

Assessing the Use of Technology-Based Learning Hub

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ABSTRACT

Distance education has been introduced primarily to address the continuously growing demands of teachers and learners for a more flexible type of pedagogy. However, emergencies such as the COVID-19 pandemic can also force teachers and students outside the confines of the traditional classroom. Despite the challenges of the current global health crisis, many learning institutions continuously delivered education through the adoption of flexible distance learning modalities. With the advent of the internet, the use of learning management systems (LMS) became an increasingly popular choice, not only in higher educational institutions but also in primary and secondary schools during this trying time. Using a descriptive quantitative design, this research study seeks to describe the experiences of 80 faculty members of the University of Makati during the academic year 2020-2021 using a Moodle-based LMS—the Technology-Based Learning (TBL) Hub. Through an online survey evaluation of the different features of what an LMS should be like, it was found that teacher-users somewhat agree that the majority of these essential criteria are already somewhat observable in the TBL Hub; particularly in areas of testing and assessment, content organization and archiving, course and file management, as well as communication and collaboration. Based on the results of this evaluation, improvement still needs to be done about the design and layout of the website together with the provision of technical support and assistance where many study participants have also identified pressing issues and concerns that they want to be addressed in the future.

Keywords: learning management system, online education, educational technology, flexible

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Introduction

The concept of distance education has been introduced primarily to address the continuously growing demands of teachers and learners for a more flexible type of pedagogy. Often described as a type of education delivered outside the traditional or physical set-up of a classroom or school, it was based on the notion that it is possible to teach and learn without the need for face-to-face interaction (Kentnor, 2015). Throughout the years, alongside the many technological developments and socio-economic reforms, more platforms and media are made available with this specific purpose in mind. Fidalgo et al. (2020) also noted that these recent advancements have quickly propelled distance education to the digital era and have been critical in transforming classrooms and schools toward 21st-century learning.

Distance education has been viewed mainly as a form of teaching and learning delivery that would enable and support learners who cannot or who do not want to be in the confines of the physical classroom

setup due to personal and socio-economic reasons. However, emergencies such as armed conflicts, natural hazards, disasters, as well as chronic health crises have long pushed millions of students out of classrooms and even forced many school shutdowns.

Towards the end of 2019, a new strain of coronavirus was immediately identified to have caused a cluster of pneumonia cases in the province of Hubei in Wuhan, China. By January 2020, the World Health Organization (WHO) has confirmed 7818 cases of COVID-19 disease worldwide, with 82 cases reported in 18 other countries. Due to the alarming increase in the rate of transmission and levels of severity, many nations closed their borders to international travelers, put non-essential businesses and services to a halt, and even forced in-person classes in schools to be suspended.

Even without an immediate end to the pandemic in sight, many learning institutions around the world decided to continue the delivery of education. In the Philippines, the adoption of the Basic Education-Learning Continuity Plan (BE-LCP) through Department

of Education Order No. 012, s. 2020, Guidelines on the Implementation of Flexible Learning through Commission on Higher Education's Memorandum Order No. 04, s. 2020, and the enactment of the provisions of the Republic Act No. 11469 also known as the Bayanihan to Heal as One Act reiterated the necessity to explore and implement other teaching and learning modalities to facilitate the transition from traditional to flexible distance learning.

With the advent of the internet, the use of learning management systems became an increasingly popular choice, not only in higher educational institutions but also in primary and secondary schools during the pandemic. In the Philippines, prominent universities such as the University of the Philippines, University of Santo Tomas, and De La Salle University, as well as the Technical Education and Skills Development Authority (TESDA), have already advocated for the use of e-learning courseware and technologies long before the onset of the COVID-19 outbreak but remained out of favor due to the Filipino students' preference for face-to-face learning and classroom training (Arimbuyutan et al., 2007).

According to Bradley (2021), an LMS "reinforces teachers and students in the learning process" (p. 86) when utilized in online learning setups. Using an LMS also proved to be advantageous to students as evidenced by the results of the study conducted by Oguguo et al. (2020) where the use of a Moodle-based LMS in teaching was found to improve students' performances.

In a study conducted by Alshorman & Bawaneh (2018), it was found that the attitudes of university faculty members and students towards the use of LMS in teaching-learning delivery were positive. Ohliti & Abbas (2019) identified factors that influence student-users satisfaction in using an LMS namely quality of information, quality of service, and perceived ease of use. Service quality, which is characterized by availability, reliability, responsiveness, and assurance from service providers, has been identified as the most dominant factor affecting the satisfaction of these student users. As for faculty users, the study of Bove & Conklin (2020), as well as that of Khoa et al. (2020), reveal similar findings, identifying usefulness and ease of use as factors that influence faculty members' comfort in using a learning management system.

There has been no specific date given as to when the current emergency health crisis will end. Until then, educators all over the world and in the Philippines need to continuously innovate and implement flexible distance learning modalities. As is with other forms of teaching and learning, there is an imperative to assess implemented pedagogies during this emergency

education setup, especially for educational leaders and school managers. Doing so gives a glimpse of the efficiency and effectiveness of these employed educational systems and practices, which in turn could offer points or provide inputs for improvement of their utilization.

In line with this, the current study seeks to explore and present the experiences of teachers in using a learning management system for the academic year 2020-2021; in particular, the experiences of the faculty members of the University of Makati in utilizing the institution's official LMS platform— the Technology-Based Learning (TBL) Hub. It is a Moodle-based online course management system launched in response to the emergency educational needs of the learners of the university. The research also specifically aims to provide a summary of the teacher's evaluation of the different facets of the identified LMS which can be used to identify areas that could still be enhanced or improved for future use.

Methodology

Since the main purpose of the study is to present the experiences of the teachers in using a learning management system for educational instruction and delivery, the study utilizes a descriptive quantitative research design. Creswell (2005) describes this research as a method that focuses on describing and explaining a phenomenon under investigation in a somewhat definitive manner (cited in Mertler, 2016). With the researcher employing a convenience sampling technique, faculty members of the University of Makati were selected as respondents for this study for two reasons: (1) the university primarily relied on the use of LMS for learning instruction and delivery for AY 2020-2021 and (2) the researcher's ease of access to the intended respondents.

A survey questionnaire was formulated to collect data in line with the objectives of the study. Parts of the research instrument were adopted from the Learning Management System Evaluation Tool of the Prairie View A&M University and Texas A&M University which can be accessed via the internet. The LMS evaluation tool was selected for this study due to its comprehensiveness and its attention to what an effective LMS should look and be like in terms of its different features.

The survey was divided into three major sections. Part 1 consists of the demographic profile of the respondents which includes their age, years in service, highest educational attainment, employment status, teaching rank, and subjects or courses handled for the school year. The second part asks about the

respondents' prior experiences in using a learning management system. If they have any, respondents are asked to identify the specific LMS platform they have used and are allowed to choose from a list of options, and their reasons for using LMS despite the face-to-face teaching and learning setup, as well as a scale description of their prior experiences in terms of effectiveness. In the third part of the questionnaire, respondents are asked whether they have utilized the identified LMS during AY 2020-2021. If they have not, respondents are asked to specify the LMS they used for their classes instead of TBL Hub and specify the reasons for choosing it.

If they have, teacher-users are then asked to evaluate the TBL Hub based on its different sets of features. Items are sorted into categories (Design and Layout, Content and Organization, Course and File Management, Communication, Collaboration, and Learning Community Features, Testing and Assessment Tools, Gradebook and Tracking, Archives, and Technical Support and Assistance) and are constructed in a 4-point Likert Scale format (1 for Disagree, 2 for Somewhat Disagree, 3 for Somewhat Agree, and 4 for Agree). Teacher-user respondents are also asked to rate the use of TBL Hub using a 5-point scale (5 being the highest) in terms of criteria such as design and style of layout/interface, accessibility, convenience, efficiency, user-friendliness, interactivity, responsiveness of the platform, and technical support offered. Aside from these, qualitative data were also gathered from the respondents. Teacher-users were asked to indicate and describe the problems and issues they have encountered while using the LMS platform, as well as write suggestions and/or recommendations to improve the utilization of TBL Hub.

An online survey form containing the items was created through Google Forms. This particular platform is chosen over other online survey websites due to its general convenience, ease of use, and accessibility to respondents, as well as its security features. After permission to conduct research has been sought from and approved by the University of Makati's Office of the Vice President for Research Development and Planning through the University Research Office, the researcher sent a request for participation, together with a link to the form, to the faculty's institutional email accounts and posted with permission to the official Facebook Messenger group chats of faculty employees.

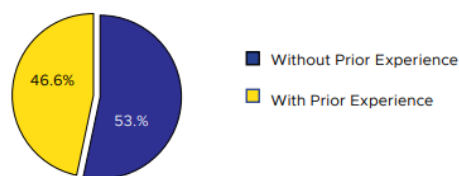
In the analysis of data, descriptive statistics were used in the processing of the data sets. The form generated a total of 88 responses in three days and no items were left unanswered as Forms already has a function and notification for such in place.

Results and Discussion

There are a total of 88 respondents from the 263 faculty members of the University of Makati. Many of the respondents were aged between 21-30 years old (26.1%) and 41-50 years old (31.8%). The majority of them have only been in the teaching service for 0-5 years (45.5%) and are full-time casual employees (55.7%). The respondents are often ranked either as Teacher II (19.3%) or Assistant Professor IV (12.5%) and a majority of them are already holders of a master's degree (53.4%). For the school year 2020-2021, 40.9% of the respondents are handling specialized courses or program-specific major and elective classes. Asiri et al. (2012) reiterated that the role of faculty members in the utilization process of any learning technology is unparalleled. It is important to note, however, that several factors influence the utilization and even the acceptance of different forms of instructional innovation.

Figure 1

Faculty Respondents' Prior Experiences with Using a Learning Management System



In terms of prior experiences with using a learning management system, 47 (53.4%) answered to not have any. The majority of the remaining 41 respondents (46.4%) who have had prior experiences with using an LMS preferred and used Google Classroom (61% of the 41 teachers) for their classes pre-pandemic. Teachers who have had prior experiences utilized an LMS platform alongside face-to-face teaching and learning mainly due to an LMS' capability to efficiently distribute learning materials which saves its users time and money. Similarly, an LMS also enables them to easily track, monitor, and record their students' course progress as well as share and upload multimedia content (see Table 1). Among these respondents, three specifically mentioned that they used an LMS because it was mandated and required by the school or institution they were working for previously.

Table 1

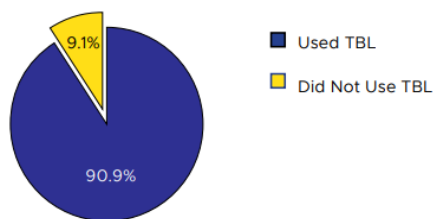
Reasons for Using a Learning Management System Despite Face-to-Face Teaching and Learning Setup

	N	Percentage	Percent of Cases
Easy tracking, monitoring, and recording of students' course progress	28	15.56 %	68.3 %
An efficient way to distribute learning materials (cost and time-saving)	30	16.67 %	73.2 %
Personalization or customization options	7	3.89 %	17.1 %
Accessible to, if not most, many students	20	11.11 %	48.8 %
Collaborative platform	16	8.89 %	39 %
Sharing and uploading multimedia content	24	13.33 %	58.5 %
Parental Access	2	1.11 %	4.9 %
Feedback transparency	10	5.56 %	24.4 %
A convenient way to communicate with students	19	10.56 %	46.3 %
Centralized storage for learning materials and student submissions	20	11.11 %	48.8 %
Others	4	2.22 %	9.8 %
TOTAL	180	100 %	439.10 %

When asked to describe these prior experiences, six or 14.6% of these 41 respondents believe that it was a very effective tool for learning instruction and delivery whereas 43.9% and 41.5% believe it's effective and only somewhat effective respectively.

Figure 2

Faculty Usage of Technology-Based Learning Hub as Primary Learning Management System for AY 2020-2021



For the third part of the survey, the study participants were asked whether they used the Technology-Based Learning Hub as their primary learning management system for the academic year 2020-2021. Eighty out of the 88 respondents or 90.9% answered yes. The rest chose not to utilize the site because it was “a bit confusing to use”, “not user-friendly”, and “always inaccessible”, and they are not familiar with the interface of the Moodle-based course management system as compared to Google Classroom which is their preferred LMS. According to these teacher-users, Google Classroom is “easy to navigate” and “more convenient [sic]” as it doesn't have many buttons with one of them even likening it to a “one-stop shop”.

The 80 teacher-users of TBL Hub were then asked to evaluate the site by rating the extent to which they agree or disagree with statements that describe availability and access to different features of an LMS based on their own experiences of using the platform. These statements are grouped into seven specific categories as illustrated in Table 3.

Table 2

Adjectival and Descriptive Equivalent of Computed Mean Score setup

Mean Range	Adjectival Equivalent	Descriptive Equivalent
3.50 – 4.50	Agree	Observable
2.50 – 3.49	Somewhat Agree	Somewhat Observable
1.50 – 2.49	Somewhat Disagree	Somewhat Unobservable
1.49 and below	Disagree	Unobservable

Singh's (2017) findings on the other hand, from his respondents of diploma students, revealed the five most common errors that the students made such as subject-verb agreement, verb tense, noun, preposition, and adjective. Additional noticeable errors were that of article, pronoun, adverb, and conjunction.

Table 3

Evaluation of the Different Features of Technology-Based Learning Hub Based on Teachers' Experiences for AY 2020-2021

Category of Statements	Categorical Mean	Standard Deviation
Design and Layout	3.2400	0.56783
Content Organization	3.4531	0.54409
Course and File Management	3.4333	0.51326
Communication, Collaboration, and Learning Community Features	3.4232	0.58237
Testing and Assessment Tools	3.5036	0.52130
Gradebook and Tracking	3.2937	0.69560
Archives	3.4708	0.57782
Technical Support and Assistance	3.2104	0.63187

In the Design and Layout category, respondents agree that TBL Hub allows for customization and personalization ($\mu=3.59$) while still maintaining consistency with the university's branding ($\mu=3.50$). However, teacher users somewhat disagree that the platform allows working completely offline with only a mean score of 2.54 which translates to a descriptive equivalent of a somewhat unobservable feature. While Penha & Correia (2018) suggests using a minimalist design for a learning management system, they also posit that standards (in this case, following the university's branding) promote consistency which in turn helps users get accustomed to the platform and other connected sites such as the university website, library, etc.

For the category of Content and Organization, the study participants agree that the platform allows them to create modules or learning units within their assigned courses or digital classrooms ($\mu=3.50$) but only somewhat agree that the site provides a repository for learning contents and basic tools for a content organization ($\mu=3.45$). This could be attributed to the file size limitations in terms of uploading resources into the

server and default or existing Moodle restrictions. According to the respondents, the TBL Hub also provides a record of learning that could be used across multiple disciplines or functions ($\mu=3.51$) but is only somehow capable of archiving content from other digital workspaces ($\mu=3.35$). This could be easily improved by the site administrators through the installation of plug-ins and/or integration of third-party applications to the website.

In terms of course and file management, the item about the TBL Hub's ability to copy, backup, and import/export files and other course contents within the platform received the highest mean score of 3.65 with an adjectival equivalent of Agree and a descriptive equivalent of Observable. On the other hand, teacher-users only somewhat agree that it allows bulk downloads or uploads of files ($\mu=3.03$) and that the site has a secured file exchange option among students ($\mu=3.36$).

Teacher-users of the TBL Hub agree that they have control over course notifications and automated course reminders ($\mu=3.59$). Receiving the highest mean score in this category ($\mu=3.60$), respondents also agree that announcements and other important notifications can be forwarded to their institution-assigned email addresses. Surprisingly, they only somehow agree that the platform has the ability for in-site messaging with only a recorded mean score of 3.05—the lowest in the Communication, Collaboration, and Learning Community Features. Even though personal and group messaging as well as announcements and threaded discussions are already available, it is believed that this particular feature remains unexplored and underutilized by the faculty respondents.

The study participants also agree that different types of questions (e.g. multiple-choice, short answer, equation, etc.) can be used ($\mu=3.59$) and rubrics can be integrated ($\mu=3.58$) in creating assessment tools within the TBL Hub. Similarly, the tests and assessments created within the LMS can provide immediate feedback to students, which in turn makes remediation possible ($\mu=3.63$). However, one feature that noticeably registered the lowest mean score ($\mu=3.29$) is the site's capability to process and/or calculate complex mathematical operations which are particularly essential in mathematically-inclined courses.

With regards to Gradebook and Tracking, teachers only somewhat agree that the site contains a functional grade book that is easy to set up and use ($\mu=3.15$). However, they agree that grades can easily be exported as a file or to the student's profile ($\mu=3.50$). Teacher-users also agree that the site provides them

access to archived courses from classes taught in previous semesters ($\mu=3.55$). However, they only somewhat agree that TBL Hub provides retrieval of the student's learning profile and history ($\mu=3.39$).

Registering the lowest computed categorical mean score of 3.2104, teacher-users of TBL Hub somewhat agree that technical support and assistance are provided to them. To be specific, they only somewhat agree that they can easily troubleshoot simple technical issues on their own ($\mu=3.06$). Similarly, they also somewhat agree that an online forum or FAQs page ($\mu=3.13$), as well as an actively dedicated helpdesk ($\mu=3.15$), is accessible to them. Just like the messaging feature, these are already available but perhaps remain to be underutilized by the learning community.

The respondents are then asked to rate or score TBL Hub using a numerical scale (1-5, with 5 being the highest) based on their own experiences using several criteria which include design and style, accessibility, convenience, cost, and time efficiency, user-friendliness, interactivity, responsiveness, and technical support. Table 4 presents the descriptive statistics for these ratings.

Table 4

Descriptive Statistics of Teacher-Users' Ratings of LMS Criteria

	N=80	Mean	Standard Deviation
Design and style of layout/interface		4.03	0.842
Accessibility		4.10	0.866
Convenience		3.99	0.864
Efficiency (in terms of time and costs)		3.99	0.934
Ease of use or user-friendliness		3.91	0.903
Interactivity		3.94	0.972
Responsiveness of the site/platform		3.91	0.957
Troubleshooting/Technical Support		3.86	0.964

The majority of the respondents gave a rating of 4 or 5 to all the criteria identified. However, the highest mean score recorded is only 4.10 for accessibility. Whereas the lowest mean score, consistent with the evaluation of the specific features under the same category, is for troubleshooting or technical support ($\mu=3.86$). When the 80 teacher-users were asked to qualify their overall experience of using TBL Hub, 42.5% says it was effective and only one (1.2%) of the respondents said that it was not effective at all.

Respondents were also asked to identify problems or concerns they encountered while using TBL Hub. Many of them identified platform-inherent issues such as difficulties in accessing the site or logging in ("data traffic") due to unexpected system downtime and

server disputes. They also expressed difficulties in terms of importing quizzes and loading certain file types when checking students' assessments. Others also encountered difficulties in monitoring students and even faculty activity during class hours using TBL Hub.

In line with these identified issues and concerns, teacher-users were also given the chance to make recommendations and suggestions to further improve the quality of their and their students' experience in using TBL Hub. The most common recommendation is to "improve the connection" to the site. This doesn't necessarily refer to the lack of internet access but rather to the difficulties they have encountered while accessing the site itself. There are also calls for increased server storage to accommodate larger file sizes. Many faculty also requested having a live "chat box" and uploading of "video tutorials" as well as training and workshops on how to utilize the platform to continuously support "non-techy faculty" members and even students. Lastly, some faculty participants also suggested enhancing the mobile version of the website.

Conclusion and Recommendations

The current COVID-19 pandemic has pushed many of our learners and teachers out of the four walls of the traditional classroom. Educational leaders, school administrators, and education specialists explored and implemented a variety of teaching and learning modalities just to continuously provide quality pedagogical service to students. In the field of education, assessment and evaluation of any implemented teaching and learning methodology are imperative as it provides information on what can be improved as regards these applied methods. This particular study gave an overview of the University of Makati's faculty experiences in using the Technology-Based Learning Hub which is a learning management system—one of the many implemented course delivery modalities during the academic year 2020-2021. A survey of 88 teachers revealed that almost half of the respondents already had prior experiences using an LMS platform even before the COVID-19 outbreak and have described it as an effective tool for learning instruction and delivery. Eighty of these respondents chose to mainly utilize the TBL Hub for the conduct of their classes during the previous school year. In an evaluation of the different features of what an LMS should be like, it was found that teacher-users somewhat agree that the majority of these essential criteria are already somewhat observable in the TBL Hub; particularly in areas of testing and assessment, content organization and archiving, course and file management, as well as communication and collaboration. However, based on the results of this

evaluation, improvement still needs to be done as regards the design and layout of the website together with the provision of technical support and assistance where many study participants have also identified pressing issues and concerns that they want to be addressed in the future. It is important to note, however, that this study is only conducted in one educational institution and is based solely on the experiences of its very own teacher-users on using a specific Moodle-based LMS platform. Therefore, the results of the study cannot be used to make generalizations and formulate assumptions regarding the use of any other learning management system. It is recommended that similar studies be conducted to further improve and enhance every user's (whether teacher or student) experience of utilizing an LMS.

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