

The Implementation of an Educational Management Information System to Strengthen Character Education in Senior High Schools

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ABSTRACT

The advancement of digital technology has encouraged schools to utilize information systems not only for administrative efficiency but also to support educational quality and character development. This study examined the implementation of the Educational Management Information System (EMIS) in supporting character education at SMAN 1 Patean, Kendal Regency. A qualitative descriptive approach was employed using in-depth interviews, participant observation, and document analysis involving the principal, teachers, administrative staff, students, the school committee, and parents. Data credibility was ensured through source and method triangulation, while analysis followed the Miles and Huberman interactive model. The findings indicate that EMIS was systematically integrated into school management through planning, implementation, and evaluation. It enhanced academic administration, attendance, assessment, parent communication, and monitoring of students' character development, thereby improving efficiency, transparency, and evidence-based decision-making. EMIS also functioned as a management control tool by providing accurate and integrated data for continuous improvement. The study concludes that EMIS is a strategic instrument for strengthening school governance and improving the effectiveness of character education, offering practical guidance for schools implementing digital education management systems.

INTRODUCTION

Digital transformation has fundamentally reshaped educational management, shifting school governance from conventional administrative systems toward data-driven and technology-enabled management. Schools no longer utilize technology solely as an administrative tool but increasingly as a strategic instrument to support planning, implementation, monitoring, evaluation, and evidence-based decision-making in a timely, accurate, and accountable manner. Within this context, the Education Management Information System (EMIS) has become an essential component that enables schools to integrate academic records, administrative services, personnel management, attendance, student development, and program evaluation into a comprehensive and structured information system. The implementation of EMIS has been shown to improve the efficiency of school management while facilitating evidence-based decision-making through the provision of accurate, accessible, and reliable information (Forrester, 2019; Grepon et al., 2021). Forrester (2019) argues that educational management information systems provide the foundation for schools to manage large-scale educational data (big data), thereby enhancing the effectiveness of planning and decision-making processes. Similarly, Grepon et al. (2021) demonstrated that the implementation of an e-school system significantly improves administrative services, interdepartmental coordination, and the overall quality of school management.

These developments are consistent with Indonesia's educational digital transformation agenda, which positions information technology as one of the principal drivers of educational quality improvement. School digitalization is expected to promote more transparent, effective, and accountable governance by ensuring that educational policies are formulated based on valid and systematically documented data. Beyond improving administrative efficiency, digital transformation contributes to enhancing educational service quality, strengthening organizational effectiveness, and fostering an adaptive school culture capable of responding to technological advancement (Forrester, 2019; Grepon et al., 2021). Consequently, EMIS should no longer be viewed merely as an administrative application but rather as a strategic management tool that supports school improvement, enhances instructional quality, and facilitates students' holistic development.

At the same time, character education remains one of the fundamental objectives of Indonesia's national education system. Schools are expected not only to produce academically competent graduates but also to cultivate individuals who demonstrate integrity, discipline, responsibility, religiosity, and social responsibility. Therefore, character education should be systematically managed through educational management functions to ensure that character formation is embedded within the school's organizational culture rather than being implemented through occasional activities. Astuti et al. (2025) emphasized that character education management in the digital era should utilize information systems to document, monitor, and continuously evaluate students' character development. Likewise, Aini and Fitria (2021) found that well-planned character education management contributes significantly to educational quality by fostering a supportive school culture and integrating character values into all school activities. Consistent with these findings, Asih et al. (2025) argued that strategic character education management should be implemented holistically through planning, organizing, implementation, and evaluation to ensure that character values become an integral part of the

school's organizational culture. Furthermore, Irfan and Usman (2023) highlighted the whole-school development approach as an effective strategy for embedding character education throughout every aspect of school operations, thereby making character development a shared responsibility of the entire school community rather than solely that of classroom teachers.

The success of character education is also strongly influenced by the quality of human resources within schools. Teachers play a pivotal role as both role models and facilitators in nurturing students' character through classroom instruction and daily interactions. Alkhasanah (2023) reported that teachers' exemplary conduct, consistency in character guidance, and positive interactions with students constitute the primary determinants of students' character development. Moreover, families and the broader social environment also make substantial contributions. Amaruddin et al. (2020) found that students' character formation is shaped by the synergy among schools, families, and the constructive use of social media. In the context of Indonesian schools abroad, Masrukhin et al. (2021) further demonstrated that effective educational management promoting Pancasila values strengthens the character of Indonesian students attending Indonesian Overseas Schools. These findings collectively indicate that character education is inherently a collaborative process requiring systematic information management to enable objective monitoring of students' character development.

The advancement of information technology has created new opportunities for implementing character education more effectively. Information systems enable schools to record attendance, discipline, behavioral violations, academic achievements, and students' character development in real time, allowing teachers, homeroom teachers, guidance and counseling personnel, and school leaders to provide timely and appropriate interventions. Wijayanto et al. (2024) demonstrated that a management information system based on Google Workspace significantly enhances the evaluation of character education by integrating student development data into a centralized and easily accessible platform for all school stakeholders. These findings are supported by Wica and Marzuki (2021), who reported that the utilization of digital platforms in character education improves instructional effectiveness, monitoring, reflection, and communication between teachers and students. Accordingly, EMIS functions not merely as an administrative system but also as a strategic management instrument that supports the continuous development and monitoring of students' character.

SMAN 1 Patean represents one of the senior high schools that has comprehensively implemented an EMIS as part of its school governance system. The system integrates academic and non-academic information, which serves as the basis for educational planning and policy formulation. Due to its successful implementation, the school has become a reference institution and a training center for EMIS operators among senior high schools in Kendal Regency. Nevertheless, preliminary findings indicate that character education continues to face several challenges. EMIS records reveal various forms of student misconduct, including inappropriate school attire (25%), failure to participate in morning Qur'an recitation (*tadarus*) activities (20%), disrespectful behavior toward teachers (20%), unexcused absences (18%), tardiness (15%), truancy (5%), and physical altercations (2%). These findings suggest that while a well-developed information system does not automatically ensure successful character education, it provides accurate and comprehensive data that support continuous evaluation and evidence-based strategies for character development.

Despite the growing body of literature, a significant research gap remains regarding the implementation of EMIS as a strategic instrument for supporting character education. Previous studies have primarily examined the effectiveness of educational management information systems in improving administrative efficiency and educational service quality (Forrester, 2019; Grepon et al., 2021), whereas other studies have focused on character education management without explicitly integrating the role of information systems (Aini & Fitria, 2021; Astuti et al., 2025; Asih et al., 2025). Empirical research investigating the relationship between EMIS implementation and the management of character education at the senior high school level remains limited, particularly from the perspective of data-driven decision-making. Therefore, this study aims to analyze the implementation of the Education Management Information System (EMIS) in supporting the implementation of student character education at SMAN 1 Patean, Kendal Regency. The findings are expected to contribute to the advancement of technology-based educational management theory while providing practical recommendations for schools seeking to optimize the utilization of EMIS to strengthen students' character development.

RESEARCH METHODOLOGY

This study employed a qualitative approach using a descriptive research design to obtain an in-depth understanding of the implementation of the Education Management Information System (EMIS) in supporting student character education at SMAN 1 Patean. A qualitative approach was selected because it enables researchers to explore phenomena holistically within their natural setting, thereby facilitating a comprehensive understanding of the EMIS implementation process and the factors influencing its effectiveness.

The research was conducted at SMAN 1 Patean, located in Central Java, Indonesia. The research site was selected purposively because the school has comprehensively implemented an EMIS to manage both academic and non-academic administration and has integrated the system into its character education programs. Furthermore, the school serves as a reference institution for EMIS implementation among senior high schools in Kendal Regency, making it an appropriate and representative setting for this study.

Research participants were selected using purposive sampling, whereby informants were chosen based on their direct involvement in and knowledge of EMIS implementation. The participants included the principal as the key informant, teachers, students, members of the school committee, and parents. Involving these diverse stakeholder groups enabled the researchers to obtain comprehensive information regarding the planning, implementation, and evaluation of EMIS in supporting student character education.

Data were collected through three primary techniques: in-depth interviews, observations, and document analysis. In-depth interviews were conducted to explore information regarding school policies, planning processes, implementation strategies, and the evaluation of EMIS in relation to character education. Direct observations focused on the operation of the EMIS, its utilization by teachers and administrative staff, and the implementation of character education programs within the school environment. Document analysis complemented the interview and observational data through the examination of relevant school documents, including annual work plans, meeting minutes, EMIS implementation reports, student records, disciplinary

reports, and character education evaluation documents. The integration of these three data collection methods provided a comprehensive understanding of the research phenomenon.

To ensure the trustworthiness of the findings, source triangulation and methodological triangulation were employed. Source triangulation involved comparing information obtained from the principal, teachers, students, school committee members, and parents. Methodological triangulation was conducted by comparing data gathered through interviews, observations, and document analysis concerning the same phenomenon. The application of these triangulation strategies enhanced the credibility and trustworthiness of the research findings.

Data were analyzed using the interactive model of Miles and Huberman, which consists of four interconnected stages: data collection, data reduction, data display, and conclusion drawing/verification. During the data reduction stage, the researchers selected, categorized, and coded the data according to the study's primary focus, namely the planning, implementation, and evaluation of EMIS in supporting character education. The organized data were subsequently presented in a narrative format to facilitate interpretation of relationships among the findings. Finally, conclusions were drawn iteratively and continuously verified by comparing evidence across multiple data sources, ensuring that the findings were consistent, credible, and scientifically rigorous.

RESULT AND DISCUSSION

Result

This study was conducted at SMAN 1 Patean, a public senior high school that has comprehensively implemented an Education Management Information System (EMIS) to support both academic and non-academic administration. The school's vision is to develop students who are religious, high-achieving, independent, digitally competent, and globally minded. To achieve this vision, the school utilizes EMIS as a platform for data management, academic services, and the implementation of character education. The school employs 56 teachers and 15 administrative staff and serves 757 students, whose academic records are fully integrated into the school's information management system.

Planning for the Implementation of the Education Management Information System

The findings indicate that EMIS implementation began with a systematic planning process involving the principal, teachers, administrative staff, the school committee, and other key stakeholders. Planning activities are conducted at the beginning of each academic year to establish the foundation for the school's information system development program. Based on interviews, observations, and document analysis, four major components of the planning stage were identified, as presented in Table 1.

Table 1. Planning Stages for EMIS Implementation

Planning Stage	Research Findings
Goal setting	Establishing EMIS objectives to support academic services, administrative management, information transparency, and character education.

Planning Stage	Research Findings
Budget planning	Funding is allocated through the School Operational Assistance (BOS) program and financial support from the school committee based on the School Revenue and Expenditure Budget Plan (RAPBS).
Resource planning	Preparing human resources, hardware, software, internet infrastructure, and standard operating procedures (SOPs) for EMIS management.
Program development	Developing annual work programs covering system enhancement, operator training, application maintenance, and the improvement of digital school services.

The findings presented in Table 1 demonstrate that all planning activities were conducted collaboratively, resulting in a shared understanding of the objectives of EMIS implementation. Beyond functioning as an administrative information system, EMIS was also designed to support character education by continuously monitoring students' discipline, attendance, behavior, and overall personal development.

Implementation of the Education Management Information System

The implementation phase revealed that EMIS has been integrated into nearly all academic and administrative services within the school. The system is utilized for data management, communication between the school and parents, administrative services, and monitoring student development. The study identified four principal forms of EMIS implementation, as summarized in Table 2.

Table 2. EMIS Implementation at SMAN 1 Patean

Implementation Area	Description
School Website and Academic Information System	Providing school information, academic records, school news, and public information services.
Digital E-Report Cards	Managing student grades, attendance, achievements, and learning progress reports electronically.
Online Student Admission System	Conducting online student admissions integrated with the national Basic Education Data System (Dapodik).
Teacher and Student Management	Managing teacher and administrative staff records, teaching schedules, student information, attendance, and academic administration.

As shown in Table 2, the implementation of EMIS has transformed the school's operational system from a predominantly manual process into a digitally integrated management system. Academic data are stored in a centralized database, enabling faster administrative services, report generation, decision-making, and communication with parents and educational authorities. Moreover, EMIS supports the monitoring of students' character development by systematically

documenting disciplinary records, attendance, academic achievements, and behavioral violations.

Evaluation of the Education Management Information System Implementation

The findings indicate that the implementation of EMIS is evaluated regularly as part of the school's management control function. Evaluation activities include coordination meetings, principal supervision, system usage monitoring, and analysis of reports generated by the EMIS. The evaluation focuses on three major aspects: the consistency between implementation and planning, the effectiveness of system utilization by teachers and administrative staff, and the impact of EMIS on improving educational service quality and character education, as presented in Table 3.

Table 3. Evaluation Focus of EMIS Implementation

Evaluation Aspect	Research Findings
Planning Evaluation	EMIS programs were implemented in accordance with the annual work plan.
Implementation Evaluation	Most academic and administrative services have been successfully digitalized.
Impact Evaluation	EMIS has improved administrative efficiency, information transparency, evidence-based decision-making, and facilitated the monitoring of students' character development.

The findings presented in Table 3 indicate that the evaluation process serves not only to identify challenges encountered during system implementation but also to provide a foundation for continuous program improvement in subsequent years. Information generated through the EMIS is utilized by the principal to support evidence-based decision-making, while teachers use the system to monitor students' academic progress and character development in a more objective and systematic manner. Consequently, the implementation of EMIS has enhanced not only the effectiveness of school administrative management but also strengthened the governance of character education by providing accurate, transparent, and easily accessible information for all school stakeholders.

Discussion

Implementation of the Education Management Information System (EMIS) at the Planning Stage

The findings indicate that the implementation of the Education Management Information System (EMIS) at SMAN 1 Patean, Kendal Regency, began with a systematic planning process involving the principal, teachers, administrative staff, the school committee, and other stakeholders. Planning encompassed the formulation of objectives, budget allocation, human resource development, standard operating procedures, and the integration of EMIS into the school's character education program. These findings suggest that EMIS was positioned as a strategic component of school management rather than merely an administrative technology.

This finding is consistent with Forrester (2019), who argues that the effectiveness of School Management Information Systems depends on comprehensive organizational planning, including user needs, data governance, and evidence-based decision-making. Similarly, Grepon

et al. (2021) emphasize that successful e-school implementation requires organizational readiness, effective resource planning, and strong leadership commitment to digital transformation.

The principal's active involvement also highlights the importance of leadership in digital transformation. According to Dexter (2018), technology leadership aligns school vision with digital innovation, while Harris et al. (2020) argue that effective curriculum leadership integrates educational policy, curriculum, and management innovation. Likewise, Pettersson (2021) views school digitalization as an organizational transformation requiring strategic planning, cultural adaptation, and continuous organizational learning.

In the context of character education, EMIS planning incorporated mechanisms for monitoring student discipline, attendance, academic achievement, and behavioral records. This finding supports Astuti et al. (2025), who emphasize that digital character education management should be designed from the planning stage. Similarly, Aini and Fitria (2021) and Asih et al. (2025) highlight the importance of clear planning, supportive policies, and integrated evaluation mechanisms for effective character education.

Furthermore, the planning process reflected the characteristics of a learning organization through operator training, teacher professional development, and cross-unit coordination before system implementation. This finding is consistent with Admiraal et al. (2021), who conclude that schools functioning as professional learning communities are better equipped to implement innovation because they foster continuous learning, collaboration, and professional capacity building. Consequently, EMIS planning strengthened both technical and organizational readiness, providing a solid foundation for supporting sustainable character education.

Implementation of the Education Management Information System (EMIS) at the Implementation Stage

The findings indicate that the **Education Management Information System (EMIS)** at SMAN 1 Patean, Kendal Regency, has been comprehensively implemented across various aspects of school management, including academic administration, student data management, attendance monitoring, learning assessment, communication with parents, and character education monitoring. This integration has transformed EMIS from a data management platform into a strategic management tool that supports efficient educational services and evidence-based decision-making. The findings demonstrate that digitalization has become embedded in the school's organizational culture, enabling administrative processes and student development programs to be conducted more systematically, transparently, and accountably.

These findings are consistent with Allouche (2024), who describes digital transformation in education as a systemic process integrating technology, organizational management, and learning into a unified educational ecosystem. Similarly, Allen et al. (2024) argue that educational technologies achieve optimal outcomes when supported by organizational readiness, competent human resources, and the effective integration of technology into core institutional activities. This condition is evident at SMAN 1 Patean, where teachers, administrative staff, and school leaders collaboratively utilize EMIS to support both administrative functions and student development.

The successful implementation of EMIS also reflects organizational transformation rather than merely technological adoption. Pettersson (2021) emphasizes that school digitalization requires continuous organizational learning involving changes in structures, culture, and work

practices. Likewise, Bond et al. (2018) highlight that digital transformation depends on user acceptance, digital competence, and organizational support for innovation.

EMIS further strengthens character education by providing real-time data on attendance, discipline, academic achievement, and student misconduct. These data enable teachers, homeroom teachers, and school counselors to monitor students more objectively and implement timely interventions. This finding supports Wijayanto et al. (2024), Wica and Marzuki (2021), and Irfan and Usman (2023), who emphasize that integrated digital systems enhance character education through continuous monitoring and a whole-school development approach.

Furthermore, EMIS promotes collaboration among schools, teachers, parents, and students through transparent and timely information sharing. In the postdigital era, such collaboration has become increasingly important. Selwyn and Jandrić (2020) argue that schools should integrate digital technologies with meaningful social interactions. Accordingly, EMIS at SMAN 1 Patean complements rather than replaces teachers' roles by strengthening coordination, communication, and decision-making in character education, reinforcing the findings of Rosyidin et al. (2025), Masrukhin et al. (2021), and Amaruddin et al. (2020) regarding the importance of collaboration among schools, families, and communities.

Implementation of the Education Management Information System (EMIS) at the Evaluation Stage

The findings indicate that the evaluation of the Education Management Information System (EMIS) at SMAN 1 Patean, Kendal Regency, is conducted regularly through coordination meetings, principal supervision, system monitoring, and analysis of EMIS generated data. The evaluation addresses not only technical aspects, such as system reliability and data completeness, but also the effectiveness of information utilization in supporting academic services, school administration, and character education. This demonstrates that evaluation functions as an integral component of the school management cycle, enabling continuous improvement through the identification of implementation gaps and the refinement of management practices.

These findings support Forrester (2019), who argues that the value of School Management Information Systems lies in transforming data into evidence-based decision-making rather than merely collecting information. Likewise, Grepon et al. (2021) emphasize that continuous evaluation is essential for ensuring system sustainability, improving service quality, and aligning technological development with users' needs.

The evaluation process also reflects a culture of organizational learning involving the principal, teachers, administrative staff, and EMIS operators. Rather than serving solely as an administrative procedure, evaluation facilitates collaborative reflection and organizational improvement. This finding is consistent with Admiraal et al. (2021), who highlight the role of professional learning communities in utilizing evaluation results to strengthen teacher capacity and organizational innovation. Similarly, Hallinger (2026) argues that sustainable **school improvement** depends on systematic evaluation, reflection, and data-informed decision-making.

From the perspective of character education, EMIS provides comprehensive data on attendance, discipline, academic achievement, and student behavior, enabling teachers and school leaders to implement more targeted interventions. These findings support Wijayanto et al. (2024), Astuti et al. (2025), and Asih et al. (2025), who emphasize the importance of integrated

digital evaluation systems for strengthening character education. Furthermore, Fullan and Quinn (2020), as well as Kristjánsson et al. (2025) and Fernández Espinosa and Domingo (2025), argue that sustainable educational improvement and character development require continuous evaluation, professional collaboration, and the use of multiple reliable sources of evidence. Accordingly, EMIS serves as a strategic instrument for data-driven management, organizational accountability, and the continuous enhancement of character education.

CONCLUSION

This study demonstrates that the implementation of the Education Management Information System (EMIS) at SMAN 1 Patean, Kendal Regency, has been systematically carried out through the core management functions of planning, implementation, and evaluation, thereby supporting the effective implementation of student character education. During the planning stage, the school established implementation objectives, allocated financial and technological resources, developed infrastructure, and formulated standard operating procedures through the active involvement of multiple stakeholders. This participatory planning process strengthened organizational readiness to integrate EMIS with the school's character education program.

At the implementation stage, EMIS was effectively utilized to support academic administration, student data management, learning assessment, attendance monitoring, communication with parents, and the monitoring of students' character development. The system improved the efficiency of school services, facilitated timely access to information, strengthened coordination among school personnel, and promoted evidence-based decision-making. Beyond its administrative function, EMIS also served as an important tool for documenting and monitoring students' discipline, behavior, achievements, and conduct as part of continuous character education.

During the evaluation stage, EMIS functioned as a strategic instrument for monitoring school programs, supervising implementation, and evaluating students' character development. The information generated by the system enabled school leaders and teachers to conduct reflective practice, formulate follow-up actions, and continuously improve school policies. Regular evaluation enhanced organizational accountability while supporting more effective character education through the use of accurate, integrated, and accessible data.

Overall, this study highlights that EMIS contributes not only to improving administrative efficiency but also to strengthening the governance of character education through systematic, transparent, and data-driven information management. The findings extend the literature on Education Management Information Systems by demonstrating that EMIS functions as both a decision-support system and a strategic instrument for promoting character education in secondary schools. Therefore, schools should continue to strengthen human resource capacity, technological infrastructure, and data-driven organizational culture to maximize the contribution of EMIS to educational quality improvement and students' character development.

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