

Integrating AI in Education Management: Strategies, Challenges, and Opportunities at SMA Kramat Dukupuntang

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ARTICLE INFO

Kata Kunci:

Artificial Intelligence;
Education Management;
Transformasi Digital;
High School;
Educational Innovation

Article history:

Received 2026-04-19

Revised 2026-05-19

Accepted 2026-06-24

ABSTRACT

The development of Artificial Intelligence (AI) has had a significant impact on various sectors, including education. The integration of AI in education management is one of the important strategies to improve the effectiveness of school management, the quality of academic services, and data-driven decision-making. This research aims to analyze the AI implementation strategy, the challenges faced, and the opportunities that arise in the management of education at Kramat Dukupangkang High School. The research uses a descriptive qualitative approach with data collection techniques through observation, interviews, and documentation studies. The results of the study show that the application of AI can support school administration, student data management, learning monitoring, and evaluation of educational performance more effectively and efficiently. The strategies implemented include strengthening teachers' digital literacy, providing technological infrastructure, and developing school policies based on digital transformation. However, AI implementation still faces various challenges such as limited human resources, uneven technological infrastructure, data security issues, and resistance to change. On the other hand, AI opens up great opportunities for improving the quality of education through personalized learning, faster information management, and more accurate decision-making. This study concludes that the successful integration of AI in education management requires school policy support, improvement of digital competence of educators, and collaboration between all education stakeholders.

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1. INTRODUCTION

Digital transformation has become a global phenomenon that affects various aspects of life, including the education sector. The development of Artificial Intelligence (AI) technology presents new opportunities in improving the effectiveness and efficiency of education management. AI allows

various administrative and academic activities to be carried out automatically, accurately, and data-driven, supporting more informed decision-making.

Along with the development of the Industrial Revolution 4.0 and towards the era of Society 5.0, educational institutions are required to integrate digital technology in all aspects of their management. Education no longer only focuses on the process of knowledge transfer, but also on the ability of institutions to utilize technology to create management systems that are effective, efficient, and adaptive to change. In this context, Artificial Intelligence is one of the technological innovations that has great potential to support the transformation of education management in a sustainable manner.

Artificial Intelligence is a technology that allows computer systems to perform various tasks that generally require human intelligence, such as data analysis, pattern recognition, prediction, and decision-making. In the world of education, AI is not only used to support the learning process, but also plays a role in managing school administration, curriculum development, monitoring student performance, and evaluating educational programs. With this ability, AI can help schools produce more quality educational services that are oriented to the needs of students.

The use of AI in education management is also in line with the education digital transformation policy that continues to be encouraged by the Indonesian government. Various school digitalization programs have been developed to improve access, quality, and governance of education. The presence of AI is expected to be able to strengthen these efforts through faster, more accurate, and integrated data processing so that it can support more effective planning and decision-making in the school environment.

In the context of secondary education, the need for a responsive management system is increasing along with the complexity of school management. SMA Kramat Dukupuntang as an educational institution is required to be able to adapt to technological developments to improve the quality of educational services. The use of AI can help schools manage student data, monitor the learning process, optimize school administration, and provide information that supports education policies.

However, the application of AI in the educational environment still requires an in-depth study, especially regarding the readiness of educational institutions to adopt the technology. Factors such as the digital competence of educators, the availability of technology infrastructure, school organizational culture, and data use regulations are important aspects that determine the success of AI implementation. In addition, there are still gaps in the use of AI technology in various educational institutions, especially at the secondary school level. Therefore, research is needed that is able to provide an overview of AI implementation strategies while identifying various challenges and opportunities that arise in education management practices at the school level.

Various studies show that the use of AI in education can improve operational efficiency, learning quality, and the effectiveness of educational evaluation. AI is able to assist educators in analyzing students' learning needs, providing feedback quickly, and supporting data-driven policy formulation. However, the implementation of AI also faces various obstacles such as the readiness of human resources, the limitations of technological infrastructure, data security, and the ethical aspects of using technology. These challenges are important concerns so that the use of AI can run optimally and provide sustainable benefits for the world of education.

Based on these conditions, this study aims to analyze the strategy of AI integration in education management at SMA Kramat Dukupuntang, identify the challenges faced, and explore opportunities that can be used to improve the quality of education. The results of the research are expected to make a theoretical and practical contribution to the development of technology-based education management and become a reference for other schools that want to implement Artificial Intelligence in educational governance.

2. METHODS

This study uses a qualitative approach with a descriptive method. This approach was chosen to gain a deep understanding of the implementation of AI in education management at SMA Kramat Dukupuntang.

The research subjects consist of school principals, vice principals, teachers, administrative staff, and students involved in the school's digital transformation process. Research data was collected through: Observation of the use of digital technology in school activities, In-depth interviews with school management and educators, Documentation study of school policies, activity reports, and educational information systems used.

Data analysis is carried out through the stages of data reduction, data presentation, and drawing conclusions. The validity of the data was obtained through the triangulation technique of sources and methods.

3. FINDINGS AND DISCUSSION

3.1. AI Integration Strategy in Education Management

Based on the results of the research, there are several strategies applied by SMA Kramat Dukupuntang in integrating AI into education management, namely:

a) Strengthening Digital Literacy of Teachers and Education Personnel

The school regularly conducts training on the use of AI-based technologies such as academic data processing applications, digital learning platforms, and artificial intelligence-assisted evaluation systems. This effort aims to increase the readiness of human resources in facing digital transformation.

b) Digitization of School Administration

The use of AI helps schools in managing administration more efficiently. Student data, attendance, academic scores, and activity reports can be processed automatically, reducing the administrative burden on educators.

c) Development of Data-Based Decision Making Systems

AI is used to analyze students' academic data to identify achievement trends, attendance rates, and learning needs. The results of the analysis are the basis for the preparation of school policies.

d) The Utilization of AI in Learning Monitoring

AI-based systems allow schools to monitor student learning progress in real-time so that teachers can provide more appropriate interventions according to the needs of students.

3.2 Challenges of AI Implementation in Education Management

Although it provides many benefits, the implementation of AI at SMA Kramat Dukupuntang faces several challenges as follows:

a) Limitations of Technology Infrastructure

The availability of hardware, internet networks, and supporting systems is still a major obstacle to the optimal application of AI technology.

b) Diverse Digital Competencies

Not all teachers have the same level of digital literacy. This difference in ability causes the process of adaptation to technology to take place gradually.

c) Data Security and Privacy

The management of student and educator data requires a strong security system to prevent information leakage and misuse of data.

d) Resistance to Change

Some educators still show doubts about the use of AI technology because it is considered to reduce the role of humans in the educational process.

3.3 Opportunities for Utilizing AI in Education Management

The implementation of AI also opens up various opportunities that can be taken advantage of by SMA Kramat Dukupuntang, including:

a) Personalization of Learning

AI allows the preparation of learning materials and strategies that are tailored to the needs, abilities, and learning styles of each student.

b) School Management Efficiency

Various administrative work can be done automatically so that educators can focus more on the learning process.

c) Improved Quality of Decision Making

AI-based data analysis generates more accurate information to support school policies.

d) Development of Educational Innovation

The use of AI encourages the creation of a culture of innovation that supports the continuous improvement of the quality of education.

3.4 Discussion

The research findings show that the integration of AI in education management has a strategic role in supporting the digital transformation of schools. These results are in line with various studies that state that AI is able to improve administrative efficiency, learning quality, and educational decision-making effectiveness.

Nevertheless, the success of AI implementation is determined not only by the availability of technology, but also by the readiness of human resources and institutional policy support. Therefore, schools need to build an adaptive digital culture and develop continuous training programs for educators.

In addition, ethical and data security aspects must be the main concern so that the use of AI can provide optimal benefits without causing risks to students and educational institutions.

4. CONCLUSION

The integration of Artificial Intelligence in education management at SMA Kramat Dukupuntang makes a positive contribution to improving administrative effectiveness, educational data management, learning monitoring, and data-based decision-making. The strategies implemented include increasing digital literacy, digitizing school administration, developing data-based systems, and utilizing AI in learning monitoring.

Despite this, AI implementation still faces various challenges such as limited infrastructure, diverse digital competencies, data security, and resistance to change. On the other hand, the opportunities offered by AI are enormous, especially in supporting learning personalization, school management efficiency, and educational innovation.

The next research is suggested to examine the effectiveness of the use of AI in improving student learning outcomes as well as the development of artificial intelligence-based education management models at various levels of education.

Acknowledgement: The author would like to thank the entire academic community of Kramat Dukupuntang High School for providing support and information during the research process.

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