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Adapting a Mobile Based Learning Management System Platform for schools in Sibuyan Island of Romblon

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In today's era, the world of learning is changing for the betterment of the education system. Due to the pandemic, face-to-face classes are suspended. Students' attitude towards learning engagement are among the most affected. One alternative solution to the pandemic's impact is to assist the island's University in embracing new technology. This study aims to adapt a Learning Management System Platform for the school in Sibuyan, Island of Romblon, Philippines based on the needs of the instructors and learners. The researcher conducted a descriptive research and used online interview survey for data collection. The researcher select the top 3 highly recommended LMSs to be evaluated based on its open source and provides features, cons, and pros. The Canvas, Moodle, and Open eDX were the LMS platforms that has the capabilities to meet the needs of the users. These existing platforms was been analyzed and mapped-out prior to the needs of the involved participants. The researcher used a comparative analysis for the purpose of distinguishing the best suited LMSs Platform to be adapted in Sibuyan island of Romblon. The comparison results showed that majority of the features suggested by respondents was found in Moodle platform. This means that adopting Moodle as a Mobile Based Learning Management System for the School in Sibuyan, Island of Romblon was very highly significant and beneficial for the instructors and the learners. This Platform was also very helpful in the educational institution in providing quality education, competitive learners, and help learners gain academic excellence.

Keywords: Educational Institution, Learning Management System, Mobile Based, Platform.

1. Introduction

In the new era of technology, schools and other industry are now gradually shifting from traditional way of learning to a digital learning environment. Learning Management System (LMS) provide opportunities and carefully bring up individual learners through manageable online training materials. It’s has a great advantage for the instructors to assist learners in a fastest and easiest way in terms of mentoring and tracking the skills and competencies. This platform was considered as a source of an effective organization and perfect combination of

virtual classroom, mobile and social learning.

Learning Management System design in mobile is not only an innovative platform for education, but rather a meaningful design interface for a hassle-free communication between the instructors and the learners. The design of mobile based learning management system has more beneficial content that will make the life easier by deploying online training resources on global technology. Many Universities and other sectors are using LMS which have really improved their education System. There are many learners enlightened to used innovative teaching technology, and have had the opportunity to improve knowledge, skills, self-advancement, and social interaction.

One of the main important resources for higher education, especially universities, is a Learning Management System (LMS), which has shown an enhancement of students' progress with high quality learning outcomes worldwide. [1].

Having this platform as innovative tool will guide the Instructors and learners specifically those Universities who were in the island or remote rural areas.

The emerging trend of the use of LMS Learning Management System in higher educational institutes is improving the teaching-learning process[2]. There were a lot of sources that explained further how Mobile Based Learning Management System aided the Universities to improved delivering learning instructions. This is the best approach to engage students in full teaching and learning activities. [3].

Romblon State University in Sibuyan Island, province of Romblon was the only educational institution that were still using the traditional method of teaching. The advancement of technology in the area was very slow and the learning process were found ineffective due to some factors such as lack of alternative solution on delivering instructional materials, the unavailability of resources to be used, an efficient managing of courses due to lack of standards and lack of facilities. The big challenge that was being manifested and experienced was during pandemic, where face-to-face classes are being suspended.

This challenge affects not only for the Instructors and learners but for the University as a whole. The unexpected adversity experienced not only by the institution but people worldwide is a compelling reason to aggressively adapt a new method of instruction from face-to-face to online. One alternative solution to the pandemic's impact is to assist the island's university in embracing new technology and gradually introducing the new method of teaching among instructors and learners.

The researcher was being motivated to conduct a study about the adaption of Learning Management System Platform. The researcher was intended to solve the gaps through adopting a Mobile Based Learning Management System platform for Schools in Sibuyan Island Romblon. The researcher believed that Learning Management System will help the Schools become accessible, the instructor can facilitate comprehensive communications, deliver learning instruction, and support student success anytime, anywhere. It made possible for many students to carry on with their studies being far away from a university. [4]. An Instructor's presence an engaging learning environment. Students retain their autonomy, enthusiasm, and motivation. [5].

The main objective of this study is to adapt a Mobile Based Learning Management System Platform for Schools in Sibuyan Island of Romblon. There is a strong global trend toward utilizing Learning Management Systems (LMSs) in academic institutions as a part of their educational management system to improve the teaching and learning experience in higher education system. [1]. There were a lot of Mobile Based Learning Management System Platforms that were present today. Due to their wide implemented, lots of LMSs have been developed in recent years. [6]. There can be no doubt that technology has transformed the way education is delivered to people across the globe. Jo L. et. Al., 2020.

2. Methodology

This study used descriptive research to determine the best LMS Platform to be adapted for the school in Sibuyan, Island of Romblon.

Descriptive research aims to accurately and systematically describe a population, situation or phenomenon. It can answer what, where, when and how questions, but not why questions. Moreover, It is useful when not much is known yet about the topic or problem. [7].

The researcher conducted an Online interview in order to gather the data. All interviews were performed in the Romblon State University in Sibuyan Island of Romblon via online in the comfort of the participants.

There were 82 respondents answer the survey. There were 6 IT faculty members, and 76 students, as participants that participated in the online survey. The respondents in this study comprised of 27 males and 55 females.

The participants suggested one feature of LMS. The researcher will tally the results and classified each features into three categories - Supported Platform,Common Features, and Administration and management. In Supported Platform, features belonging to this category are related to system support features from a several perspective. In Common Features, features belonging to this category are mainly related to internal operational features and activities supported by the tool,and in administration and Management, features belonging to this category are related to system management and administration, both for users and courses and Administration Features.

In writing this method, the researcher also collects theories taken from other sources and by studying and reading sources of information data that are related to the purpose of this study. Corroborating with other studies helped the researcher to attain the goals and objective for the comprehensive and outcome of the study. Moreover, to determine the best fit LMS Platform in the School in Sibuyan, Island, Romblon, the researcher was able to select the top 3 highly recommended LMSs based on its open source and provides features, pros, and cons.These parameter used was considered since the Participants has no experience about LMS. These selected tools were Canvas, Open edX and Moodle.

The purpose of these 3 LMS will be compared to the needs of the Instructors and Learners. After the selection of the 3 LMSs Platform, the researcher identified the needs and desires of the learners and instructors. The researcher corroborated with other studies in mapping the

needs of the participants. The researcher used the Comparative Analysis tool to determine the best fit LMS Platform according to the needs of the Learners and Instructors in the School in Sibuyan, Island. After identified the needs of the Participants, the researcher compared those needs to the features of the selected 3 LMS.

In some other literature, A comparative analysis of 10 LMSs, both open source and commercial was used. It categorized the selected features into 3 categories with 40 features. The suggested categories are learner tools that include communication, productivity, and student involvement; support tools that include administration, course delivery, and curriculum design; and technical specifications that include HW/SW and pricing/licensing. [8].

Another study, Moodle 2.0 and Blackboard 9.1 were compared. They made the comparison based on 3 categories of features: communication tools (discussion forum, file exchange, email notification, notifications and dashboard), productivity tools (calendar, progress review and searching) and student involvement tools (group organizing, community networking, course menu, assignments, custom grading, and grading preferences). [3].

Online survey was conducted, and responses were collected from eighty two out of One hundred respondents among IT students and IT faculty members of Romblon State University in Sibuyan Island of Romblon. The distribution of respondents is illustrated in Table 1 below.

Table 1: Number of IT Respondents

Respondents	Population	Sample Size
IT Students	90	76
IT faculty	10	6
Total	100	82

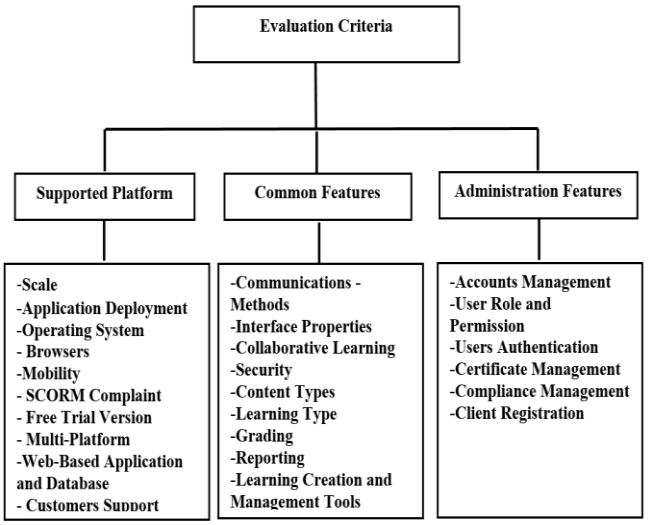

Figure 1. The classification of LMSs Platform features taken as evaluation criteria.

3. Results and discussions

Based on the conducted survey from Romblon State University in Sibuyan Campus, there were seventy six (76) IT students and Six (6) IT faculty members participated in the study

After identifying the needs of the participants, the researcher collected some theories from other resources and corroborating with other studies. In order to identify the LMS Platform that was suited to the needs of the instructors, and Learners, the researcher selected the three Open source and cost free with licensed under (GNU) General Public License (GNU GPL or GPL), a license for software that guarantees end users the freedom to share, study, run and modify the software.

Therefore, other commercial LMSs was not included in the selection process. These three LMSs Platform was evaluated and compared using its own features, Pros, Cons, and supported languages, number of users that served as the parameter to select these 3. The analysis being carried out in this study was base upon the latest version update and declared on the tool's main Website. The three LMS was the best open source compared in the year 2022 according to the themegrill author updated November 3, 2022.

The selected 3 LMSs were the most highly recommended platform to be adapted because of the unique main properties, the Open source and free cost. It has a features, Pros, and Con. that will show the impact of its individual differences.

The following were the 3 LMSs Platform

Canvas has the following Features: There are 99.9% system uptime; Easy upload and sharing of information; personalized learning;Canvas API to link other apps and tools; and Accepts unlimited file size for audio and video contents. The Pros of the Canvas are as follows: Cloud-based; Large number of options for customization;Sends alerts/notifications for important events; and Easy for third-party integration. However, it emphasized the Cons of the Canvas which are: Might be difficult to get started;Presence of some useless tabs; and Frequent issues while navigating and editing.

The features of the Open edX were the following Customizable and easy to use; Real-time data analysis; Interactive forums and discussion boards; Cross-device compatibility; Supports live video conferencing; and Wide choice of content types. The Pros of the Open edX were the following: Provides verified certificates on course completion ; and Let you create courses as well as degree programs. The Cons of the Open edX has the following: Limited third-party integration ; and Lacks course structure.

Moodle is consists of the following features: Translated into 100+ languages;Offline access with Moodle app;Badges and certificates available ;Custom report and analysis; Calendar, messaging, and notifications for learners. The Pros of the moodle were the following:Completely free ;A large number of add-on and plugins;Vast online community of user groups;and Cross-browser compatibility. Like other LMS, Moodle also have a following Cons: Might not suit a large mass of learners; The admin interface is quite difficult to get familiar with; and Lacks flexibility.

The researcher used the comparative analysis based on the Criteria. The evaluation criteria used was adapted from the study of [9]. The comparative result are shown in Table 2, 3, and

4. Table 2 detail the comparative summary of features belonging to category 1 (supported platform); Table 3 detail the comparative summary of features belonging to category 2 (common features); and finally, the results belonging to category 3 (administration and management) are summarized in Table 4 .

In terms of the classifications of the suggested features in LMS needed by the respondents using the parameters, 31% suggested a features under support Platform. Under this category, the sub-categories were composed of ten features such as: Scale, Application Deployment, Operating System, Supported Browser, Mobility Support, SCROM Compliant, Free Tutorial Version, Multi-Platform, Webpage Application Database, and Customer support.

Table 2. Supported Platform. Showed the results of the Comparison of User Needs and the 3 LMSs Platform.

Parameters	User Needs	Learning Management System		
		Canvas	Moodle	Open edX
I. SUPPORTED PLATFORMS	The Respondents Suggested the following Features:			
Scale	Large Interprise	X	/	/
Application Deployment	Mobile Based	/	/	/
	Cloud Based	/	/	/
Operating System	Android	/	/	/
	iOS	/	/	/
Supported Browser	Chrome	/	/	/
Mobility Support	Offline	/	/	/
	Online	/	/	/
SCORM Compalint	Latest edition	/	/	/
License	Open Source	/	/	/
	Free of cost	/	/	/
Customer Support	24/7	/	/	/

Referring table 2, the researcher extract the following findings: (i) almost of the LMS are capable to meet the users' needs except Canvas where in the designed is only support small enterprises. (ii) capable in Mobile and Cloud Based. (iii) Both can be utilize in android and iOS. (iv) it is also available in Chrome Browser. (v) it is supported by offline and online services. (vi)both has a latest edition. (vii) Open source and free cost. (viii) offers 24/7 customer services.

While 37 % of the respondents were suggested a features belonged in the category of Common Features. The sub-categories were the following: Communication Methods, Interface Properties, Collaborative learning, Security, Gamification, Content Type, Learning Type, Grading, Reporting, Learning Creation and Management Tool.

Table 3. Common Features. The results showed the Comparison of the User Needs and the 3 LMSs Platform.

Parameters	User Needs	Learning Management System		
		Canvas	Moodle	Open edX
II. COMMON FEATURES	The Respondents Suggested the following Features:			
Communication Methods	Forum Discussion	/	/	/
	Online Chat	/	/	/
Interface Properties	Multi-lingual	/	/	/
	Calendar	/	/	x
	Dashboard	/	/	/
Collaborative Learning	Assignment	/	/	/
	Feedback	/	/	/
	Quiz	/	/	/
	Workshop	/	/	/
Security	Anti-spam	x	/	/
	Data Protection	/	/	/
	Antivirus	x	/	/
Gamification	Points	/	/	x
Content Type	Video conferencing	/	/	/
	Online lessons	/	/	/
Learning Type	Learning by-self	/	/	/
	Blend learning	x	/	/
Grading	Assessments	/	/	/
	Gradebook	x	/	/
Reporting	Dashboard reports	x	/	/
Learning Creation & Management Tools	Assignment creation	/	/	/
	Supported files - PPT/PDF/Videos	/	/	/
	Upload courses	/	/	/

The comparative analysis in Table 3. Common Features has derived the following findings: (i) the three LMS has forum discussion and has online chat for communications. (ii) it has properties like Multi-lingual, Calendar, and Dashboard except Open eDX which is no Available calendar feature. (iii) It has complete Collaborative Learning tools such as Assignment, Feedback, Quiz, and Workshop. (iv) in terms of security, the three LMS has Anti-spam, Data Protection, and Antivirus except Canvas. (v) Canvas and Moodle has points features except Open eDX. (vi) The content of the three LMS are both available in Video Conferencing and online Lessons. (vii) Canvas and Moodle and Open eDX has learning by-self property but in terms of Blend Learning, Canvas is not supported. (viii) it has a grading features like Assessment and gradebook except Canvas. (ix) Canvas has no dashboard reports available. (x) Nevertheless, the three LMS provide assignment creation, support files like PPT, PDF, and Videos, and can upload courses.

Moreover, 19% of the respondents suggested a features of LMS belong to administration and Management. In this Category, the features were as follows: Account Management, User Role Permission, User Authentication,

Certificate Management, Compliance Management, and Client Registration.

Table 4. Management and administration features. The result showed the Comparison of User Needs and the 3 LMSs Platform.

Parameters	User Needs	Learning Management System		
		Canvas	Moodle	Open edX
III. MANAGEMENT AND ADMINISTRATIVE FEATURES	The Respondents Suggested the following Features:			
Account Management	Add new account	/	/	/
	User profile	/	/	/
	Users' group search	/	/	/
Users Role and Permission	Create role	/	/	/
	Permission role	/	/	/
	Assignment permission	X	/	/
Users Authentication	Customer user login page	X	/	/
	Self-registration	/	/	/
	Self- registration with admin confirmation instead of user confirmation	X	/	/
Certificate Management	Manage certification templates	X	/	/
	Unique Certificate by course	X	/	/
Compliance Management	Certificate expiration notifications	X	/	/
	Manage certification expiration	X	/	/
Client Registration	Online Attendance Tracking	/	/	/
	Auto registration	/	/	/

From Table 4 which summarizes the comparative analysis of features belonging to category 3 (management and administration), we conclude the following: (i) the three LMS has account management tools. (ii) it has user roles and permission tools except canvas. (iii) the three LMS has user authentication tools except Canvas. (iv) Moodle and Open eDX has Certificate Management tools except Canvas. (v) Canvas has no available Compliance Management while Moodle and Open eDx has available properties. (vi) Lastly, the three LMS has client registration.

However, 9% of the respondents suggested a features that does not belong to the three category not supported by the LMS Platform. The following features were as follows: More Self-Serve/Self-Management and Better Communication, Tech-Forward, Including AI, Boolean Logic that Organizing Learner Assignment, Online exam proctoring , Grammar Checker, and Essay Exam Checker.

4. Conclusion

Analysis of survey data acquired in this study showed that the features suggested and needed of the respondents was almost found in Moodle LMS. This was identified as the best platform suited to the School in Sibuyan, Island of Romblon. The researcher concluded that Moodle platform will be the avenue to develop now a system to be utilized. It helps the School to improve educational innovation as well as competent environment that usually provide quality education to all the learners and effective instructors. It also provides an avenue for classroom materials or activities to be shared easily.

Further, it is recommended that the researcher will integrate other features prior to the needs of other participants for the future use.

References

1. P. Reviewed, “Issn:2277-7881; i,” vol. 816, no. 2, pp. 11–18, 2022.
2. F. Yousaf, K. Shehzadi, and A. H. Aali, “Learning Management System (LMS): The Perspectives of Teachers,” Glob. Soc. Sci. Rev., vol. VI, no. I, pp. 183–196, 2021, doi: 10.31703/gssr.2021(vi-i).18.
3. B. T. Gamede, O. A. Ajani, and O. S. Afolabi, “Exploring the Adoption and Usage of Learning Management System as Alternative for Curriculum Delivery in South African Higher Education Institutions during Covid-19 Lockdown,” Int. J. High. Educ., vol. 11, no. 1, p. 71, 2021, doi: 10.5430/ijhe.v11n1p71.
4. V. Burtsev, “Adoption of Learning Management Systems At South African Learning Institutions,” INTED2021 Proc., vol. 1, no. January, pp. 10818–10824, 2021, doi: 10.21125/inted.2021.0318.
5. V. M. Bradley, V. M. L. Management, and S. Lms, “Learning Management System (LMS) Use with Online Instruction To cite this article : Learning Management System (LMS) Use with Online Instruction,” 2021.
6. R. Kraleva, M. Sabani, and V. Kralev, “An analysis of some learning management systems,” Int. J. Adv. Sci. Eng. Inf. Technol., vol. 9, no. 4, pp. 1190–1198, 2019, doi: 10.18517/ijaseit.9.4.9437.
7. C. K. Chen and M. N. Almunawar, “Cloud Learning Management System in Higher Education,” no. September, pp. 29–51, 2019, doi: 10.4018/978-1-5225-7473-6.ch002.
8. S. Salah and M. Thabet, “E-Learning Management Systems- A Feature-based Comparative Analysis,” J. Inf. Syst. Technol. Manag., vol. 18, no. November, 2021, doi: 10.4301/s1807-1775202118003.
9. S. Salah and M. Thabet, “E-Learning Management Systems- A Feature-based Comparative Analysis,” J. Inf. Syst. Technol. Manag., vol. 18, 2021, doi: 10.4301/s1807-1775202118003.