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From Chalkboards to Chatbots: Revolutionizing Education with AI-Driven Learning Innovations

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Abstract

Education is undergoing a major paradigm shift with the emergence of artificial intelligence (AI) as a driver for transforming teaching methods. This research explores the role of AI in transforming education, particularly in the transition from traditional methods such as whiteboards to more interactive learning systems based on AI chatbots. Using a qualitative approach, this research collects data through interviews with educators, students, and educational observers and analysis of related literature. The findings show that applying AI increases student engagement and creates a more personalized, flexible, and adaptive learning experience. One significant result is that AI allows students to learn at their own pace and style, while teachers can focus more on developing an in-depth curriculum. This research provides new insights into the potential of AI to improve the quality of learning and expand access to education in the digital era while inspiring the adoption of technology in various educational contexts.

Keywords: *AI Chatbots in Education, Adaptive Learning, Educational Technology Transformation*

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INTRODUCTION

The history of educational tools shows a gradual evolution, from the whiteboards of the past to the emergence of digital platforms and now artificial intelligence (AI). The technological revolution in education is not limited to hardware and software but extends to the integration of AI as a transformative learning tool (Santosa et al., 2023). AI technologies, such as chatbots and adaptive learning systems, have played an important role in creating educational environments that are personalized and responsive to individual needs. A UNESCO report highlights that the application of AI in education significantly increases student engagement and accelerates the learning process through real-time feedback (Pérez et al., 2020). The transition from traditional tools such as whiteboards to AI-based technology is not only a technical advancement but also a paradigm shift towards more effective and efficient educational practices. This historical transformation underscores the growing importance of AI in shaping the future of education.

The integration of artificial intelligence in education has piqued the interest of researchers globally due to its potential to revolutionize teaching methods and elevate student engagement. Studies by Rudolph et al., (2023), Tlili et al., (2023), and King, (2023), demonstrate AI's ability to adapt to the unique needs of learners, fostering personalized learning experiences and accelerating knowledge acquisition. Despite its promise, integrating AI into traditional educational systems faces several challenges, such as resistance to change, technological infrastructure limitations, and concerns about data privacy and ethical use. Moreover, existing studies often overlook the potential long-term impact of AI on the dynamics between teachers and students and how traditional educational values, such as empathy and interpersonal communication, can

coexist with this advanced technology. Addressing these gaps is crucial to ensuring that the transition to AI-powered education retains the core values of teaching and learning.

This study aims to address these shortcomings by exploring the intersection between AI technology and traditional educational values. While prior research has focused on the efficiency and effectiveness of AI in improving learning outcomes, less attention has been paid to integrating this technology with the ethical and humanistic dimensions of education. Bekkar & Chtouki, (2024) emphasize the importance of ensuring that AI supports, rather than replaces, the role of teachers, preserving a balanced learning environment where human interaction remains central. Case studies, such as those highlighted by Kooli, (2023) illustrate how AI can complement teachers' roles as facilitators, rather than diminishing their significance. By exploring these dynamics, this study seeks to fill gaps in the literature and offer new perspectives on AI integration that prioritize both technological advancement and the preservation of core educational principles.

The discussion begins with the premise that the use of AI in education should extend beyond a mere technical solution aimed at optimizing learning efficiency. While existing approaches often prioritize technology and measurable outcomes, this study argues for a more holistic perspective that considers ethical aspects and the indispensable role of human interaction in education. Hwang & Chang, (2023) stress the importance of empathy, interpersonal communication, and a holistic understanding of students' needs as guiding principles for the ethical and sustainable use of AI. Furthermore, Gill et al., (2024) highlight that educational institutions, as hubs for both academic and character development, must adopt approaches that integrate these values into AI applications. By prioritizing these elements, this study aims to illustrate how AI can comprehensively support education, ensuring that technological efficiency aligns with the enduring values of empathy and human engagement.

METHODS

This study focuses on the integration of traditional educational values with AI technology in the context of education. Values that have been upheld so far, such as empathy, collaboration, and responsibility, are expected to positively impact the application of AI as a learning aid. This integration is a technical approach to improve learning efficiency and includes ethical and moral dimensions to build a more humane educational environment. In an increasingly digital era, exploring how these traditional values can accompany AI technology is essential to creating a holistic and comprehensive learning experience. Thus, this study aims to show that combining AI and educational values can present a more meaningful and sustainable approach.

This study uses a qualitative approach with a case study method to explore integrating traditional educational values in applying AI technology in learning. The case study was chosen because it provides an in-depth understanding of this particular context, allowing for a thorough analysis of the role of traditional values in guiding the use of technology in education (Raco, 2010). This research design is descriptive-explorative, intending to explore the experiences, perceptions, and influences of AI implementation in education. The research aims to examine schools implementing AI in learning while maintaining traditional educational values. The research subjects include teachers directly involved in AI-based learning, students as technology users, and educational technology developers who provide AI solutions in the school environment.

Table 1. Informant Data in Research

Position	Number of	Education			Gender		Code
		S1	S2	S3	Male	Female	
Director	1	-	-	1	1	-	SK
Principal	1	-	1	-	1	-	KL
Deputy Principal	4	2	2	-	2	2	DFP, SJ, TWR, AZ
Teacher	6	4	2	-	3	3	NH, JK, TR, SW, ID, KK
Staff	1	1	-	-	-	1	DP
Student	5	-	-	-	3	2	QR, NS, AS, FG, IM
Number of	**18**	**7**	**5**	**1**	**10**	**8**	

Data collection was carried out using three main techniques, namely in-depth interviews, observation, and documentation, which allowed for data triangulation to increase the validity of the findings (Soesana et al., 2023). In-depth interviews were conducted with teachers, students, and technology developers to explore their views on integrating AI and traditional educational values in learning. Observations were used to directly see the application of AI in the classroom and the manifestation of these values in learning interactions. Meanwhile, documentation includes reports, policies, and materials related to using AI in schools that support further analysis processes.

The data obtained were analyzed using qualitative analysis methods, including data condensation, data presentation, and verification of findings (Haryono, 2023). Data from interviews, observations, and documentation were then condensed into main themes such as "*integration of AI with traditional values*," "*the role of ethics in learning technology," and "the impact of AI on teacher-student interactions*." Data presentation is done in tables and matrices to display the analysis results visually and make them easier to understand. The findings are verified through source triangulation and re-checking (member checking) to ensure the accuracy and consistency of the research results.

The steps of this research are described in a flowchart that includes several stages. First, research objects are selected by selecting schools that use AI in learning while maintaining traditional values. Second, data collection is done through interviews, observations, and documentation. Third, the collected data is processed by grouping the results based on the central theme. Fourth, data analysis uses the Miles and Huberman technique, followed by the final stage, namely drawing conclusions and verification through triangulation, to ensure the accuracy of the findings. With this research design, readers are expected to gain a thorough understanding of the methods used to explore the application of AI in education and the ethical implications of this approach.

RESULTS AND DISCUSSION

he discussion of this study's results underscores the critical role of traditional educational values in the successful implementation of AI technology in schools. These values have been shown to enhance the learning experience and strengthen teacher-student relationships. For instance, one teacher interviewed noted, 'By incorporating values like honesty and collaboration into AI-supported activities, we observed students becoming more engaged and taking greater ownership of their learning.' Similarly, a student remarked, 'AI tools are helpful, but having discussions about how to use them responsibly makes the learning experience more meaningful.' These perspectives align with research Özdemir & Tuna, (2023), which emphasizes that integrating local and cultural values into education amplifies the effectiveness of technology and fosters deeper student engagement.

However, our findings also highlight challenges that emerge when these values are overlooked. Rahim's study by Mohd Rahim et al., (2022) illustrates that over-reliance on technology can diminish active student participation when foundational values are not incorporated. This aligns with our observation that classrooms relying solely on AI tools without contextual grounding in ethical and collaborative practices often report lower levels of meaningful interaction. When compared to similar studies, such as those by Maisyaroh et al., (2024), our research provides a unique perspective by emphasizing the role of values like honesty, responsibility, and collaboration in not just enhancing AI's educational utility but also encouraging students to engage in the learning process actively. These findings suggest that values-driven AI integration can produce richer, more dynamic interactions within classrooms.

Nonetheless, this study is not without limitations. One notable constraint was participant bias, as educators who were more tech-savvy or had prior experience with AI tools might have been predisposed to view them positively. Additionally, technological constraints, such as uneven access to reliable AI infrastructure, presented challenges in fully implementing the tools across all study settings. Addressing these limitations in future research could provide an even more comprehensive understanding of how AI can be ethically and effectively integrated into educational environments.

Personalizing Learning through Technology

In this digital era, personalization of learning through technology has become a key to improving educational effectiveness. This study found that integrating technology into learning allows students to learn according to their needs and pace. The findings are based on the analysis of data obtained from in-depth interviews with teachers, students, and parents, which provide valuable insights into the application of

technology in the educational context. One interview with a teacher stated, "*With the online learning platform, I can adjust the teaching materials according to the abilities of each student. This makes the learning process more effective*." This statement reflects how technology allows teachers to apply a more individualized approach to teaching so that students can focus on the areas they need to develop without feeling pressured to keep up with the overall class pace. This aligns with the findings of Labadze et al. (Labadze et al. 2023), which emphasize the importance of adapting teaching materials to meet individual student needs.

A student also shared his experience: "*I feel more comfortable learning using an application I can access anytime. I can repeat the material I do not understand without feeling embarrassed in front of my friends*." This shows how personalization through technology gives students a sense of security and confidence, increasing their motivation and learning outcomes. This aligns with research by Abbas et al. (Abbas et al., 2022), which states that technology can reduce students' anxiety and increase their engagement in the learning process. In addition, a parent gave his opinion: "*I see my child is more active in learning after using educational applications. He does not only learn from books but also from various sources that are more interesting*." This shows that the use of technology not only benefits students academically but also affects their learning attitudes. Research by Tam et al. (Tam et al., 2023)supports this statement by showing that using diverse learning resources can increase students' activeness and creativity in learning.

Interpretations from the interviews suggest that personalization of learning through technology contributes to increased student engagement, both academically and emotionally. This underscores the importance of technology in creating adaptive learning environments responsive to students' needs. By leveraging technology, education can become more inclusive, providing opportunities for all students to develop to their full potential. Thus, educators and policymakers must continue growing and leveraging technology in education to create more comprehensive and inclusive learning experiences that prioritize character development and human engagement.

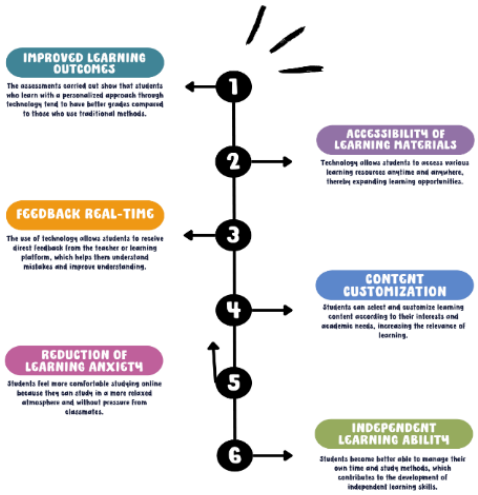

Figure 1. Personalization of Learning through Technology

The results of the study showed that personalization of learning through technology has a significant impact on students' learning experiences. The implementation of this approach not only increases student engagement but also facilitates more independent learning. Access to various resources and materials tailored to individual needs makes students feel more motivated and empowered to manage their learning process. These findings indicate that technology can effectively create responsive learning environments that encourage students to learn proactively and exploratively. This greater engagement contributes to improved academic outcomes and creates a more positive atmosphere in the educational process. The study by Wang et al. (Wang et al., 2023)also supports our results by showing that an approach that integrates ethics in the use of educational technology can increase student motivation and facilitate a more inclusive learning environment. Thus, this study contributes to the understanding that the success of AI integration in education is determined not only by the technology itself but also by the traditional values that form the ethical framework in its use.

Theoretically, the results of this study support the concept of adaptive learning, which focuses on students' ability to learn most effectively (Neumann et al., 2021). This approach aligns with constructivism theory, which emphasizes that effective learning occurs when students are actively involved in their learning process (Osamor et al., 2023). Using technology to personalize learning, educational institutions improve academic quality and shape students' character by developing social skills and independent learning abilities. This study emphasizes the importance of strategic use of technology to create an inclusive learning experience, which aligns with modern education's goal to form individuals who are not only academically intelligent but also have good interpersonal skills and readiness to face future challenges.

Value Education through Educational Content

Value education through educational content presents new opportunities in building the character and morals of students in the digital era, where the basic principles of character education can be integrated with artificial intelligence technology to increase the effectiveness of learning.(Ilieva et al., 2023). Learning focuses on intellectual development and positive character building by incorporating values such as empathy, responsibility, and honesty into AI-powered content. This is expected to create a generation that has broad knowledge and is solid in noble moral values.

Table 2 shows the Value of Education through Educational Content;

Table 2. Interview Result Data Value Education through Educational Content

Interview Result Data	Coding	Resources
I see a significant change. Children now understand the concept of honesty and empathy better. They are more aware that these values are essential in theory and as a guide in their daily lives.	Improving Understanding of Moral Values in Students	Educator
Now, I did need to understand more clearly why I must be honest in every situation. Before, I only knew it was a rule, but now I realize that honesty can affect other people's trust in me.	Improving Understanding of Moral Values in Students	Learners
Many students are now more active in expressing their opinions and asking questions. They are more confident because the classroom atmosphere is more conducive and interactive, mainly when discussing values in life.	Increasing Active Participation in Learning	Educator
The material interested me, mainly because it was often related to everyday life, so I felt closer to the topic.	Increasing Active Participation in Learning	Learners
They became more respectful of each other and more sensitive to friends who were having difficulties. Some students even helped their friends without being asked, which was rare before.	Positive Attitude and Behavior Changes	Homeroom teacher
My child is now more responsible, especially regarding homework and time discipline. He is more willing to help his parents and is more polite when speaking; this is a development that I appreciate.	Positive Attitude and Behavior Changes	Parent
They are more concerned about classroom cleanliness and more cooperative in group activities. Some students even volunteered in social activities at school, which was rare before.	Application of Values in Daily Life	Guidance and Counseling Teacher
I try harder to be on time with my assignments and honest with my friends and teachers. Even at home, I help my parents more without being asked.	Application of Values in Daily Life	Learners

Applying educational content based on values in learning has positive implications for developing students' character and morals. The findings show an increased understanding of values such as honesty and empathy, which are no longer seen as mere rules but as fundamental principles in interacting. Honesty is reflected in students' understanding that integrity builds trust in social relationships, while increased active participation shows students' responsibility and courage to be more involved in learning. In addition, changes in positive attitudes, such as mutual respect and care for friends, reflect that empathy is an integral part of their daily lives. Discipline and responsibility are also increasingly visible, both in the school environment and at home, according to the recognition of teachers and parents. The ability of students to

apply these values outside the classroom, for example, through an attitude of caring about cleanliness and the initiative to help without being asked, shows that value-based education has succeeded in forming students' morally strong characters. Integrating moral values in learning increases student involvement and builds a generation that can play a positive societal role through ethical attitudes and actions.

Table 1 shows four forms of Value Education through Educational Content. Thus, the data above explains the findings as follows;

They were first, Improving Understanding of Moral Values in Students. Interview data shows increased students' understanding of moral values, especially honesty and empathy, now understood as essential aspects of everyday life. From the perspective of educators, it is apparent that students are increasingly aware of the importance of moral values, not only as a theory but also as a guide to life. In addition, from the students' perspective, students stated that understanding the concept of honesty is now more than just a school rule. Students know its impact on others' trust in them (Stathakarou et al., 2020). These findings indicate that value-based learning successfully enhances students' more profound and more meaningful understanding of morality.

They were second, Increasing Active Participation in Learning. Learning with educational content based on moral values also positively impacts students' participation in class. Educators observed that students are now more active in expressing opinions and asking questions, especially when learning is linked to life values. The classroom atmosphere becomes more conducive and interactive, thus increasing students' confidence to participate (Cheong et al., 2024). From the students' perspective, they admitted that the material presented became more exciting and relevant to their daily lives, thus fostering interest in engaging in discussions. This increase in participation shows that value-based teaching methods can create a more dynamic and meaningful learning environment for students.

Third, Positive Changes in Attitudes and Behavior. Value-based learning also impacts changing students' attitudes and behaviors in a more positive direction. According to the homeroom teacher, students have become more respectful and sensitive to each other's circumstances; some even help friends voluntarily without being asked. This was also acknowledged by parents, who saw that their children are now more responsible for homework, disciplined with time, and polite in speaking. These changes show that the application of values in learning not only improves students' understanding of morals but fosters positive behavior that is appreciated by the surrounding environment (Bozkurt, 2023).

Fourth, the Application of Values in Daily Life. Other findings show that students can apply the values they learn in real life at school and home. Guidance and counselling teachers noted that students were more concerned about classroom cleanliness and showed cooperative attitudes in group activities. Some students even volunteered to participate in social activities at school (Annamalai et al., 2023). From the student's perspective, they feel encouraged to be more honest with friends and teachers and help their parents without being asked. These results indicate that value-based education has succeeded in forming the character of students who understand moral values and can apply them in everyday life.

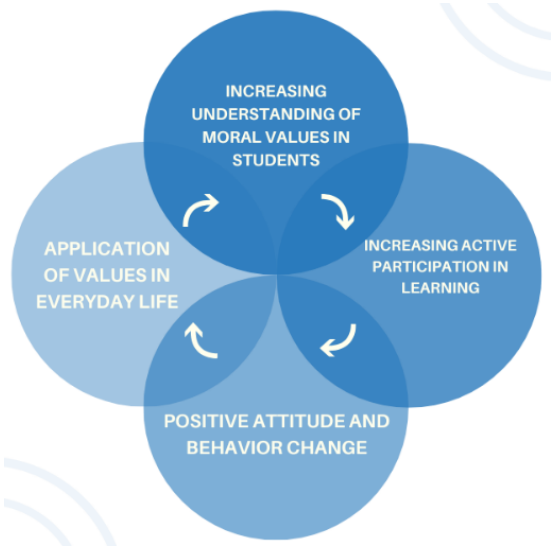

Figure 2. Value Education through Educational Content

The findings of this study indicate that the application of value-based educational content in the learning process significantly impacts the development of a student's character. The increased understanding of moral values is seen in students who increasingly understand the concept of honesty and empathy not just as rules but as an essential part of their social relationships. In addition, the increase in active participation shows that this method has created an interactive classroom atmosphere where students feel more confident to express their opinions and ask questions. Changes in positive attitudes and behaviors, such as mutual respect, discipline, and responsibility, show that students receive academic material and learn to apply these values . This indicator is strengthened by the recognition of parents and teachers who state that students now show better attitudes at school and home.

From a theoretical perspective, these results support the view that education that integrates moral values directly into learning can holistically strengthen students' ethical and character understanding. This study aligns with the concept of character education that emphasizes the importance of internalizing values through real experiences so that students not only memorize concepts but also apply them contextually (Yuan, 2023). The practical application of moral values helps students excel academically and have strong character and a good personality. This finding shows that using technology or educational content based on values has excellent potential in shaping the character of the younger generation, who are not only learners but also moral individuals who can bring positive values to their social environment.

Integration of Technology and Humanistic Approach

The findings of this study indicate that integrating technology with a humanist approach not only increases the effectiveness of learning but also supports the development of student character. Technology in education must be designed to create deep and meaningful interactions between students and educators (Tsivitanidou & Ioannou, 2021). This study recommends that educational institutions continue to develop and utilize technology to place students at the center of learning so that the teaching and learning process becomes more adaptive and meets students' individual needs. In this study, it was revealed that the integration of technology with a humanistic approach in education has a significant impact on students' learning experiences. This study involved in-depth interviews with various stakeholders, including teachers, students, and parents, to explore their perspectives on the application of technology in the learning process. The interviews showed that the presence of technology not only increases the accessibility of information but also strengthens interpersonal relationships that are essential in education.

One teacher emphasized the importance of technology in creating better interactions between teachers and students. Rahman stated, "*Using online learning platforms, I can see how students interact and understand the material so that I can adjust my teaching methods to their needs*." This statement reflects that technology allows teachers to make faster and more precise adjustments, which can increase learning effectiveness. This finding is consistent with the study by Condero et al. (Cordero et al., 2020), which shows that an approach that integrates technology and humanistic teaching can improve student engagement and conceptual understanding. On the other hand, interviews with students revealed that they felt more engaged and motivated in learning when technology was used effectively. One student stated, "*I feel freer to ask questions and discuss with friends in the online forum. It helps me understand the material better than just listening in class*." This shows that technology serves as a tool to convey information and as a platform that supports social interaction and collaboration between students. Research by Tian et al. (Tian et al., 2024) emphasizes that technology-based learning that emphasizes student interaction can strengthen the learning experience and encourage critical thinking.

Interviews with parents also provided valuable insights into the impact of technology in education. One parent shared, "*I see my child is more active in learning after using educational applications. He learns from books, videos, and quizzes, making learning more fun*." This suggests that technology can make learning more exciting and varied, increasing student motivation. This finding aligns with Media et al.'s (Belda-Medina & Kokošková, 2023) research, which states that the diversity of teaching methods supported by technology can increase student engagement and understanding. Considering the data and interviews above, this study concludes that to achieve optimal education, it is essential to integrate technology with an approach that still pays attention to humanist values. This will increase the effectiveness of education and form academically intelligent individuals with good interpersonal skills, which are very much needed in an ever-evolving world.

Based on the interview results above, it can be concluded that technology integration in education must be done with a humanistic approach to creating a better learning experience. All parties, including teachers, students, and parents, will benefit when technology supports interaction, communication, and collaboration. This underlines the importance of educators focusing on technology as a tool and considering the human aspect in every learning process. Thus, combining technology with human values will produce a more inclusive learning environment that responds to students' needs.

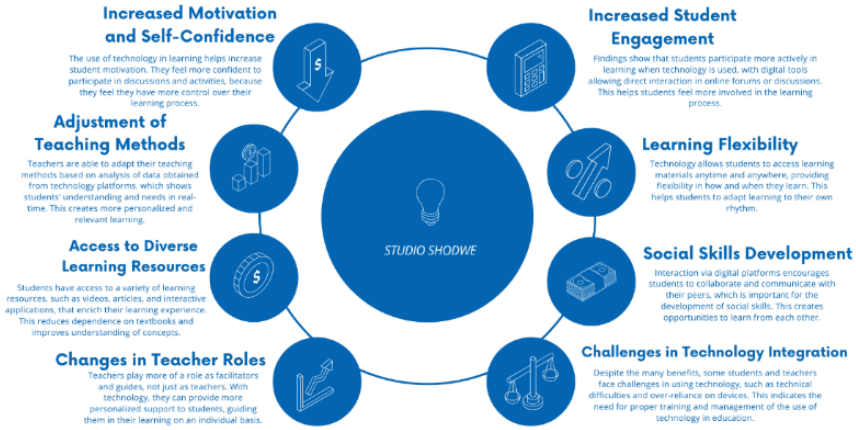

Figure 3. Integration of Technology and Humanistic Approach

It can be seen from the findings above that the integration of technology and a humanist approach in education has a significant impact on students' learning experiences. This study shows that the application of technology in learning not only increases accessibility and flexibility but also encourages active student involvement in the learning process. More dynamic interactions between students and teachers, as well as increased learning motivation, indicate that technology can serve as an effective tool to create a more responsive and adaptive learning environment. These findings emphasize the importance of integrating technology with a humanist approach in education to produce a generation with high academic competence and good social skills.

Theoretically, integrating technology and humanist approaches in education aligns with constructivist learning theory, emphasizing that students construct knowledge through interaction and experience (Williams, 2023). This study supports the argument that education that uses technology wisely can improve learning outcomes and student character development. Therefore, educational institutions need to pay attention to training and support for teachers in the use of technology, as well as creating policies that promote the use of technology inclusively and humanely. With these steps, it is hoped that education can provide a more comprehensive and humanizing learning experience, which supports the development of student's skills and character in facing the challenges of an increasingly complex world.

CONCLUSION

The conclusions of this research highlight the transformative potential of artificial intelligence (AI) in education, particularly in increasing accessibility, fostering inclusivity, and enhancing student engagement through more interactive and adaptive learning experiences. By integrating AI with traditional teaching methods, this study demonstrates that AI can provide personalized learning pathways, allowing students to learn at their own pace and according to their individual needs while supporting teachers in creating more dynamic classroom environments.

Educators should adopt a balanced approach by using AI as a complement to, rather than a replacement for, traditional teaching methods. Training programs should be developed to equip teachers with the skills needed to integrate AI into their teaching practices effectively. Policymakers are encouraged to prioritize investments in equitable AI infrastructure, ensuring all schools have access to these technologies, regardless of geographic or economic disparities.

Future research should focus on exploring the long-term impact of AI on critical areas such as student-teacher interactions, the development of social and emotional skills, and the ethical implications of AI use in education. Additionally, investigating the scalability of AI tools across diverse educational contexts and

levels can provide valuable insights into how these technologies can be implemented more broadly and effectively. By addressing these areas, the education sector can harness AI not just as a tool for improving efficiency but as a means to foster deeper, more meaningful learning experiences while preserving the core values of human interaction and ethical responsibility.

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