

Survey on the Use of Learning Management Systems and Online Skill-based Assessment in Thai Teacher Universities

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Abstract— This research aims to investigate the use of Learning Management Systems (LMSs) and online skill-based assessment in Thai teacher universities (Rajabhat Universities), including the problems of implementation. The researcher developed a questionnaire and sent to the participants, which consisted of undergraduate students and instructors from 8 universities in 4 regions of Thailand via online channels. Each participant voluntarily responded to the questionnaire based on the usage experience in the course with the highest LMS usage within the recent academic year. There is a total of 494 valid responses from 466 students and 28 instructors from multiple disciplines. The results show that students and teachers commonly used the LMS for information distribution and sharing materials. Only about 40% of users used the evaluation system, and less than 30 percent of users used the communication system. The common problems with LMS usage reported by students and teachers were connectivity and technical issues, which occurred more than 40 percent of total usage. The problems with online skill-based assessment besides previously-reported technical issues were commonly about submission feedback and work quality, only that students and teachers reported problems on different perspectives. The researcher therefore suggested that in order to promote the use of LMS and online skill-based assessment in Thai teacher universities, it is necessary to provide a stable system such as a cloud-based system replacing the on-premises ones. To promote the use of online skill-based assessment, resolve existing feedback issues, and improve work quality, the assessment scheme should be changed from one-way teacher-to-student communication to providing feedback between students and instructors.

Keywords—learning management system; online skill-based assessment; higher education

I. INTRODUCTION

The trend of education in the 21st century is changing towards online learning due to the advancement of information and communication technology that broke down the limitations of distance and opportunities to access learning resources. At the same time, many leading businesses and organizations are now focusing on work skills upon recruitment, instead of degrees or knowledge. In order to survive this highly-changing world, educational institutions need to revise their strategies by encouraging all stakeholders to have the potential to manage online learning, focusing on developing employable skills

Teacher universities in Thailand (Rajabhat Universities) have provided Learning Management Systems (LMSs) for teaching and learning for a period of time, focusing on Moodle and Google Classroom. Any LMS will have the following components [1] (e-learning and Educational Technology Department, RMUTI, 2018):

- 1) Content management system - is the part that users upload and download files, post text, videos, links, and more
- 2) User Account Management System - is a system that controls access to contents and activities using usernames and passwords, keeps activity records and access logs
- 3) Communication system - is a tool used to communicate between students and teachers, or between students together, such as private messaging, discussion boards, and e-mail.
- 4) Evaluation system - consisting of knowledge-based and skill-based assessment tools such as quiz, assignment, and grading systems.

The use of the LMS has a variety of purposes which vary according to the policies of each department and the needs of each instructor. The system can be used by teachers to distribute course materials, used by students to review lessons, used by the department for the final exam, or use to manage distance learning. However, based on information accessible by visitors, we found that the LMS usage amount among Thai teacher universities was still at a low level compared to the total number of courses.

When considering the system that the researcher is responsible for, there were problems regarding LMS usage and online skill-based assessment, as experienced by students and teachers, from technical issues to management issues. As similar systems and curriculums are being used, it is possible that the same problems will exist. Analysis of LMS usage behaviors among students and teachers including specific problems regarding the system use and online skill-based assessment will require data collecting from current users. Therefore, this research has been done aiming to explore the LMS usage behaviors and online skill-based assessment, including problems regarding the use of such systems, among students and teachers in Thai teacher universities.

II. LITERATURE REVIEW

The use of the LMS in teaching and learning is widespread with users who are students and teachers from around the world. In practical, students and teachers play different roles while using the LMS. Some studies suggested that learners and instructors also have different perceptions of using the LMS. According to Lonn & Reasley [2], most teachers recognized that the LMS benefits the teaching and learning as it helps facilitating communication between students and teachers, while students paid more attention to the ease of use and efficiency of the system than the benefits received. The study also shows that the use of the LMS to manage and track student works, as well as providing suggestions, still has a small proportion. In addition, the analysis of the system log is consistent with the data obtained from the questionnaire.

Al-Ani [3] analyzed the relationship between students' perceptions of using Moodle, a popular free and open-source LMS and learning achievement, motivation, cooperation and communication. The results showed that using LMS helped developing learning achievement and self-learning skills. The problems and obstacles that most students encountered are technical problems such as unstable networks and computer skills. Similar problems are presented in the study of Goyal & Tambe [4].

Based on the above research, it can be seen that the researcher mentioned the primary use of LMS as a tool for information distribution and communication but still lacking in the skill-based assessment, which is very important especially in the training program where there are only practical assessments. The results of the studies also revealed many problems in the evaluation process. For example, the grading process often takes too long, reserving less time for students to consult. There are also problems with quality control. For our context, the in-depth analysis needs to be performed.

III. METHODOLOGY

A. Population and Samples

The population of this study consisted of undergraduate students and teachers from 38 teacher universities in Thailand. The researcher used multiple-step sampling as follows:

1) Purposively sampled 8 universities in proportion to the number of teacher universities in each region of Thailand; central, northern, southern and northeastern regions. Chosen universities were noticed by their high LMS usage based on information accessible by visitors. Such the information included the number of courses available in the system and the rank of the website in search engines.

2) For each chosen university, purposively sampled groups of students and teachers who had high LMS usage at the present time. We attempted to distribute samples to cover major disciplines offered at teacher universities including Science, Arts, Management, Social Science, and Education.

The total sample group is 494 people, consisting of 466 students and 28 teachers. The sample distribution is shown in Table 1.

TABLE I. PARTICIPANT DISTRIBUTION

Disciplines/Year	# of participants	
	Students	Teachers
Total	466	28
Disciplines		
- Science	94	6
- Arts	85	4
- Management	100	5
- Social Science	92	5
- Education	95	8
Year		
- First	26	
- Second	198	
- Third	168	
- Other	95	

B. Research Instruments

The researcher created 2 sets of questionnaires. One set is used to collect data from student samples and another set for collecting data from teachers. Questionnaire items on both sets were designed to measure the same things but from different perspectives. This is based on the past research [2] which found that students and teachers have different perspectives on the use of the LMS. In addition, as questionnaires were created in Thai language, there are different appropriate wordings for students and teachers. The questionnaire was structured as follows:

- 1) Personal information of the respondents, including disciplines and the year of study (for students)
- 2) LMS used (e.g. Moodle and Google Classroom)
- 3) Estimated frequency and time spent on using the LMS per week
- 4) Tools in the LMS used, categorized into four sub-systems [1], as described in the introduction part
- 5) Problems in using the LMS, identifying as percentage of usage that specific problems occur
- 6) Problems regarding online skill-based assessment, identifying as percentage of submissions that specific problems occurred

With the question 2 – 6, respondents were instructed to respond based on the system usage in the course they were most online active in the current academic year.

The research instrument (questionnaires) created was evaluated by the LMS experts that the issues questioned cover the common usage behaviors and existing problems, and tested with an additional group of students and teachers who are not in the sample group. The instrument was modified according to the recommendations before using to collect the actual data.

C. Data Collection and Analysis

The questionnaire created by the researcher was prepared using the online survey tool, which was programmed to route the questions based on the previous answers. For example, Question 6 (problems regarding online skill-based assessment) will be shown to only respondents who previously responded to Question 4 that they had used the corresponding tools. All

questionnaires were sent via online channels in corporation with contact persons. Participants can respond to the questionnaire using either computers or mobile devices. The participation was voluntary, and we did not collect any data which may identify a specific person or department.

After the data collection had finished, the researcher downloaded the data collected from the online questionnaire tool and analyzed it with the spreadsheet program using descriptive statistics; mean, sum, and percentage.

IV. RESULTS

Fig. 1 shows that more than 75% of students and teachers in our sample group used the LMS only 1-2 times a week. Remark that the data was supposed to display usage behaviors in most online-active courses. As shown in Fig. 2, more than 60% of student users had the average usage time of less than 30 minutes per session. On the other hand, teacher users had longer average usage time.

Fig. 3 shows that both students and teachers mostly used the first part of the LMS including content posting (POST), file upload/download (FILE), and hyperlinks (LINK). All teacher users in our sample group had ever used the user account management (ACC) at least once (i.e. change a password, provide a profile picture, or edit a profile) while more than a half of student users left their accounts and profiles unattended. Very small number of teacher users had accessed to the system log (LOG). Students even checked their activity records more than teachers did. Note that the system log may not be available in some LMSs, including Google Classroom by the time this study was conducted. A significant number of users used online evaluation tools such as survey (SURV), quiz (QUIZ), assignments (ASG), group work (GRP), in which very small number of users used the built-in summative evaluation or grading tools (EVA). Users who used the LMS for communication, including discussion forum (FRM), private messaging (MSG), email (MAIL), and blog (BLOG) had a very small proportion compared to other applications.

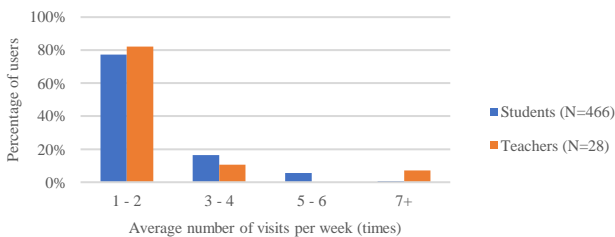


Fig. 1. Average number of visits to the LMS per week (times)

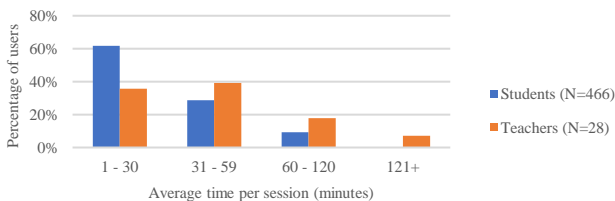


Fig. 2. Average time per session (minutes)

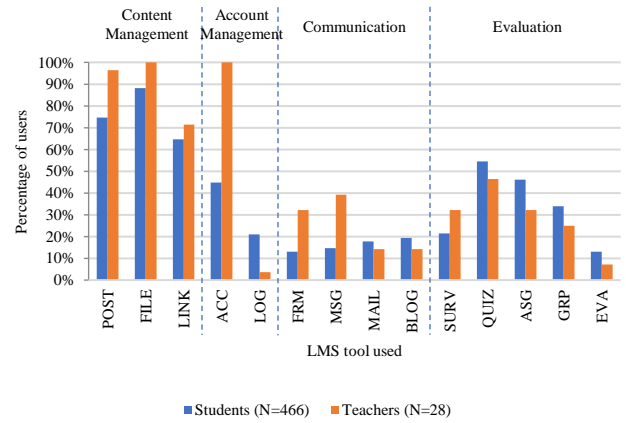


Fig. 3. LMS tool used

Fig. 4 shows problems regarding the LMS usage reported by student and teacher users, displaying as percentage of total usage time in which specific problems occurred. The data shows that most users had encountered problems with the internet (NET) and web access (WEB). In addition, there are other problems regarding hardware such as lacking of computers (COMP) or poor specification (SPEC). Some users had difficulty accessing the LMS from outside of the university (OUTS). Some users were confused by the user interface (UI) and some of them were not sure how to use specific tools (HOW). Users also reported the lack of technical supports (SUP). Remark that only 410 students (out of 466) and 26 teachers (out of 28) responded to this part of the questionnaire.

Among all participants who responded to the questionnaire, there are 264 students and 9 teachers who used online skill-based assessment and completed the 6th part of the questionnaire. The results are shown in Fig. 5 and 6 displaying as percentage of submissions in which particular problems were found. In the view of the students, as shown in Fig. 5, the systematic problems (SYS) are as high as 40.47%. Some qualitative responses indicated that teachers did not receive the files they sent, or it was not possible to crosscheck if their submissions had received. The other problems reported by students are the unclear instructions (INS), unclear assessment criteria (CRI), lack of examples (EXA), time to complete the tasks did not correspond to the actual time required (SMT), grading process took too long (AMT), received no useful feedback or no feedback at all (FBK), and revision not allowed (REV).

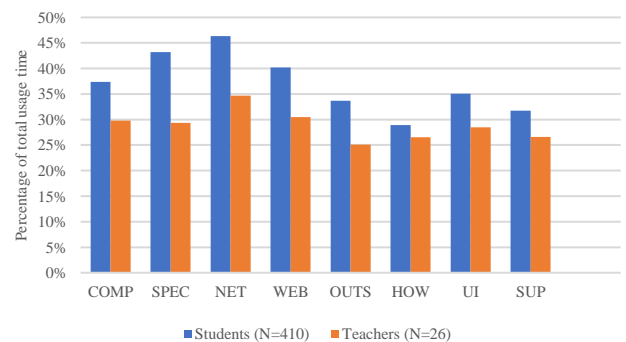


Fig. 4. Problems regarding LMS usage reported by users

In the teachers' perspective, as shown in Fig. 6, most of the problems regarding online skill-based assessment were that students who submitted their assignments did not intend to revise or improve their works (REV). The other problems were that students submitted their works late (SMT), systematic problems (SYS) such as unable to open files, students did not follow the instruction (INS), work quality below expectation (QUA), plagiarism (PLG), assessment took too long (AMT), and students never check feedback (FBK).

V. CONCLUSION, DISCUSSION, AND SUGGESTION

From the research results, it was found that the LMS usage amount in Thai teacher universities was at a low level. Most of users only used the LMS about once a week and less than an hour per session. Note that teachers had used the system slightly more than students due to the process of preparing contents and assessment. The information about the LMS tools used revealed that most of users in our context partially used the system focusing on content management such as post, file upload /download, and hyperlinks. The results are consistent with [2].

The use of the LMS for communication is minimal because most users prefer to use social networks for this purpose [5]. The LMS still has a role in assessment and evaluation possibly because it is more secure and formal. However, the number of users who used these functions is still a small proportion compared to all users.

The problems regarding the LMS usage in our context were mostly related with technical issues. This seems to be normal for any technological system and the results are in accordance with [3] and [4]. Therefore, the promotion of the LMS usage should be done in parallel with the development of the system integrity. We suggested the use of highly-stable systems such as cloud-based services instead of the on-premises ones. The diversity of users should also be taken into account because the IT resources each user has are not equal.

Problems with the online skill-based assessment, despite the technical issues that have already been discussed, were varied among student and teacher users. However, we can conclude that students and teachers found similar problems but on different perspectives. For example, students commented that the teachers had given very little time to work while the teachers felt that students had worked very slowly. Some teachers reported that the quality of the works submitted was not as expected but students said they did not know what good submissions should look like and there were no enough good examples to follow. These are possibly because some users perceived that the LMS is a one-way communication from teachers to students, corresponding to Fig. 3, causing the lack of traceability and opportunity to improve work quality. Another problem is that the assessment process is quite time consuming since there is a large proportion of students to teachers and assignments cannot be automatically graded, unlike quizzes.

The researcher's suggestion, in addition to the system improvement, is to provide or improve the assessment scheme with student involvement, such as self- and peer assessment, in order to achieve traceability in every step and motivate students to focus on the improvement of their works and skills.

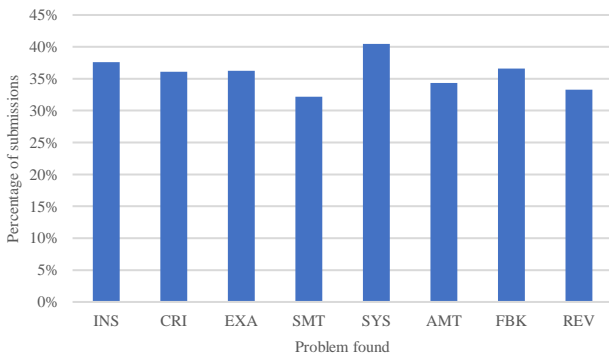


Fig. 5. Problems regarding online skill-based assessment reported by students

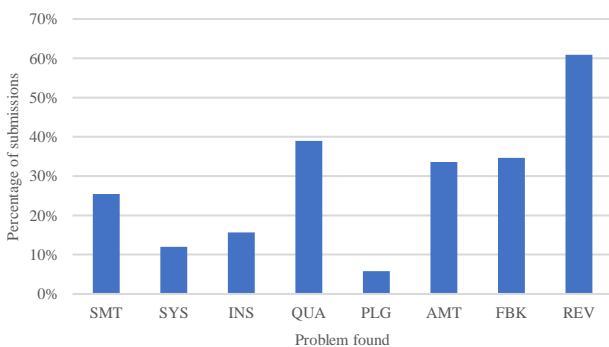


Fig. 6. Problems regarding online skill-based assessment reported by teachers

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