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Leading the Digital School: Exploring the Relationship between Learning Management System Practices and School Leadership in Senior High Schools

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ABSTRACT

Employing a mixed method of research this study measured the usage of the five (5) components of Learning Management System (LMS) as practiced by school leadership in private senior high schools in the province of Laguna, Philippines. The five components, Student Database (SD), Curriculum Development (CD), Teachers' Evaluation (TE), Teachers' Monitoring (TM), and Resource Allocation (RA) as explored by Akram (2022), focusing on how (LMS) can revolutionize various school management functions. Qualitative recommendations were also solicited from selected informants to enhance usage of LMS in its five components. The school leaders and administrators used the platform as just a storage tool particularly for curriculum development, (CD) Teachers' Evaluation (TE) and Teachers monitoring with less than fifty percent (50%) utilization. Student Database (SD) and Resource Allocation (RA) has more than fifty percent (50%) of intended LMS features are utilized. School leaders and administrators have a strong tendency to develop LMS programs using alternative tools like Google, MS word and Artificial Intelligence (AI). There was a feeling among school administrators and leaders of unfamiliarity, difficulty and lack of specific technical features on the current LMS platform. Although low usage cuts-through educational attainment and empirical barriers, it is recommended that institutions should sponsor extensive training on the LMS platforms their institutions is currently using.

INTRODUCTION

Digital age has revolutionized nearly every aspect of human life and education is no exception. Educational institutions worldwide rapidly adapt digital tools and resources to enhance the school leadership functions in the areas student database, curriculum development, teachers' evaluation, teachers monitoring, and resource allocation. This shift to the digital approach to education presented opportunities and challenges for educators and policymakers. Digital tools simplified the process of data gathering, storing, and analysis and guided educators and learners in decision-making.

Digital schools were born out of this paradigm shift where academic institutions used technology to enhance learning, teaching and management. This made educational leaders effective in their roles (Eden, *et al.*, 2019) particularly on curriculum development and implementation. Teacher monitoring and evaluation as components of school management are streamlined in collecting and analyzing performance data in the forms of student comments, classroom observations, and submission of lesson plans. Attendance, class plans, and student involvement could all be monitored by administrators through digital platforms.

This study veered into the dynamics between LMS practices on use students database, curriculum development, teachers' evaluation monitoring and resource allocation in private senior high schools in the province of Laguna. The use of LMS generates excellent learning outcomes for developing the vision, encouraging

innovation, and allocating resources to ensure efficient educational processes. LMS provides teachers with access to a consolidated repository of course materials, assignments, and assessments; and students in engaged interactive learning experience. This encouraged students to take control of the learning process by allowing them to review lessons for clarification and set their own learning pace providing access to learning resources at any time and location. This requires leadership that fostered a strong digital learning culture that will provide the skills and knowledge needed to optimize the capabilities of the platform while incorporating teaching-learning techniques. This will give rise to collaboration, supportive learning environment and enable the formation of online communities to discuss best practices, solve problems, and co-create educational resources. Understanding the relationship between LMS practices and leadership styles in senior high school institutions could help school administrators to exploit technology to improve teaching and learning experiences towards positive educational outcomes. The findings could contribute to the existing educational technology practices and empirical advice to educational leaders for school leaders in the region.

Theoretical Framework

This study articulated the concept of e-leadership of Akram (2022), closing-in only how Learning Management Systems (LMS) could revolutionize some school management functions: Student Database, Curriculum Management, Teachers Evaluation, Teachers

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monitoring and resource allocation.

Akram (2022) identified key themes showcasing how a Learning Management System (LMS) is associated with

the five areas: student database, curriculum development, teachers' evaluation, teachers' monitoring and resource allocation.

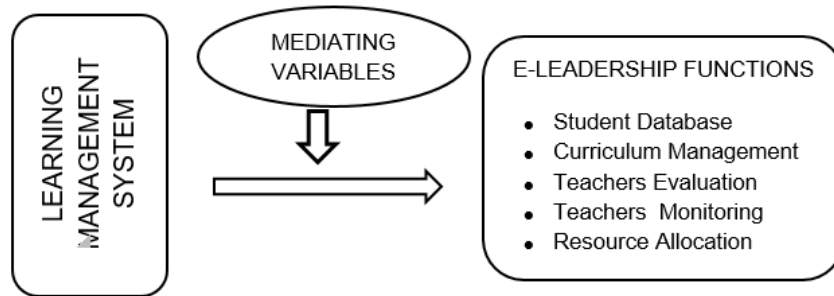


Figure 1: Adapted Paradigm (Akram, 2022)

Technology Acceptance Model (TAM) and Learning Management Theory (LMS).) highlighted the growing popularity of TAM as a suitable framework for understanding factors influencing users' adoption and acceptance of new technologies like LMS. Cavus *et al.* (2022). Integration of LMS required consideration of factors that can influence its adoption and acceptance among users. The TAM, with its usefulness and ease of use provided a valuable lens for examining the factors on informed decisions regarding resource allocation, curriculum development, and teacher evaluation and monitoring

LITERATURE REVIEW

Leading Digital School

Soliman *et al.* (2019) showed the significance of student feedback for an effective implementation of the Learning Management System (MS). This attempted to leverage in bridging the recommendations of students and administrators to form a continuum between theoretical ideals and practical application. A similar idea surfaced when Charles and Mkulu (2020) highlighted the collaboration between administrators, teachers and students to confront management challenges.

Ashrafi *et al.* (2020) and SlideShare (n.d.) underscored the growing adoption of Learning Management System in higher education. Students considered LMS a valuable tool in enriching learning experience. The study however suggested that further research needs to ascertain the effectiveness of LMS versus the backdrop of traditional methods. The success of LMS implementation is best anchored on the administrator support as highlighted by Thomas (2023). It pursued school leaders to have crucial role in the adoption of LMS by fostering a supportive environment, providing training and enhanced their perception of the LMS. Earlier though Kanyemba (2022) demonstrated the disparity in ICT integration between universities and TVET colleges. Universities with more extensive LMS usage showed efficient administrative tasks in enrollment, attendance and grading to dedicate more time for other operational areas.

Marmoah *et al.* (2024) delved into the specific advantages of LMS for administrators. LMS with features like

centralized management, data-driven insights, improved communication, and automation capabilities streamlined workflows, fostered informed decision-making, and saved valuable time and resources. The systems offered an array of benefits for stakeholders in education. This foster collaboration and harnesses the power of data. Indeed, wean the fire of learning in the digital age.

Learning Management and Student Database

Bradley and Malcolm emphasized LMS as a tool for enhancing the learning process through collaboration and centralized information management hub for students. Odekeye *et al.* (2023) later highlighted LMS to identify the student knowledge gaps, aligning with the core functions of databases in tracking and supporting progress of students. Tus *et al.* (2021) and Furqon *et al.* (2023) later explored LMS within blended learning environments, emphasizing its role in student interaction. This further examined how LMS served as a platform for school administrators to manage student enrollment, track progress, and communicate with stakeholders as collaborated by Aruldas in (2023 and later by Husain in (2024) that further highlighted the adaptability of LMS across various educational contexts, like language learning and general education.

Singh in (2021), Yawisah *et al.* (2022) and Arda Helvacilar in (2023) introduced the concept of LMS as a platform for career development. They emphasized implementation, importance of infrastructure, system capabilities and reliable internet access and other functionalities for effective student database management.

Impact of LMS on Curriculum Development

Paguirigan in (2022) leveraged Learning Management Systems (LMS) for universities for more than just delivering online courses. It further highlighted the potential of LMS platforms as collaborative spaces for faculty. However, successful LMS implementation required more than just the technology itself. Earlier however, Asamoah (2020) emphasized the importance of collaboration with ICT specialists to build a strong LMS environment that empowered faculty to participate

in curriculum development through technology. Fearnley & Amora (2020) also emphasized a user-centered approach by understanding faculty perceptions and needs. Administrators could create an environment that encouraged faculty to leverage curriculum development. This aligned with the foundational understanding later provided by Kasabova *et al.*, (2023) who identified LMS functions that administrators could strategize to actively involve faculty in shaping and implementing the curriculum. Yousaf *et al.*, (2021) considered addressing faculty concerns and fostering an environment where faculty felt empowered to actively shape the development of curriculum. Use of these functionalities were later explored by Furqon *et al.* (2023), that allowed administrators to create a collaborative environment where faculty could actively develop and refine the curriculum.

The impact on student learning is a crucial consideration. Garcia *et al.*, (2021) demonstrated the potential of LMS to positively impact student learning. By promoting its effective use for development, administrators could create an environment where faculty are empowered to design and deliver a more engaging curriculum. Understanding faculty engagement levels is important. As noted by Ghilay (2019), activities may need more targeted administrative support for curriculum tasks by identifying reasons for low activity and implementing strategies. Understanding and promoting faculty engagement created an environment where faculty felt empowered to use the LMS for collaborative curriculum development. Delos Santos, M. S. M., Durano, D. C., & Hortillosa, A. D. (2022). Articulated potential LMS design for informed user needs. Administrators acting as facilitators utilized user data to identify curriculum gaps and tailor the LMS functionalities to close these gaps. This approach improves the quality of learning experiences, fosters engaging and learning environment.

Teachers' Evaluation

The rise of online learning platforms ushered new challenges and opportunities to evaluate performance of teachers. Researches by Sun *et al.*, (2023) and Huang, (2022) did not directly address administrator its use for evaluation. They offered valuable insights and proposed an integrated framework encompassing student, course, instructor and organizational elements. Other studies laid the potential of LMS to streamline the evaluation process. Phothong *et al.*, (2023) discussed the benefits experience and designs of online submissions, evaluator assignment and automated data processing.

Although not directly focused on teacher evaluation, Rosário and Dias (2022), zeroed on user-centered design on rubrics, automate evaluation tasks and integrative student feedback tools. Alhazmi (2021) earlier averred on the LMS features indirectly connected with informed administrator decisions to success factors. Lee and Park (2021) earlier identified in Artificial Intelligence features with evaluation potentials that could leverage teacher evaluations. Additionally, highlighted communication

features that could facilitate discussions and feedback exchange between administrators and teachers, contributing to the evaluation process.

Teachers' Monitoring

Vaughn Malcolm Bradley, (2023). Reinforced the learning process through inclusive online classroom environments and intercede structures that promote online collaborative-group discussions, professional training, and communication. Teachers and administrators have an active equilibrium between learning with technological resources and guidelines from the objective monitoring and evaluation. Yousof F. *et al.*, (2021) suggested an emerging trend of the use of a system in higher educational institutes to improve the processes of teaching and learning. It discussed the phenomenological viewpoint of teachers on the use of LMS as a monitoring tool. An analysis uncovered four main categories of faculty perceptions: advantages, disadvantages, features, and problems that require intensive training or faculty and students.

The study of Luming, Piang *et al.* (2024) discussed a strategically transitioned LMS specially during the pandemic. It pointed out a visually and functionally improved interface training for familiarity among students and teachers. The frequency and manner of LMS usage varied between teachers and departments, suggesting tailor-made information and support. It was suggested a dialogues involving multiple stakeholders on monitoring teachers to enhance quality of teaching and learning. The outbreak of Covid-19 Arinaitwe, (2024) had forced many educational institutions in Uganda to adopt learning management systems and modes including Moodle system approach. This enabled and enhanced online monitoring, teaching and learning as it ascertained what parameters to assessed. Some of these included developing, updating and uploading content as guided by the curriculum.

Soko *et al.*'s (2024) study delved to explore the level of collaboration among stakeholders on promoting inclusive education in primary and secondary schools in Lilongwe Rural East and Mthandiza zone in Dedza. The authors exposed current insights into how teachers and stakeholders perceived their collaborative roles in achieving better learning outcomes for students with special educational need (SEN). There was a strong willingness among teachers to acquire competencies and strategies to guide SEN in their quest for quality education. They further showed high comprehension about inclusive education practices due to attendance on workshops other than learning on teacher training colleges. Teachers showed apprehension that there was little support from schools and stakeholders especially on promoting inclusive practices in classes. This resulted to limited collaboration, conditional, erratic and unplanned activities that are done on an individual basis rather than teamwork. Parents also acknowledged the strong importance of collaboration to achieve the goals and objectives of inclusive education.

Bustamante, (2025). This study averred that professional development programs as essential for teaching competencies foster scientific literacy, critical thinking, and student engagement. It articulated that demographic factors like age, gender, teaching experience, and training attendance do not have significant effect on how teachers perceived the programs. There is however strong influence on grade level and educational attainment as to its effectiveness especially in collaboration, pedagogical approaches and assessment strategies. These professional development programs may prioritize mentorship programs that can further enhance teacher effectiveness in promoting scientific literacy. Taking into consideration these factors will help strengthen science instruction, consequently improving the understanding and application of scientific concepts by students. Hence, the study recommended an increased funding to custom-fit on specific grade levels and guarantee equitable opportunities for educators in resource-scarce areas.

Resource Allocation

Studies have highlighted the importance of data-driven decision-making for resource allocation (Willis *et al.*, 2019). LMS emphasized the need to prioritize resource allocation endeavors that have impact on student needs. Analysis of student performance, resource usage and engagement metrics, administrators could identify the most effective means to allocate resources. Tan *et al.* (2020) analyzed LMS data to identify areas of frustration to accordingly allocated resources. Abbad *et al.* (2021) identified student computer literacy as a key factor in LMS use and initiated training programs. Not long enough, Naveh and Shelef (2022) also found that initial student satisfaction with a new LMS platform was low but improved over time affirming that training and initiatives are crucial before, during and after LMS implementation. It appeared that underutilization, Edmondson-Kelly (2022) geared towards faculty development programs to address concerns about usability and build confidence in utilizing the LMS.

Synthesis

The related literature reviewed above gave the researcher a much clearer idea of the main direction of this research. These studies, books, and journals further showed the way for the researcher to see the gaps and similarities of knowledge that this research seeks to integrate and connect to create new viewpoints. The studies of Soliman *et al.* (2019), Charles and Mkulu (2020) emphasized the importance of feedback in shaping effective LMS implementation and utilization by bridging the gap between theoretical ideals and practical application in a school setting. Medina (2021) Haryani *et al.* (2021), and Kanyemba (2022) offered a connection between textbooks, LMS use and teacher performance, suggesting further that LMS proficiency could enhance the accuracy of an evaluation factor.

Further, the studies of Sackstein *et al.* (2019) and Jung &

Huh (2019) stressed that successful LMS implementation required attention to the specific context, specifically effective assessment tools in resource allocation as emphasized by Ghani's (2019) as reiterated by Tan *et al.* (2020) who explored how data analysis can improve resource allocation. The researcher ardently hoped that this review of related literature would further delineate the specific place of this research in vast dimensions of existing knowledge and the results generated from this endeavor would clearly situate itself as a contribution to the existing body of knowledge.

MATERIALS AND METHODS

The study utilized mixed method for an in-depth understanding of how the five features of LMS platform were used for digital school management. Fifteen private senior high schools in the province of Laguna, Philippines Eighty-five (85) and eleven (11) provided quantitative and qualitative data respectively. They were personnel trusted with decision-making administrative tasks that were involved in the use of LMS platform.

Quantitative data were gathered through a validated questionnaire using a four-point likert. Seven (7) working days were allotted for the questionnaires to be returned and later analyzed using the Statistical Package for Social Sciences (SPSS). Qualitative Data were analyzed using Narrative and Phenomenological insights about LMS practices.

The researcher strictly observed the confidentiality of opinions, beliefs, information, and identities of the research participants in accordance with accepted research ethical standards and the Data Privacy Act of 2013 of the Philippines.

RESULTS AND DISCUSSIONS

Descriptions of the Respondents on Educational Attainment and Experience

Thirty-one-point eight percent (31.8%) are on their master's degree studies while twenty-eight-point two percent (28.2%) have finished their master's degree. A good number, however, eighteen point eight percent (18.8%) are pursuing their doctorate and twelve point nine percent (12.95) are full-pledge doctors. This sums up to 31.7% or almost one-third is relatively young dynamic school leaders who are further honing their management skills and competencies through formal education in this digital age of leadership. Fifty-three percent (53.0) have experience of at least seven (7) years as an administrator, thirty-seven percent (37.6%) have been school leaders for at least four years. A total of ninety-point seven percent (90.7%). are relatively experienced leaders. However, a seventy-four have at least point one percent (74.1) have used LMS only for the last three (3) years, although LMS have been available for the last four (4) years, (Priti & Chetna, 2019; Eden *et al.*, 2019).

The Use of Learning Management Systems for Student Database

The composite mean (CM) on Student Database (SD) is

2.99, interpreted as Sometimes Used. This is generally low usage taking into consideration the dictum technological age as alleged by Medina (2021) that LMS proficiency can enhance safety and accuracy of student data. Haryani *et al.* (2021) and Kanyemba (2022) in fact offered a connection between higher LMS use and stronger teacher performance on monitoring students learning processes. School administrators and academic leaders used LMS feature on Student database only to manage student communication by sending out important announcements and updates. Although Soliman *et al.* (2019) emphasizes the importance of student feedback, Charles and Mkulu (2020) highlighted collaboration among - to overcome management challenges and improve student performance.

Educational Leaders felt that MS Word, or even Spreadsheet (Google Sheets, Excel) are easier to adapt and work well with other tools. One educator quipped: we “often lean toward tools that feel more comfortable especially during face-to-face classes”. A school leader lamented that: “There is Lack of Awareness and Training for actual users of our LMS platform”. The current LMS appears more complicated than Artificial Intelligence applications. School administration felt that there are redundant applications like MS Word. Although the current LMS platform has potential to speed up teaching-learning processes, it has inherent limited functionality. Concerns on data integration and the availability of alternative solutions External Limitations add up to technical challenges that frequently result to partial or non-use in more than one features of the LMS.

The Use of Learning Management Systems for Curriculum Development

The composite mean (CM) for Curriculum Development (CD) is 2.82, interpreted as Sometimes Used. This is generally a low usage taking into consideration the massive adoption of learning platforms in school management Paguirigan (2022). Curriculum materials and interactive learning experiences require more than just technology, (Asamoah (2020) but re requires collaboration with LMS to participate in curriculum development through technology. School administrators and academic leaders sometimes Integrate Curriculum Development (CD) particularly as content library to store and share curriculum-related resources like lesson plans, templates, and multimedia materials. Standardized curriculum templates within the LMS can ensure consistency across different grade levels and subjects. The latter results veered away from the study of Medina (2021), as it suggested that LMS proficiency enhances accuracy factor in the development of school curriculum.

Despite that school leaders failed to fully optimize LMS in Curriculum Development, studies of Fearnley & Amora (2020) emphasized a user-centered approach by encouraging faculty to leverage LMS for curriculum development as later advocated by Kasabova *et al.* (2023) who identified LMS functionalities that strategically utilized by administrators to involve faculty in shaping

and implementing the curriculum.

The integration Curriculum Development with external educational resources allow seamless incorporation of up-to-date content into the academic curriculum. Among the uncommon application usage among participants is sharing the curriculum with parents and stakeholders. This is promoting transparency and Curriculum differentiation that can be achieved by providing teachers with options to tailor content based on student needs. These imply that the current use of LMS by school administrators was mainly for storage for curriculum developed in other platforms.

The LMS platform feature for Curriculum development is underused. According to a learning are coordinator: “because it has very limited features for Curriculum Development, it cannot fully capture the evaluation and decision-making process of curriculum development.” In fact, she continued: “Using the usual software and programs like MS office and the artificial intelligence software can suggest a comprehensive yet detailed view on certain topic”. There are also some issues of limited in effectiveness and efficiency in data integration, absence of advanced collaboration tools required for curriculum building. The availability of alternative solutions to LMS platforms resulted to partial or non-use of LMS in this area.

The informants believed that current LMS platform is not user friendly perhaps due to lack of technical and operational trainings. “The lack of knowledge of the intended and beneficial users of the platforms. It is simply: It is not user-friendly” one coordinator emphasized. “and I would like to recommend comprehensive training and support programs for school

The Use of Learning Management System for Teachers’ Evaluation

The Composite Mean (CM) on Teachers’ evaluation (TE) is 2.56, interpreted as Sometimes Used. Phothong *et al.* (2023) earlier postulated that online submissions and automated data processing as collaborated by Sun *et al.* (2023) and Huang, (2022) could allow for a more accurate and comprehensive evaluation of teachers. Classroom observations, Panda (2021) and Lee (2021) to ensure teaching quality and practices this LMS feature can indirectly collect data on student engagement, course completion and performance. Data on student achievement and feedback linked to specific teacher was however used mainly for storage for manually collected evaluation data of teachers.

Inherent technical and practical limitation impeded the application of this LMS feature. “It typically cannot capture the full range of factors needed for comprehensive teacher evaluation”, said a seasoned principal. Even transfer of the encoded data to the platform is time consuming and we prefer the traditional way or the “way the know how to maximize time”, a Learning coordinator added.

The use of Learning Management System for Teachers’ Monitoring

School administrators only used sometimes this LMS feature to monitor teachers. Laming, Piang *et al.* (2024)

however averred that while LMS was previously viewed as merely a repository of course materials, it has strategically transitioned as key information dissemination tool during the pandemic as an alternative communication channel. It integrated into teaching and a component for monitoring performance. A tailor-made information and support for each department were facilitated. It becomes easier to monitor professional development programs for teachers as it blended into electronic completion and data analysis for urgent interventions. Kasabova *et al.* (2023) indeed demonstrated how measuring aspects like teaching quality and student understanding facilitated by LMS contribute to positive outcomes.

Despite the adoption of LMS for more than five (5) years in school management, there is a growing perception that there is very limited familiarity on its features for monitoring teachers. “It is both simplicity and complexity issues”, a principal said. The platform primarily focused on student learning and not monitoring teachers’ performance. “It has scope limitations and privacy restrictions”, she continued. Handheld tools and software become convenient alternatives. Lack of practical competency further created confusion on usage of the features of the platform.

The Use of Learning Management System for Resource Allocation

The composite Mean (CM) on the use for resource allocation is 2.65 interpreted as Sometimes Used. This low usage is outside the ambit of technological age as suggested by Saudi Arabian Ministry of Education Report (2020) that emphasized the power of LMS data for resource allocation. Participating school administrators seldom used this component in analyzing after-school programs and data-driven decision-making for resource allocation. Willis *et al.* (2019) emphasized a data-driven decision to prioritize programs that could create the biggest impact on students learning processes. Charles and Mkulu (2020) further highlighted collaboration among stakeholders- administrators, teachers and students to overcome challenges in raising the bar of student performance through appropriate allocation of resources. Consequently, Tan *et al.* (2020) and Edmondson-Kelly (2022) explored data analysis on underutilization of a mandated LMS to bridge the gap between policy and practice. This concerns on usability and confidence may be addressed through Administrative Support. “I suggest that users and administrators collaborate in analyzing LMS data in identifying areas of high student engagement where resources are underutilized ensuring that students have access to these resources”, a principal said. Management experience of school leaders is in no way influence the use of student database LMS feature. However, it was noted that curriculum development, teacher monitoring, teacher evaluation and resource allocation showed sufficient evidence to conclude that the use of these four other features mentioned above are influenced by previous management experience of school leaders.

CONCLUSIONS

1. LMS platforms have been used in its very limited capacity despite its availability for the last seven years. Only 74.1% used LMS only for the last three (3) years, only (53.0%) of them actively use LMS platforms despite their long experience of at least seven (7) years as administrators.

2. Only 30.28% usage of LMS Student Database feature. Non-familiarity, resistance change to availability of other platforms and management support contributed much to this low usage.

3. The use on Curriculum Development is low only 37.3% as it does not fully capture the evaluation and decision-making process characters of curriculum development.

4. Monitoring of teachers and valuation features are not proficiently utilized for it could not deal with comprehensive online evaluation and processing of automated data.

5. The resource allocation feature is under-emphasized to explore data analysis. It has not raised it bar enough to strategically leverage the allocation of resources.

Recommendations

1. The current institutional LMS platforms may explore intensively and extensively further applications of LMS and encourage academic leaders to patronize the current system through intensive training administrative support.

2. Leaders may optimize adaptation of features of LMS by frequently using its inherent other than their storage capabilities only.

3. Extensive technical and operational training on LMS to capture the decision-making processes of curriculum development and other features.

4. Comprehensive training Monitoring and valuation features of LMS should be strategically transitioned to multiple stakeholders of educational institutions.

5. Further endeavors on technical and practical applications may be explored to integrate LMS features to minimize underutilization.

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