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Analyzing Online Platforms and Enhancing Quality at Bangladesh Open University: An Ideal LMS

Md Moshiur Rahman*
School of Science and Technology, Bangladesh Open University, Gazipur-1705, Bangladesh.

Abstract

Over time distance learning has become more effective and popular worldwide. School of Science and Technology, Bangladesh Open University (BOU) initiated to continue their academic curriculum during the COVID-19 pandemic situation through BOU LMS as well as Google Classroom. By conducting a thorough comparison between Google Classroom and BOU LMS, two online learning platforms that Bangladesh Open University (BOU) recently deployed, this study aims to evaluate and appraise the opportunities and challenges of e-learning in the context of Bangladesh. Also, the oversights of these LMS are from the student's point of view. The analysis pointed out the limitations of BOU LMS and suggested to optimize those for wide acceptance by students. Also, this research proposed to add a few more popular and useful features for the optimum performance of BOU LMS. This study aims to explore the comparative scenarios of both systems for online courses and identify the requirements for improving the quality of online courses at Bangladesh Open University. This study mainly focuses on effective online programs conducted through an ideal LMS for Bangladesh Open University (BOU).

Keywords: LMS, Online Courses, Google Classroom, BOU LMS, BOU.

1. Introduction

The LMS (Learning Management System) of BOU is web-based application software that allows BOU learners to get their contents and resources virtually and interact with the facilitator and facilitate as per requirements. One LMS is bou.elearning.gov.bd domain has shifted to el.bou.edu.bd funded by the Access to Information (a2i) under the Honorable Prime Minister's Office (Mannan, 2015). and another one lms.bou.edu.bd domain faces some complexity in open-source software (Moodle) with hosting problems. Due to the complexity of this research, the researcher took the initiative to take class online classes and shift to Google Learning Management System (Google Classroom). Google Classroom is a learning management system in the cloud that is part of Google Apps for Education. It is appropriate for educational institutions only (Google for Education, n.d.).

The purpose of this research work is to explore the feasibility of both LMS and the behaviour of these platforms in the case of offering online certificate courses or BOU academic programs and to find the bug-free learner-centric, flexible and suitable platform for the type-specific (degree or non-degree) program.

1.1 Problem Statement

Over time distance learning, the education system of students who may not always be physically present at a school has become more effective and popular worldwide. However, despite some small test launches, this method of study is not widely appreciated yet in BOU as well as in Bangladesh. By

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conducting a thorough comparison between two online learning platforms, Google Classroom (log in through Gmail account under G Suite facilities from Google) and BOU LMS (bou.elearning.gov.bd domain shifted to el.bou.edu.bd), recently used by BOU, this study aims to understand and assess the possibilities and obstacles of E-learning in the context of Bangladesh. Also, the oversight of these LMSs from the student's point of view. The purpose of this research is to explore the comparative scenarios of both systems and also find the gap between both systems which is time-consuming and necessitated for offering online programs by Bangladesh Open University.

1.2 Objectives of the study

This study aims to determine which platform is suitable for undergraduate students and to compare flexibility, evolution process and student feedback on e-learning facilities at Bangladesh Open University (BOU) the Specific Objectives of this study are:
  a) To compare student enrolment behaviour, activity and outcomes
  b) Comparison of the student's feedback and course evolutions
  c) Platform selection with recommendations for BOU certificate courses or online degree programs for implementing e-learning at BOU.

1.3 Research Questions

The following research questions were directed address to find solutions to specific problems:
  1) What are the students' attitudes toward online learning platforms?
  2) What are the completed course and missing tools of the formal program for both systems?
  3) What are the comparative common, supportable and advanced features of both systems?
  4) Which platforms give a comparatively better experience in online learning active aspects?

In the above context, the main research question was to select a particular online platform for starting an online-based academic curriculum in BOU from the comprehensive comparison and student feedback.

1.4 Motivation and Learning Environment

The study is driven by the acknowledgement of the crucial role that Learning Management Systems (LMS) play in contemporary education, particularly at BOU. This motivation is closely tied to insights derived from earlier research examining the utilization of online platforms in global educational institutions, specifically in the realm of open and distance learning. Past studies have emphasized the transformative possibilities of successfully implementing LMS, emphasizing its potential to democratize education, enhance accessibility, and elevate the quality of learning experiences. However, adapting these findings to address the distinctive challenges and opportunities encountered by BOU necessitates a customized inquiry.

1.5 Research Approach

This research took the form of a descriptive survey and qualitative approach. The study consisted of 206 participants in five online courses through BOU LMS and 227 participants were enrolled and completed 07 (seven) courses from the B.Sc in Computer Science and Engineering program in different semesters at Dhaka Regional Centre of BOU. A total of 47 students have participated in the feedback survey from the different semesters. A questionnaire titled 'A study on the effective supports of e-Learning platforms of BOU' designed by the researcher was used to collect the data. This approach was chosen because the researchers were trying to analyze the effectiveness and describe the feedback of their experiences of this comparative analysis of both systems based on the selective mix courses from the Bachelor of Science in Computer Science and Engineering program at the Bangladesh Open University under School of Science and Technology.

2.1 Conceptual Framework

Following the identification of the two software programs' potential, an investigation into e-learning and novel difficulties was conducted to ascertain the courseware that was being developed for e-learning and to analyze the types of platforms that are utilized to sustain e-learning at various educational levels. The goal is to choose a platform to support E-learning i.e., consistent and of quality with the Technology processes and content.
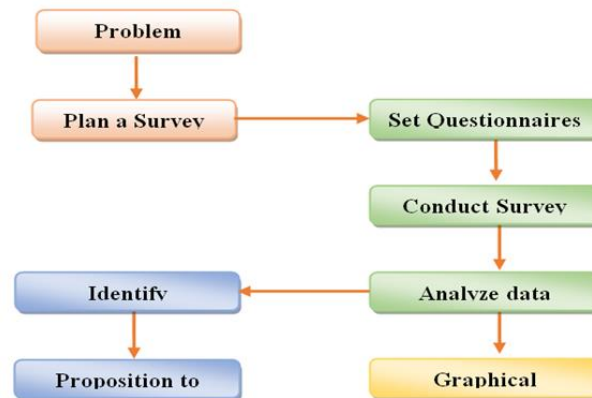

Figure 1: Workflow diagram of the study

This study assessed and compared the two platforms by preparing criteria-wise responses based on the above criteria and the following seven steps are collecting data from coding and analyzing the data:

Step One: Problem Acquisition

At first, finds the research questions and missing tools of both systems for online courses relative to the context of BOU.

Step Two: Plan, set and conduct survey questionnaires

This step involved developing a defined or interactive questionnaire from a set of features and categories from different angles for the participants of the enrolled courses.

Step Three: Develop a policy for coding

In this step, develop coding rules for our study type of descriptive research. This study was coded for counting frequency.

Step Four: Coding and evaluate the feedback

Fourthly, researchers have coded the text on the type of feedback, after developing the coding rules. Set the standardization of the feedback value to identify the challenges.

Step Five: classify requirements

The guidelines for this study included calculating the number of action verbs used in each question and establishing the frequency of action verbs used in the questionnaire as methods of data analysis.

Step Six: investigate the results

Utilizing frequency distributions, percentages, required graphs, and charts, this was constructed.

Step Seven: Proposition to LMS packages for BOU

Finally, in this study, the researcher finds the actual challenges for promoting online courses as well as the prospect of e-learning of BOU.

2.2 Data Collection Instrument

The methods for gathering data for this study were based on online courses that were provided in both systems and survey data gathered using Google Forms. The research design comes from the developed online courses and uses the experiences of both systems with the help of learners' feedback. Since the data collection instrument was created by the researcher specifically for the online course, authorization was not required. The following figure shows the different learning engagement in both

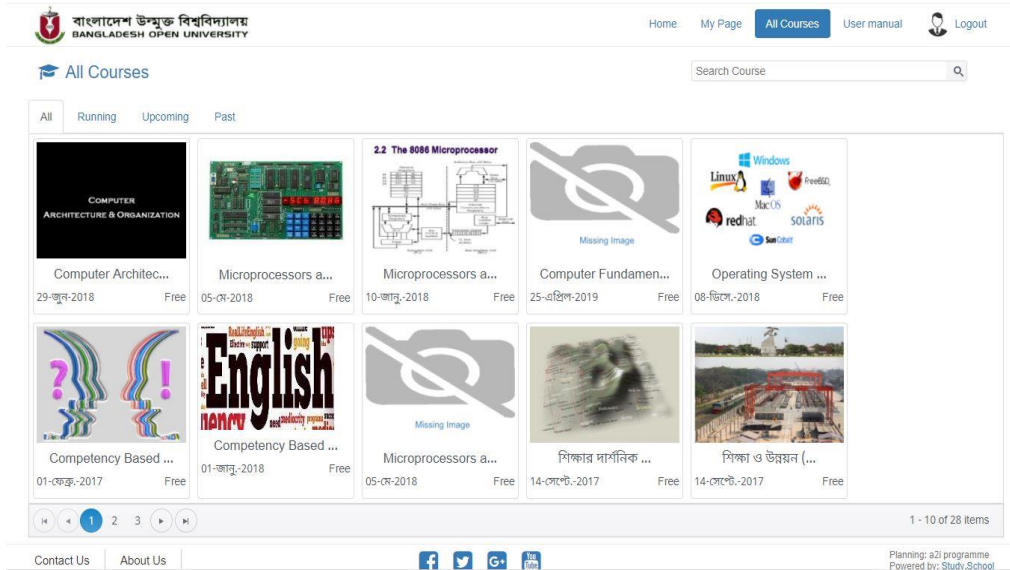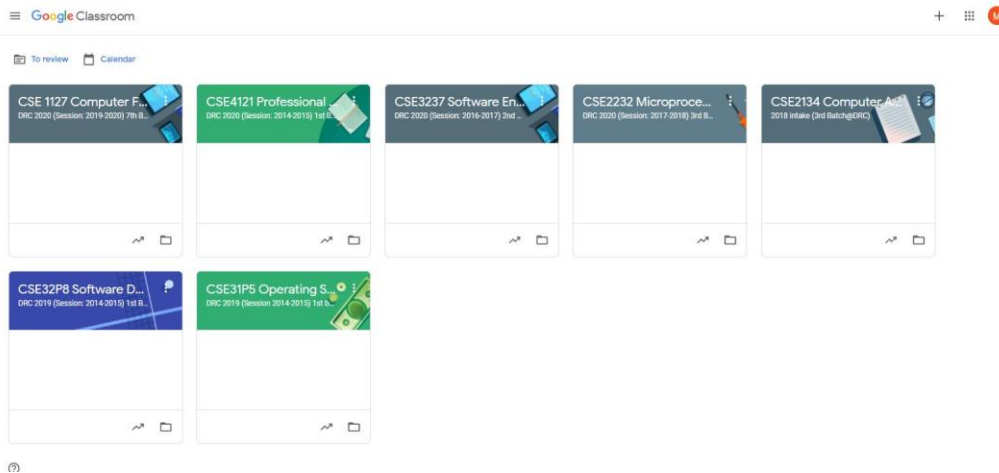systems for different activities:

Figure 2: Offered courses by BOU LMS

After that, the study's data was logged and imported into Microsoft Excel for additional examination. Frequency, percentages, graphs, and charts were used to express this. From BOU LMS, 206 students have participated in 5 (five) mentioned courses in the following Table 1 of B. Sc in CSE for the session 2015-2016, 2016-2018, and 2017-2018. From Google Classroom, 227 students have participated in 7 (Seven) mentioned courses in the following Table 2 of B. Sc in CSE for the sessions 2015-2016, 2016-2018, and 2017-2018 were reviewed in this study. Table 1 and 2 shows the semester-wise participants per course.

Table 1: BOU LMS participant per course in semester wise

Year and	Qty	Course Code and Name	Participant

Semester			
First Year First Semester	1	CSE11P8 Computer Fundamentals lab	30
Second Year First Semester	1	CSE2134 Computer Architecture and Organization	40
Second Year Second Semester	2	CSE2232 Microprocessors and Microcontrollers	51
		CSE22P3 Microprocessors and Microcontrollers Lab	51
Third Year First Semester	1	CSE31P5 Operating System lab	34
Total:	**5**		**206**

Table 2: Google classroom participant per course in semester wise

Year and Semester	Qty	Course Code and Name	Participant
First Year First Semester	1	CSE1127 Computer Fundamentals (Running)	49
Second Year First Semester	1	CSE2134 Computer Architecture and Organization	27
Second Year Second Semester	1	CSE2232 Microprocessors and Microcontrollers	24
Third Year First Semester	1	CSE31P5 Operating System lab	23
Third Year Second Semester	2	CSE3237 Software Engineering	43
		CSE32P8 Software Development Projects	43
Fourth Year First Semester	1	CSE4121 Professional Ethics and Cyber Law	18
Total:	**7**		**227**

3. Result and Analysis

A mix of course types was used; theory, laboratory and core courses. In BOU LMS, 206 students were enrolled and participated in 5 courses and in Google Classroom, 227 students were enrolled and participated in 7 courses online. The selection of online courses consists of three types of courses included in Table 3.

Table 3: Course Selection

Type	BOU LMS	Google Classroom
General Courses	01	02
Core Courses (Theory)	01	03
Practical/ Laboratory	03	02

For this study, select a mix type of courses for a better understanding of the effectiveness of online engagement. A total of 47 students participated in the survey those who are enrolled on my online course in our study from different sessions and semesters. Table 4 shows the statistics of the participants. For any online course supported by any digital device is mandatory to participate and enrol on the offered course.

Table 4: Number of students who participated in the survey from various sessions.

3.1 Data Interpretation and Analysis

Session	Female	Male	Total
2015-2016	1	9	10
2016-2017	7	11	18
2017-2018	1	18	19
Grand Total	**9**	**38**	**47**

This study was conducted on random undergraduate students in the second, third and final year of the B. Sc in Computer Science and Engineering program. They have participated in sharing their own experiences and thoughts about the BOU LMS along with Google Classroom as a second option as an online learning platform. About 98% of total student who participated chose online classes as their preferred learning method. Figure 3 illustrates the learning method preferences of both male and female students on two online platforms against the offline class method. The majority of male students chose Google Classroom over BOU LMS while female students preferred BOU LMS more than Google Classroom.

Table 5: Device used to complete course in LMS

Device Available	BOU LMS		Google Classroom	
	No	Yes	No	Yes
Desktop, Tab, Laptop, Smartphone	30%	61%	9%	83%
Smartphone	4%	4%	0%	9%

Table 5 shows the percentage of students to complete courses using LMS based on devices to access the LMS. Since LMS is not well architected to function fully on smartphones, it makes sense that the greatest number of student completed their course in LMS using their computer. Even though we have already seen that the majority of the students choose online learning methods, now we will look into a major terminology, internet access and speed, for online learning methods. As Figure 5 shows, only 2% of the student think offline classes are more reliable to improve their learning. However, student having strong internet availability tend to believe that a complete online learning platform will help them to enhance their learning ability. We set another 82 questions in 11 categories and asked the students to evaluate BOU LMS and Google Classroom based on those questionnaires. A comprehensive comparison between these two LMS was given at Bangladesh Open University (BOU). 46% of the students who participated in the survey found both LMS provided a good student management system. Individually Google Classroom stand at 21% compared to 14% of BOU LMS. However, one-fifth of students did not pick any of these two LMSs which indicates further upgradation of learner management of this platform is required. In the case of individual course features, BOU LMS still stands behind with 11% of student's opinions whereas Google Classroom has 24%. About one-third of the students think both platforms have similar features and another one-third have no specific choice.
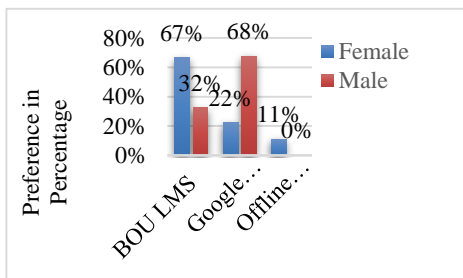

Figure 4: Student's preference for online learning method and offline classroom-based learning.
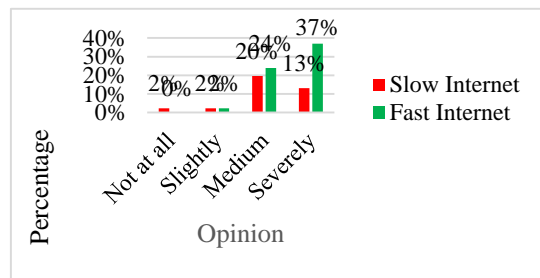

Figure 5: Student's Opinion on whether a strong and complete e-learning platform can improve their learning.
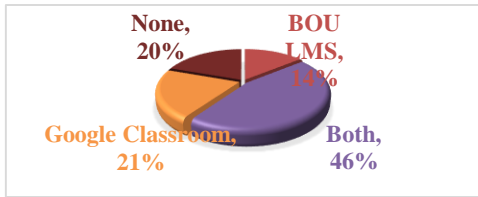
Figure 6: Comparison between BOU LMS and Google Classroom in the context of Learner Management.
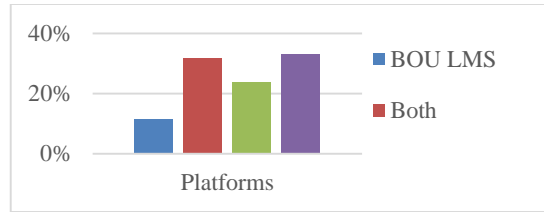

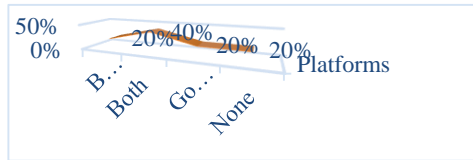Figure 7: Comprehensive comparison based on Individual Course Features.

Figure 8: LMS preference based on quiz features.
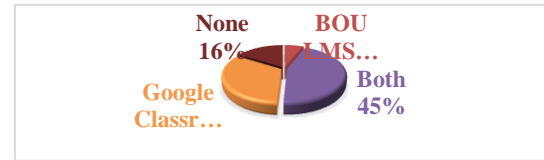

Figure 9: LMS preference based on communication tools feature.
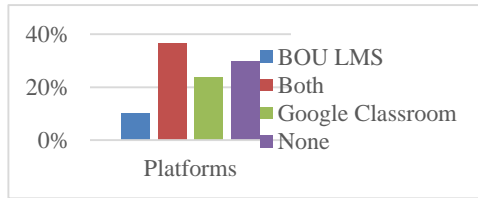

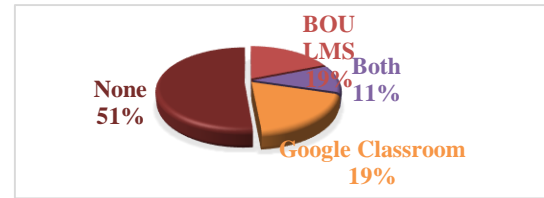Figure 10: Learners' view on performance management feature.

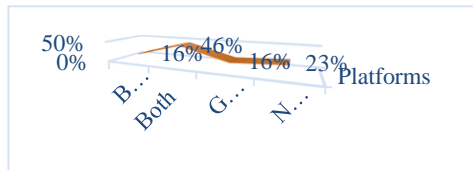Figure 11: LMS preference based on reporting features.

Figure 12: Student's view on administrative features.
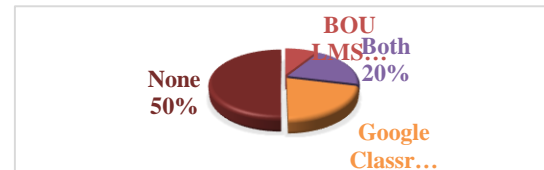

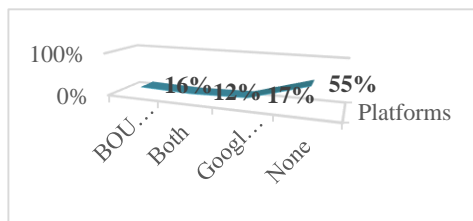Figure 13: LMS preference based on supportable features.

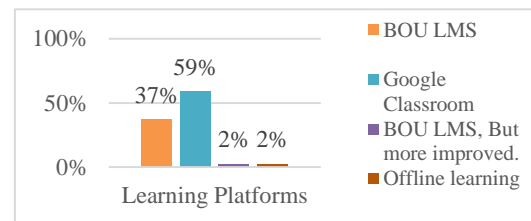Figure 14: LMS preference based on advanced features.

Figure 15: Learner's view of comparatively better experience in online learning.

Learners preferred both BOU LMS and Google Classroom by 40% along with individual preference of 20% for each LMS for their quiz features. That shows the satisfactory standard of BOU

LMS in the context of quiz features. Around half of the student-rated communication tools feature of BOU LMS satisfactory considering individual and combined preferences. Therefore, still the communication features that existed in BOU LMS need further development such that students and teachers communicate easily as physical means of communication is not possible; the LMS platform needs to act as a reliable way of communication. The management feature of BOU LMS was not satisfactory to more than half of the students. However, as about 46% of students still preferred this platform based on performance management features, a little bit of improvement of this system will make sure more students like it. More than half of the students choose not to pick any platform that is good enough for reporting. However, 19% of students chose BOU LMS and equally preferred Google Classroom. Viewing LMS in the context of its payment features did not go well as 79% of the student found it not satisfactory. A lot needs to be done to improve the current system to make the platform comfortable to use for payment. Similar to student interaction features, student-rated supportable features of LMS are not very satisfactory. It is essential to develop and integrate more supportable features in BOU LMS such that more students benefit from it. This will also make sure that student's adaptability to online learning accelerates. Half of the students who participated in the survey were not sure about picking up any particular LMS that provides advanced features. However, from the rest half, a decent number of students picked Google Classroom and BOU LMS. 9% of the students choose BOU LMS which indicates further integration of more advanced features is required. BOU LMS has a promising future in the context of an online learning platform for BOU and contains some great features to help students to adapt with distance learning method. The comprehensive comparison between BOU LMS and Google Classroom helps to determine a particular LMS to use for online education at Bangladesh Open University (BOU).

4. Conclusion

The research was focused on performing a comprehensive comparison between Google Classroom and BOU LMS for E-learning. The summary of this research includes the limitations of Google Classroom as an LMS despite its popularity. For a basic Google account, Institutional email functionality, storage capacity, admission procedure and course registration module are a few limitations for example. BOU LMS on the other hand, newly developed LMS with a promising future especially for the Bangladesh Open University (BOU). However, load balancing, server failure, higher access time and character limitation in the discussion forum are some major constraints for BOU LMS to become a perfect LMS as per the requirements.

Considering 98% of total student who have preferred online learning to illuminate their knowledge, BOU LMS need to develop and upgrade. This study suggested upgradation to overcome the above-mentioned boundaries as well as proposed to integrate more necessary features for optimum performance. Finally, for sustainable performance, continuous development with new changes is required as the solution given today may not be applicable in the future.

Recommendations

The study shows that Google Classroom is preferred over BOU LMS by most of the students because of some unique features e.g. assessment, grading, easy login, smooth access and storage facilities. On the other hand, BOU LMS is also preferred by a major portion but they also face some problems e.g. load balancing problems, server failure, character limitation, storage, access time higher, etc. The researcher conclusions have led to the following recommendations:
For BOU LMS:
- The LMS should include online payment options for admissions and registrations;
- A multilingual feature
- User-friendly and simple-to-use LMS interface
- Improving content storage capacity
- BOU LMS mobile apps for quick access

- Boost load-balancing performance
- No file size restriction when uploading materials or content
- A committed development team for the BOU LMS
- To give instructors and students institutional email addresses

For Google Classroom:
- Facilities for registration and admissions that accept online payments must incorporate a Google Classroom-integrated system.
- Upgrading BOU's institutional account from basic to Google
- Facilities for tracking students
- Create a second house site to oversee further
- To use Google Education to give instructors and students institutional email addresses

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