, addressed issues of learning and learning-centered education. The findings presented in this paper, although based only on a one-semester class, lend credence to the argument that distance learning cannot be merely delivered to students, and that as educators we must instead focus on how to create learning-centered environments supported by technology, not driven by it. This paper also maintains that the discourse about distance learning projects needs to be reconceptualized as technology-based, learning-centered education, so that we as educators can better focus on the creation of a more learning-centered environment for students and life-long learners.

## **INTRODUCTION**

The rapid growth of the Internet has undoubtedly contributed to the wealth of literature written on the future of distance learning and distributed learning<sup>1</sup> in higher education (Sherron, 1997; Rowntree, 1992). Subsequently, a dialogue about Web-based technologies for instruction has emerged across both K-12 and higher education communities as concerns about cost-effectiveness, access, and flexibility have been brought to the table and debated (Fetterman, 1998; Jones, 1996; Rumble, 1997; Bell, 1991). Among faculty and administrators, discussions of distance and distributed learning often focus on what it means as an instructor to teach in this type of environment. Interestingly enough, these conversations at colleges and universities center around how to best deliver instruction to students who are separated physically from their instructor and therefore tend to focus on the medium by which instruction is transmitted, as opposed to discussions of how students actually learn in this environment. However, as a

faculty member who over the past several years has been experimenting with Web-based technologies in teaching and learning, I maintain that the discourse about distance learning projects needs to be reconceptualized as technology-based learning-centered education, so that we as educators can better focus on the creation of a more learning-centered environment for students and life-long learners. In other words, under what conditions can the creators of traditional instruction become facilitators of learning? And how can we create the conditions for learning so that students become inwardly centered to learn on their own? These seem to be the key components of what could be called essential learning. I believe that the most useful research and discussions will need to focus on how to facilitate learning with technology and the Internet. For example, does technology-based learning-centered education have to be interactive; does it need to be collaborative? Are we trying to transmit knowledge or to create knowledge? And how might we use technology to accomplish these objectives?

Therefore, the purpose of this paper is to examine the ways in which a higher education classroom, which used Web-based technology as a supplement to a regularly scheduled classroom-based course, addressed these issues of learning and learning-centered education. Throughout the semester, students worked with me, the instructor, to explore the concept of learning-centered education as was evidenced by whether or not distributed learning enhanced or detracted from the opportunity for students to learn from each other, and to determine if the use of distributed learning increased access to and flexibility in learning. In my experience of working in higher education classrooms at Teachers College, Columbia University, I have utilized several different types of Web-based technologies in order to facilitate learning, primarily as distributed learning. Attempts at creating technology-based, learning-centered educational experiences for my students have met with only moderate success as defined by my own classroom observations as well as by student surveys. However, I believe that the findings presented in this paper, although based only on a one-semester class, lend credence to the argument that distance learning cannot be merely delivered to students, and that as educators we must instead focus on how to create learning-centered environments supported by technology, not driven by it.<sup>2</sup>

## **USING WEB-BASED TECHNOLOGY IN A HIGHER EDUCATION CLASSROOM**

The course was entitled "Information Systems for Decision Making in Learning Organizations." It was a graduate level class taught in a school of education in a program of educational administration. The class was offered as a face-to-face seminar that met one night a week and had 13 students enrolled. The purpose of the class was to provide a theoretical, conceptual, and operational analysis of information systems used for decision making and problem solving in learning organizations. An integral part of the course involved developing the technical and analytical skills necessary to manage information systems, with an emphasis on those systems that are designed to make it possible for organiza-

tions to transform their information-based systems into knowledge-based systems.

In addition to weekly face-to-face class time, the class made use of a software product, LearningSpace (LS)<sup>3</sup>, which could be used as a stand-alone distance learning course or as a supplement to face-to-face classroom based courses. By design, this Web-based technology provided a collaborative yet instructor-facilitated environment, and contained four modules: scheduling, media center, discussion rooms, and student profiles. The scheduling module contained a calendar system that consisted of all assigned readings and written assignments. The media center contained all course documents, online readings, and other types of multi-media used in the class (including video clips). The discussion rooms were "places" or virtual spaces where students who were enrolled in the class could contribute their thoughts and ideas about class topics throughout the semester. The purpose of using the discussion rooms was to facilitate out-of-class discussion and information sharing among students. This format did not require students to be at the same place during the same time. Students posted messages in response to other messages, or initiated new threads of conversation prompting others to respond in kind. Messages could be retained indefinitely (or at least during the course of the semester) and were available for review at any time with a Web browser and provided ongoing reference for review and additional out-of-class involvement. The student profiles contained information about the students, including job and research interests, as well as digital photographs.

Additionally, synchronous office hours were held online with separate chat software.<sup>4</sup> The purpose of these online office hours was to provide an alternative to in-person meetings, especially for those students who lived out of town or who were not on campus regularly. This format was meant to encourage interaction between the students and professor outside of regular class time meetings. Another benefit of this format, as opposed to one-on-one office hours, was that it allowed for students to discover shared interests among themselves by participating in group discussions about various topics that came up in class, questions about assignments, and weekly readings.

## FINDINGS

The findings reported in this paper are based on classroom observations, and analyses of online postings in discussion boards and chat rooms throughout the semester. Additional data were gathered from written evaluations that took place at mid-semester and at the end of the semester. Among general types of questions about class satisfaction, students were also asked to explain the ways in which their experience with distributed learning in the course was teaching-centered or learning-centered, and to provide concrete suggestions of how to achieve the goal of creating a more learning-centered environment with distributed learning.

Overall, students reported that their experience with distributed learning was much more learning-centered than teaching-centered. Students highly valued the collective access that they had to each other's ideas and written assignments throughout the semester. This contributed to collaborative inquiry in their online

experience, which they reported was an important component of their learning. Explained one student:

LS eliminated the obsolete factory model of education and introduced the wave of the future. It began by allowing creativity to be shared by the entire class, and it ended with an understanding of our classmates' ideas.

Another student noted:

I believe that the distributed learning experience was more learning-centered primarily because it was more of a forum for posting investigation of or reflections on questions for the students. In fact, it allowed students to raise more questions and post those replies to classmates. How's that for multiple loop learning—we were able to continue to reflect upon [each others] reflections.

Students reported that the online discussion rooms provided them with an opportunity to bring their own experience and opinions to the table more so than face-to-face interactions. Said one student:

LS absolutely required you to interact with it and with each other. It really placed the responsibility on the student or user. It allowed for more freedom of thought and discussion.

Additionally, several students noted that the written voice added a layer of complexity to their interactions with each other. One student commented:

If you look back on all of the classes you have ever participated in, very few really allow for participatory experience. There is something that forces you to think more deeply about subject areas when you have to respond in writing.

Therefore, the distributed learning experience provided students with the opportunity to interact and learn with classmates in a much different setting, primarily due to the fact that students were able to read each other's written thoughts and viewpoints about classroom topics, thereby giving them additional insight about their own lives and experiences. Said another student:

It provided an alternative forum where we could learn from each other, and it provided a more convenient and structured format where we could come together to discuss and exchange information.

Having the opportunity to communicate in written form online as well as face-to-face communication provided a greater sense of dependability and trust. As one student noted:

Our class has become very open in its communication to one another and supportive of one another, it made communications more reliable.

Additionally, distributed learning offered an opportunity for those students who might not have volunteered their viewpoints in a more traditional face-to-face classroom. Specifically, for students who felt less comfortable raising their hand to speak in class, distributed learning offered an opportunity for students who would not have otherwise been heard. Said one student:

LS increased access by simply providing another alternative for us to voice our thoughts and to communicate to each other. LS allowed people to express themselves to the rest of the group in a more protective environment.

The opportunity for increased interactions online also appeared to positively affect face-to-face interactions. Said one student:

I think that LS increased my interaction with students in the class both online and in class. Because I interacted with students online, I feel that I got to know them better and talk more in person. I felt comfortable discussing issues or reacting to comments.

Yet while most students felt more connected with each other in class after spending time on Web-based assignments, some of which were done in teams,

other students expressed reservation about this style of learning. Said one student:

This is a mixed bag of results. While I welcomed the wisdom that came out from writings posted in the discussion room, it lacked the immediacy and serendipitous discovery that comes out of structured class discussions. However, it did allow for more reflection that doesn't occur for some individuals in classroom-based discussions. In this regard, [the online discussion boards] provided an additional dimension of the thought process, which was of course made faster and more accessible through the Internet technology. The challenge was to keep up with the amount of information that was generated by each discussion.

Additionally, in the virtual discussion rooms, some students questioned the supposed expertise of each other, and felt more comfortable relying on the expertise of the instructor.

Students who were less comfortable with or had limited access to computers and the Internet were much more likely to voice frustration with their lack of access to discussions and materials that took place in the virtual class space. There were students in the class whose only access to a computer outside of class was at their workplace. Other students had slow modems at home making it very difficult to participate in the distributed learning aspects of the class. In some ways, this is a unique problem with distributed learning as a supplement to classroom-based education because it was not assumed prior to the class that all students would have access to the appropriate technology during non-classroom time, whereas those students who enroll in pure distance learning classes understand that there is only one mode of communication and learning. Many students in the class commented that while they did have access (although sometimes limited) to the necessary technology, they understood the exclusivity that this type of learning involved. One student noted:

[Online participation] had membership to an exclusive club for which the benefits were great, but for the members only.

Over the course of the semester, several students did report a decrease in their hesitancy to respond in a virtual format, and had become much less fearful of technology in general. All students in the class said that they were more likely to engage in a distance learning project in the future after this distributed learning experience.

Students believed that the LS software itself was structurally designed to be more teacher-centered than learning-centered. In part, this may have been because this was a new tool and students were not conditioned to using it, therefore the focus of the learning was detracted by simply "getting used to it." However, with regard to software design, the administration of the LS program required a fair amount of front-end configuration by the instructor prior to the beginning of the semester, and therefore in many ways, its subsequent design was motivated by instructor objectives. It also required a series of passwords and protections that could not be easily shared with students without compromising system integrity. In order for the LS software to have been more learning-centered in its initial design, there would need to be an easy way for students to have been involved in the design of how materials were selected and used, as well as in how different configurations of interactions could be best facilitated and designed by the class as a whole. As it was, because LS was a fairly inflexible platform that could not be easily modified, the technology appeared to drive the process in a way that was not learning-centered.

In fact, students were concerned that if the software were to be used solely as a distance learning tool without the classroom-based interaction, it could easily be implemented in a way that would place more emphasis on an instructor-focused or teaching-centered learning. Said one student:

I think LS can be guided by the instructor, but it also takes into account the experience and opinions of the learner. Depending on the instructor, LS could be teaching or learning-centered.

In other words, the design of the technology lent itself to a much more hierarchical way of teaching that the students thought was less desirable. However, students also felt that distributed teaming experiences such as LS could be a step toward increasing learning-centered education as long as the “horizontal communication” possibilities were designed by the software programmers and encouraged by the instructor.

Students appreciated the flexibility that the course offered in terms of being able to spend time on class projects on their own terms, namely, without having to physically be there and participating when they wanted to communicate with each other or complete online assignments. Said one student:

I certainly spent more time on this class because of the existence of distributed teaming. I appreciated the flexibility of when I spent that time. It was also easier to work in collaborative groups without rearranging everyone’s schedule.

Additionally, it was felt that this experience facilitated more “knowledge sharing” than would have occurred in a more traditional classroom setting.

Students overwhelmingly felt that with distributed learning they learned many concrete research tools and also gained practical experience associated with it. However, they also felt that LS should be used as a supplemental mode of learning to just duplicate what is already going on in class. Some students reported that class assignments using distributed teaming were not specifically tailored to enhance the knowledge that was meant to be acquired during the course, but instead were created because the assignment was suitable to the distributed learning format. Students also felt that because the instructor had designed the classroom-based experience as a discussion seminar, distributed learning was more of a continuation of the same type of approach, as opposed to distributed learning being used to supplement a lecture style class.

And finally, students were in agreement that the use of the distributed learning software lent itself to be more participatory in terms of teaching, grading, topics discussed, and exam questions, but that it had not been fully utilized in that way during the semester. For example, one student said:

I would say that in our use, it was a combination, perhaps leaning a bit toward teaching-centered because many of the postings [in our discussion room] were [made] by the teacher and necessitated responses to the teacher. However, the potential is there for students to work collaboratively and completely independently of the teacher.

## CONCLUSION

In conclusion, students in the class reported that their experience with LS, as compared to previous classes they had taken, was more learning-centered than teaching-centered, that it increased engagement with others, and that it helped them to further clarify their spoken ideas in writing with each other, which then led to more convincing discussions and realizations. In this class, distributed learning helped to create conditions for learning so that students learned on their own and in collaborative settings.

Additionally, students felt strongly that the distributed learning experience provided them with more access to both the instructor and fellow classmates, and that they benefited from the increased virtual interaction because it helped to facilitate face-to-face interaction with the instructor and with each other. Lastly, given the changing demographics of students (more part-time and geographically diverse), distributed learning offered opportunities to enhance and build upon classroom experience and provided a central place to explore class content, although students felt that distributed or distance learning should not replace the classroom experience.

## FUTURE CONSIDERATIONS

One of the first questions that was posed in this paper was how can we shift the emphasis from the delivery of education to technology-based learning-centered education? As the instructor of this class, the definition of learning that I wanted to promote was about critical engagement with others, hearing and appreciating other people's ideas, being able to explain your own ideas, and making cogent arguments. Facilitation of this process can be greatly enhanced by technology as was shown in this one semester course, but not if we let technology drive the learning-centered goals of education. Why waste rich technological opportunities by packaging instruction in a non-interactive one-way format and then simply delivering it to a waiting student, especially since the structure of the Internet is in itself decentralized and non-hierarchical. However, it was a challenge to keep the focus on learning while negotiating the practical and operational demands of technology (e.g. having a full class planned with LS and then having the LS server be down for an hour).

Therefore, as new technologies are developed and instructors across the country experiment and refine distance learning experiences for students, I believe that there are two issues that impede the discourse about, and therefore the practice of, distance or distributed learning, that is, learning that is in some way facilitated by technology. First, why is the predominant discourse of distance learning so often focused on the delivery and not on the learning? To focus on the delivery of instruction only serves to amplify the worst parts of the commodification of education, as if education were merely a consumer good, waiting to be delivered before it gets cold. It suggests an empty receptacle waiting to be filled. It implies that learning is simply a passive action waiting to happen.

Secondly, why do we focus on the discourse of distance, when after all, the

purpose of education facilitated through technology and the Internet is to in fact minimize the distance between student and instructor, or at least to diminish the importance of the distance? Given the advent of technology and the Internet, perhaps we should not let distance continue to be the adjective that modifies learning. Perhaps we should strive for not-so-distant learning, since as the technology becomes seamless it also becomes more transparent and physical distance is no longer of consequence. Additionally, moving from the delivery metaphor to one of interactivity and learning definitely renders people less intellectually distant from each other.

Certainly the history of correspondence courses in this country contributes to our current conceptualization of distance teaming. Course materials were sent through the U.S. postal service to individuals who were geographically distant from each other and from the originator of the instruction materials. Often these materials were sent out in a sequential order, with each new packet sent out to students after the instructor received the completed assignments. Later, some of these correspondence courses used television and video as the medium. In fact, these materials were “delivered” to the home; hence, delivered instruction seemed an appropriate metaphor.

But unfortunately, even though technology and the Internet have vastly changed the ways in which most students interact with non-classroom based teaming, most definitions of distance learning still incorporate the delivery metaphor today.<sup>5</sup> However, there are far fewer definitions of distance learning that contain a learning-centered concept of distance learning.<sup>6</sup>

This descriptive study of a one-semester course represents one microcosm of distributed learning in a higher education classroom. It also represents a modest effort to reconceptualize the discourse on distance and distributed learning on a pathway to creating technology-based learning-centered educational experiences. I believe that we need to transform the conversations about distance and distributed learning from transmission and delivery into learning-centered experiences that create knowledge and facilitate learning. It is then that we might be able to begin to imagine how technology might actually help us to reach those goals.

Direct Reprint Requests to:

Lisa A. Petrides, Ph.D.

Dept. of Organization and Leadership

Teachers College, Columbia University

525 West 120th Street, Box 176

New York, NY 10027

Email: lap52@columbia.edu



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## NOTES

- <sup>1</sup> Distributed learning is a term that has been used to describe the use of Web-based technologies to supplement in-class teaching and learning. It is different from distance learning, which assumes that there is no face-to-face contact between instructors and students.
- <sup>2</sup> The analyses in this paper are based only on the distributed learning aspects of the class, and do not include the interactions of students during face-to-face classroom time except where noted.
- <sup>3</sup> LearningSpace is a Lotus Notes based product. The brand name is used only for clarification.
- <sup>4</sup> The chat software is called eShare Expressions. The brand name is used only for clarification.
- <sup>5</sup> For example, the California Distance Learning Project defines distance learning as "an instructional delivery system that connects learners with educational resources" ([www.uwex.edu/disted/definition.html](http://www.uwex.edu/disted/definition.html)).
- <sup>6</sup> Distance education is the offering of educational programs designed to facilitate a learning strategy which does not depend on day-to-day contact teaching but makes best use of the potential of students to study on their own. It provides interactive study material and decentralized learning facilities where students can seek academic and other forms of educational assistance when they need it (Daniel, 1997, pg. 15).

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