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Blackboard™ Gets A Global Review

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Summary: A global group of robotics educators were invited to participate in and evaluate a pilot online course on LEGO® Mindstorms Robotics that was delivered via Blackboard™ course management software. Participants completed a usability survey regarding their perceptions of Blackboard™'s ease of use. In general, the results were favorable toward Blackboard™ as a communication tool.

INTRODUCTION

Course management software, such as Blackboard Learning System™ (Blackboard™) is widely used in distance learning in order to (i) facilitate continuous and direct communication between instructors and students; (ii) to deliver and exchange course information; and (iii) to facilitate collaborative partnerships among students (Romeu, 2002). In 1999, Wichita State University adopted Blackboard™ as their course structure tool to meet the growing demand for distance education. Many researchers agree that course structure is an important component for creating a sustainable learning environment (Fisher & Coleman, 2001; Smith, Ferguson & Caris, 2002; Verbeeten, 2001) Verbeeten also suggests that successful interactions between the user and technology lead to optimism towards web-based education, thus assessments of perceived user satisfaction is necessary. Communale, Sexton, & Voss (2001) agree that it is necessary to evaluate the effectiveness of web tools for education.

This article describes a university course pilot study, Robotics Projects, that investigated the viability, sustainability, and transferability of an online, global, learning environment. This online course pilot study was built from pre-service teacher and graduate-level courses offered within the College of Education in which teachers learn to design, build, and program robots using LEGO® Mindstorms Robotics Invention Systems. The study investigated three major research questions: 1) Can participants build an online global community of practice and create their own learning? 2) Can participants design, build, and program robots collaboratively in an online global classroom? 3) Will participants broaden their global perspective and knowledge through this interaction? More complete descriptions of the project (Witherspoon, T.L., Reynolds, K.V., Alagic, A. & Copas, G.M. 2004) and (Witherspoon, T.L., Reynolds, K.V., & Copas, G.M. 2004) can be found at http://www.wichita.edu/gl under "Bibliography".

METHOD

Participants

A global group of robotics educators was recruited to participate in this course pilot study via the Internet using educational listservs, bulletin boards, and educational robotics mailing lists. There were twenty-two participants representing nine countries that began the study, however, only nine participants remained to complete the final survey. Participant attrition was anticipated as participation was entirely voluntary and this study provided no compensation. Participant comments with regard to their not being able to complete the pilot study frequently included mention of prior time commitments. Thus, the final nine participants represented the US, Canada, India, Saudi Arabia. Four participants reported that they had never used Blackboard™ before, however, three of those had used other course management software.

Materials

The communication strategies used within Blackboard™ included public discussion forums, private small group discussion forums, virtual classrooms with guest experts, and file exchange capabilities (Witherspoon, T.L., Reynolds, K.V., Alagic, A. & Copas, G.M. 2004). Course content included online collaborative activities including designing, building, and programming LEGO® robots (Witherspoon, T.L., Reynolds, K.V., & Copas, G.M., 2004).

Procedure

The Blackboard™ usability survey was a series of Likert-type questions adapted from the Post Study System Usability Questionnaire (Lewis, 1995) and delivered as part of a larger survey via the Internet. Participants were requested to evaluate each statement and respond within a scale of 1 = Agree; 6 = Disagree. Usage data was retrieved from Blackboard™'s internal statistical tools.

RESULTS

Completion of the study indicated that the original purpose of the study was successful; it was, in fact, possible for an online, global learning environment to be viable and sustainable. It was determined that Blackboard™ was an appropriate course management tool to manage virtual meetings of instructors, participants, and guest experts. Participants were able to use file exchange tools to exchange technical building guides and programs. They were also able to effectively use the communication tools to discuss problems as well as reflect on learning experiences. In an effort to increase global awareness, participants were also able to discuss current events and cultural customs via Blackboard™'s communication tools. Blackboard™ was able to support the challenges of time differences that occur in global interactions by being available 24 hours a day. The distribution of Blackboard™ usage is shown in Table 1.

Table 1. Distribution of Blackboard™'s usage

Blackboard Area	Hits	Percent
Communication	14637	56.49%
Main Content	4272	16.5%
Group	7615	29.4%
Student	503	1.94%

The areas most accessed by students were the communication areas which include the public discussion forums, virtual classrooms and e-mail capabilities. The group areas were next in total

number of hits and included the discussion and file exchange services in which students were divided into groups with the capability of private discussions among group members. The main content areas included those areas in the course management tool that allowed instructors to post information regarding the assigned projects as well as additional resources. Finally, the areas accessed the least were the student areas, where participants could post personal information.

Table 2. Participant Perceptions of Blackboard™'s Ease of Use

1 = Agree; 6 = Disagree	**M(SD)**
Overall I am satisfied with how easy it is to use Blackboard	1.56(1.0)
I can effectively complete my tasks using Blackboard	1.56(1.0)
I am able to efficiently complete my tasks using Blackboard	1.56(1.0)
I feel comfortable using Blackboard	1.56(1.0)
It was easy to learn to use Blackboard	1.89 (1.54)
I believe I became productive quickly using Blackboard	1.56(1.0)
When I make a mistake using Bb, I am able to recover quickly and easily	1.67(1.0)
The information (online help, onscreen messages, and other documentation) with Bb is clear	2.11(.93)
The structure of Bb is effective in helping me complete my tasks	1.89(1.1)
The interface of Blackboard is pleasant	1.89 (1.27)
I like using the interface of Blackboard	1.78(1.1)
Blackboard has all the functions and capabilities I expect it to have	2.1(1.1)
Overall, I am satisfied with Blackboard	1.78(.97)

DISCUSSION

Survey results indicate that participants were very satisfied overall with their experience using Blackboard™. There were highly favorable responses to issues such as: satisfaction, effectiveness, efficiency, comfort, learnability, productivity, error recovery, structure, and interface aesthetics. Although responses were still favorable, issues that were not as highly rated included the online information (online help, onscreen messages, and other documentation) and personal expectations regarding functions and capabilities. These perceptions could be influenced by how the instructors used the course management software as well as participants prior experience with other web-based educational tools.

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