Factors Affecting the Adoption of Online Discussion Boards in Physical Learning Environments

Emergent Research Forum papers

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Abstract

Online discussion boards can be a powerful tool in both online and traditional face-to-face classes. While there is research on the adoption of online discussion boards in virtual classes, it is unknown which factors lead to the successful adoption of Information Technology in education in physical learning environments. We propose this research in progress paper to understand 1) whether online discussion boards can enhance learning in traditional face-to-face courses, and 2) the factors that affect the adoption of online discussion boards in physical learning environments. By utilizing interviews for data collection and grounded theory for data analysis, this research in progress paper will seek to answer the research questions using qualitative methods.

Keywords

Grounded Theory, Online Discussion Boards, Adoption, Interview, IS for Education.

Introduction

Given the importance of education, it is important to identify factors that lead to improvement in education. Previous research espouses that the use of technology has a positive influence in education (Strauss & Frost, 1999; Kulik, 1994; Sivin-Kachala, 1998; Al-Ammary, 2012). Every year, a considerable portion of public funds is invested in college education. Universities across the globe have invested large amounts of money to implement, upgrade, and maintain technology in education. In 2014 and 2015, the University of Western Sydney will provide each incoming freshman with an iPad to support a new mobile application course offered by the university (iPad Initiative, 2015). Modern education incorporates the use of technology in the form of slides, online systems for posting resources and grades, online discussion forums, and many other technical tools which is believed to improve learning. However, the successful adoption of a technology in education is complicated, which may involve many factors including the technology, people, and environment. Ineffective use of technology in education is a looming threat leading to wasted efforts and inappropriate monetary investments. Hence, it is critical to determine the factors which lead to the successful adoption of information technology in education.

In this research, we focus on online discussion boards as a technology which is included in many course management systems used in college classrooms. An online discussion board enables the students and instructors to create a discussion thread and reply to each other. Analysis will be conducted towards the online discussion board. The two primary research questions addressed in this research are
1. Do online discussion boards enhance learning in regular courses?
2. What are the factors that can affect the adoption of the online discussion boards in physical learning environments?

The impact of discussion boards in online courses have been an active area of research for quite some time. However, the effects of discussion boards in face-to-face courses have been an area of uncertainty. Therefore, studying this phenomenon provides both theoretical and practical contributions. Rather than studying the adoption of online discussing boards using traditional technology adoption models, we choose to use a qualitative research method to further explore the research questions and identify factors that may emerge from the data. We will examine these questions using interviews with students from two different types of undergraduate classes. Grounded theory will be used to analyze the data to discover patterns based on the interviews and past knowledge from the literature.

Literature Review

Success of Technology in Education

Since the introduction of technology in education, there has been an implicit assumption that the use of technology promotes better learning. However, it is extremely important to assess the role of technology in education before investing efforts to incorporate it in the field of education. Using a meta-analysis, students across all levels of education demonstrated higher performance in the achievement tests when instruction was computer-based (Kulik, 1994). Additional research also identified that students in technology-enriched environments showed higher performance at all education levels (Sivin-Kachala, 1998). A study on the usage of education technology at the University of Bahrain, using surveys and experiments among students and academic staff, found that education technology has a positive influence on student achievements (AlAmmary, 2012).

Effects of Online Discussion Boards on Student Learning

Online discussion boards are web-based systems where students can participate in various discussions, including posting a new topic of discussion, sharing individual opinions, asking questions, and providing feedback to classmates. It has unique capacity to support the development of a learning community which is instrumental to improve the learning experience of each student belonging to the community (Levine, 2007). Online discussion boards also offer a platform where students can interact with each other and engage in complex problem solving through constant knowledge sharing. The concept of online discussion boards originated from the bulletin board system (BBS), with the aim to promote active learning over passive learning through participative engagement among the students. It is posited that online discussion boards are a good pedagogical method for students to interact with instructors and other students (Bonk, Kirkley, Hara, & Dennen, 2001).

In a study of computer-based interaction on student learning within virtual learning environments, learning in most cases is individualistic rather than interactive due to lower participation rate from the physically distributed students; tutors or instructors that facilitate online discussions for discussion boards are important for online discussions to be successful (Thomas, 2002). Learner centricity, asynchronous interaction, communication effectiveness, and assessment facilitation are attributes found to have positive impacts in learning outcomes when using online discussion boards (Sahu, 2008).

Adoption Factors of Online Discussion Boards

Previous literature claims that success of online discussion boards depends on the facilitation of discussions. For example, strategies can be used by instructors while designing the course and conducting online discussions to help students derive greater benefits (Rovai, 2007). Using the discussion board with assigned tasks has been found to promote collaborative self-controlled learning (Al-Qirim, 2009). Zhang, Zigurs, and Kamal (2010) identified factors affecting student attitudes towards a virtual world learning environment which lead to the generalized adoption of technology in education. The factors include ease of use, usefulness, likeability, technology accessibility and system quality (Zhang et al., 2010).
Student motivation also impacts the use of online discussion boards (Xie & Ke, 2011). Tripathi, Cuong, Xiong, and Najjar (2012) examined the motivational factors for student participation in online discussion boards in blended learning contexts. Their study identified that the desire for esteem, desire for affiliation, conformity to group norms, and reciprocity as key factors that could lead to the participation of online discussion boards. However, there are conflicting results regarding the role of student motivation and online discussion boards in that Chen and Jang (2010) found that student motivation failed to explain the learning outcomes of online learners.

**Research Methodology**

Although prior research has questioned the effectiveness of online discussion boards and the factors leading to its adoption, there still exists some uncertainty in the factors which influence the success of technology, like online discussion boards, in a regular, face-to-face classroom. This uncertainty results from the conflicting results found in prior research. Since the majority of previous research focuses on the online courses, or blended courses (Tripathi et al., 2012; Chen and Jang, 2010; Cox and Cox, 2008; Zhang et al., 2010), few studies consider the adoption of education technology, such as online discussion boards, in face-to-face courses.

A qualitative research method will be conducted to answer the research questions. Interviews have been and will be conducted in the Fall 2014 and Spring 2015 semesters across two courses. A total of 20-30 student interviews are expected to be conducted (see Appendix for interview questions). One class is an introduction to information systems course while the other class is an introductory programming course.

It has been generally observed that the extent of instructor intervention has a considerable impact on students' acceptance of discussion board in the context of courses. However, there has not been much research attempts to determine the role of course contents or nature of learning material on the acceptance of discussion boards by students in a course. Hence, we focus on the role of learning contents on online discussion board adoption instead of reinforcing the significance of the role of instructors in the process of acceptance of this technology tool. To conduct comparative research on the adoption of online discussion board across different types of educational content, the impact from the instructors is controlled and standardized.

Each instructor will mention and encourage the usage of online discussion boards at the beginning of the semester. Then at the mid-point of the semester, the instructor will conduct interview with students to explore whether 1) they use the discussion boards and 2) they think discussion boards could help improve learning. We are collecting data by interviewing undergraduate students at a Midwestern university in USA. We are selecting students who have sufficient experience of using online discussion boards in face-to-face classes. From these interviews, we are seeking a deeper knowledge about student perceptions of using discussion boards in face-to-face classes. In our research, we are measuring perceptual learning based on the students' perception about the extent of knowledge gained or the holistic quality of their learning experience due to the incorporation of online discussion boards in physical classroom environments.

**Analysis**

Grounded theory is a systematic qualitative research method to help researchers discover the general features of a topic (Martin & Turner, 1986). Grounded theory is widely used in traditional social science research (Strauss & Corbin, 1997; Glaser & Strauss, 2009; Eisenhardt, 1989). In information systems, grounded theory is an analytical technique used to develop context-based, process-oriented descriptions about information system phenomena (Urquhart, Lehmann, & Myers, 2010). This qualitative research strategy enables us to examine a phenomenon in its natural setting, employing multiple methods of data collection to gather information from one or a few entities, i.e., people, groups, and organizations (Flyvbjerg, 2011) and examine those insights within the context of existing literature.

**Expected Contributions**

Both theoretical and practical contributions are expected from the study. Students in undergraduate courses, studying different types of content, will be interviewed to reach different levels of generalizability.
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(Bacharach, 1989). Practically, the research questions are highly related to higher education, especially for understanding the utilization of online discussion boards in face-to-face classes. Since little attention has been paid in understanding how course content may impact students’ adoption of an online discussion board, we plan to expend considerable research efforts in identifying if course content is a factor that influences success of online discussion boards. The initial research findings will lead to a better understanding regarding potential reasons behind students’ adoption or repudiation of online discussion boards in face-to-face classes.

Conclusion, Limitation and Future Research

There are several limitations in this research. For example, our selected analysis method of grounded theory can introduce subjectivity of the data and researcher, particularly if an instructor interviewed his/her own student. To minimize the effects of this potential bias, the interviewer will not be the student’s current instructor for the course. Further, all three authors will examine accuracy of data evolved from the interviews as well as from the coding and labeling processes associated with grounded theory research methodology.

Online discussion boards are powerful tools in both online and traditional face-to-face classes. While there is research on the adoption of online discussion boards in virtual classes, it is also critical to determine the factors which lead to the successful adoption of online discussion boards in education, especially in physical learning environments because majority of classes in the universities still follow a regular face to face framework for offering courses. In this study, we conduct research to explore 1) whether online discussion boards can enhance learning in regular courses, and 2) the factors that can affect the adoption of online discussion boards in physical learning environments. By utilizing a classic qualitative research approach called grounded theory, this research in progress paper reports our initial endeavor to understand the research questions.

References

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Appendix

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Background:

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<tbody>
<tr>
<td>1.</td>
<td>Have you used DB before? What's your previous experience like?</td>
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<td>2.</td>
<td>Do you think DB is useful? Why?</td>
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<td>3.</td>
<td>Are you aware of the DB function in the BB?</td>
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<td>4.</td>
<td>Have you used DB in any class?</td>
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<td>5.</td>
<td>Why you choose not to use the DB?</td>
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<td>6.</td>
<td>If there are some extra credits for participation of DB, are you willing to use that?</td>
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<td>7.</td>
<td>What kind of information are you planning to share or to ask in the DB?</td>
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<td>8.</td>
<td>Do you think DB can help you with the assignments?</td>
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<td>9.</td>
<td>Do you feel comfortable to post in DB, which will be available to all the members in the class?</td>
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<tr>
<td>10.</td>
<td>What do you think should be the role of instructors in conducting discussions in discussion boards?</td>
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