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Implementation of a Web-Based Learning Management System to Support Parental Involvement in Digital Learning

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Abstract

Parental involvement in the learning process is a crucial factor in supporting student academic success in the digital education era. However, limited academic monitoring systems in schools often result in suboptimal communication between teachers and parents. This community service activity aims to implement a web-based Learning Management System (LMS) with monitoring features to support parents in digital learning. The program, implemented at Epsom College in Malaysia, encompasses needs analysis, system design, LMS implementation, user training, mentoring, and system evaluation. The system was developed using the Dynamic Systems Development Method (DSDM) approach, while testing was conducted using Black Box Testing and questionnaire-based quantitative evaluation. Participants included 15 teachers, 48 students, and 32 parents. The implementation results showed that the system helped teachers manage digital learning, facilitated student access to materials and assignments, and increased parental involvement in monitoring students' academic progress in real time. User evaluation results showed a system feasibility rating of 86.2%, categorized as very feasible. User response analysis also showed a 31.4% increase in academic communication effectiveness after system implementation. These findings suggest that web-based LMS can support digital learning transformation while strengthening collaboration between schools and families.

Keywords: Learning Management System; Parental Monitoring; Digital Learning; Community Service; Educational Technology

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Introduction

The development of information and communication technology in the digital era has brought very significant changes in various sectors of life, including the education sector (Akour & Alenezi, 2022; Harini et al., 2024; Santos et al., 2019). Digital transformation has not only impacted how individuals communicate and obtain information but has also transformed learning management practices, academic administration, and interactions among teachers, students, and parents in educational settings. The use of technology in education has become a crucial factor in improving the quality of educational services, making them more effective, flexible, and aligned with modern learning needs. The integration of technology into learning is no longer optional but has become a strategic necessity for educational institutions to face the challenges of 21st-century education (Alenezi et al., 2023; Cornu, 1995; Eden et al., 2024). Educational institutions are required to adapt to technological developments to create more innovative, interactive, and student-centered learning processes. The use of educational technology is also a crucial part of supporting schools' digital transformation, particularly in improving the efficiency of academic management, the effectiveness of communication, and the accessibility of learning information for all education stakeholders.

In the context of modern education, the implementation of technology-based learning systems provides various benefits, such as increased flexibility in learning, easier access to materials, more efficient management of academic data, and improved quality of interactions in the learning process (Asad et al., 2021; Isaeva et al., 2025; Sain et al., 2025; Sunarjo et al., 2024). Technology also enables schools to integrate various learning and administrative activities into a single, structured, and well-documented digital system. This is crucial because today's evolving educational needs demand a learning process that focuses not only on conventional face-to-face activities but also on more flexible, adaptive digital learning. One widely adopted approach in educational technology implementation is the use of a Learning Management System (LMS). An LMS is a digital platform designed to facilitate integrated learning management, including content delivery, assignment submission, attendance management, learning evaluation, and monitoring of students' academic progress within a centralized system (Bradley, 2021; Furqon et al., 2023; Oguguo et al., 2021; Sarkar, 2012; Veluvali & Surisetti, 2022). The implementation of an LMS enables teachers and students to engage in learning activities more flexibly, without being constrained by time or location. In addition, LMS adoption improves the efficiency of academic administration and supports more organized, systematic documentation of learning activities.

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The use of LMS in education has grown rapidly, particularly following the increased demand for digital learning during the COVID-19 pandemic. Many educational institutions have begun adopting LMS as their primary tool to support online learning and manage academic activities. LMS use is considered effective in helping schools maintain continuity in the learning process and increase educational accessibility for students (Hariyatmi et al., 2022). In addition to serving as a learning medium, an LMS also functions as an academic administration and reporting system capable of integrating various educational activities into a single digital platform (Veluvali & Surisetti, 2022)(Simelane-Mnisi, 2023). However, LMS implementation in educational settings should not only focus on the relationship between teachers and students, but also requires parental involvement as a crucial part of the educational process. Parental involvement in students' education is a key factor influencing academic success and motivation. Parents who have access to fast and accurate academic information tend to be more active in providing learning support, supervising academic activities, and building better communication with the school. Optimal parental support can help students improve their learning discipline, academic responsibility, and motivation to participate in learning.

However, in many educational institutions, monitoring student academic progress is still done manually and has not been integrated with digital systems. Information regarding assignments, attendance, grade progress, and student learning activities is often delivered through conventional communication methods such as contact books, text messages, or face-to-face meetings. This process has several limitations, including delays in information delivery, a lack of structured academic documentation, and ineffective communication between schools and parents. As a result, parents do not always receive adequate information about their students' learning progress in real time. A lack of parental involvement in academic monitoring can affect student learning within the family environment. Parents who do not receive regular information about academic progress tend to struggle to provide appropriate learning support. Furthermore, teachers face challenges in promptly and consistently communicating students' academic progress to parents. This situation highlights the importance of digital systems that support more effective academic communication between schools and families.

Epsom College in Malaysia is one of the educational institutions that continuously transform technology-based learning to improve the quality of educational services. The school is committed to integrating technology into the learning process and academic management to create a more modern, effective, and adaptive educational environment in response to global developments in educational technology. Based on initial observations and discussions with the school, it was determined that the school needed a system capable of supporting digital learning management while also strengthening parents' real-time monitoring of students' academic progress. Prior to the system's implementation, academic information in schools was delivered through conventional communication channels, thereby limiting parents' ability to monitor their children's academic progress. Information regarding assignments, attendance, and student progress had not been integrated into a single, easily accessible digital platform. Furthermore, managing learning and academic documentation remained quite time-consuming because some administrative activities were performed manually. This situation resulted in ineffective and unsustainable communication between teachers and parents.

These issues highlight the need for a digital learning system that not only supports students' and teachers' academic activities but also involves parents in monitoring students' progress. Therefore, this community service activity was implemented via a web-based Learning Management System with parent-monitoring features. The system developed is designed to support integrated digital learning management and provide parents with real-time access to academic monitoring. The implementation of this web-based LMS is expected to help teachers manage learning more systematically, facilitate flexible student access to learning materials and assignments, and increase parental involvement in monitoring student academic progress. Furthermore, the system is also expected to help schools improve the efficiency of academic data management, strengthen communication between schools and families, and support a more effective and sustainable digital transformation for education.

Several previous studies have shown that LMS implementation positively impacts learning effectiveness and academic management in educational environments. Research by (Mesterjon et al., 2022) emphasizing that in the era of Industrial Revolution 4.0, the implementation of technology-based learning through an LMS is a primary requirement to support the implementation of e-learning. An LMS enables a more flexible learning process and increases educational accessibility for students. Furthermore, Wijaya and Risdiansyah stated that implementing an academic information system can improve the effectiveness of data management and the quality of educational services. The use of digital systems helps schools integrate various academic activities more efficiently and structured.

Other research (Makumane, 2023) has shown that using an LMS in online learning can help maintain continuity in the educational process, especially during the pandemic. LMSs are considered capable of assisting teachers and students in conducting learning without being limited by space and time. Furthermore, (Sims, 2025; Veluvali & Surisetti, 2022)

explained that an LMS functions not only as a learning medium but also as an integrated system for academic administration, documentation, and reporting within a single digital platform. These findings demonstrate that LMS utilization has significant potential to support digital transformation in education and improve the effectiveness of learning services. Although various previous studies have discussed the implementation of LMS in digital learning, research integrating LMS with parental monitoring features is still relatively limited, particularly in the context of strengthening academic communication between schools and families. Therefore, this community service activity contributes to the development of a web-based LMS that functions not only as a digital learning medium but also as a means of monitoring students' academic progress, accessible directly by parents.

This community service activity aims to: (1) implement a web-based Learning Management System to support digital learning; (2) increase parental involvement in monitoring student academic performance; (3) assist teachers in managing digital learning in an integrated manner; and (4) evaluate the effectiveness and feasibility of the system based on user testing and responses. Through the implementation of this system, it is hoped that a more effective, transparent, and integrated digital learning process will be created, thereby strengthening collaboration between schools and families in supporting students' academic success.

Method

This community service activity uses a participatory educational technology approach, implementing a web-based Learning Management System (LMS) with parent-monitoring features. The program was implemented at Epsom College in Malaysia, with 15 teachers, 48 students, 32 parents/guardians, and 3 school administrators participating. Overall, the activity involved 98 participants. However, the user evaluation only involved 95 primary respondents consisting of teachers, students, and parents/guardians, while school administrators were only involved in the system implementation and testing process. This approach is designed to support digital learning transformation while increasing parental involvement in monitoring students' academic progress. The system implementation stages followed the Dynamic Systems Development Method (DSDM), an iterative and flexible approach for developing a system based on user needs (Aisah & Ikhwan, 2024; Alpiyasin & Febriani, 2024; Dinata & Marlim, 2020; Imamuddin et al., 2021).

The implementation process adopted the Dynamic Systems Development Method (DSDM), which emphasizes iterative, user-oriented system development. The stages include feasibility analysis, needs identification, iteration of system design and functional models, system development and testing, and implementation and user evaluation. This approach allows the LMS to be adaptively developed to meet the needs of teachers, students, parents, and school administrators throughout the implementation process. The implementation process begins with a needs analysis phase that uses observation, interviews, and document reviews to identify learning problems and user needs for the digital system.

Next, the system was designed using the Unified Modeling Language (UML), which included interface design, database, and system process flow. The next stage was the development and implementation of a web-based LMS using PHP, HTML, CSS, JavaScript, and MySQL. The system was developed with a multi-user architecture featuring dashboards for administrators, teachers, students, and parents. The system's main features include learning material management, assignment uploads, digital attendance, student assessments, academic monitoring, and PDF and Excel-based learning reports. The web-based LMS system architecture developed in this community service activity is based on the design shown in Figure 1. The system architecture illustrates the relationships among users, the LMS, the database, and the academic monitoring features integrated into the digital platform.

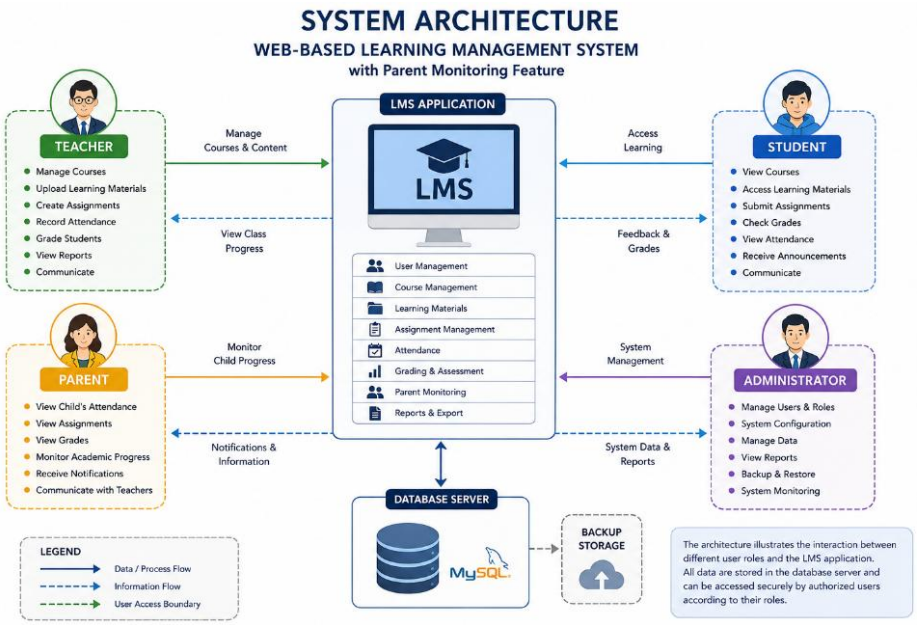

Figure 1. LMS system architecture

Based on Figure 1, the system is designed with a multi-user model that allows administrators, teachers, students, and parents to access it according to their respective access rights. All learning activities and academic monitoring are stored in a centralized database, enabling real-time access and integration. After the system implementation is complete, the next stage is user training and mentoring. Teachers receive training in digital learning management and student evaluation, while students and parents receive guidance on using the learning dashboard and real-time academic monitoring. System testing is carried out using the Black Box Testing method to ensure that all features function as required by users (Maspupah, 2024; Nidhra & Dondeti, 2012; Sutiah & Supriyono, 2021). In addition, system evaluation was conducted through User Acceptance Testing (UAT) and a Likert-scale questionnaire-based user evaluation to measure the level of acceptance, ease of use, feature connectivity, and the usefulness of the LMS from the user perspective. Data were collected through observation, interviews, documentation, and a Likert-scale questionnaire with responses ranging from 1 to 5. Data analysis was conducted descriptively and quantitatively, using a feasibility percentage to measure user acceptance of the implemented system. The feasibility percentage was calculated using the following formula:

$$Feasibility\ Percentage \frac{\text{Actual Score}}{\text{Maximum Score}}\ x\ 100\%$$

Results and Discussion

Implementation of the Web-Based Learning Management System

A web-based Learning Management System (LMS) was implemented to support the digital learning transformation and increase parental involvement in monitoring students' academic progress. The developed system was implemented at Epsom College in Malaysia and was designed with a multi-user concept to allow school administrators, teachers, students, and parents to use it according to their respective access rights. The implementation phase began with system installation, database configuration, and user data input, including teacher, student, parent, subject, and class data. After the system configuration was complete, teachers began using the LMS to upload learning materials, assign assignments, manage digital attendance, and conduct online student assessments. Students used the LMS to access learning materials, submit assignments, and view learning evaluation results through the system dashboard. Meanwhile, parents gained access to academic monitoring tools, allowing them to track student progress, attendance, and grades in real time.

The implementation of an LMS represents a significant change in the learning management process at schools. Prior to the system's implementation, most academic administration activities were still carried out manually using printed documents and conventional communication. Teachers required a relatively long time to distribute learning materials, check student assignments, and communicate academic progress to parents. After the LMS was implemented, the

learning management process became more structured, digitally documented, and easily accessible to all users. The main LMS dashboard used in this community service activity is shown in Figure 2.

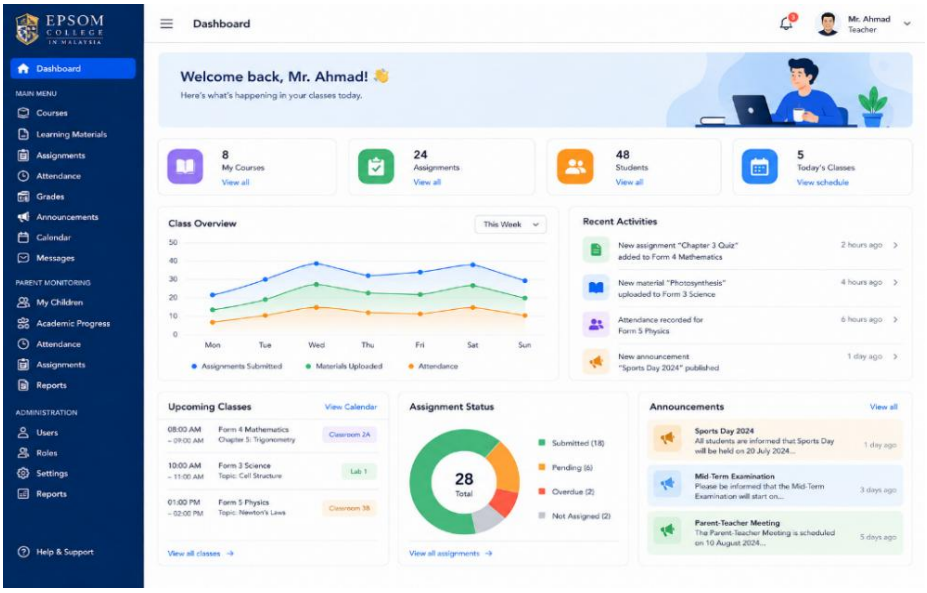

Figure 2. Dashboard of the Web-Based Learning Management System

As shown in Figure 2, the system dashboard features a simple, responsive interface that makes it easy for users to access the LMS's core features. The main menu includes learning material management, assignment submission, digital attendance, academic monitoring, and learning reports, all accessible according to user access rights.

Results of Black Box Testing

System testing was conducted using the Black Box Testing method to ensure that all LMS features function as required by users (Meiramova et al., 2025; Sims, 2025). Testing was conducted on all main system modules, including user authentication, learning material management, assignment submission, digital attendance, student assessment, academic monitoring, and learning reports, as shown in Table 1.

Table 1. Results of Black Box Testing

No	System Features	Expected results	Test Results
1	User login	The system displays the dashboard according to access rights.	Succeed
2	Dashboard system	The main menu appears according to the user	Succeed
3	Material management	Teachers can upload learning materials	Succeed
4	Assignment collection	Students can upload assignments online	Succeed
5	Digital attendance	Attendance data is stored in the system	Succeed
6	Student assessment	Teachers can give grades digitally	Succeed
7	Academic monitoring	Parents can see the progress of students	Succeed
8	Learning report	The system generates PDF and Excel reports.	Succeed

Test results showed that all key features of the LMS functioned as designed. No significant functional errors were found during the system testing process. These findings demonstrate that the developed LMS meets user needs in supporting digital learning and integrating student academic monitoring.

User Evaluation Results

User evaluation was conducted to determine the level of user acceptance of the implemented LMS. The evaluation used a 1–5 Likert-based questionnaire administered to teachers, students, and parents. Table 2 presents the measured aspects: ease of use, interface appearance, feature connectivity, user convenience, system access speed, and LMS benefits. User evaluation through questionnaires was conducted with 95 primary respondents, including teachers, students, and parents/guardians. School administrators were involved in the system implementation and testing process, but were not included in the user evaluation calculations.

Table 2. Results of User Evaluation

No	Assessment Aspects	Actual Score	Maximum Score	Percentage
1	Ease of use of the system	410	475	86.3%
2	System interface view	398	475	83.8%

No	Assessment Aspects	Actual Score	Maximum Score	Percentage
3	System access speed	404	475	85.1%
4	System feature connectivity	421	475	88.6%
5	Academic monitoring	417	475	87.8%
6	Clarity of information	392	475	82.5%
7	Convenience of use	414	475	87.1%
8	System usability	419	475	88.2%
	Total	3275	3800	86.2%

Based on the user evaluation results, the LMS achieved a feasibility rating of 86.2%, which is categorized as very feasible. The highest score was obtained for the system feature connectivity aspect, at 88.6%, indicating that users considered the LMS features well integrated and effective in supporting digital learning activities. Furthermore, the system usability aspect obtained a score of 88.2%, indicating that the LMS provides real benefits for teachers, students, and parents in supporting the learning process and academic monitoring. Meanwhile, the information clarity aspect obtained the lowest score at 82.5%. Although these results are still considered very feasible, they indicate that some users still require simplification of the information display and system navigation to improve understanding. A visualization of the user evaluation results is shown in Figure 3.

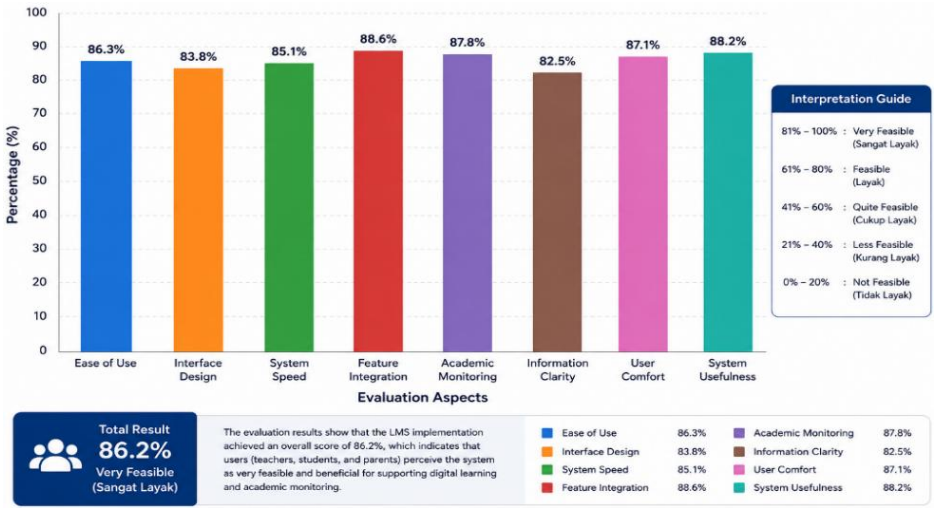

Figure 3. User Evaluation Results of LMS Implementation

Figure 3 shows that all evaluation aspects scored above 80%, indicating that the LMS was well-received by users. The high scores for academic monitoring and system usability indicate that integrating parent monitoring features positively impacts family involvement in student learning.

Impact of LMS Implementation

In addition to user evaluations, an impact analysis of the LMS implementation was conducted by comparing conditions before and after the system's implementation across several key indicators: the effectiveness of academic communication, student attendance monitoring, access to academic information, and the accuracy of student assignment submissions. Pre-implementation data was obtained through initial observations and user needs questionnaires, while post-implementation data was obtained through user evaluations after the system was in use.

Table 3. Impact of LMS Implementation

Indicator	Before Implementation	After Implementation	Improvement
Effectiveness of teacher-parent communication	54.2%	85.6%	31.4%
Accuracy of student assignment collection	68.5%	89.3%	20.8%
Monitoring student attendance	61.7%	90.1%	28.4%
Access to academic information	58.4%	91.5%	33.1%

The analysis shows that LMS implementation positively impacts the effectiveness of learning management and academic communication in schools. The highest increase occurred in the academic information access indicator, at 33.1%. This indicates that the system successfully helps parents obtain information about students' academic progress more quickly and easily than before its implementation. The effectiveness of communication between teachers and parents also increased by 31.4%. Before the LMS implementation, academic communication was still conducted through conventional mechanisms, such as text messages and face-to-face communication, which were not always

possible on a regular basis. After the system was implemented, academic communication became more effective because parents could monitor student progress directly through the monitoring dashboard. A 28.4% increase in student attendance monitoring indicates that the digital attendance system optimizes academic oversight. Parents can view student attendance data in real time, thereby helping improve student discipline in participating in the learning process. The parental monitoring feature developed within the LMS is shown in Figure 4.

Figure 4. Parent Monitoring Feature in the LMS

Based on Figure 4, parents can monitor students' assignment progress, attendance, and grades in real time through the monitoring dashboard. The system also provides information on students' learning activities, enabling parents to track their students' academic progress more quickly and comprehensively.

Discussion

The implementation of a web-based Learning Management System (LMS) demonstrates that educational technology can support the digital transformation of learning and improve the effectiveness of academic management in schools. The developed LMS serves not only as a medium for distributing learning materials but also as an integrated system that supports academic activity management, educational communication, and real-time monitoring of student progress. The system's implementation demonstrates that integrating digital technology into learning can help schools create more effective, flexible, and well-documented learning processes (Aspandi & Muttaqin, 2025; Hadi et al., 2025; Zou et al., 2025).

The increased effectiveness of learning management is evident in how easily teachers can manage learning materials, assignments, attendance, and student assessments digitally. Prior to the system's implementation, most learning administration processes were still carried out manually using printed documents and conventional communication. This resulted in relatively long processing times for distributing materials, collecting assignments, and conveying academic information. After the LMS implementation, all learning activities can be managed within a single, integrated digital platform, making the learning management process more efficient and systematic. These findings demonstrate that technology integration in education plays a crucial role in supporting the modernization of learning services and academic administration (Nasir et al., 2024; Panakaje et al., 2024; Setyadi et al., 2025).

The results of this activity align with research by (Mogas et al., 2022), which states that using an LMS is a primary requirement for implementing digital learning in the era of Industrial Revolution 4.0. An LMS enables more flexible learning activities because teachers and students can access the system without being limited by space or time. Furthermore, using an LMS helps make the academic documentation process more structured and accessible. Research by (Gunawan et al., 2024; Veluvali & Surisetti, 2022) also explains that an LMS can improve the effectiveness of learning management and expand access to digital education by integrating information technology into the learning process.

From a student's perspective, LMS implementation positively impacts flexibility and regularity in the learning process. Students can access learning materials, submit assignments, and view learning evaluation results through the system dashboard in real time. This ease of access helps students become more independent in managing their learning activities. Furthermore, the use of a digital system helps improve the regularity of assignment submissions, as all academic activities are automatically recorded. This is evident in the 20.8% increase in the accuracy of student assignment submissions after the LMS implementation.

The increased accuracy of assignment submissions demonstrates that digital systems can help students manage their learning activities with greater discipline and organization. In conventional learning, students often experience delays in submitting assignments due to a lack of information or limited communication with teachers. Through an LMS, students can directly access assignment information, making the learning process more structured and transparent. This finding supports research by (Mumcu & Çebi, 2025), which states that LMSs can increase the effectiveness of online learning and help maintain the continuity of academic activities more optimally. Furthermore, (Dubey et al., 2023) explain that using an LMS can increase student engagement in digital learning by providing more flexible, interactive learning opportunities.

One of the most important outcomes of this community service activity is increased parental involvement in monitoring students' academic progress. Prior to the LMS implementation, information on assignments, attendance, and student grades was still delivered manually via a liaison book or infrequent face-to-face communication. This often resulted in parents experiencing delays in receiving students' academic information, leading to suboptimal monitoring of learning within the family environment. After LMS implementation, parents can monitor students' academic progress in real time through the system's monitoring features. The monitoring dashboard allows parents to view information on assignments, attendance, and student grades directly, without waiting for periodic reports from the school. Evaluation results showed that access to academic information increased by 33.1% and the effectiveness of academic communication by 31.4% after the system's implementation. These findings indicate that integrating parental monitoring features into the LMS significantly improves communication between schools and families.

Increasing parental involvement in learning has a significant impact on student academic success. Parents who have access to fast, accurate academic information tend to be more active in supporting home learning, motivating students' learning, and continuously monitoring students' academic progress. This helps improve student discipline in learning and in completing assignments on time. These findings support research by (Sofi-Karim et al., 2023), which states that academic information systems can improve communication effectiveness and the quality of educational services. Research by (Lee, 2025) also indicates that parental involvement in digital learning can increase students' motivation to learn and strengthen the relationship between school and family.

The integration of parental monitoring features into the LMS is a key contribution to this community service activity. Most LMS implementations generally focus solely on the teacher-student relationship, while parental involvement remains limited. In this activity, the LMS was developed not only as a digital learning medium but also as an academic monitoring tool, allowing parents to directly participate in the student's learning process. Thus, the developed system strengthens collaboration between schools and families to support students' academic success. In addition to increasing parental involvement, LMS implementation positively impacts student attendance monitoring. Evaluation results show that student attendance monitoring increased by 28.4% after the system's implementation. The digital attendance system allows for automatic recording of student attendance data and real-time monitoring by teachers and parents. This helps improve academic oversight of students and supports discipline in the learning process. Research by (Haque et al., 2024) shows that using an integrated digital learning system can help schools increase transparency in academic data management and strengthen monitoring of student learning activities.

Regarding system quality, user evaluation results indicate that the LMS achieved a feasibility rating of 86.2%, considered very feasible. The highest score was achieved in the system's feature connectivity, at 88.6%. This indicates that users consider the LMS's features well-integrated and effective in supporting digital learning activities. Furthermore, the system's usability aspect also achieved a high score of 88.2%, indicating that the LMS provides tangible benefits for teachers, students, and parents. The high level of user acceptance indicates that educational technology implementation is well received when the system is designed to meet user needs and supported by adequate training. In this community service activity, training and mentoring for users are important factors supporting the success of LMS implementation. Teachers, students, and parents receive direct guidance on using the system, enabling them to fully understand the LMS's functions and features. This indicates that the success of educational technology implementation is influenced not only by the quality of the technology used but also by users' readiness and ability to

operate the system. This finding aligns with research by (Rahmi et al., 2026), which explains that the success of LMS implementation is influenced by user readiness and the quality of technical support during system use.

Although the LMS implementation has shown positive results, several aspects still require further development. Information clarity received the lowest score among the evaluation aspects, at 82.5%. These results indicate that some users still have difficulty understanding the information display and system navigation, particularly those unfamiliar with digital platforms. Therefore, developing a simpler and more user-friendly interface is an important recommendation for further system development. Furthermore, the system implementation is still being carried out at a single educational institution, so the results cannot be generalized widely across educational settings. The relatively short implementation period also means that the system evaluation focuses more on the initial impact of LMS use. Therefore, follow-up activities are needed to evaluate the long-term effectiveness of LMS use, particularly in improving student learning outcomes, sustained parental involvement, and the sustainability of the system's use within the school environment.

In the context of digital transformation in education, implementing a web-based LMS with parental monitoring features has strong potential for adoption across various educational institutions. This system can support more effective digital learning management while strengthening academic communication between schools and families. Furthermore, LMS use also helps schools improve the efficiency of academic administration, accelerate information delivery, and create a more transparent and well-documented learning environment (Ayhan, 2026; Bahari, 2026). The findings from this community service activity demonstrate that the integration of information technology in education serves not only as a learning medium but also as a means to strengthen collaboration between schools and families. By utilizing a web-based LMS, schools can build a more modern, effective, and adaptive digital learning system to meet future educational needs. The system, integrated with parental monitoring, also helps create more open and sustainable academic communication, thus supporting overall improvements in the quality of learning.

Overall, the implementation of a web-based Learning Management System integrated with parental monitoring features has successfully supported the digital learning transformation and increased the effectiveness of academic communication between schools and families. This system helps teachers manage digital learning, facilitates student access to learning activities, and increases parental involvement in monitoring students' academic progress in real time. Therefore, utilizing a web-based LMS can be a strategic solution to support educational modernization and strengthen collaboration between schools and families in the digital era.

Conclusions

The implementation of a web-based Learning Management System (LMS) with a parent-monitoring feature successfully supported Epsom College's digital learning transformation in Malaysia. The developed system helped teachers manage learning materials, assignments, digital attendance, and student assessments more effectively and in a structured manner. Furthermore, the LMS made it easier for students to access learning materials, submit assignments online, and monitor learning evaluation results through a flexible, easily accessible digital platform. Implementation results showed that the use of the LMS positively impacted the effectiveness of learning management and academic communication between the school and families. The integration of the parent monitoring feature enabled parents to track assignment progress, attendance, and student grades in real time, thereby increasing family involvement in the student's learning process. User evaluation results showed a system feasibility level of 86.2%, which falls within the very feasible category. Furthermore, the LMS implementation also improved the effectiveness of academic communication, student attendance monitoring, access to academic information, and the accuracy of student assignment submission compared to before the system was implemented.

This community service activity demonstrates that LMS-based educational technology serves not only as a digital learning medium but also as a means of strengthening collaboration between schools and families to support students' academic success. The system, integrated with parental monitoring features, can help schools create a more transparent, interactive, and well-documented learning environment. Therefore, implementing a web-based LMS can be a strategic solution to support educational modernization and the digital transformation of learning in schools. Although the system implementation has shown positive results, further development is still needed, particularly to simplify the system interface and develop features that are more adaptive to user needs. Furthermore, implementation at a wider range of educational institutions is needed to obtain a more comprehensive evaluation of the effectiveness of LMS use in supporting sustainable digital learning.

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Contribution

Abdul Adam Abdullah contributed to the conceptualization of the study, system development, implementation of the LMS, data analysis, and manuscript preparation. Ni Putu Yulia contributed to the system design, user training, data collection, and evaluation process. Aeriyn Ahmad contributed to the literature review, system testing, data interpretation, and manuscript revision. All authors reviewed and approved the final version of the manuscript.

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