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STUDENTS' PERCEIVED EFFECTIVENESS OF AN ONLINE COURSE DELIVERED THROUGH MOODLE

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Abstract
This study analyzed students' perceived effectiveness of an online course delivered through one of the open source course content management system, Moodle. Students' expectations, perception, comments and suggestions about Moodle were investigated in this study. This is a case study carried out 49 students who attended to "Foundation of Distance Education" course in a summer school and 29 students who attended to the same course in the following fall semester at Computer Education and Instructional Technology at Middle East Technical University. Blended learning that combines face-to-face interaction and online learning was used in the course.

In this study, both qualitative and quantitative data were gathered from the students attended to the study through questionnaire and interview. The results of the study indicated that the majority of the students had positive attitudes towards Moodle and its application.

Keywords: Moodle, Blended course, Web-based instruction, Collaborative learning.

INTRODUCTION

Advances of information technology have affected the educational life. Throughout the past decade, many tools and media come into existence into the educational area. These technological tools and media allow instructors to give more effective online courses. Multimedia and computer network made learning easier and more convenient to use (Chang & Tung, 2008). World Wide Web provides opportunities for instructors to create well-designed, learner-centered, engaging, interactive, affordable, efficient, easily accessible, flexible, meaningful, distributed and facilitated learning environments (Khan, 2001). In addition, e-learning provide opportunities to improve teaching and learning process (Govindasamy, 2002). It is available, and offers training at anytime and anywhere to anyone. It offers training to the right person with competent technical ability or knowledge at the right time (Chang & Tung, 2008). With the help of these technologies, higher education institutions can begin to offer a number of distance-education opportunities to meet the needs of increasingly high numbers of these nontraditional students (Khan, 1997). Web-based Learning Environments supported by the Course Content Management Systems (CCMS) have become solutions for institutions, schools and universities that want to offer e-learning or supported blended-learning activities (Botturi, Mazza, & Tardini, 2007). The main advantage of the CCMS is that they are designed by the educators so that they are seen as effective tools in learning process (Flood, 2007). These tools help educators to build communities of learners and construct community of knowledge using web-based templates. (Gunawardena & McIsaac, 2003). Most of the schools, companies use CCMS technologies for their educational purposes. Moodle can be given as an example for these kinds of course content management systems.

Moodle is open source course content management system software which is aimed to help educators to create collaborative, interactive learning environment in order to support their classroom courses (Maikish, 2006). The verb Moodle stands for "Modular Object-Oriented Dynamic Learning Environment". Besides, it describes "the process of lazily meandering through something, doing things as it occurs to you to do them, an enjoyable tinkering that often leads to insight and creativity" (Cole & Foster, 2007). According to Buddie (2006), traditional learning approaches cause ineffective learning since they enhance passive transfer of knowledge from master to learner. However, Moodle provides an environment that allows the tutor to create core resources and activities which guide the students. He stated that many schools prefer Moodle due to plethora of activities it provides (Tuzi, 2007).

Moodle was created by Martin Dougiamas who has postgraduate degrees in Computer Science and Education. It has over 100 gradable activity modules and plugins (Tuzi, 2007) and designed based on a social constructivist theory. For this reason, it is learning-centered while most of the course content management systems are tool-centered. It offers a range of software modules and several features that help tutors to create online courses (Cole & Foster, 2007). Wiki, quiz, assignments, glossaries, and chats can be given as example to these features. ,

Additionally, it addresses the need for pedagogical support. It helps the tutor to create constructivist student-centered learning environments where students learn from his or her own experiences (Monahan, McArdle, & Bertolotto, 2008). Moodle offers 70 language options and each site of Moodle can host 200,000 students (Moodle, 2008). Due to all these reasons, more than 30,000 educational organizations around the world currently use Moodle in order to deliver online courses or support traditional face-to-face courses (Monahan, McArdle, & Bertolotto, 2008).

Although Moodle is becoming more popular across the universities, the effectiveness of Moodle from students' perspectives was not analyzed deeply. The main assumption of this study is that without knowing what problems students face when they use Moodle or other course management programs or the perceptions of the students towards these kinds of programs, it is very difficult to build effective online learning communities. For this reason, there is a need to investigate the students' perception towards Moodle program to take the advantages of e-learning.
The purpose of the study is to analyze the effectiveness of the Moodle program in blended learning environment blended online learning and traditional learning. The researcher tries to illustrate the effectiveness of Moodle from the students' perspectives.
The study addressed the following specific research questions;

- What are the students' perceptions about the effectiveness of Moodle in online learning environment?

a) What are the students' perceptions about communication through Moodle?
b) What are the students' perceptions about user interface, ease of access, user control, freedom in the Moodle?
c) What are the students' perception about diagnose, recover from errors in Moodle?
d) What are the students' perception of Moodle and its applications?

METHOD

Research Design

This study was conducted two times in a year in Summer and Fall at Middle East Technical University in Ankara, Turkey. The total number of students who were enrolled to the course was 49 in summer school and 29 in fall semester. All students were computer literate. Table 1 presents the demographic characteristics of the students.

Procedures

Before the study started, the students were informed about the procedures of the course. Blended learning method which blended face-to-face learning with online learning was used in the course. In

the classroom, the students were offered with a face-to-face traditional lecturing of two hour lessons. The instructor discussed the main points of the week topic with the students by using lecturing methods to teach the concepts of the distance education in this face-to-face traditional learning environment.

In the online part of the course, the students used Moodle as the course web site. Students could access the Moodle in 24 hours at seven days. Each week, the instructor uploaded the new course topic and content to the course web site prepared by using Moodle application. By this, students read the necessary materials before face-to-face lecture and were prepared for the face-to-face lessons. In addition to that, instructor uploaded discussion questions to encourage the students to share their knowledge with each other and instructor. Discussion activities were conducted via the forums and wiki in asynchronous mode. Students discuss about the concepts and topics of distance education every week based on the questions posed by the instructor at the beginning of the week. By such kind of activities, students generated and expanded their knowledge. Moreover, to understand the students' knowledge, the instructor uploaded the assignments in the Moodle. Students had to do assignments and uploaded it to Moodle before the due date of the assignments. After the due date Moodle did not allow the students to upload their assignments. Furthermore, they took the quizzes that include questions related with the topic of the week in every week. The quiz was opened in two days period and the students could take the quizzes whenever they want. The results of the quiz and the scores of the students were sent to the students immediately so that they could see their performance in the quizzes without delay.

Data Collection

In this study, both qualitative and quantitative data is collected from the participants. The students were given 5-point Likert type questionnaire which contains 66 items both at the end of the summer school and fall semester. The questionnaire was in English and the items in the questionnaire were prepared according to the previous research studies in this field. The items in the questionnaire were adapted from the measurement defined by Ham (2002, cited in Çetiz, 2006) and Pierrotti (1995, cited in Kavaklı, 2004). The mean values of the items were calculated separately for both summer school and fall semester.

A semi-structural interview was carried out with 10 volunteer students to get deep understanding of students' perception about the Moodle application. The questions were prepared according to the previous research done by Çetiz (2006) and they were checked by two experts in CEIT department. The questions in the interview were in Turkish. By this, the researchers aimed to make the students feel comfortable while they were expressing themselves during the interview process.

RESULTS

The items in the questionnaire were categorized into 7 main topics and the data gathered through questionnaire and interviews were analyzed based on these categories.

Course, Objectives and Content of the Course CEIT321 and Online Course

The data gathered from the questionnaire showed that students' perception about the course, objectives and content of the course were positive to some extent. Most of the students in the study agreed that the objectives of the course were clear and achievable. Moreover, they thought that the course was interesting and they gained the necessary skills that were useful in their professional life. In addition, they stated that accessing online lecture notes made positive contribution to their learning. This result was expected since the students could access the lecture notes wherever and whenever they wanted by accessing Moodle via the internet. However, though most of the students thought that online lessons were not boring and they were more convenient, they were neutral or disagreed with the statement that online lectures were better learning experiences than traditional learning. This response can be explained by looking at the number of online courses that students had taken prior to the study. Most of the students did not take any online courses before. In other

words, they did not experience any online course so they may not be objective when they compare the traditional learning experiences and online learning experiences. Their responses may be changed after getting several online courses.

The results of the questionnaire showed that students had positive perceptions about Moodle. They believed that Moodle was appropriate for the course and it was a good way to learn the topics of the course. Moreover, students' perceptions about online lecture were positively increased when it was given through Moodle. The reason for this perception change is that most of the students liked Moodle. The positive perception about Moodle may cause the positive perception of students about online learning through Moodle. Nearly half of the students in the study believed that Moodle were more advantageous than traditional learning and more than half of the students recommended online course given through Moodle.

Communication through Moodle

Students had positive perception about the communication opportunities that Moodle provided. Most of the participants of the study thought that Moodle provided opportunities to interact with their friends and/or their instructor.

Moore (1989) stated that learner-learner interaction and learner-instructor interaction are two essential interactions in distance education. In the researches, it is founded that the level of interaction affects the quality of the learning experience (Navarro & Shoemaker, 2000). For this reason, all the system that is used for delivering online courses have to provide opportunities for students to interact with their classmates and instructor during the learning process. To achieve this, Moodle includes several asynchronous and synchronous communication modules such as forums, discussion boards, and chat tools. Most of the students in the survey stated that these modules were easy to use and helped them a lot in their learning process. These tools not only provide opportunities to interaction, but also help students to construct their knowledge by sharing their ideas with their classmates and instructor. Clark and Mayer (2003) stated that collaborative tools such as discussion boards, forums support learning of course content and causes knowledge management function by encouraging learners to exchange their own experiences related to the course topic. Moreover, they stressed that learning through knowledge exchange is a valuable feature of online learning. When the students were asked which tools they used to communicate with their friends in the interview, all of the participants stated that they did not used chat tools of Moodle for communication. Instead of it, they used forums and wiki tools to interact with their friends. Students stressed that they did not need to use chat tools. If they encountered a problem during the learning process, they just wrote to the forum and waited for the answers. Blended learning environments may cause this situation. First of all, the students met every week with their friends and instructor. In these meeting, they could discuss about their problems they had encountered during the week. Moreover, most of the participants were in the same departments so that they had chance to communicate with their peers face to face.

Help and Prevention, Diagnose, Recover from Errors in Moodle

The results of the questionnaire distributed to the students showed that there should be improvements related with the error messages and prompts in Moodle. Nielson (1994) stressed that the error messages in any system should be expressed in plain language instead of codes, it should state the problem, and constructively suggest a solution to solve the problem. However, the results showed that students were neutral about the error messages in Moodle. According to them, there were few error messages and they did not be warned about the error encountered whey they were using Moodle. Moreover, the system did not warn the user about the severity of their actions and it did not inform the students what steps they should follow to recover from the errors.

Since these systems may be used by the novice students who have basic computer knowledge, there must be plenty of error messages which indicated the cause and severity of error, and the needed steps to recover the error. Otherwise, the novice students may be distracted when they faced a

problem while they were using Moodle and it may cause the undesired events such as decrease of students' motivation to the course.

User Interface, Ease of Access, User Control and Freedom in the Moodle
The students had positive perception about easement of access and freedom in the Moodle. The students' responses showed that they were able to access Moodle whenever they needed. Participants of this study thought that Moodle was easy to use and it provided opportunities to navigate easily in the system.

Çağıltay, Graham, Lim, and Craner (1999) stated that users need to clearly shown what their current location is. Moodle shows the current location of the user in every window. Moreover, they can easily jump between the pages. Although students were satisfied with the system, they had problems related with the interface of Moodle. In the interviews, the participants emphasized that there were problems with the appearance of Moodle. The system did not allow the instructor to change the color or size of the links in the system. The students said that the important links they frequently used such as wiki, forums should be highlighted to take the students attention. The system should provide opportunities to change the color and size of the links.

Help and Documentation
Students had positive perception about the documentation and help function of Moodle to some extent. According to Nielson (1994) stated that the system which is used without documentation is preferable. However, he stated that sometimes it may be necessary to provide help and documentation. In these situations, the information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

More than 70% of the students in this study thought Moodle provide necessary help and documentation for them. The responses of the students showed that most of the students did not face problems when they tried to access the materials in Moodle and they could find the necessary information whenever they needed.

Moodle and its Applications
The study indicated that students' perception about Moodle and its application can be accepted as positive to some extent. Most of students in this study agreed on the applications of Moodle were helpful to gain the necessary skills in their future.

Moodle provide valuable experiences for students in their learning process. Since students can access Moodle easily whenever they want, Moodle gave the opportunities to students to study at their own rate, whenever and wherever they wanted. In the interview, one student said;
Moodle gave student ease when they were taking a course. It was independent from the instructor and you could access the resources whenever you wanted. Because of these reasons, I recommended Moodle to other people

Moreover, students can get feedback from many resources such as forums, wiki, quizzes in Moodle. Feedback is the necessary part of a distance learning system (Schlosser & Anderson, 1994). As stated by Çağıltay, Graham, Lim, and Craner (1999), prompt feedback is the primary principle of determining the quality of instruction.

Moodle allows students to take online quizzes. According Horton (2000), taking online quizzes has most of advantages. Online test help the instructor to show the important parts of the course to the students so that learners are motivated to focus on these parts. Moreover, it helps the instructor to understand the success of parts of the course and provide opportunities to the learner to master the certain knowledge and skills. Lynch (2002) stated that the main advantage of using a computer-marked quiz is instant feedback. According to him, that feedback can be just right and wrong marks, or it can be advice for remediation, explanations of what they did wrong, and reinforcement for what

was correct. In the interview the students said that quiz application helped them much in their learning process since they could take them whenever and wherever they wanted. They stated that they could get immediate feedback from the quiz. Moodle informed the students about their performances and showed the answers of the questions when they completed the quiz. One of the students stated that;
Quiz was super. We could take the quizzes whenever we wanted. The questions were in order and we got immediate feedback after the quiz. It helped us a lot.

Moodle provides opportunities for students to benefit from the advantages of wiki technologies. According to Klobas and Beesley (2006) wiki is not only a means of communicating ideas but also a resources for sharing, storing, retrieving knowledge among its members. The questionnaire distributed in this study showed that students had positive attitudes towards wiki application of Moodle. Most of the students thought that wiki was easy to access and use, and it helped them to gain the necessary skills. Moreover, in the interviews the students emphasized the benefits of wiki application. According to them wiki was one of the most important application of Moodle. They stated that it helped them to share their knowledge and gave feedback to each other.

Finally, Moodle helped the learners to manage their time in their learning process. Management of time is one of the most important skills needed for online courses. Çağıltay, Graham, Lim, and Craner (1999), states that learning results from time spending on task. Due to this reason, students need to know how to use their time well. They needed help for their time management skills. Calendar application of Moodle helps the students to develop their time management skills. Moodle includes a calendar which warns the students about the occasions of the month. Students had positive perception about the calendar application of Moodle. In the interview, they stated that calendar helped them to see what they had to do until a specific time, what event was coming next. So that they could manage their time in order to do their assignments.

DISCUSSION & CONCLUSION

This study aimed to analyze the effectiveness of the Moodle program in blended learning environment, blended online learning and traditional learning. The researchers tried to illustrate the effectiveness of Moodle from the students' perspectives. Based on the data, the followings are concluded:

- The instructor should consider the background computer knowledge of the students who will use Moodle as the course material during the semester. As stated by the students, novice users may be confused while they are using Moodle. At the beginning of the semester, an orientation about how to use Moodle effectively should be given to the students.
- Moodle should be redesigned in order to take the students' attention. Multiple visual, textual, auditory, authentic activities should be added to improve the students' attention and enhance students learning. Instructor should add challenging activities, discussion topics, and weekly assignments in order to make the students follow the course web site and master the new concepts and skills regularly and let the students understand the concepts clearly.
- Instructor should provide discussion environments where students share and construct their knowledge. Instructor should let the students discuss about the specific content through forums or wiki to increase the knowledge of the students.

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