The Usability of Moodle Learning Management System As a Web-Support Tool in Teaching Chemistry

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Abstract

The purpose of this study was to investigate the usability of Moodle Learning Management System [LMS] as a web-support tool in teaching chemistry at secondary school. For this purpose Moodle LMS was used as the web-support tool for teaching "Chemistry in Our Lives" unit in the 9th grade high school chemistry curriculum and the its effect on students' academic achievement and interest towards chemistry were investigated. The sample of the study was composed of total of 60 ninth grade students from two different classes in a high school in Erzurum. In this study in which instrumental case study was utilized as the research method, "Chemistry in Our Lives" unit was taught through Context-based ARCS Instructional Model and Moodle LMS was used as the web-support tool. At the end of the implementation an achievement test was administered and semi-structured interviews with 13 students were done. The students' achievement test scores were compared with Kruskal-Wallis test according to the frequency of using Moodle LMS. Semi-structured interviews were subjected to descriptive analysis. The results showed that Moodle LMS which was used as a web-supported tool had positive effects on students' achievement and interest towards chemistry. In addition, the problems encountered during Moodle LMS implementation have been identified and various suggestions have been made to overcome these problems.

Keywords: Chemistry teaching, web supported, Moodle LMS, achievement, interest.

Extended Summary

In today's information age quickly accessing information and learning knowledge is vital for the development of individuals and societies. The rapid developments in technology emerging interactive computers, network technologies and the internet has accelerated to share and access the information. As in all areas of life, these technologies had been used in the field of education and in education new approaches have emerged rather than the traditional methods (Chuang & Wang, 2003). The management software called Learning Management Systems [LMS] was developed especially for sharing information and learning activities in the field of education. In the most general LMS can be defined as a software that provides planning, assessing and applying the instruction process or a web-based technology (Aydın & Biroğul, 2008). One of the most important advantages of LMS is to provide asynchronous education. Students can access the contents of education that have been transferred by educators (Hodges, 2004).

In this study, a LMS was needed as a web-based support tool for encouraging the students. Among the existing LMS's examined Moodle LMS, which is an open source software, was decided to use. Moodle LMS is differentiated from other softwares with features such as appearance, ease of use, messaging, student/teacher to provide the picture display for the user to provide file upload media, surveys, discussion, live chat facilities, the opportunity to provide multi-language support and easy switching between languages and composing course calendar.

When the related literature of Moodle LMS was researched, it has been seen that Moodle LMS has increased the students' academic achievements, interest and attitudes towards science lessons. Although there were a lot of studies about Moodle LMS at undergraduate level, there was a few study about Moodle LMS at secondary school level. Therefore this study is important as it examines the usability of Moodle LMS as a web-support tool to help for teaching chemistry at secondary school level.

Purpose

The purpose of this study was to investigate the usability of Moodle LMS as a web-support tool in teaching chemistry at secondary school.

Method

In this study, instrumental case study was utilized as the research method. In this research design, the researcher chooses the case to develop and/or test a theory or to better understand some important issue or redraw a generalization. Explanation is a key goal and the case is of secondary interest, it plays a supportive role, and it facilitates our understanding of something else (Stake, 2003, p.137). Participants of this study consisted of a total of 60 ninth grade students, including 35 male and 25 female in an high school located in Erzurum. In this study "Chemistry in Our Lives" unit was taught through Context-based ARCS Instructional Model and Moodle LMS was used as the web-supported tool. In this model at first, a context related the daily life (news, events, stories likely to be real etc.) was given to draw the stu-

dents' attention towards the subject and then content located in the context was explained. In the Moodle LMS the four topics (cleaner agents, common materials, chemistry in biological systems, environmental chemistry) in "Chemistry in Our Lives" unit were taught through with the videos, the animations, the presentations, the exercises and the exams related with the each topic. Following the implementation, which was lasted for 7 weeks, an achievement test was administered and semi-structured interviews with 13 students were done.

Results

When the students' cases of using the Moodle LMS were examined, the students were seen that they divided into three groups according to the frequency of use of Moodle LMS. The first group those are who accessed Moodle LMS and worked on tests, The second group who accessed Moodle LMS but stayed short time, and the third group who did not accessed Moodle LMS. The students' achievement test scores in these three groups were compared with Kruskal-Wallis test. The results showed that the students Moodle LMS had positive effects on the students' achievement and solving tests located in Moodle LMS was increased even more success. Semi-structured interviews were subjected to descriptive analysis. The results showed that Moodle LMS which was used as a web-supported tool had positive effects on students' achievement and interest towards chemistry.

Discussion and Conclusion

In this study, using Moodle LMS as a web-based support tool was seen to increase the students' achievement and interest towards chemistry. It can be said that the user-friendliness, the preparation of the content was very rich and usability of interactive were effective to obtain such a result. As a result it can be said that Moodle LMS is very useful on teaching chemistry at secondary school level.

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