Pedagogical Features and Instructional Activities in e-learning
Management System Discussion Board Forums

Abstract

This mix-methods study examined how instructors seek information to assess students’ input on an e-learning discussion board forum and determined which pedagogical features instructors’ use most frequently to facilitate instructional activities. Researchers examined instructors’ preferences through a comparison of two different discussion board formats and how instructors perceived added pedagogical features in a new version of the discussion board. The findings suggested that the ability to easily track and respond to student’s post is the most important feature to instructors while reading student posts and replying to students are the most frequent instructional activities.

Keywords

E-leaning, learning management system, Blackboard, discussion board, information foraging theory, pedagogical usability, instructional activities

INTRODUCTION

Online discussion forums have found their way into traditional, face-to-face, hybrid and online courses. Learning management systems often facilitate different types of interaction. In the context of e-learning, Moore (1989) divided this interaction into three categories: (a) learner-instructor; (b) learner-learner; and (c) learner-content (as cited in Bouhnik & Marcus, 2006). A fourth category of interaction (Hillman, Willis, Gunawardena, 1994; Bouhnik & Marcus 2006),
learner-system or student-system interaction, has been identified and refers to the technologies, platforms and applications individuals use to interact with instructors, fellow students and the content. According to Arbaugh and Benbunan-Fich (2007), “Learner-system interaction facilitates or constraints the quantity and quality of the other three types of interactions”.

Students and faculty are in agreement that the quality and quantity of interaction in a discussion board can increase their satisfaction in the course (Picciano, 2002). Instructor responsiveness is one of the most important elements to successfully achieving meaningful interaction in a distance-education course (Blignaut & Trollip, 2003). This study was primarily interested in learner-system interaction from the instructor’s perspective with specific focus Blackboard’s discussion board. By comparing the current discussion board forum with a newly designed forum within the same learning management system, we investigated the pedagogical features that influence instructional activities within discussion board forums.

The underlying framework, information foraging theory (Pirolli & Card, 1999; Trepess, 2006) was applied to investigate how instructors perceive existing factors in a learning management system interface, such as the discussion forum in Blackboard, to determine their preference and seeking strategies to obtain valuable information needed for assessing students’ input. Pedagogical usability, which is how pedagogical features support instructional activities, was also applied to this study. As some researchers (Nokelainen, 2006; Silius, Tervakari, and Pohjolainen, 2003) have pointed out, pedagogical usability is viewed as a sub-concept of utility in Neilson’s usability model while technical usability is a sub-concept of usability. In an e-learning system, it is critical to evaluate the pedagogical design of web-based teaching/learning from the perspective of the teachers, learners, and other actors. The usefulness of web-based
learning environments is a combination of its usability and utility (Silius, Tervakari, and Pohjolainen, 2003).

METHODS

Approach

This study conducted an online survey and a follow-up interview using the same pool of participants. In terms of design approach, a counterbalanced design was applied. The participants were randomly placed into two separate groups. Group A participants were shown the current Blackboard discussion board first while Group B was shown the new Blackboard discussion board version first. Each group viewed both versions of the discussion board and performed the same tasks in each. After the tasks were finished in both versions, interviewees answered several exit-interview questions regarding their satisfaction and discussion board preference according to their experience.

Participants

Eighteen participants responded to the online survey with nine of them participating in a follow-up interview. All participants were selected from a pool of faculty and graduate instructors in the College of Education at a Midwestern University. All eighteen participants are actively using Blackboard discussion boards with experience ranging from less than six months to more than six years. Of the participants who indicated they checked the discussion board, 56% of them check the boards daily with 22% of them checking the boards two to three times a week.
Procedures

The online survey was created in Qualtrics and sent out via email. Interview participants were recruited through the distributed survey. The interview protocol was designed to conduct a comparison study of two versions of the Blackboard discussion forum. A fictitious discussion board thread was created for each version of the Blackboard discussion boards. Both discussion board forums had identical prompts with only the topic changing between boards. The interviewees were asked an opening set of question to begin the interview process after which they were asked to perform a series of tasks in the two versions of the forum. One of the tasks was to apply a provided rubric to assess the discussion board threads in each version. During the interviews, the interviewees were observed performing the assigned tasks while researchers recorded their observations and participants’ answers to posed questions.

RESULTS

What features in the Blackboard discussion board tool are important to instructors?

We provided five Blackboard discussion board pedagogical features for instructors to evaluate. Respondents reported that the ability to easily track student posts (83%) and respond to posts (78%) was ranked as the most important activity (Table 2). Of particular interest to the researchers was the importance of the ease of grading students’ posts. The researchers expected that the ease of tracking students’ posts to be positively correlated with grading. The results indicated that tracking student posts goes beyond just grading and may be important for other aspects of teaching.
What instructional activities in the Blackboard discussion board do instructors perform most often?

When asked which activity instructors perform most frequently, 33% indicated it was reading student posts. Replying to students, creating forums and facilitating group discussion were ranked immediately after that. Other activities such as viewing discussion board statistics and grading were not performed as often (table 3).

Table 2. Instructors’ most important discussion board features

<table>
<thead>
<tr>
<th>#</th>
<th>Answer</th>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Profile picture</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>Tree view or list view</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Easy to track student posts</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>Easy to respond to student posts</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>5</td>
<td>Easy to grade student posts</td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

Table 3. Instructor’s most frequent instructional activities

<table>
<thead>
<tr>
<th>#</th>
<th>Activity</th>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Creating forums in the discussion board</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Creating group discussions</td>
<td>0</td>
<td>1%</td>
</tr>
<tr>
<td>3</td>
<td>Facilitating group discussions</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Reading student's post</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>Replying and interacting with the students</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Viewing discussion board statistics</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>7</td>
<td>Grading discussion board participation</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>10</td>
<td>100%</td>
</tr>
</tbody>
</table>

What instructional activities are difficult for instructors to perform?
While using the Blackboard discussion board, 53% of the instructors stated that they experienced some difficulty. According to the results, replying and interacting with the students and facilitating group discussions were chosen as the most difficult tasks (Table 4). This may have been a reflection that students’ participation and involvement in the discussion board were not meeting instructors’ expectations. As one participant stated, “It’s hard to enforce ‘norms’ of behavior on some students” and another stated “It took several years to create a workable way to structure small group discussions.” At this point, pedagogical usability of the discussion form regarding instructor-student interaction was not satisfactory.

<table>
<thead>
<tr>
<th>#</th>
<th>Activity</th>
<th>Response</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Creating threads in the discussion board</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>Creating group discussions</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>Facilitating group discussions</td>
<td>4</td>
<td>40%</td>
</tr>
<tr>
<td>4</td>
<td>Reading student’s post</td>
<td>3</td>
<td>30%</td>
</tr>
<tr>
<td>5</td>
<td>Managing and interacting with the students</td>
<td>5</td>
<td>50%</td>
</tr>
<tr>
<td>6</td>
<td>Solving discussion board problems</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>7</td>
<td>Creating discussion board participation</td>
<td>2</td>
<td>20%</td>
</tr>
</tbody>
</table>

Table 4. Difficult instructional activities for instructors

Which version the Blackboard discussion board forum do instructors prefer to use when given a rubric and asked to perform a set of instructional activities? Why?

Nine participants were asked to perform three tasks in the old version of the discussion board and then the same three tasks in the new version. Being able to view the whole conversation of a single thread on Blackboard all at once and having profile pictures (Figure 1) included on the thread posts received the strongest endorsements from instructors.
After completing the same tasks in both versions, participants were asked to rate their experiences with both current (Figure 2) and new (Figure 3) discussion forums respectively. In the current version of blackboard, finding a student’s post and responding to them were evaluated by 22% of the participants as unsatisfactory. One participant commented that he couldn’t determine to whom students were responding to in the old version. By contrast, in the new version, 33% of the instructors rated that they were very satisfied with this activity. Forty-five percent of respondents did not favor one version over the other. Only one participant indicated that the new blackboard was unsatisfactory and would not want to switch to the new one. She stated that change always involves a learning curve for the instructors and students alike. Participants found negative, as well as positive, attributes of the new discussion board. For instance, some instructors found the font size indicator in the editing tool to be confusing. Although most participants found the new profile pictures to be beneficial, one participant stated, “Even though I really like the picture, it could lead to bias and discrimination in grading for some instructors and in students replying to posts.” Overall, 89% of the participants preferred the new version of the Blackboard discussion board over the current version. Grading the
The discussion board forum was the most controversial among participants due to the individuality of grading posts. Most instructors tended to read all posts from a student at once and evaluate post quality based on a rubric. A few of them read student’s posts statistics. Instructors using the grade forum tool found no difference between the current and new versions of Blackboard’s discussion forums. If the instructor read every student’s post in context to grade, then they preferred the new version due the new features discussed above.

**Figure 2. Instructors’ satisfaction of the current discussion board**

**Figure 3. Instructors’ satisfaction of the new discussion board**
DISCUSSION

This study contributes to generalizable knowledge in the human-computer interaction field, particularly in e-learning instructor-system interaction. From the instructor’s perspective, the convenience and accessibility of the online course delivery model of a discussion board forum guides and encourages students’ questions, postings and dialogue (Harris & Sandor, 2007). The most frequent instructional activities performed by instructors are reading and replying to students’ post, unfortunately, the pedagogical usability of the two versions of the Blackboard still did not meet the instructors’ needs. This indicates that discussion board designers may need to improve pedagogical features to make reading and replying to students more convenient and accessible for instructors who otherwise forage for information needed for assessing student contributions. Considering the utility of discussion boards, pedagogical usability (Nokelainen, 2006) should be assessed to promote instructors’ experience in implementing instructional activities. The biggest issue facing instructors is how to encourage students to participate more in discussions and provide meaningful input, which supports other research findings (Cheung and Hew 2004; Dennen, 2005; Lee et al. 2011). These findings indicate that designers should consider adding features to assist instructor’s interaction with students and facilitation of group discussions. Overall, findings of this study indicate that Blackboard Discussion board designers need to consider refining pedagogical objectives and adding value to support instructor-student interaction in a discussion board forum.
CONCLUSION

Regardless of the online environment, whether it is a website, social media environment or learning environment, information is continuously being sought. Information foraging theory asserts that people will modify their searching strategies for the environment to make seeking information more effective and efficient. It was a change in environment that aided instructors in finding the valuable information they needed to access student participation in a discussion board. This study demonstrated that most instructors preferred the new discussion board format to the current one because it made finding the information they sought much easier. The addition of the profile pictures and the new thread format display were the two greatest enhancements aiding instructors in the discussion board. Although the new discussion board format is much improved, there are still aspects that ought to be changed to assist instructors’ information foraging and instructional activities. Many learning management systems fall short in their design evaluations, and as such do a disservice to instructors and students alike. As Nokelainen (2006) indicated, usability evaluation within a learning system is not enough; it is essential to evaluate the pedagogical design of the system. Further research is needed to fully explore the design elements within learning systems’ discussion board forums that support pedagogical usability within the system.

REFERENCES


