USING TECHNOLOGY FOR STUDENT ACADEMIC SUPPORT AT THE UNIVERSITY OF KWAZULU NATAL, SOUTH AFRICA

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Abstract

This study aims to investigate the effect of a learning management system, Moodle, which is being used to support / supplement many courses at the University of KwaZulu Natal. In determining how knowledge and skills are exchanged in an educational context, this technological learning management system was considered and evaluated in terms of the interactions that take place during learning. Pedagogies vary greatly, as they reflect the different social, political, cultural contexts from which they emerge. To identify the properties and structure of the key support areas in Moodle, a case study was conducted.

This study takes on a mixed methodology. Data was gathered through a questionnaire to n=188 first year Engineering chemistry and Main stream chemistry students. Two focus group interviews were conducted with those students who volunteered to form part of the focus group interviews. The transcribed interview data, and questionnaire data which were thematically analysed and constructed in order to analyse the data.

It was established that the successful engagement with the learning management system, Moodle depended on many variables which can be divided into two main categories: structure and form of the support offerings. In particular students’ commented on their satisfaction with the online programme, factors affecting interaction with the programme (effective marketing the programme, presentation, appeal and accessibility of teaching material), limitations of the Moodle design and usage, and lastly how feedback was provided. According to the analysis, Moodle served three kinds of relationships that are dependent on the skills of the academics in crafting an effective online support structure, student interest in enhancing their pedagogical content knowledge and the ability of the online programme to appear user friendly. These were considered interdependent to each other, as well as scaffolding one another.

Keywords: Moodle, student academic support.

1 INTRODUCTION

Technology has hugely impacted every aspect of life, with higher education being no exception. Today, academics are challenged with new ways of teaching in a digital age, incorporating technology effectively in educational settings.

The role of technology in the world of education has been ever changing. Most recently, technology has been a new phenomenon to help motivate, differentiate, and allow students to achieve and excel in ways that they have never been able to before [11].

Moodle course management system (CMS) allows educators to construct online learning sites for uploading content materials, facilitating student-student/student-tutor communication via discussion forums, e-mail, and chat functions, setting up online quizzes and questionnaires, and managing multiple student groups. These features can help educators to organize their course materials, efficiently distribute learning materials, and introduce creative methods of teaching. CMSs can also be used to implement ongoing course evaluation [3], facilitate collaborative learning [2], and enhance student learning [16]. A good CMS platform should be easy to use, readily available, stable, flexible, and able to be integrated with other platforms [12]. Although commercial CMSs are available for a licensing fee, many institutions are now adopting open-source applications, which carry benefits in terms of cost and functionality [20, 21].

2 METHODOLOGY

Questionnaires were handed to each of the students during chemistry tutorial sessions to evaluate their feedback on the Moodle course management system. These anonymously answered
questionnaires were in paper format to include nonusers as respondents. The questionnaire consisted of three parts. The first part provided the demographic information (year of study, sex, and Moodle usage). The second part enabled students to evaluate various elements of Moodle, including its accessibility, ease of use, content, ability to facilitate student-student/student-tutor interactions, and effectiveness in complementing face-to-face teaching using a five-point Likert scale. The third part was a narrative response section with five open-ended questions related to students’ overall experience with Moodle. Nonusers were requested to respond to the first and third sections of the questionnaire to evaluate their reasons for not using the Chemistry Moodle site.

3 RESULTS AND DISCUSSION

3.1 Student Feedback from the Questionnaire

Most respondents commented positively (strongly agree/agree) on the convenience, accessibility (and ease of use (78.2%) of the online learning management system. Most of the users (70.1%) were happy and satisfied to use Moodle Chemistry site to access mostly course content.

When asked about the frequency that the Moodle site was accessed

Table 1: Responses from Interview Data.

<table>
<thead>
<tr>
<th>Key Points</th>
<th>Number of Responses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question 1. What did you like the most about the Moodle site?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture notes</td>
<td>70</td>
<td>37</td>
</tr>
<tr>
<td>Pass exam and test papers</td>
<td>36</td>
<td>19</td>
</tr>
<tr>
<td>Videos</td>
<td>62</td>
<td>33</td>
</tr>
<tr>
<td>Communication with tutors and academics</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>New way of learning</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td><strong>Question 2. What did you not like about Moodle?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercises in Lecture notes uploaded with no answers</td>
<td>49</td>
<td>26</td>
</tr>
<tr>
<td>Too many notifications about Supplemental Instruction sessions</td>
<td>20</td>
<td>11</td>
</tr>
<tr>
<td>Slow download</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td><strong>Question 3. How could it be improved?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uploading of lecture notes with solutions</td>
<td>57</td>
<td>30</td>
</tr>
<tr>
<td>Online discussion forums</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>Online quizzes with feedback</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

From the narrative response section (Table 1), it was clear that students liked the online lecture notes but preferred to have them answers to exercises uploaded before the lectures. They also liked the quiz feature but requested more exam-based questions (short-answer type, multiple-choice questions, and essays). Although they appreciated the availability of communication with lecturers and peers, some students complained about numerous messages from Supplemental Instruction (SI) leaders with respect to changes in SI session Timetables. It also appeared that a few students experienced problems with the internet connection and speed. Unfortunately, none of the nonusers provided any feedback in the narrative response section, nor did they attend the focus group interviews and their reason(s) for not using Moodle is not known. However, it should be noted that the nonusers were found to be less than 5% of the first year chemistry student population.

Further it should be noted that there was no significant difference in responses from male and female Chem 110 students.
3.2 Focus Group Interview Data

Responses from the Focus Group Interviews with respect to usefulness of the information on the Moodle site:

“everything I need in terms of information for my course can be found on the site.”

“information on the site is very useful because we can access the lecture slides which are a summary of the key concepts that we should know. Also students who cannot afford the textbook can benefit from the lecture slides”.

“past year tests and exam help me prepare for assessments”.

When asked if there are any aspects of the Moodle site that students would change for their benefit, the majority of the students indicated that they were happy with the current site however, the following responses were received from a few students:

“all modules should have an etext book that can be accessed”.

“there should be an online discussion forum that allows us to ask Tutors questions at anytime”

“there should be online quizzes that help us assess what we know about a certain section.”

3.3 Discussion

This study describes students’ experience of an open-source CMS (Moodle) to support teaching and learning of chemistry to a group of first-year undergraduate chemical engineering and mainstream chemistry students. We assessed student usage patterns, performance in tests, and feedback on the Moodle site.

3.3.1 Student Satisfaction

The data received from this study suggests that students were generally satisfied with this e-learning tool. Students found the Moodle site to be readily accessible, convenient and easy to use. They also suggested that the materials available on the Chemistry Moodle site were both relevant and useful. This perception is also reflected in their request for the continued usage of the CMS. However, students did suggest that the site could be improved by introducing discussion forums that allow interactions with their peers and tutors.

The availability of lecture notes online before the lecture enabled students to read the notes beforehand and have printed notes with them during lectures. This assisted students in concentrating on understanding lecture contents without being burdened with the task of taking notes as well (8).

3.3.2 Factors Affecting Student Interactions

Moodle was originally designed based on the social constructivist learning model (10), which posits that students learn best when they interact with the learning material, their peers, and tutors. Although the most frequently visited resource in Moodle was the resources posted, not all students fully participated in it. For example, although students regularly viewed the Moodle site after announcements were posted alerting them to Tutorial exercises and academic support sessions forthcoming. The total number of students attending the academic support discussions and students attempting the Tutorial exercises before was occasionally found to be low. Students’ reluctance to actively participate in the interactive features such as the Supplemental Instruction discussion forum could be due to their busy schedule, unfamiliarity with collaborative learning platforms, and lack of incentives for participation.

Student participation in the interactive activities can be also influenced by tutors’ involvement [17]. For more effective use of online forums, tutors will be in future encouraged to actively post questions and comments relevant to the curriculum that may lead to critical thinking and deeper learning [19] on the Moodle discussion platform. Incentives can be given to students by grading them based on their participation and content of their postings. Another possible method for improving forum participation is by designating student facilitators, who take turns to lead discussion topics [19].

3.3.3 Limitations of Moodle Design and Usage

One of the components lacking in the Chemistry CMS is a well-designed online quiz made available for chemistry students to enhance performance in final exams [10, 14]. Rewarding students through
course credits may increase student participation rates on CMS through online quizzes [18]. In addition, various “marketing” strategies such as providing an introductory lecture to emphasize the importance of participating in online quizzes, regular in-class reminders, and subsequent follow-up discussions can be used [19]. The quiz module in Moodle offers a large number of options and tools that are currently underutilised [12].

Finally, the CMS was primarily designed to be used as an interactive learning tool, we also made lesson materials available online for students. This decision was well received by the students (the most liked feature of Moodle was the lecture notes) as they were able to access the notes promptly and in color as well. However, we noted that having lecture notes online encouraged some students to use the CMS merely for downloading them rather than using them as a learning tool. Furthermore, the designing of the interactive functions was not attractive for students as no incentives were offered for their participation through a discussion forum. As discussed earlier, we hope to address this issue by coming up with additional strategies to encourage the usage of the CMS for interactive learning.

3.3.4 Educational Benefits and Implications of the Study

Using the CMS to supplement traditional classroom teaching provides many benefits. As discussed earlier, the CMS provides an opportunity for cooperative learning. The features available in the CMS promote interactions with learning resources that can enhance student interest and motivation. In addition, it also increases flexibility in the teaching and learning process. The CMS allows students to decide where and when they want to engage in learning, and it can have the effect of bringing educators and students closer together [4]. It was found that students were willing to use Moodle outside formal teaching hours, including on weekends and holidays. This is a great advantage in courses such as medicine, where students and educators are equally busy and have limited physical interactions with one another.

If the CMS offers greater rewards in teaching, is it then acceptable to replace the traditional method of teaching with web-based learning? The feedback from our students indicates that despite being strongly supportive of Moodle usage as an adjunct to the traditional style of teaching, they were largely apprehensive of its potential as a substitute to face-to-face teaching. This finding concurs with the findings from another study [15] that compared student feedback of web-based physiology teaching with traditionally conducted lectures. The unwillingness of students to adopt the online method completely may be caused by lack of familiarity with web-based teaching. After years of learning in conventional styles and environments, the perceived indispensability of face-to-face learning may have been ingrained in their minds. Thus, educators should be aware that any effort to replace conventional teaching with an online method should be carried out in carefully planned stages rather than as an abrupt shift of teaching medium.

4 CONCLUSIONS

Based on the evaluation of the Moodle course evaluation system, the Moodle platform in first-year Engineering Chemistry and Mainstream Chemistry courses clearly provided many advantages. The Moodle platform was user friendly, was found to have many interactive features that could enhance the students’ learning experience, and allowed for more flexibility in teaching. The responses with respect to the Moodle platform suggest that it has a positive impact on student learning outcomes. This study will be extended to assess Moodle frequent users final summative assessment in comparison to non-users. The positive feedback received in this study suggests that Moodle can therefore be recommended as an option for chemistry educators who are interested in incorporating CMS in their teaching domain.

REFERENCES


