



Impact of the Utilization of Learning Management System in the Implementation of Distance Learning in Secondary Schools in the Philippines from 2019 to 2023

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Abstract

Learning Management Systems (LMS) have been one of the emerging technologies in the field of education and are widely used in higher education around the world. In the Philippines, it was not until the COVID-19 pandemic that it was introduced and utilized in basic education. As a result, limited studies about LMS in basic education were conducted. Hence, this study aimed to determine the impact of the utilization of LMS in the implementation of distance learning in secondary schools in the Philippines from 2019 to 2023. Nine articles that met the criteria underwent systematic review. The findings revealed that Moodle and Google Classroom are the most widely used LMSs by secondary schools in the Philippines. Secondary schools utilized LMS primarily to create and deliver learning content; moreover, for assessment, monitoring, feedback, and establishing interaction and communication between students and teachers. The utilization of LMS significantly improves teachers' performance and students' academic achievement during distance learning. It also addresses the gaps and skepticism towards online learning. The paper recommends that secondary schools maximize the use of LMS to improve instruction. The DepEd shall institutionalize the use of LMS in public secondary schools, especially during the disruption of regular classes. It shall also provide training and capacity building in the use of LMS so that teachers and learners will be able to use LMS effectively. Lastly, developers shall continue to enhance the features of LMS to cater to the needs of teachers, learners, and school administrators.

Keywords: Implementation of Distance Learning, Learning Management System, Secondary Schools in the Philippines

Introduction

The COVID-19 pandemic, which emerged in late 2019, had significant repercussions for both the global economy and the field of education. Schools were deserted from the everyday hustle and bustle. School administrators and education practitioners were forced to find ways and solutions for teaching and learning to take place, even at a distance.

Distance learning encompasses educational methods in which the physical presence in the same place of both the teacher and pupils is not required. The education sector chose it as a solution to close the gap between teachers and students. More recently, distance learning programs are making use of the incredible opportunities afforded by modern technology and offer very intimate and effective learning opportunities in all manner of distance education courses (Fatmi et al., 2021). Online learning, modular learning, television, and radio-based learning have been considered for blended and hybrid learning modalities, considering the different situations of learners, teachers, and other school stakeholders (Bayod & Bayod, 2020).

Just like any other country, the Philippines also struggled to find ways to provide alternative learning for students, considering the threat of exposure to COVID-19. The adoption of distance learning was also the answer. The challenge was to ensure that access to education was possible while keeping the students safe while learning. In response to the difficulties the pandemic presented in the field of basic education, the Philippines



developed the Basic Education Learning Continuity Plan (BE-LCP). It lays down the direction for basic education in the country, embodying the Department of Education's response to the disruptions caused by the pandemic. The BE-LCP addresses the need for continuity in education despite the changes and dangers posed by the emergency (Department of Education, Republic of the Philippines, 2020a).

DepEd implemented the Alternative Delivery Mode (ADM) during the pandemic by offering flexible learning modalities. Within the flexible learning framework, individuals and parents have the option to select from remote printed learning, radio/TV-based learning, and internet learning, depending on their educational requirements and socioeconomic circumstances. Online learning, which consists of synchronous and asynchronous setups, offers more learning opportunities through the varied techniques available on the Internet. In this connection, DepEd utilized the Electronic-Self Learning Module (e-SLM) and Learning Management System (LMS) for teachers and learners who prefer online classes as the learning modality. With the use of LMS, teachers were able to set up online classrooms, distribute assignments, administer online tests to gauge students' understanding, keep track of students' progress, and submit grades. The DepEd LMS includes three applications: LMS for online classes, LMS for online training, and LMS for national tests (Department of Education, Republic of the Philippines, 2020b). The Moodle LMS platform is what powers the DepEd LMS. DepEd LMS is a powerful tool that teachers and school heads utilize during distance learning.

In the post-covid 19 pandemic, secondary education in the Philippines has experienced significant development in digital education. An increasing number of students rely on technology, particularly on the internet, to gather information as supplementary to the information they acquired at school. Moreover, the Department of Education is actively promoting digital learning through the Digital Rise Program and DepEd Computerization Program. Through these programs, DepEd is bridging the gaps between education and technology by integrating ICT skills development in the K to 12 Curriculum, gradually providing laptops, tablets, and smart TVs to teachers and students and establishing partnerships with Microsoft and Google in providing software services to school stakeholder (Hernando-Malipot, 2022). With LMS also being integrated into digital education, sufficient knowledge and skills on its utilization are key to ensuring learning continuity despite the challenges.

Objective

This systematic review aimed to determine the impact of the utilization of the learning management system on the implementation of distance learning in secondary schools in the Philippines from 2019 to 2023. It will specifically determine what and how secondary schools use LMS, as well as the effects of LMS use in the implementation of distance learning in secondary schools in the Philippines.

Literature Review

Online Distance Learning

Distance learning is any kind of remote education wherein a student is not physically present in the classroom. During the pandemic, the Philippines adopted different forms of distance learning. Online Distance Learning (ODL) is one of the modalities, along with modular and blended learning, offered by the Department of Education, where students learn using the internet. ODL can either be asynchronous or synchronous. Synchronous learning is learning from a distance by attending a class virtually on a regular schedule, while asynchronous learning is learning at one's pace and schedule but within a certain timeframe (Nolasco, 2022). Online distance learning benefits both students and teachers because it promotes interaction, communication,



flexible scheduling, and time arrangements (Weldon et al., 2021). Though online learning provides an alternative to traditional learning, it is not as effective as the latter. Online distance learning cannot produce the desired results in underdeveloped countries where many students have difficulty accessing the Internet due to technical and monetary issues (Adnan & Anwar, 2020). Online distance learning is still in the development stage, but the willingness of most students to engage in online distance learning in a post-pandemic setting shows the immense potential of e-learning in the future (Ismaili, 2021).

Learning Management System

Learning Management System is a software tool that allows students to receive learning content as well as educational resources to continue learning in an online modality. It enables educators to create customized learning content, uses a variety of pedagogical models, and improves students' engagement in online distance learning (Obana, 2021). LMSs have a variety of features that support online distance learning, including course management, lecture scheduling, assessment of learning, delivery of learning content, learner progress tracking, support for online social communities, communication tools, and system security (Asenahabi et al., 2022; Turnbull et al., 2020).

Choosing the right LMS depends on educational objectives, budget constraints, and technological preferences for the features of the LMS. It can be either installed or cloud-based, open-sourced or closed-source, and free or commercial (Global, 2023; Kunju, 2021). There are a handful of LMS platforms that users can choose from. The popular LMSs are Blackboard, Moodle, Google Classroom, Schoology, Canvas, Brightspace, Edmodo, Absorb LMS, and Talent LMS (Bouchrika, 2024b; Fenton, 2018). According to the study by Gamage et al. (2022), Moodle, which is an open-source LMS, was identified as the most popular. Open-source LMSs were preferred over other types because of their highly customizable features and the low cost charged for upgrading (Mohd Kasim & Khalid, 2016). In addition, Moodle is a well-established and advanced learning platform widely used in education, with a focus on university settings and undergraduate studies (Altinpulluk & Kesim, 2021). On the contrary, the study by Aldiab et al. (2019) revealed that most of the universities (around 90%) use Blackboard LMS for their teaching and learning activities. They underscore the significance of LMSs in the education system and the need for continued development and integration of innovative features to enhance the learning experience for students.

Benefits & Limitations of LMS

LMSs have become an essential tool for managing e-learning, and they have the potential to improve the quality of education. LMS provides learning access anywhere and independently using technology, customizes courses and training programs, organizes learning content in one location, and monitors learning performance easily (Seth, 2017). Integration of LMS in education creates a positive impact, but there are still many challenges that need to be addressed, such as better integration with other systems, more effective pedagogical approaches, better support for learners and instructors, IT infrastructure, system-related issues, and policy issues (de Oliveira et al., 2016; Bervell & Umar, 2017). Furthermore, LMS does not have a parental role, which makes it harder for parents to manage the learning progress of their children (Xin et al., 2021).



Methods and Materials

This section describes the method used in searching, analyzing, and synthesizing research articles to determine the impact of the utilization of LMS on the implementation of distance learning in secondary schools in the Philippines from 2019 to 2023.

This study employed a systematic review methodology. The study was carried out in six phases: 1) identification of the topic and formulation of the research question, 2) establishment of criteria for including and excluding studies, 3) identification of pre-selected and selected studies, 4) categorization of the selected studies, 5) analysis and interpretation of the results, and 6) presentation of the review and synthesis of knowledge.

In the topic identification and research question formulation stage, researchers considered the following as the subjects or topics for this review: “Learning Management System or LMS”, “Impact of Learning Management System”, “Utilization of Learning Management System”, and “Distance Learning”. The question that guided the development of this systematic review was: “What is the impact of the utilization of LMS in the implementation of distance learning in secondary schools in the Philippines from SY 2019 to 2023?”. The primary sources of data are research articles about the impact of the utilization of LMS, which were collected from different online resources.

In the second step, the researchers used several inclusion and exclusion criteria. First and foremost, the article must be about the impact of the utilization of LMS. The article must be a journal article published in the years 2019 to 2023 and conducted in either public or private secondary schools in the Philippines. Studies about online learning that do not focus on the utilization of LMS were excluded from the study. Similarly, studies not conducted during the pandemic from 2019 to 2023 were also not considered. In addition, articles that involved the utilization of LMS in elementary, higher education, and businesses were also limited.

In the stage of the identification of pre-selected and selected articles, the researchers pre-select articles whose titles have relevance to the research problem. There were 43 pre-selected articles taken from five research databases which include Google Scholar, ACI, ResearchGate, ERIC and Academia. The following keywords or descriptors were used in searching for the articles: “Learning Management System”, “Online Learning” and “Distance Learning in Secondary Schools in the Philippines”. Out of 43 pre-selected articles, 9 studies met the criteria for inclusion. To ensure the quality of the selected studies, the Mixed Methods Appraisal Tool (MMAT) 2018 version was used. It is a critical appraisal tool for quantitative, qualitative, and mixed-method researchers included in systematic reviews (Hong et al., 2018).

In the categorization of selected studies, the researchers categorized the selected studies based on the inclusion criteria as well as the research objectives and research design employed. In the stage of analysis and interpretation of results, the abstract, results and discussion, and conclusion of the selected articles were reviewed thoroughly to analyze and interpret the data using thematic coding analysis through a deductive approach. Three themes were established. **Theme 1:** Learning Management System, **Theme 2:** Utilization of Learning Management System, and **Theme 3:** Impact of the Utilization of LMS. After analyzing and interpreting the results, the researchers summarize and synthesize the findings and integrate them into the writing and presentation of the reviewed and synthesized information on the impact of the utilization of LMS in the implementation of distance learning in secondary schools in the Philippines.



Results and Discussion

Several studies around the globe were conducted on the utilization of Learning Management Systems (LMS), especially during the pandemic when the world shifted from face-to-face modes to distance learning. In this connection, this systematic review focused only on the impact of the utilization of LMS on the implementation of distance learning in secondary schools in the Philippines from 2019 to 2023. The table below presents the identification of studies that were selected for synthesis. The researchers preselected 43 studies about the utilization of LMS. After reading all the articles, 9 were selected for synthesis based on the set inclusion and exclusion criteria.

Table 1 List of Papers Selected Based on Inclusion Criteria

Author & Year Published	Year Conducted	Locale	Setting
Acala & Dimasacat (2023)	2023	Manila Philippines	Private School – Senior High
Aguilar et al. (2021)	2021	Urdaneta City, Pangasinan, Philippines	Public School
Barrera et al. (2022)	2021	Cavite, Philippines	Public School – Senior & Junior High
Cajilla & Bug-os (2022)	2022	Misamis Oriental, Philippines	Public School – Senior High
Fernandez (2023)	2022	Taguig City, Philippines	Public School – Junior High
Fullente & Dio (2023)	2022	Sorsogon, Philippines	Private School – Junior & Senior High
Garcia et al. (2022)	2022	Surigao, Philippines	Private School – Junior High
Lalap (2021)	2021	Not Specified	Public School – Junior High
Sombria et al. (2023)	2021	Sultan Kudarat, Philippines	Public School – Junior High School

It indicates that four studies were conducted in the year 2021; similarly, four studies were conducted in the year 2022; and one study was conducted in the year 2023. It implies that most of the studies were conducted during the COVID-19 pandemic, when the learning modality shifted to distance learning. Furthermore, all the studies were conducted in the Philippines. The studies above were conducted in one each of Pangasinan, Cavite, Misamis Oriental, Surigao, Taguig City, Sorsogon, and Manila, and another one did not specify the locale of the study. It implies that most of the schools that utilized the learning management system are from Luzon, with five studies conducted, compared to Mindanao with three and Visayas with zero.

All the studies were conducted in secondary schools. Six studies were conducted in public schools, and likewise, three studies were conducted in private schools. Most of the studies were conducted solely in junior high schools, with four studies conducted. There were only two studies conducted solely in senior high school, two studies consisting of both junior high and senior high school, and another study that did not specify the grade level of their respondents. It implies that both private and public schools utilized learning management systems during the pandemic. Moreover, more studies explored the impact of the utilization of LMS in junior high school than in senior high school. The selected studies differ from one another in terms of purpose and research design. The table below specifies the objectives of the studies and the research design employed.

**Table 2** List of Papers by Author, Year Published, Objective, Research Design

Author & Year Published	Objectives	Research Design
Acala & Dimasacat (2023)	To determine how private senior high school students perceive the use of learning management systems and how it affects their communication skills.	Qualitative & Quantitative Method (Mixed-method)
Aguilar et al. (2021)	To determine the acceptability and validity of Learning Management System through the implementation and design of i-nhs.	Descriptive and Developmental Research Design
Barrera et al. (2022)	To explore the experiences of teachers during the implementation of online distance learning.	Narrativeinquiry Design Under the Qualitative Approach
Cajilla & Bug-os (2022)	To ascertain the academic achievement and perceived level of satisfaction of the students in using the gamified learning management system.	Quantitative-descriptive Research Design
Fernandez (2023)	To explore students' experiences and perception in using the Brightspace as online learning support.	Quantitative-descriptive Research Design
Fullente & Dio (2023)	To determine how mathematics teachers utilized Moodle Learning Management System.	Mixed-methods Explanatory Sequential Research Design
Garcia et al. (2022)	To determine how high school teachers at St. Paul University are using the Quipper learning management system.	Quantitative-descriptive Research Design
Lalap (2021)	To determine how utilizing Google Applications affects students' academic achievement in social studies.	Descriptive Research Design
Sombria et al. (2023)	To assess the effectiveness of google classroom in improving students' critical thinking skills in chemistry.	Experimental Research Design

Four studies aimed to examine the effectiveness of LMS in improving students' academic performance. Meanwhile, three studies aimed to determine the experiences of teachers on how they use the LMS. One study explored the experiences and perception of students in using LMS. Lastly, one study focused on the implementation and design of LMS to determine the acceptability and validity. In terms of the research design, five studies utilized descriptive research design, two studies used mixed methods, one used experimental research design, and another used narrative inquiry design. The table above implies that most studies are conducted to determine the effectiveness of the utilization of the LMS. Additionally, the descriptive research design is the research design often used in studies related to the utilization of LMS.

Learning Management System

In the Philippines, schools adopted LMS for distance learning during the pandemic. Different private and public schools in the Philippines used various LMS platforms. The table below shows the LMS utilized by secondary schools in the Philippines from 2019 to 2023.

Table 3 Learning Management System

Author & Year Published	Learning Management System Explored
Acala & Dimasacat (2023)	Blackboard, Brightspace, Canvas, Google Classroom, Schoology
Aguilar et al. (2021)	Moodle
Barrera et al. (2022)	Moodle
Cajilla & Bug-os (2022)	Gamified Learning Managements System Called Physci-Zone
Fernandez (2023)	Brightspace
Fullente & Dio (2023)	Moodle

**Table 3** (Cont.)

Author & Year Published	Learning Management System Explored
Garcia et al. (2022)	Quipper
Lalap (2021)	Google Classroom
Sombria et al. (2023)	Google Classroom

Based on the table, three studies explored Moodle, and two studies explored Google Classroom. Quipper, Gamified LMS, and Brightspace were also explored, with one study conducted each. Furthermore, another study explored the utilization of several LMS, including Blackboard, Brightspace, Canvas, Google Classroom, and Schoology.

The data implies that the most used LMSs in secondary schools in the Philippines are Moodle and Google Classroom. The other LMSs utilized by secondary schools in the Philippines are Google Classroom, Quipper, Gamified LMS, Brightspace, Blackboard, Schoology, and Canvas. In the study of Gamage et al. (2022), they highlighted that Moodle is a highly customizable and adaptable platform that has a wide range of features and is widely used in academia. The study found that Moodle has a high rate of acceptance in the community and many institutions. Likewise, Jaca (2022) discovered that students prefer Google Classroom because it is convenient to use and can easily be accessed.

Utilization of a Learning Management System

LMS has revolutionized how knowledge is imparted, received, and assessed in academic institutions. Using LMS helps achieve an environment where learning opportunities are optimized (Bouchrika, 2024a). How LMS will be utilized depends on the purpose and preference of the user. LMS has different features that provide a variety of uses for teachers and students. The table below shows how the LMS was utilized by secondary schools in the Philippines from 2019 to 2023.

Table 4 Utilization of Learning Management System

Author & Year Published	Utilization of LMS				
	Learning Content	Assessment	Monitoring/ Feedback	Communication with Teachers	Interaction with Peers
Acala & Dimasacat (2023)				X	X
Aguilar et al. (2021)			X		
Barrera et al. (2022)	X	X			
Cajilla & Bug-os (2022)					X
Fernandez (2023)	X				
Fullente & Dio (2023)	X	X	X		
Garcia et al. (2022)	X	X			
Lalap (2021)	X	X		X	X
Sombria et al. (2023)	X	X	X	X	X

The table above reveals how the LMS was utilized. 66.7% of the studies stated that LMS was used for creating and delivering learning content (Fullente & Dio, 2023; Lalap, 2021; Garcia et al., 2022; Sombria et al., 2023; Fernandez, 2023; Barrera et al., 2022). Meanwhile, 55.5% of the studies stated that LMS was utilized for assessment purposes (Fullente & Dio, 2023; Lalap, 2021; Sombria et al., 2023; Garcia et al., 2022; Barrera et al., 2022). Likewise, 44.5% LMS was also used to establish interaction among teachers and students during online classes (Cajilla & Bug-os, 2022; Lalap, 2021; Acala & Dimasacat, 2023; Sombria



et al., 2023). On the other hand, 33% of the studies revealed that LMS was used to monitor and provide feedback (Aguilar et al., 2021; Sombria et al., 2023; Fullente & Dio, 2023). Lastly, 33% of the studies stated that the LMS was used for communication between the teacher and students about academic concerns (Lalap, 2021; Sombria et al., 2023; Acala & Dimasacat, 2023).

The data implies that secondary schools in the Philippines utilized the LMS primarily to create and provide educational content. Furthermore, LMS was also utilized for assessment, monitoring, and feedback, establishing interaction through online classes, and communicating between students and teachers about academic concerns. In connection, Al-Sharhan et al. (2019) found in their study the low utilization of some LMS functionality tools where instructors frequently utilized the administrative and management tools of LMS and rarely used the interactive learning functions like chats and interactive books.

The utilization of LMS encounters some issues, as stated in the reviewed studies. Technical issues such as stability, network traffic, and server capacity were encountered when using LMS. The usability of the interface and user experience in using LMS were also some concerns that students and teachers encountered (Acala & Dimasacat, 2023; Fullente & Dio, 2023; Barrera et al., 2022). According to Fullente and Dio (2023), to maximize the utilization of the significant features of the LMS, training should be provided, considering the time, the tools, and the quality of the delivery of the content.

Impact of the Utilization of Learning Management System

LMS significantly changed the face of online distance learning. Hence, this study explored the impact of the utilization of LMS. The table below shows the impact of the utilization of LMS on the implementation of distance learning in secondary schools in the Philippines.

Table 5 Impact of the Utilization of Learning Management System

Author & Year Published	Impact of LMS			
	Teachers' Performance	Student' Academic Performance	Gap of Distance Learning	Perception Towards Distance Learning
Acala & Dimasacat (2023)		X		
Aguilar et al. (2021)			X	X
Barrera et al. (2022)	X			
Cajilla & Bug-os (2022)		X		
Fernandez (2023)		X		X
Fullente & Dio (2023)	X			
Garcia et al. (2022)	X			
Lalap (2021)		X		
Sombria et al. (2023)		X		

The table below reveals that the utilization of LMS has an impact on the implementation of distance learning in secondary schools in the Philippines. 55% of the studies agreed that the utilization of LMS improves the academic performance of students in distance learning (Acala & Dimasacat, 2023; Cajilla & Bug-os, 2022; Fernandez, 2023; Lalap, 2021; Sombria et al., 2023). Furthermore, 33.3% stated that it has a positive impact on teachers' performance in online distance learning (Barrera et al., 2022; Garcia et al., 2022; Fullente & Dio, 2023). In addition, 22.2% stated that LMS had a positive impact on how people perceived and experienced online distance learning (Aguilar et al., 2021; Fernandez, 2023). Subsequently, 11.1% specified that LMS addresses the gaps in distance learning (Aguilar et al., 2021).



The data implies that the utilization of LMS in secondary schools in the Philippines during the pandemic had a significant impact on the academic performance of the students then on the teacher's performance in online distance learning. It also has an impact on how people perceive online distance learning as well as in addressing the gaps in distance learning. The above result shows a resemblance to the study of Furqon et al. (2023) as they found out that the utilization of LMS had beneficial effects on the academic performance of students and can foster a favorable perception of distance learning implementation. Likewise, Samson and Yango (2023) found out in their study that LMS effectiveness is high in developing teacher's techno-pedagogical skills.

Conclusion and Recommendations

Secondary education in the Philippines has been transitioning to digital education in the past few years. The Department of Education has been promoting digital education to improve the quality of education in the country. It was evident during the pandemic that secondary schools in the Philippines utilized LMS during the distance learning period from 2019 to 2023. The result of this study revealed that Moodle and Google Classroom are the most widely used learning management systems. Other LMS utilized by secondary schools in the Philippines are Quipper, Brightspace, Blackboard, Schoology, Canvas, and Gamified LMS. Secondary schools utilized LMS primarily to create and deliver learning content; moreover, for assessment, monitoring, feedback, and establishing interaction and communication between students and teachers regarding academic concerns. Some issues were encountered in the utilization of LMS. These are technical issues (stability, network traffic, and server capacity), usability of the interface and user experience, and readiness to use the LMS. The utilization of LMS had a significant impact on the implementation of distance learning in secondary schools in the Philippines. The utilization of LMS significantly improves students' academic achievement and teachers' performance during distance learning. Moreover, it has a favorable impact on how students and teachers perceive online learning. Hence, it also addresses the gaps in distance learning.

Based on the findings of the study, the researchers recommend the following: Secondary schools shall maximize the use of LMS to improve instruction. The DepEd shall institutionalize the use of LMS in secondary schools, especially during disruptions of regular classes. Furthermore, it shall provide training and capacity building in the use of LMS so that teachers and learners will be able to use LMS effectively; Developers shall continue to enhance the features of LMS to cater to the needs of teachers, learners, and school administrators. Future researchers may conduct studies about the extent of utilization of learning management systems by secondary schools in the Philippines.

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