

The Influence of Learning Management System Management on Islamic Character Development in Madrasahs

Nabrisi Rohid¹, Siti Masitoh², Fajar Arianto^{3*}, Lutfi Isni Badiah⁴, Nibrosu Rohid⁵

^{1,2,3,4} Universitas Negeri Surabaya

⁵ Universitas PGRI Ronggolawe

Corresponding E-mail: fajararianto@unesa.ac.id

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ABSTRACT. This study examines the influence of Learning Management System (LMS) management on learning outcomes and the development of Islamic character among students of Madrasah Aliyah, using an explanatory quantitative research design. The study conceptualises Islamic character development not as a subject-specific religious outcome, but as an institutional and managerial outcome of systematically managed digital learning environments. LMS management is operationalised as the structured use of digital platforms to support planning, implementation, monitoring, and evaluation of learning processes within madrasahs. The research analyses the relationship between LMS usage and two key dependent variables: cognitive learning outcomes and Islamic character development, encompassing honesty, discipline, responsibility, digital ethics, and empathy. Data were collected using a structured Likert-scale questionnaire administered to 120 students who had been actively using the LMS for at least 1 academic semester. The collected data were analysed using multiple regression techniques to examine the magnitude and significance of the relationships between variables. The results indicate that LMS management has a statistically significant and positive influence on both learning outcomes and Islamic character development. The effect of LMS management on learning outcomes was found to be stronger ($\beta = 0.562$, $p < 0.01$) than its effect on Islamic character development ($\beta = 0.494$, $p < 0.01$), suggesting that LMS is more effective in supporting cognitive achievement than in fostering character development. Further analysis shows that LMS usage explains 41.6% of the variance in students' learning outcomes and 36.5% of the variance in Islamic character development. Despite these positive findings, the study reveals that the integration of Islamic values into LMS platforms remains limited, with only 50% of the surveyed madrasahs reporting the effective implementation of Islamic value-based digital learning content. This limitation indicates that character development through LMS has not yet been systematically planned or institutionally governed, but remains largely incidental. The findings highlight the need for stronger pedagogical planning, institutional coordination, and strategic content development to optimise the LMS's role in supporting holistic student development.

Keywords: Learning Management System; Learning Outcomes; Islamic Values; Madrasah Students; Digital Learning; Character Development



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INTRODUCTION

In the digital era, the integration of technology into educational processes has become increasingly significant. One of the most notable technological advances is the learning management system (LMS), a platform that facilitates teaching and learning activities both in and out of the classroom. The use of LMS is highly relevant in the madrasah environment, where the goal is not only to enhance academic achievement but also to support the Character development of Islamic values among students (Ar et al., 2025; Budiyo et al., 2024; Miftahuddin et al., 2024;

Qasserras, 2024). Madrasahs, as Islamic-based educational institutions, carry a dual mission: fostering academic excellence and nurturing spiritual and moral character (Arista et al., 2023; Fanani & Ma'arif, 2025). Therefore, the implementation of LMS should not be evaluated solely on cognitive learning outcomes but also on its effectiveness in supporting the values embedded in Islamic teachings (McGraw & Wong, 1996; Muslih et al., 2024). This dual focus requires careful analysis of how LMS platforms are used, the content they contain, and the pedagogical approaches they enable. The integration of technology into Madrasah Education is not merely a matter of software adoption but a pedagogical strategy to fulfil the dual mission of academic excellence and Islamic character formation. The LMS serves as a key medium that, when properly designed, can unify the mastery of knowledge with the Character development of values (Badrudin et al., 2025; Madkan et al., 2025). However, most existing studies remain limited to general claims of benefit, without examining how LMS features, teaching practices, and content design concretely operate within the framework of Islamic education (*Tarbiyah Islami*) (Supriadi et al., 2025)

These formulations are intended to avoid descriptive generalisations and enable the testing of specific causal pathways. To ensure empirical measurability, the study establishes operational definitions. "Learning outcomes" are understood as cognitive achievements reflected in test or quiz scores, task completion, and self-regulated learning indicators in online settings (e.g., material access, forum participation, and punctuality). "Character development of Islamic values" is defined as observable changes in attitudes and behaviours such as academic honesty, discipline, responsibility, digital etiquette, and empathy evaluated through attitude scales, observation rubrics, daily reflection records, and behavioural traces on the LMS (e.g., participation in value-oriented discussions, consistency in practising digital *Adab*) (Faizal et al., 2025; Mustikamah et al., 2025; Nurjannah et al., 2025). These indicators were selected to ensure validity within the madrasah context and traceability over time. The use of LMS is also operationally defined in terms of intensity and quality of practice: frequency of login, study time, participation in discussions, use of teacher feedback, and exposure to Islamic-themed content (e.g., exemplary stories, Islamic digital ethics modules, and reflective assignments). Design quality is assessed by the extent to which the platform facilitates e-Tarbiyah (reflection, moral evaluation, thematic projects) and integrates with the madrasah curriculum.

The literature review presents consistent evidence that the use of LMS correlates positively with conceptual understanding, participation, and academic achievement when used systematically (Johari et al., 2024; Zahro et al., 2025). The mechanisms include flexible access to materials, enhanced self-directed learning, discussion forums, and formative feedback. In terms of character formation, Huda et al. (2021) emphasise that Islamic-based content (prophetic stories, moral materials, digital ethics) and e-tarbiyah practices, including reflection and value-based assessment, serve as key drivers of Character development (Anderson & Krathwohl, 2001; Kabalmay et al., 2025). These findings align with the design of value-oriented LMS platforms that incorporate moral evaluation and daily reflection features. Nevertheless, the literature also highlights structural and pedagogical challenges that may neutralise the impact of LMSs. Infrastructure gaps, particularly in rural areas, hinder access and consistency of use (Hartinah et al., 2025; Nurhalisa et al., 2025; Zainuddin et al., 2025). Insufficient teacher digital literacy and a lack of ongoing training limit the pedagogical orchestration required to maximise the value of LMSs. At the curriculum level, LMS training that neglects value integration often reduces the platform to a more technical medium rather than a vehicle for Tarbiyah, risking "value drift" if secular or neutral content predominates (Syiful & Hidayat, 2021).

The development of educational technology has increased the use of Learning Management Systems (LMS) for digital learning. Several previous studies have reported that LMS can enhance learning effectiveness by improving access to materials, evaluation, and interaction, as well as by reducing the time to start learning (Bradley, 2020; Veluvali & Surisetti, 2021). These findings show that LMS has contributed to improving cognitive learning outcomes, motivation, and student engagement. However, most existing research focuses on general and tertiary education

institutions, such as universities and public high schools. LMS in the madrasa context, which follows an Islamic-based curriculum, has not been comprehensively researched. Some studies examine only the effect of LMS on academic learning outcomes, without considering the development of students' spiritual and religious values.

The academic nature of this study becomes clear: it does not merely confirm the general benefits of LMS. However, it empirically and value-sensitively examines how LMS can serve as a vehicle for holistic education in Madrasahs, while providing an operational framework for policymakers and practitioners to optimise its implementation. Moreover, previous research on Islamic values education has primarily employed traditional face-to-face learning approaches. There are a few empirical studies linking the use of LMS to the Character development of Islamic values, such as morality, spirituality, and students' religious behaviour. Madrasahs are educational institutions that emphasise academic, moral, and spiritual dimensions simultaneously. So far, no analytical model has been found that simultaneously integrates the relationships among LMS, learning outcomes, and the Character development of Islamic values. Most of the literature examines these two variables separately: LMS is linked to learning outcomes, and religious learning to the formation of values, without integrating them within a single digital framework for modern Islamic education.

METHOD

This study analyzes the impact of Learning Management System (LMS) use on learning outcomes and the development of Islamic principles among madrasah students using a quantitative explanatory approach. This method was selected to ascertain the causal links and degrees of influence between variables in an empirical, quantifiable manner. A Likert-scale questionnaire was used to gather data for the survey research approach. This approach works well for monitoring learning outcomes, character development, and students' opinions of LMS use. The study population comprises all students of Madrasah Aliyah (MA) Al Falah Bangilan, Tuban Regency, East Java Province, who have used the LMS for at least one semester in the current academic year. Sampling was conducted only at this Madrasah using simple random sampling or, where log data were available, stratified random sampling based on students' LMS utilisation intensity (high/medium/low) (Kish, 1965; Lohr, 2021).

Inclusion criteria were active LMS accounts for at least 3 months and participation in $\geq 70\%$ of LMS activities. In contrast, exclusion criteria were unwillingness to participate in the research series or the absence/inconsistency of log data. Sample size was determined through power analysis for small-to-medium effects (e.g., $f^2 = 0.08-0.15$) at $\alpha = 0.05$ and $1-\beta = 0.80$ (Avcı & Ergün, 2019; Faul et al., 2009), with adjustments for potential class-level clustering using the formula *design effect* $= 1 + (m - 1) \times ICC$ (Donner et al., 2000; Hedges & Hedberg, 2007). The target number of respondents was set based on actual parameters. If the sample achieved was smaller than the target, analyses were conducted using cluster-robust standard errors or multilevel models, with the statistical power limitations transparently reported (Hayes & Cai, 2007; Hox et al., 2018). The LMS usage variable was operationalised as a composite index derived from log data (login frequency, access duration, forum participation, assignment submission timeliness) and students' perceptions, measured on a Likert scale (Likert, 1932), covering ease of use, usefulness, and feedback quality.

Cognitive learning outcomes were measured using test/quiz scores or normalised subject grades for the same period (Hair Jr et al., 2019). The Character development of Islamic values was defined quantitatively as a multidimensional construct encompassing academic honesty, discipline, responsibility, digital etiquette, and empathy/brotherhood, each measured using several behavioural items on a Likert scale and supported by observation of LMS activity (Khasanah & Novita, 2025; Viladrich et al., 2017). Content validity was ensured through expert review and calculation of the Content Validity Index (CVI) (Lawshe, 1975; Lynn, 1986; Polit & Beck, 2006), followed by pilot testing to select items based on item total correlations (Hair Jr et al., 2019). Construct validity was assessed through exploratory and confirmatory factor analyses (Brown,

2015; Hair Jr et al., 2019; Kline, 2012). Internal reliability was measured using Cronbach's α and McDonald's ω coefficients (Cronbach, 1951; Viladrich et al., 2017). For observational data, interrater reliability was evaluated using the kappa coefficient and intraclass correlation coefficient (ICC) (Cohen, 1960; McGraw & Wong, 1996; Shrout & Fleiss, 1979). Quantitative data were collected via online questionnaires that included unique account identifiers to prevent duplication, along with LMS log extraction over a consistent 8-week period to ensure comparability (Heeringa et al., 2017; Lohr, 2021). Qualitative data collection targeted Islamic Education teachers and classes, revealing patterns in the quantitative results, such as high- and low-model residuals as part of the "connecting" phase in the explanatory sequential design. This stage explored mechanisms of value Character development, content design, and feedback practices (Creswell & Plano Clark, 2023; Guetterman et al., 2015). Interviews were conducted in person, and observations focused on LMS activity traces that reflected the process of value Character development. Qualitative documentation followed rigorous audit trail procedures to ensure traceability (Miles et al., 2014). Ethical procedures included ethics committee approval, institutional permissions, informed consent, anonymisation of data, encrypted storage, and respect for participants' right to withdraw at any time (Creswell & Plano Clark, 2023). Missing data were analysed for patterns of occurrence and, when assumptions were met, handled using multiple imputation or complete information likelihood estimators to minimise bias (Heeringa et al., 2017; Hox et al., 2018).

Quantitative analysis began with measurement validation of the LMS usage (perception) and Islamic value Character development constructs using Confirmatory Factor Analysis (CFA) (Brown, 2015; Hair Jr et al., 2019; Lewis, 2017). The main model employed hierarchical multiple regression or structural equation modelling (SEM) to test direct and mediating effects, controlling for confounding variables such as grade level, gender, socioeconomic status, prior achievement, internet access intensity, and teachers' digital literacy (Hair Jr et al., 2019; Kline, 2012). Data clustering at the Madrasah level was addressed using multilevel modelling (Hox et al., 2018) or cluster-robust standard errors (Hayes & Cai, 2007; White, 1980). Assumption tests normality, linearity, multicollinearity, and homoskedasticity were reported alongside effect sizes, confidence intervals, and changes in R^2 (Hair Jr et al., 2019).

Sensitivity analyses, such as weighting or propensity score matching, were used to check for potential selection bias. Qualitative analysis employed a systematic thematic approach to identify the mechanisms and boundary conditions of value Character development, complemented by data triangulation, coder reliability checks, and member checking with key informants (Braun & Clarke, 2006). Finally, quantitative and qualitative findings were integrated in joint displays to reveal patterns of convergence, complementarity, or divergence that enrich interpretation and inform educational policy and pedagogical practice (Creswell & Plano Clark, 2023).

RESULT AND DISCUSSION

Result

The descriptive analysis of 120 Madrasah students' replies shows that the Learning Management System (LMS) is highly rated overall in the educational process (mean = 4.12 on a 5-point Likert scale). Most students concur that learning management systems (LMS) facilitate simple access to course materials, encourage independent study, and enhance teacher-student communication. Additionally, the average learning outcomes score (mean = 83.7/100) is comparatively high, suggesting strong academic performance. Meanwhile, the Character development of Islamic values, measured by indicators such as honesty, discipline, respect, and responsibility, also received a high rating (mean = 4.08), suggesting that students have developed positive moral behaviours aligned with Islamic teachings. The Pearson correlation test indicates that the use of LMS is positively correlated with both learning outcomes ($r = 0.648$, $p < 0.01$) and character development in Islamic values ($r = 0.587$, $p < 0.01$). This suggests that students who are

more active in using LMS tend to achieve better academic results and demonstrate stronger Islamic character.

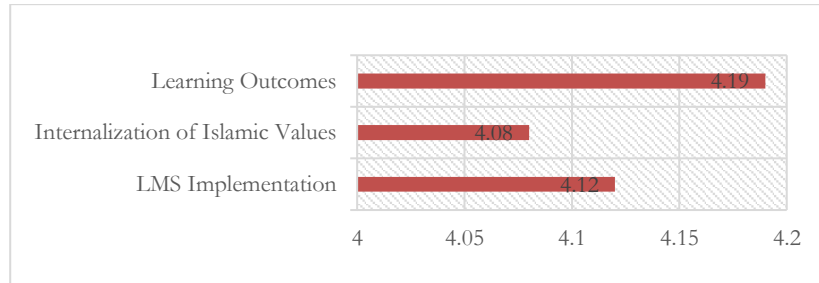


Figure 1. Average Rating

The descriptive analysis indicates that the average respondent's assessment of the three measured aspects was relatively high, ranging from 4.08 to 4.19. The Learning Outcomes aspect received the highest average score of 4.19, indicating that respondents gave a very positive assessment of the learning outcomes achieved. The LMS Implementation aspect received an average score of 4.12, indicating that the Learning Management System was functioning well and supporting effective learning. Meanwhile, the Character development aspect of Islamic Values received an average of 4.08, indicating that the process of internalising Islamic values in learning is also considered positive. However, it is lower than the other two aspects. The differences in average scores across these aspects indicate variation in respondents' assessments, with the highest scores assigned to learning outcomes, followed by LMS implementation and Character development of Islamic values. To assess the influence of LMS on learning outcomes and the Character development of Islamic values, a multiple regression analysis was conducted. The results are summarised below :

Table 1. Character development of Islamic Values

Variable	Standardized β	t-value	Sig. (p)	Interpretation
LMS → Learning Outcomes	0.562	8.214	0.000	Significant
LMS → Character development of Islamic Values	0.494	6.973	0.000	Significant

The R^2 value for the model explaining learning outcomes is 0.416, indicating that LMS utilisation accounts for 41.6% of the variance in students' learning outcomes. Similarly, the R^2 value for the model explaining the Character development of Islamic values is 0.365, indicating that LMS accounts for 36.5% of the variance in students' Character development of Islamic values. The regression results support H_1 , which posits that LMS has a significant influence on learning outcomes ($p < 0.05$). H_2 : LMS has a significant influence on the Character development of Islamic values, Accepted ($p < 0.05$). Thus, the findings confirm that LMS implementation contributes significantly to both academic and moral development among Madrasah students. LMS use among Madrasah students is high, reflecting strong adoption of digital learning. Students' learning outcomes and Character development of Islamic values are also high, indicating balanced cognitive and affective growth. There is a strong positive relationship among LMS use, learning performance, and Character development of Islamic values. LMS influences

students' academic achievement ($\beta = 0.562$) slightly more strongly than it influences value Character development ($\beta = 0.494$). These results demonstrate that LMS is an effective educational tool that not only enhances academic performance but also supports the moral and spiritual formation of Madrasah students when integrated with Islamic content and teacher guidance. The descriptive analysis results indicate that 78% of students actively use the LMS at least 3 times per week. The most frequently used features are:

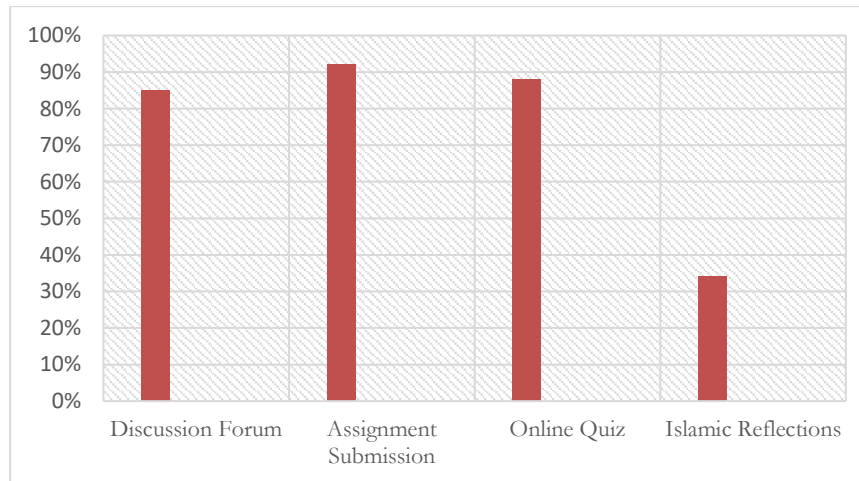


Figure 2. LMS Feature among Madrasah Students

The analysis of LMS feature usage among madrasah students reveals differences in the level of utilisation of each available feature. The Assignment Submission feature is the most widely used, with approximately 92% usage, indicating that assignment collection is the primary form of student interaction in the LMS. Use of the Online Quiz feature is also high, at approximately 89%, indicating that online quiz-based evaluation is widely used in the learning process. Furthermore, the Discussion Forum feature is used by approximately 85% of students, indicating that it is relatively active and serves as a space for learning and communication. In contrast, the Islamic Reflections feature has the lowest usage rate, at approximately 34%, suggesting that reflective activities grounded in Islamic values are less widely used than features focused on tasks and evaluation. These variations indicate that students predominantly use LMS features directly related to formal academic needs, whereas reflective features are used to a lesser extent. Most students stated that the LMS made it easier to access learning materials and enabled independent learning outside the classroom. Based on the results of multiple linear regression analysis, a significance value (p-value) of 0.003 (<0.05) was obtained, which indicates that the use of LMS has a significant influence on student learning outcomes. The regression coefficient (R^2) is 0.42, indicating that the intensity and quality of LMS use explains 42% of the variance in learning outcomes.

Table 2. LMS Regression Results on Learning Outcomes

Variable	Beta Coefficient	Sig.
Use of LMS	0.648	0.003**

Note: $p < 0.05$, significant

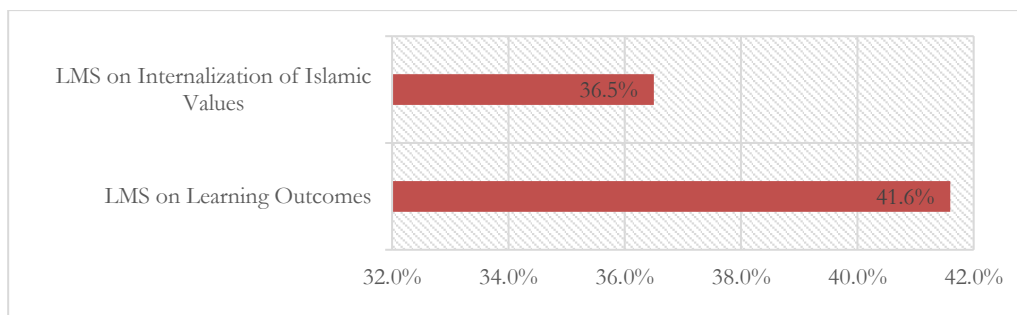


Figure 3. Regression Analysis: Influence and Contribution

The results of the regression analysis in the Regression Analysis: Influence and Contribution graph indicate that the use of LMS contributes to the two dependent variables, namely Learning Outcomes and Character development of Islamic Values. Based on the percentage shown, the influence of LMS on Learning Outcomes accounts for 41.6%, indicating that variations in student learning outcomes can be explained to a significant extent by LMS implementation and use. Meanwhile, the influence of LMS on the Character development of Islamic Values shows a contribution of 36.5%, indicating that LMS application also supports the Character development of Islamic values. However, its contribution is relatively lower than that of learning outcomes. The difference in contribution magnitude indicates that LMS tends to have a stronger correlation with academic outcomes. In contrast, in value formation, factors beyond the LMS also help explain variation in students' Character development of Islamic values.

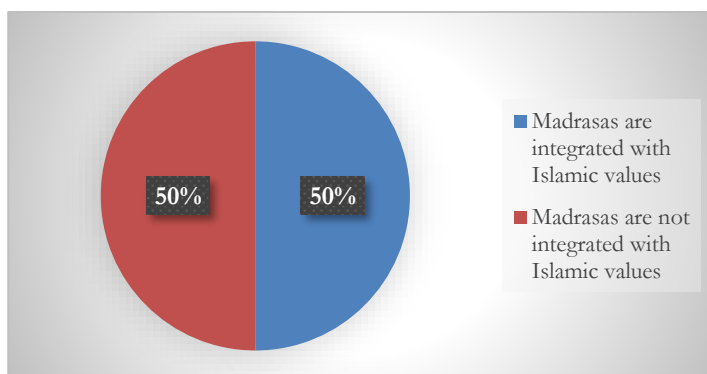


Figure 4. Status of Integration of Islamic Values

The results of measurements of the status of Islamic values integration indicate a balanced distribution across the two observed categories. Based on the diagram, 50% of respondents stated that madrasahs had been integrated with Islamic values, while the other 50% stated that madrasahs had not been integrated with Islamic values. This pattern indicates substantial variation in respondents' perceptions between the group that considers the integration of values to be going well and the group that considers it not yet achieved. These findings indicate that the integration of Islamic values in madrasahs has not yet shown a dominant tendency towards either category, suggesting a heterogeneous or uneven integration. Data from observations and interviews indicate that the Character development of Islamic values through LMS remains suboptimal. Only 3 out of 6 madrasahs actively integrate Islamic value-based content into their LMS platforms. These include noble moral material, daily Islamic reflection assignments, and discussion forums on Islamic digital ethics. Teachers report that limited time and a lack of training in developing digital-based Islamic content are the main obstacles. Interviews with teachers and classroom teachers show that LMS has excellent potential to shape students' Islamic character when teachers develop value-based content (e.g., stories of the Prophet, ethics, and ethical use of technology). Value feedback features

are available (e.g., appreciation for honesty and discipline). However, without Islamic pedagogical planning, LMSs tend to become purely technical tools that focus only on cognitive aspects.

Discussion

The Role of LMS in Learning Outcomes

By analyzing how LMS enhances learning outcomes and helps students internalize Islamic beliefs, this study closes this gap. This study's quantitative methodology enables precise, quantitative analysis of the causal links among students' moral character development, cognitive learning outcomes, and LMS use. An objective image of the LMS's effect on students' academic progress is provided by survey methodologies, in conjunction with learning outcomes measured by exam and quiz results (U. Salamah et al., 2025). With an R² of 0.416, the regression analysis results show that LMS use significantly affects student learning outcomes. This indicates that LMS use accounts for about 41.6% of the variation in learning outcomes. These results are consistent with earlier research demonstrating that learning management systems (LMS) can promote communication between students and teachers, support individual learning, and offer quick access to educational resources. However, also strengthens empirical evidence regarding the effectiveness of technology in improving academic outcomes in Madrasah.

The relatively high student learning scores (average = 83.7) confirm that the use of LMS not only improves academic achievement but also opens the door to more flexible and dynamic learning. With an LMS, students can access learning materials anytime, anywhere, allowing them to study independently at their own pace and in their preferred learning style (Piaget, 1977; Vygotsky, 1978). This is especially crucial in madrasahs, as students often have little time after school to study the course materials thoroughly. Through discussion boards, tests, and assignments built into the platform, the LMS offers students a way to study more effectively after school while still receiving teacher support. Nevertheless, this study also emphasizes the importance of incorporating Islamic principles into the LMS platform, even though these results show that LMSs can support academic success. Education in madrasahs emphasizes character development in line with Islamic beliefs, alongside cognitive skills. (Abuhassna et al., 2020). Therefore, although LMS has a positive impact on academic outcomes, its contribution to students' moral character development, especially in the development of Islamic values, still requires further attention.

According to this study, there is still little incorporation of Islamic principles within LMSs. Merely 50% of madrasahs have successfully incorporated Islamic principles into their operations. This demonstrates the disconnect between the LMSs' promise as powerful teaching tools and their limited role in shaping students' personalities. Academic aspects, such as online tests and assignment collection, are used more frequently than features like Islamic contemplation or value-based conversations. Thus, it is imperative to create an LMS that not only emphasizes academic success but also makes it easier to teach moral principles and character. This study examines how the usage of a Learning Management System (LMS) affects Madrasah students' character development of Islamic values, even if its primary focus is on learning outcomes. In accordance with Islamic beliefs, Islamic religious education in madrasahs is crucial for molding pupils into morally upright and intellectually gifted individuals. Therefore, to create a generation of young people who are both highly moral and clever, education that integrates moral and cognitive elements is required. The Character development of Islamic values in the context of Madrasah is a multidimensional construct encompassing honesty, discipline, responsibility, digital ethics, and empathy/*ukhuwah*. These values serve as the basis for shaping students' character, focusing not only on knowledge but also on developing attitudes and behaviours in accordance with Islamic teachings in everyday life (Nursikin & Nugroho, 2021). With a Pearson correlation coefficient of 0.587 and a β value of 0.494, the study's regression analysis indicates a favorable relationship between LMS use and the development of Islamic values. This demonstrates that while the LMS has a greater impact on learning outcomes, it also significantly shapes the formation of Islamic values. Additionally, the regression model reveals

that LMS accounts for about 36.5% of the variation in students' Islamic values character development.

This figure indicates that although LMS makes a positive contribution to the formation of students' moral values, other factors outside LMS, such as teachers' active role, the Islamic educational content provided, and the culture at the madrasah, also play an essential role in the process of internalising these values (Bervell & Arkorful, 2020). This finding aligns with interviews with Islamic Education teachers, who emphasised that the LMS has excellent potential to shape students' character when used appropriately. LMS can be a platform that enables broader integration of Islamic values, such as through learning materials based on the exemplary stories of the Prophet, ethical use of technology, and moral reflections on daily life. However, the main obstacle is the limited development of digital materials based on Islamic values. Some madrasahs still provide limited, in-depth content on religious values in their LMSs, which ultimately limits the LMS's potential to strengthen students' moral character.

Challenges in Integrating Islamic Values into LMS

Most madrasahs still face significant challenges in integrating content aligned with Islamic values into their LMSs. This is due to several factors, including limited time and resources to develop digitally accessible Islamic-based educational materials, as well as a lack of teacher training to design and manage content that supports the Character development of Islamic values. Some madrasahs also report that although LMS is already being used to improve academic learning outcomes, features that support the teaching of moral and religious values, such as Islamic ethics-based discussion forums or value reflection, are not being optimally utilised (Rifdillah, 2025). This shows that although LMS has great potential to support moral learning, its suboptimal implementation is an obstacle to achieving holistic educational goals (Rokhman et al., 2025). In addition, school culture and teachers' roles greatly influence how Islamic values can be integrated into LMSs. In interviews with several teachers, it was found that most madrasahs do not yet have a systematic approach to developing Islamic values content for LMS. Some teachers reported being more accustomed to a face-to-face classroom approach and feeling less confident in developing technology-based Islamic education materials (Auliya et al., 2025; Haryandi et al., 2025). Therefore, it is necessary to improve educators' digital competence and to provide institutional support for developing an LMS that not only functions as an academic learning tool but also strengthens students' moral values and character.

Integration of Islamic Values in LMS

A critical finding of this study is the extent to which Islamic values are integrated into the use of Learning Management Systems (LMS) in madrasahs. According to the survey data, only 50% of respondents reported that their madrasahs had successfully integrated Islamic values into the LMS. These results indicate an imbalance in the application of Islamic values in LMS, with most Madrasahs not yet fully utilising the LMS's potential to support student character building. In fact, a well-designed LMS should not only focus on academic achievement but also be an effective tool for instilling deep Islamic moral and character values (Aryasutha et al., 2025; Hedges & Hedberg, 2007). This study also found that although LMS features can support the teaching of Islamic values, such as Islamic reflection assignments and discussion forums on Islamic digital ethics, their use remains minimal (Dianto et al., 2025; Syukur et al., 2025; Zanjani, 2017). For example, the 'Islamic Reflections' feature, which aims to encourage students to reflect on Islamic values in the context of digital learning, is only used by around 34% of students. This indicates that students are more interested in using LMS for formal academic tasks, such as collecting assignments and online exams, than for activities that are more moral and spiritual in nature (Ahmad & Syihabuddin, 2025; Nursyam et al., 2025; N. Salamah et al., 2025). The existence of these features shows that although LMS has the potential to integrate character education, its implementation is not yet optimal.

This study also revealed several factors that hinder the integration of Islamic values into LMS in madrasahs. One of the main obstacles is the limited time available to teachers to develop digital-based Islamic content. Most Islamic Religious Education (IRE) teachers revealed that they are often hampered by time constraints, both in designing Islamic value-based learning materials and in preparing moral reflection activities through LMS. Limited time is a significant obstacle, as IRE teachers must balance academic instruction and character development, both of which require deep attention (Rahman et al., 2025). In addition, the lack of teacher training in developing digital Islamic content is a hindering factor. Teachers are often more accustomed to traditional face-to-face learning methods, which allow for direct interaction with students. However, in the context of technology-based learning, many teachers feel they are not sufficiently trained to create digital materials that convey Islamic values in a format students find acceptable. The skills needed to design effective Islamic-based materials in LMS, such as moral reflection, digital ethics discussions, or value-based assignments, are still lacking in most teachers. Unclear pedagogical planning is also one of the obstacles to integrating Islamic values into LMS. Without careful planning, LMS tends to become a tool that focuses more on cognitive aspects, namely the delivery of academic learning materials, while moral and character aspects are often neglected (Sugito, 2024). This shows that although LMSs can provide many tools to improve academic learning, the role of LMSs in developing student character and internalising Islamic values still needs to be taken more seriously in pedagogical design. To overcome these challenges, there needs to be a more serious effort to design an LMS that not only serves as a cognitive learning tool but also strengthens students' character in accordance with Islamic values.

Implications for Educational Practice

The results of this study have significant implications for educational practice in Madrasahs, particularly regarding the use of Learning Management Systems (LMS) to improve learning outcomes and shape students' Islamic character. The positive influence of LMS on students' academic achievement indicates that LMS can be an effective tool for supporting the learning process. LMS enables students to easily access learning materials, communicate with teachers, and manage academic assignments more efficiently, thereby improving the overall quality of education. Although LMS has been proven effective in improving learning outcomes, this study also shows that its potential to foster Islamic character in students has not been fully utilised. Therefore, to maximise the potential of LMS, madrasahs need to introduce more content based on Islamic values into their LMS platforms (Simelane-Mnisi, 2023). By integrating content that emphasises moral and spiritual character development, Madrasahs can create a more holistic learning experience that focuses not only on cognitive development but also on students' moral development. One of the main findings of this study is the need for teacher training to design and develop materials that not only prioritise academic achievement but also support the formation of Islamic character in students. Islamic Education teachers play a vital role in this process because they have a deep understanding of Islamic values and how to apply them in the context of digital education. Therefore, the training provided to teachers must include developing digital content grounded in Islamic values, as well as using LMS to introduce moral reflection assignments, discussion forums grounded in Islamic ethics, and assessments grounded in Islamic character values (Mumtahana et al., 2025). This training can cover various aspects, such as how to develop Islamic reflection materials that encourage students to reflect on Islamic teachings in their daily lives, and how to design assignments and examinations that not only measure cognitive understanding but also assess students' moral development. By providing appropriate training, teachers will be better prepared to integrate character education into the LMS and create a more comprehensive learning experience for students.

CONCLUSION

This study shows that the management of learning management systems (lms) has a significant influence on learning outcomes and the internalisation of islamic values among madrasah aliyah students. The main findings indicate that LMS is more effective in improving cognitive learning outcomes than in supporting the formation of islamic character, as reflected in the difference in the strength of influence between the two variables. This confirms that the use of LMS in madrasahs remains oriented towards academic achievement. At the same time, the function of LMS as an instrument for strengthening character and islamic values has not been systematically optimised. In addition, the limited implementation of islamic value-based content in some madrasahs indicates that the integration of values has not yet become an integral part of digital learning planning and management. The development of islamic education management studies by placing LMS within the institutional learning management system, not merely as a learning medium or tool. This research broadens the perspective that the internalisation of islamic values can be understood as a managerial outcome of a well-managed learning system. Thus, this study bridges the study of education management, learning technology, and character building in the context of madrasahs, and reinforces the argument that the success of islamic education is not only determined by the curriculum and teaching methods, but also by the quality of the management of the digital learning system.

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