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December 2006

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e-Learning Through an Electronic Discussion Board:
A Comparative Study of Distance Education
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ABSTRACT

Many university courses use electronic discussion boards to support student collaboration and learning. The purpose of this research is to compare the attitudes of distance education and on-campus students in the use of an electronic discussion board. Two groups of students – one group situated on campus and the second taking the course at a distance – enrolled in the same introductory Business Law course were surveyed to determine their motivations to participate in an electronic discussion board and their perceptions of the usefulness of the discussion board. While their attitudes to participation differed slightly, overall, both distance education and on-campus students had similar, positive perceptions about the contribution of electronic discussion boards for enhancing learning outcomes.

Keywords

electronic learning, e-learning, electronic discussion boards, distance education

INTRODUCTION

Asynchronous communications tools such as electronic discussion boards are widely used to facilitate instructor-to-student and student-to-student communication. If utilised correctly, these discussion boards can develop an online community of learners and support these learners in their studies (Sheard, 2004).

An electronic discussion board can be especially valuable when a course is offered at a distance (Benbunan-Fich and Hiltz, 2003; Harasim, Hiltz, Teles, and Turoff, 1995). The lack of face-to-face interaction can create a feeling of isolation and deprive the distance education student of a more fulfilling learning environment (Hill, 2001). An e-discussion board can reduce the feeling of isolation by providing a rich environment for discussion and interaction.

Electronic discussion boards are also being used to support on-campus teaching. A communication environment may develop that will achieve a higher level of understanding than what would be possible in a purely face-to-face discussion (Benbunan-Fich and Hiltz, 2003; Hoyt, 2000; Sheard, 2004). This is because many students find the asynchronous nature of discussion boards is more convenient, allows more thoughtful responses (Mason and Kaye, 1990) and encourages participation from students who feel more comfortable presenting information in this way rather than face-to-face (Swift, 2002). This is especially true for students who are physically handicapped, tend to be introverted, or have low language ability, all of which negatively affect synchronous communication (Benbunan-Fich and Hiltz, 2003).

The purpose of this research is to determine the attitudes and perceptions of distance education and on-campus students in the use of an electronic discussion board to support a university learning environment. The study will assess how two groups of students – one group situated on campus and the second enrolled in distance education – taking the same introductory Business Law course view the discussion board on factors such as learning support and ease of use.

As used in this study, "discussion board" or "electronic discussion board" is an "asynchronous electronic space where text-based communication takes place over time with participants posting messages that receive some sort of response later in time" (Burkett and Spector, 2004, p. 1). Today most students encounter electronic discussion boards as part of learning management systems such as BlackBoard or WebCT.

As used in this study, an "on-campus student" is a student who has opportunities to attend lectures and personally interact with fellow students and the instructor on a regular basis. A "distance education student" is usually geographically remote from the campus and has little or no face-to-face interaction with fellow students and the instructor.

The principal outcome of this study is to provide educators with a foundation on which they are able to build and encourage a strong online community of learners. The study also helps identify if mode of delivery impacts the success of the discussion board.

PARTICIPATION ON ELECTRONIC DISCUSSION BOARDS

Many university courses use electronic discussion boards for a variety of reasons, principally to support student collaboration and learning. The asynchronous online interaction that discussion boards allow can lead to new paradigms for learning. Students are allowed to collaborate and communicate with each other independent of location and time, something that is not possible in an offline, synchronous environment (Harasim et al., 1995).

Discussion boards also enable instructors to monitor and track students' discussions. Discussions are therefore more robust and thoughtful, as students know that the discussion is recorded and teachers have a better idea of students' understanding of concepts (Swift, 2002).

These goals can only be achieved through active student participation. Participation is fundamental to the effective utilization of the bulletin board and a major issue for many classes is low participation, either in quantity of messages and/or quality of message content (Hoyt, 2000).

There are a number of reasons why a student may not participate in an electronic discussion board. Jaycox (1996) suggested reasons for non-participation include outside commitments, fear of embarrassment, overwhelming workload, or bad experiences and conflict from previous interactions. Other reasons for low participation include difficulty or unwillingness to use the discussion board software (de Bruyn, 2004), unease at a lack of response (Benbunan-Fich and Hiltz, 2003), fear that they may embarrass themselves (de Bruyn, 2004; Jaycox, 1996), a perception that the discussion board is less effective than face-to-face interactions (Rourke, Anderson, Garrison, and Archer, 1999; Stacey, 2002), and lack of feedback about their messages (Hewitt, 2003). Other reasons may be that the student is not encouraged or rewarded to post messages, the discussion board may not be well supported by the lecturer and students, or electronic mail may be a quicker and easier alternative.

A few studies have examined the correspondence between course grades and participation in asynchronous electronic communication. Generally, students who participate in online discussions have a greater chance of success in the course than students who did not participate (Collins and Barbour, 2004; Slovacek, 1989) but obviously a number of confounding variables exist.

METHODOLOGY

The sample in this study comprises students enrolled in an introductory Business Law (155.100) course at a New Zealand university during July-November 2005. This course is offered in both on-campus and distance education modes, by the same instructor and course requirements for both modes are similar, including the use of an electronic discussion board in WebCT. This offers an excellent opportunity to compare perceptions of bulletin board use between on-campus and distance education students.

Data were collected via a questionnaire distributed to students electronically and by post. The questionnaire included (a) eleven questions that collected demographic and general information about the student, (b) seven questions that asked about the student's attitudes toward participation in the discussion board, and (c) eight Likert scale questions that determined perceptions of discussion board use. Most questions were followed by a space that encouraged students to comment on their responses.

RESULTS

Participation in the study was voluntary, but encouraged by the course's instructor. Thirty (15 percent) of the 200 distance education and 75 (15 percent) of the approximate 500 on-campus students agreed to participate in this study.

Demographic Profile

Females are a slight majority (60%) of distance education students and nearly half (49%) of on-campus enrolments. Students of European heritage dominate the distance education roll (87%) with Maori students the second largest group at 7%. The on-campus roll consists of European (51%), Asian (41%), and a variety of other ethnicities (8%).

The age distribution between the two groups differed with almost half of the distance education students in the 30-39 group (47%) and most (63%) of the on-campus students were between the ages of 20-29. The first language spoken in the distance

education group was predominantly English (90%). The on-campus group was split almost evenly between English as their first language (51%) and other languages (49%).

Most students in the distance education group were taking the course as a part-time student (82%) whereas on-campus students were predominately full time (97%). The largest proportion (distance 43%; on-campus 54%) of students were in their first year of university. Almost all students were enrolled in the College of Business (distance 85%; on-campus 91%).

Data to compare this sample with the survey population were not available, but there is no reason to suspect that this sample is not representative of the students enrolled in this course.

Discussion Board Use

Almost all students (distance 77%; on-campus 88%) use the Internet daily. However checking the discussion board is a less frequent activity, especially for distance education students, as shown Table 1.

	Distance Ed		On-campus	
A few times a day	6.7%	(n=2)	12.5%	(n=9)
Daily	13.3%	(n=4)	22.2%	(n=16)
Every second day	23.3%	(n=7)	22.2%	(n=16)
Weekly	30.0%	(n=9)	16.7%	(n=12)
Occasionally	20.0%	(n=6)	16.7%	(n=12)
Never	6.7%	(n=2)	9.7%	(n=7)

Table 1. Frequency of Discussion Board Use

Fifty-two percent (52%) of the distance education and 48% of the on-campus students had just one year of experience using a discussion board as part of a university course. A smaller proportion (distance 35%; on-campus 30%) had two years of experience and even fewer students (distance 12%; on-campus 22%) had more than two years of experience.

Attitudes Toward Participation in Electronic Discussion Boards

A series of attitudinal questions were asked to assess the students' views of discussion boards and their participation in them. When asked what is their preferred method of student-to-instructor and student-to-student communication, a majority of both groups (distance 63%; on-campus 69%) favored a combination of both face-to-face and electronic communication. Distance education students slightly favored electronic communication alone (distance 13%; on-campus 7%) and the two groups were equal in preferring face-to-face contact alone (23%).

Students were asked to rate their own participation on the course's discussion board. Most distance education students felt their interaction was poor (54%) while on-campus students were fairly evenly distributed between poor (33%), fair (31%), and good (33%).

Why do students participate in electronic discussion boards? For both distance education (42%) and on-campus (46%) students the main reason for participation was to ask questions about assignments or exams. Students were also keen to use the board to ask questions of the lecturer (distance 28%; on-campus 30%) or to answer another student's question (distance 13%; on-campus 16%). Other reasons (distance 8%; on-campus 3%) volunteered by the respondents included to gain additional information by reading what others had written, to compare their own progress and views with other students, to support other students, and because the discussion board was simply part of the learning process.

Why do students not participate in electronic discussion boards? For both groups, the principal reason for not participating on a discussion board was if the lecturer did not respond quickly enough (distance 35%; on-campus 42%), followed by if the discussion board was not used by others (distance 35%; on-campus 34%). Other reasons (distance 6%; on-campus 7%) volunteered by the students included students didn't like communicating with people they did not know, irritation when students ask questions that are repetitive or not on the topic, too busy to participate, and they did not find the discussion board useful for their studies.

What about the usefulness of the discussion board? A majority (56%) of distance education students found what other students wrote to be "somewhat" helpful in completing assignments. Equal portions (8%) of distance education students found the discussion board to be "a lot" or "not at all" useful (the rest (28%) indicated "very little"). Generally, on-campus

students found the discussion board to be less useful in contributing to how they did the assignment (e.g., 11% said "not at all"; 33% said "very little"; 47% indicated "somewhat" useful).

Finally, students were asked whether the discussion board was an aid or hindrance to learning. Most confirmed that it was an aid (distance 79%; on-campus 71%). A few students clarified this statement by commenting that overall it was a good way to get help, to acquire information, and to clarify issues. Conversely, a few students suggested that the discussion board could hinder learning if comments on the discussion board confused or led students astray.

Perceptions of Discussion Board Use for Learning

A second focus of the questionnaire, and this study, was an analysis of the way that distance education and on-campus students perceive the use of an electronic discussion board in the conduct of learning activities. A five-point Likert scale – strongly agree, agree, no opinion, disagree, strongly disagree – was used to investigate the extent to which students agreed or disagreed with eight statements about discussion board use. A null hypothesis was set for each of the eight statements: that 50% or more of the students would agree with the statement. Formally, the null hypothesis (H_o) is $p => 0.5$ and the alternative hypothesis (H_a) is $p < 0.5$. Statistical significance was assessed using a binomial Z test with a significance level of 0.1. The results are shown in Tables 2 (distance education students) and 3 (on-campus students).

Statement	N	Agree No. (%)	Disagree No. (%)	Z statistic p value (two-tailed test)
1. Discussion boards are an effective method of delivery.	24	20 (83%)	4 (17%)	1.000
2. Discussion boards are easy to use.	26	22 (85%)	4 (15%)	1.000
3. Discussion boards are essential for learning.	24	2 (8%)	22 (92%)	0.000
4. Discussion boards are useful tools for learning.	24	9 (38%)	15 (63%)	0.158
5. Discussion boards facilitate collaborative learning.	24	17 (71%)	7 (29%)	0.989
6. I need a high level of skill to use the discussion board.	19	3 (16%)	16 (84%)	0.002
7. Using the discussion boards improved my grades.	19	10 (53%)	9 (47%)	0.676
8. Using the discussion boards improves study success.	23	18 (78%)	5 (22%)	0.999

Table 2. Distance Education Students Perception of Electronic Discussion Board

The results for distance education students (Table 2) and on-campus students are similar. Especially statements 3 (discussion boards are essential for learning) and 6 (I need a high level of skill to use the discussion board) were both rejected for both groups of students. For all other statements the null hypothesis was not rejected – students agreed with the statements.

DISCUSSION

In this section we discuss the results presented in the previous section. In doing so we also suggest some implications for practice that will be useful for college and university instructors who are using electronic discussion boards to support their teaching, especially in distance education.

Demographically, distance education students in this study were mostly of European ethnic origin, most were mature students, almost all spoke English as a first language, and most were enrolled on a part-time basis. In contrast, on-campus students were mostly European or Asian, younger, did not necessarily have English as a first language, and took the course as full-time students. These observations, and other data from the demographic profile, are consistent with the expected profile of the two student groups and the study's target population.

In spite of these differences, the two groups shared similar attitudes and perceptions about the participation and use of discussion boards. For example, both groups showed strong preferences for face-to-face contact with instructors – even 87%

of the distance education students preferred face-to-face contact, either alone or in conjunction with electronic discussion. This finding supports de Bruyn's (2004) findings that students prefer face-to-face communication.

Statement	N	Agree No. (%)	Disagree No. (%)	Z statistic p value (two-tailed test)
1. Discussion boards are an effective method of delivery.	60	58 (97%)	2 (3%)	1.000
2. Discussion boards are easy to use.	65	63 (97%)	2 (3%)	1.000
3. Discussion boards are essential for learning.	55	8 (15%)	47 (85%)	0.000
4. Discussion boards are useful tools for learning.	50	22 (44%)	28 (56%)	0.240
5. Discussion boards facilitate collaborative learning.	56	52 (93%)	4 (7%)	1.000
6. I need a high level of skill to use the discussion board.	60	9 (15%)	51 (85%)	0.000
7. Using the discussion boards improved my grades.	33	18 (55%)	15 (45%)	0.757
8. Using the discussion boards improves study success.	45	37 (82%)	8 (18%)	1.000

Table 3. On-campus Students Perception of Electronic Discussion Board

Approximately three-quarters of the students (distance 70%; on-campus 76%) in both groups highlighted lack of lecturer responsiveness and minimal student participation as the two key reasons for not participating. Instructors who want to encourage students to use bulletin boards must (a) use them themselves, including quickly responding to comments and questions, and (b) encourage, promote, and even provide incentives for a critical mass of students to participate.

Frequency of use (e.g., Table 1) and self-rating of their own level of participation were higher for the on-campus students. Intuitively, one would think that distance education students need electronic discussion more and so their participation levels should be higher. However, because of very practical reasons – their full-time enrolment, engagement in other courses using discussion boards, and easy access to campus computing facilities – it is understandable that on-campus students would participate more, especially when self-ratings are used to measure participation.

A study from the management literature (Griffith and Neale, 2001) suggests that information, goal/value, and social category can make a major difference in participation. When applied to an educational setting, their findings suggest that even though on-campus students have multiple opportunities for face-to-face interaction, they do not take advantage of these opportunities. For example, on-campus students are more likely to ask about forming study groups in a discussion board rather than in personal interaction. On-campus students are also more likely to post a question to the lecturer on a discussion board, rather than drop by during office hours.

The findings in Tables 2 and 3 suggest that both student groups have similar, positive perceptions of electronic discussion boards. On-campus and distance education students believe that discussion boards are effective (statement 1), useful (4), easy to use (2, 6), facilitate collaborative learning (5), and e-discussion boards can improve grades (7) and study success (8). Similarly, an overwhelming majority (distance 79%; on-campus 71%) consider the discussion board used in this course to be an aid to learning.

Both groups of students did not view discussion boards as essential to learning (statement 3 in Tables 2 and 3). This may be attributable to how students perceived and used this discussion board, principally to ask questions about assessments and administration. This is likely to change if students use the discussion board as a way to push their own thinking and understanding of the course content (Hewitt, 2003). Accordingly, educators should encourage an active dialogue throughout the course and push student perceptions beyond the idea that the discussion board is merely a question-and-answer tool. This was not how the discussion board was used in the course studied in this research, but it is a suggestion for other lecturers to adopt.

CONCLUSION

The overall aim of this study was to increase the e-learning field's understanding of the use of and participation in electronic discussion boards. This study has done so using comparative research that compares results from distance education and on-campus students studying the same university course.

The findings of this study identified factors that influenced student participation and how they view the use of discussion boards in their learning. Students need a reason to participate! Educators can use the findings of this study to promote factors that encourage participation and limit factors that hinder the use of the discussion board.

Future Research Opportunities

This study lays the foundation for future research in the area of distance learning through electronic discussion boards. One of these contributions has been the focus on comparative research, contrasting results for distance education and on-campus students in the same course. Future studies are possible to extend this research. This may be done in the following ways:

This study considered only one course at one university. Although the sample was considered to be representative of the study's population – students enrolled in an introductory business course – this research would be enriched if the study was extended to other student groups in other universities.

Students were encouraged to participate in the study by the instructor, but participation was voluntary. Accordingly, self-selection has the potential to bias the results. There was the potential for non-response bias, as it was not guaranteed that all students would send back the questionnaire. To increase the response rate, the questionnaire was available in multiple formats.

This study used a survey questionnaire. A richer data set could be obtained if student participation – both quality and quantity of postings – could be monitored and matched against survey results. The time and effort required to do this was beyond the scope of this study.

The concept of the association of participation rate and academic success is in its infancy. Sophisticated research that is able to determine if a real relationship exists, or if other factors can be attributed to this association, are necessary.

This study, and the findings it has provided, should contribute in some small way to future research that enhances our understanding of the complex nature of e-learning on electronic discussion boards.

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