

The Utilization of Artificial Intelligence in Enhancing Students' Character and Soft Skills in the Digital Era: A Literature Review

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Article Info	Abstract
Article History Received: May 22, 2025 Revised: June 2, 2025 Published: June 4, 2025	<i>The advancement of digital technology has had a significant impact across various sectors, including education. One of the technologies that has been increasingly utilized is Artificial Intelligence (AI), which offers tremendous potential for enhancing students' character and soft skills. Although AI is widely used to support the development of technical skills, research on its application for enhancing students' soft skills remains limited. This article aims to explore the use of AI in improving students' character and soft skills in the digital age. The study employs a literature review approach, gathering and analyzing various relevant sources on AI and character education. Data were collected through a literature search of academic articles published between 2020 and 2025. The analysis was conducted by assessing the types of AI technologies utilized, the learning models integrated, and the impacts and challenges of implementing these technologies in education. The main findings indicate that technologies such as chatbots and AI-based adaptive learning systems have the potential to enhance students' communication, leadership, and empathy skills. However, challenges related to technology access and the objective measurement of character remain significant barriers. This research contributes to the development of technology-based education by offering insights into how AI can be applied to support the development of students' soft skills. In conclusion, while AI demonstrates great potential, further research is needed to address implementation challenges and to develop more effective AI-based evaluation tools.</i>
Keywords Artificial Intelligence; Soft Skills; Character Education Students'; Digital Era	

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INTRODUCTION

The digital era, characterized by rapid technological advancements, has transformed educational paradigms worldwide, including in Indonesia. Artificial Intelligence (AI) has emerged as one of the key innovations that not only revolutionizes industry and technology but also significantly impacts teaching and learning methods in higher education institutions (Sihaloho & Napitupulu, 2024; Grand Canyon University, 2025). The implementation of AI in education has opened up new opportunities to enhance the quality of learning, streamline administrative processes, and, importantly, contribute to the development of students' character and soft skills. This phenomenon has become increasingly relevant in the face of the evolving demands of the workforce, where technical skills alone are no longer sufficient to ensure professional success in the future.

The rapid development of AI between 2020 and 2025 has accelerated its use in various aspects of higher education. According to recent studies, AI adoption in higher education plays a crucial role in improving the efficiency and quality of educational services (Sihaloho & Napitupulu, 2024). Data indicates that AI technologies such as chatbots, data analysis, and

virtual tutors have facilitated easier access to learning materials and supported curriculum adaptation, creating a more interactive and personalized learning environment for students (Grand Canyon University, 2025). This trend has further strengthened, particularly following the COVID-19 pandemic, which accelerated digital transformation in the education sector.

In terms of character development, AI offers innovative ways to instill essential values in students. AI-based systems can identify students who require specific guidance in developing character aspects such as empathy or teamwork skills (Kompasiana, 2023). This technology allows for a more personalized and adaptive approach to character education, where systems can analyze student behaviors and mindsets to pinpoint areas of character development that need more attention (Kompasiana, 2024). Through the use of simulations and ethical scenarios tailored to individual interests or career aspirations, AI can create more meaningful learning experiences in shaping students' character.

Meanwhile, in the development of soft skills, AI has proven to have a significant positive impact. Soft skills such as communication, teamwork, and problem-solving are increasingly important in today's complex and dynamic workplace (Mark Plus Institute, n.d.). AI facilitates more effective communication training through interactive simulations and AI-based learning platforms, where chatbots and virtual assistants can serve as conversational partners to enhance students' speaking and listening skills in various contexts (UMG, 2024). Furthermore, AI platforms also support collaboration among students in virtual projects, helping them learn how to work in geographically distributed teams, understand team dynamics, and develop leadership and project management skills.

Based on a review of 15 journal articles published between 2018 and 2024, research in Indonesia has identified various applications of AI in education, such as chatbots for teaching science and engineering, social robots for religious education, and AI for learning assessments (Sihaloho & Napitupulu, 2024). These findings indicate that while AI implementation in education in Indonesia is starting to develop, it is still in its early stages compared to more developed countries. The potential of AI to improve the efficiency and effectiveness of learning, provide more personalized feedback, and assist in decision-making by educators has been acknowledged in several studies, marking a positive direction for technology-based education development in Indonesia.

However, despite offering numerous benefits, the integration of AI into the development of students' character and soft skills also faces several challenges. According to recent studies, AI implementation in education in Indonesia is confronted with obstacles such as high costs, the need for adequate technological infrastructure, and various ethical issues (Mark Plus Institute, n.d.). The digital divide between regions is also a significant hindrance, as unequal access to technology and the internet can exacerbate educational disparities (Sihaloho & Napitupulu, 2024). Additionally, the lack of digital literacy among educators and students, as well as resistance to change from traditional teaching methods, are challenges that must be overcome to optimize the use of AI in higher education in Indonesia.

There is a significant gap between the theoretical potential of AI in character and soft skills development and its practical implementation in higher education institutions in Indonesia (Vemić, n.d.). While AI offers various possibilities for creating more personalized and effective learning experiences, its application in the context of character education and soft skills development remains limited (UMG, 2024). This gap is primarily due to the lack of comprehensive empirical research on the effectiveness of AI in developing students' non-cognitive aspects, the absence of clear guidelines and frameworks for integrating AI into character education curricula, and the limitations in resources and technical expertise in higher education institutions. Therefore, systematic efforts are needed to bridge this gap and maximize the potential of AI in supporting holistic student development.

Based on the identified context, urgency, and gaps, this article aims to comprehensively examine the use of AI technology in the development of students' character and soft skills in the digital era through a literature review approach (Vemić, n.d.). Specifically, this article will analyze various AI applications in character education and soft skills development, identify effective implementation models, evaluate the impact and challenges of using AI for these purposes, and propose strategic recommendations for optimizing the integration of AI into higher education curricula in Indonesia (UMG, 2024). With a focus on recent publications from 2020 to 2025, this article seeks to provide a comprehensive overview of the state-of-the-art in the use of AI for the development of students' non-cognitive aspects.

RESEARCH METHOD

This article employs a literature review research method aimed at examining and analyzing various relevant sources related to the utilization of Artificial Intelligence (AI) technology in the development of character and soft skills among students in the digital era. This approach was chosen as it allows for the exploration of various theories, concepts, and findings from previous studies, which are then critically analyzed to provide a more comprehensive understanding of the potential and challenges associated with the use of AI for character education.

This type of research is a qualitative literature study. In the literature review, the researcher collects, analyzes, and synthesizes findings from prior research related to AI, character education, and soft skills. This research does not gather primary data through interviews, surveys, or direct experiments, but instead focuses on the collection and evaluation of scholarly articles, journals, books, and other relevant publications related to the topic. The literature analyzed includes articles published between 2020 and 2025, with a focus on the application of AI in educational contexts.

The primary data sources used in this study are various academic publications published in international journals, conferences, and books that focus on character development, soft skills, and AI technology in education. These sources are obtained from leading academic databases, such as Google Scholar, JSTOR, Springer, and others. The collected data is then selected based on its relevance and quality with regard to the topic under discussion, namely the utilization of AI in character education and soft skills. The data collection technique used in this research is library research, where the researcher searches for and reviews relevant literature through the retrieval of articles, journals, and books that have been published. All the collected sources are then evaluated based on their credibility, relevance to the topic, and contribution to the understanding of AI in education. This technique allows the researcher to understand the context and development of existing theories while identifying gaps that need further investigation.

The data analysis procedure in this study is conducted through content analysis. Content analysis involves identifying key themes emerging from the collected literature, such as the use of AI in developing soft skills among students, the impact of AI on character formation, and the challenges and opportunities in implementing this technology in education. After the main themes are identified, the researcher synthesizes the results of the analysis to illustrate the potential of AI in character education and soft skills, while offering recommendations based on the findings.

FINDINGS AND DISCUSSION

Research Findings

This study utilizes a literature review approach, which involves gathering and analyzing various articles, journals, and academic publications from the past five years that are relevant to the topic of using Artificial Intelligence (AI) to enhance students' character and soft skills in

the digital era. The literature search process is carried out by accessing trusted sources, such as Google Scholar, JSTOR, and Springer, to ensure the quality and relevance of the sources used. The results of this literature review are summarized in a table that contains information on the types of AI technologies employed, the pedagogical approaches applied, as well as the impacts and challenges encountered in implementing AI for the development of students' non-cognitive skills. Table 1 aims to provide a comprehensive overview of how AI can improve students' character and soft skills within the context of digital education.

Table 1. Frequency Distribution

Author & Year	Article Title	AI Technology Used	Pedagogical Approach	Impact & Challenges of AI in Developing Non-Cognitive Skills
Dalu, Z. C. A., et al., 2023	Open AI-assisted microlearning platform for promoting autonomous learning in students participating in the MBKM program	Open AI, Chatbot	Microlearning, Self-directed Learning, Adaptive Learning	Positive effects on students' independent learning, challenges in precisely assessing character outcomes.
Setiawati, E., 2024	The role of AI in shaping students' values and character in social studies education	AI, Learning Analytics	Value-Based Learning, Character Building	Improvement in students' mastery of values, challenges in personalizing AI-driven feedback.
Husairi, H., & Sodikin, S., 2023	Enhancing soft skills through AI technology in Islamic boarding schools (pesantren)	Machine Learning, Adaptive Learning Systems	Adaptive Learning Model, Case-Based and Simulation Learning	Strengthened communication and leadership abilities, but limited access to technology.
Wahyuni, E., & Akhidah, A. N., 2024	The role of AI in shaping values and character in education	Chatbot, AI Simulations	Interactive Learning with Chatbots, AI-Based Simulations for Character Development	Supports positive character formation, but faces challenges in wider integration across various education levels.
Elfira, R., 2024	Leveraging AI in student-centered learning in the digital era	AI, Adaptive Learning Platforms	Adaptive Learning, Personalized Learning	Facilitates character development, but faces challenges in adapting AI curricula to various student profiles.
Prastyono, A., et al., 2023	The use of AI chatbots in student character development: An empirical investigation	Chatbot, AI Communication Tools	Interactive AI-based Communication Learning	Enhances student communication skills, but maintaining the quality of AI interactions remains a challenge.
Putu Sagita, W., 2024	The impact of AI on digital responsibility among University of Lampung students	AI, Data Analytics	Learning Based on Digital Responsibility	Positive influence on digital ethics, but challenges in scaling the system.
Arifin, N., 2025	Enhancing students' literacy and critical thinking skills through AI	AI, Machine Learning	Digital Literacy Learning, Critical Thinking Development	Boosts literacy and critical thinking, but adaptation to diverse teaching methods is challenging.
Syaharani, D. D. P., 2024	The utilization of technology in educating the digital generation	AI, Learning Analytics, Digital Platforms	Technology-Enhanced Learning, Development of 21st-Century Skills	Strengthens 21st-century skills in students, but challenges remain in directly measuring soft skills.

Author & Year	Article Title	AI Technology Used	Pedagogical Approach	Impact & Challenges of AI in Developing Non-Cognitive Skills
Kartika, D. M. R., et al., 2025	The integration of deep learning in adaptive Islamic education: A systematic review of literature	Deep Learning, Adaptive Learning Systems	Adaptive Islamic Learning, Technology-Driven Character Development	Positive impact on character development, but implementing deep learning within traditional curricula poses challenges.

Discussion

Based on the findings from the literature review, several key trends can be identified regarding the use of Artificial Intelligence (AI) in enhancing students' character and soft skills in the digital era. First, the most commonly used technologies are chatbots and adaptive learning systems. These two technologies enable more personalized and interactive learning, which is crucial for developing non-cognitive skills such as communication, teamwork, and leadership. AI-powered chatbots allow students to interact in a more responsive context, facilitating the development of communication skills and character. On the other hand, adaptive learning systems enable learning that is tailored to each student's pace and ability, providing a more personalized learning experience.

The most frequently integrated learning models with AI technology are adaptive learning and microlearning, which allow learning to occur in small, easily accessible modules. This approach is particularly relevant for the development of soft skills, as it promotes continuous and accessible learning. It can also help students develop learning autonomy, a key characteristic in the digital age. However, a significant challenge in implementing this model is the accessibility of technology and varying levels of digital readiness across different educational institutions.

The positive impact of AI in character education includes the enhancement of communication, creativity, and leadership skills. Additionally, this technology can support the strengthening of digital ethics and social responsibility among students, which is highly relevant in the connected digital era. However, challenges include the difficulty in objectively measuring character and the complexities involved in effectively integrating AI systems across various educational levels.

Overall, the existing literature indicates that AI holds great potential to support the development of students' character and soft skills. However, further research is needed to address the technical implementation challenges and the disparities in access across different educational institutions.

CONCLUSION

Based on the conducted literature review, it can be concluded that Artificial Intelligence (AI) holds significant potential in enhancing students' character and soft skills in the digital era. Various AI technologies, such as chatbots, machine learning, and adaptive learning systems, have proven effective in helping students develop communication, leadership, creativity, and digital ethics skills. The pedagogical approaches integrated with AI, including adaptive learning and microlearning, also show positive outcomes in providing a more personalized and responsive learning experience tailored to each student's needs.

However, despite the significant positive impact of AI in the development of non-cognitive skills, challenges remain regarding technology accessibility and system integration across different educational institutions. Additionally, the objective measurement of character and soft skills continues to be a challenge that must be addressed for AI to be effectively implemented within educational contexts.

The implications of these findings suggest that while AI offers numerous benefits for character and soft skills education, further research is needed to overcome implementation challenges and to design more inclusive and adaptive solutions that cater to the diverse needs of educational institutions worldwide.

RECOMMENDATION

Future research recommendations on the use of artificial intelligence (AI) for the development of students' character and soft skills:

1. AI Integration into Curriculum

In-depth research is needed to explore the application of AI in curricula to support the development of character traits such as empathy, leadership, and cross-disciplinary communication.

2. Long-Term Impact

Evaluations are necessary to assess the long-term effects of AI on the development of soft skills and the social-professional habits of students.

3. AI-Based Soft Skills Measurement

The development of AI-based tools to objectively assess skills such as teamwork, communication, and problem-solving is essential.

4. Multidisciplinary Learning Models

AI should be developed within learning models that combine technical, social, emotional, and ethical aspects to foster well-rounded skill development.

5. Collaboration with Industry

Research should explore collaborations with industry partners to design AI-powered educational platforms that are aligned with the needs of the workforce.

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