

Learning Management System: An Experience and Perception Study from Medical Imaging Lecturers and Scholars in a Private University

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Abstract—A Learning Management System (LMS) is a virtual interactive medium that modernize the classic classroom interaction in the higher education system. It allows instructors and students to share instructional materials, make class announcements, submit and return course assignments, and communicate with each other online. In KPJ Healthcare University College, Department of Medical Imaging under school of Health Sciences was the first unit that has used LMS actively since 2013. The aim of the study is to determine the perception of Medical Imaging lecturers and scholars on LMS implementation before this system is fully utilized by the university. Using a descriptive study, 200 participants were randomly selected to answer the questionnaire via Google form and 93% responded. Analysis such as frequencies, percentage and statistical analysis were conducted. The results showed that most of the lecturers and scholars have a positive perception on the system implemented. Implication of the results and future improvement are also presented.

Keywords—Learning management system, e-learning, perception, higher education system

1 Introduction

The aim of health science curriculum is to provide scholars with adequate knowledge with high competency level in clinical practice to produce best radiographic images for diagnostic purposes; wherever possible and in an evidence-based manner [1]. Traditionally, health science undergraduate education consisted mainly of face-to-face lecturing and the use of paper-based handouts and lecture notes [2]. In evolution of technology mainly the internet, the teaching and learning approaches have been expanded by a new mediation of knowledge via digital e-learning and thereby became part of most interactive method of curricular delivery.

Online learning offers 24/7 availability to more features compared to traditional text books, thus it is very popular among young generations, who love technology which everything is in a single screen [3-4]. E-learning has become common in most universities [5]. Some e-learning set-ups provide uni-directional information for online use or download such as lecture notes and presentations whilst others integrate interactive

tools like radiographic image evaluation quizzes [3]. Nonetheless, the use of Web 2.0 media with podcasts, wikis or blogs has been implemented for medical teaching [6-7].

Nowadays, the provision of complex blended learning set-ups highly depends on an online platform where scholars and lecturers can get access to them [8]. Different forms of learning management systems (LMS) were established to address the issue. An LMS is the current technology being used as tool for teaching and learning activities [9]. It can be defined as software that automates the administration, tracking and reporting of training events and delivers learning contents rapidly [10].

Department of Medical Imaging (MI) under School of Health Sciences was the first unit in KPJ Healthcare University College that has been using LMS actively since 2013. In conjunction with the upgrading of the university college to a full-fledged university plus improving the implementation of LMS in teaching and learning activities in total, authors feel that it would be helpful if the findings could be documented as institution reference and guideline for the betterment of the university college. Hence, the purpose of this study is to assess the perception of MI lecturers and scholars pertaining to the implementation of LMS.

2 Methodology

The current cross-sectional descriptive study was conducted in Medical Imaging Department, KPJ Healthcare University College, Kota Seriemas, Nilai, Negeri Sembilan, Malaysia.

2.1 Participants and sampling technique

Total sampling technique was used in this study. All MI lecturers (n=9) and all diploma and bachelor MI scholars (n=191) were recruited in this study. All respondents are familiar with this LMS for at least a year.

2.2 Data collection

The questionnaire was constructed and developed into structures and sections. A pilot study was conducted to validate the questionnaire and feedback was gathered. A reliability test was performed by assessing the internal consistency of the items using Cronbach's alpha coefficient test. A value of 0.78 was generated; it is an appropriate reliability coefficient to trust the reliability of the scale for application. Then, the final questionnaire was generated. It includes: Section A: Demographic data and Section B: Respondents' perception on LMS, which comprised of (a) questions on their experiences with LMS, (b) ten items to rank the importance of LMS (5-point Likert response), (c) ten items on their satisfaction on LMS (5-point Likert response), (d) a question on challenges when using LMS, (e) five items on rating their expertise on using the internet (5-point Likert response), (f) overall rating experiences with LMS and the needs of LMS, (g) additionally, students were asked to narratively answer: what they like and dislike about LMS and possible improvement for LMS.

Participants were either asked to indicate their agreement with each item on a 5 point-Likert scale, with 1 indicating the lowest and 5 indicating the highest. The survey was conducted online via Google form. The online questionnaire was available for 20 days from 4th to 24th October 2017. We received responses from 191 participants overall (93% response rate). The collected data from questionnaire was analysed by using Statistical Package for Social Science (SPSS) version 21 (IBM Corp, Armonk, New York). Descriptive data were collected, analysed and reported as frequency and percentage in relation to the total numbers.

3 Findings

From the study, 95% of the participants were scholars (diploma and bachelor students) and 5% were lecturers, with a total of 78% female and 22% male participants. A total of 80% of the respondents are in the age range of 18 to 22 years old. Table 1 below shows the participants' answers on 'Are they taught to use LMS?'. Participants recognize that LMS are used in some courses and subjects based on Table 2. A majority of 67% answered that 1-5 subjects in a semester were delivered using LMS.

Table 1. Participants' are taught using the LMS

Answers	Frequency	Percent (%)
Yes	176	92
No	15	8
Total	191	100

Table 2. Using LMS for any of the courses or subjects

Answers	Frequency	Percent (%)
Yes	186	97
No	4	2
Missing data	1	1
Total	191	100

LMS is considered as a very important component in the learning process by the participants. In terms of communication tools, web conferencing and academic calendar, 42.4%, 47.6% and 43.5% admitted these tools are important, respectively. The results revealed that the participants agreed that the LMS tools are very important especially in delivering the subject content (64.4%), assignment submission (44%), clinical document submission (42%), online test (59.7%), module outcome evaluation (60.2%) and timetable tools (68.1%). The participants demonstrated positive satisfaction towards all the tools provided in LMS especially on academic calendar (59.7%) and academic survey (59.2%). Some of the tools received high satisfaction, which are assignment submission (56.5%) and clinical document submission tools (56%). Table 3 revealed the challenges that the participants encountered when using LMS.

Table 3. Challenges encountered when using LMS

Challenges	Frequency	Percent (%)
I have not had any problems	63	33.0
Difficult to use	8	4.2
Not available when I need it	26	13.6
Challenges getting it to work on my personal computer	12	6.3
Challenges getting it to work on my personal mobile phone	36	18.8
My instructors do not use it	6	3.1
Not all of my instructors use it effectively	38	19.9
Access to technology support for technical issues with the system	29	15.2
Access to my instructor for questions about the course /assignments	13	6.8
Speed is slow when doing online quizzes	66	34.6
Others	10	5.2

The participants were asked on their expertise in the technology items in the following areas: educational activity, research activity, personal activity, entertainment and online shopping. Over half (50.3%) of those surveyed responded that they are an intermediate user for educational and research activity (53.4%). While 50.3% stated that they are expert with the entertainment. This proves that most of the participants have good ICT skills background. A total of 29% are extremely satisfied with the system, more than half (58.6%) of the participants were very satisfied and only 1.1% was slightly satisfied with the LMS reputation. Table 4 conclude that LMS is very much needed by the participants for their learning process.

Table 4. The need of LMS

Does LMS meet the needs	Frequency	Percent (%)
Fully	37	19.4
Very much	91	47.6
Somewhat	56	29.3
Slightly	7	3.7
Total	37	19.4

To determine the perception of MI lecturers and scholars on LMS implementation, the Bloom's cut-off points of, 81-100%; 60-80%; and $\leq 59\%$ were adapted and modified from the KAP study [11]. Overall, it shows that 72.3% of the participants gave a high score but there is still quite high percentage of moderate score (26.2%) which will be discussed further in discussion. Finally, the analysis of open-ended survey questions showed that students' responses were mainly positive.

4 Discussion

LMS are defined as a web based technology which assists in the planning, spreading and evaluation of a specific learning process [12]. Meanwhile, Martin [13] defined LMS as software environment designed to manage user learning interventions as well as deliver learning content and resources to students. The key factors for a successful introduction and both effective and persistent usage of digitally supported learning concepts in education in LMS [10]. Hence, this study will determine the MI lecturers and scholars' perceptions on LMS implementation and indirectly recognizing the challenges and limitation faced by them.

LMS offers various kind of tools like communications tools, web conferencing, academic calendar, subject content, assignment submission, clinical document submission, online tests, survey, course syllabus and timetable. Both MI lecturers and scholars admit that online tools was an important resource and useful in online learning environment, especially for assignment submission and clinical document submission where it makes work a lot more easier than the traditional approach. Communication and web conferencing tools get a quite high score of "neither important nor unimportant" with 14.7% and 18.8% respectively. These tools are rarely used by participants as there is no urge for them as they still can contact each other directly via phone calls, messages and emails [10].

Based on previous studies, students' satisfaction on LMS is based on either they were taught on how to use the LMS [14], experience in using ICT and training [15]. Thus, based on 92% of participants who had been taught using LMS, most of them are satisfied with the tools in LMS. Although assignment and clinical document submission tools received a high score of "very important" by 56.5% and 56%, respectively, there are still challenges complained by the participants. They complained that the submissions of clinical posting documents are not user friendly due to a few technical issues: There are also complains on networking problems and system not updated.

Good internet connection is essential for LMS to work smoothly. Most of the challenges faced by the lecturers and scholars are due to technical problem from slow or unreliable internet connection especially during submission and online tests where many users are online at time creating internet traffic. Suggestion should be made to the university to plug in a high-band width network that can provide a high-capacity online service that is affordable.

ICT skill is also one of the program learning outcomes that is adopted in Faculty of Health Sciences [16]. This study finding also points to show the participants rated as an intermediate to advance user for most of the technology item except for online shopping, which is pleasing to know although they are also expert in entertainment areas which are not surprising. In determining participants' overall satisfaction on LMS, study by Eom [17] stated that, out of the four antecedent constructs hypothesized to affect user satisfaction with LMS, only two which are information quality and readiness for online learning are significant. Both components are cleared in this study.

In terms of perception, most of MI lecturers and scholars accumulate a high score (80-100%) that indicates positive perception towards LMS. However, it appears that there is 26.2% of the participants gathered moderate score with a total mark of 60-80%,

showing neutral perception. A possible explanation is because there are still presence of physical constraints, personal constraints and administrative constraints [18].

5 Conclusion

Majority of MI lecturers and scholars have positive perception on LMS. The use of LMS as a medium of teaching and learning may hold the promise of a more student-centered approaches which are in parallel with what is being instilled by the outcome-based education implemented earlier, one that inspires students to extent across the boundaries of academic terms and learning disciplines. In order to ensure LMS to increase the quality of learning, a suggestion should be made to the university to improve the server and make it more users friendly. Furthermore, the lecturers and scholars need to be equipped with technological skills by attending series of training, and encouraging them to be more interactive.

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