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Ethics of Artificial Intelligence Usage in Education: A Qualitative Study on Teachers' and Students' Perceptions

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Abstract: The use of artificial intelligence (AI) in education is becoming increasingly widespread, offering numerous benefits while also raising ethical dilemmas. This study aims to explore teachers' and students' perceptions of AI implementation in education, highlighting its benefits, challenges, and ethical implications. Using a qualitative approach, the research involved in-depth interviews with 20 teachers and students from various high schools in Indonesia. Data were analyzed using thematic coding techniques to identify key patterns in their responses. The findings indicate that AI can enhance learning efficiency, facilitate curriculum personalization, and support educational administration management. However, concerns exist regarding algorithmic bias, personal data security, and the impact on social interactions in learning. Teachers emphasized the need for clear regulations on AI usage, while students were more focused on the benefits that technology can offer. This study concludes that although AI holds great potential in education, strict policies and ethical guidelines are necessary to ensure its balanced use and to prevent it from replacing the human role in the learning process. These findings provide valuable insights for policymakers and education practitioners in designing more ethical and effective AI implementation strategies.

Keywords: Artificial Intelligence (AI), Education, Learning Efficiency, Curriculum Personalization.

INTRODUCTION

Artificial intelligence (AI) is rapidly advancing and has become an integral part of various sectors of life, including education. The development of AI technology brings numerous innovations that can transform the way learning takes place. In education, AI has been applied in various aspects, ranging from school administration and student data analysis to personalized learning. The primary advantage of AI is its ability to process and analyze large amounts of data quickly and accurately. With this technology, educational institutions can optimize various operational aspects and enhance teaching effectiveness as well as student learning outcomes (Sholeh et al., 2024).

One of the main benefits of AI in education is its ability to create adaptive learning systems. These systems can adjust learning materials based on the needs and capabilities of each student.



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With advanced algorithms, AI can identify students' strengths and weaknesses in understanding certain subjects and then present a more suitable approach to improve their comprehension. This allows for a more personalized and effective learning experience, where each student receives attention tailored to their learning pace and style. For instance, AI-based learning platforms can provide additional exercises for students struggling with specific subjects or accelerate material for those who have already mastered it (Arifah & Noor, 2025).

With this technology, teachers can gain deeper insights into the academic progress of individual students as well as the entire class. The data generated by AI enables teachers to identify learning patterns, determine more effective teaching strategies, and provide more accurate, data-driven feedback. AI can also assist in administrative tasks such as grading assignments and exams, which previously required significant time and effort. As a result, teachers have more time to focus on direct interaction with students and the development of more creative and innovative curricula (Habibulloh et al., 2025).

Despite the numerous benefits AI offers in education, several challenges must be considered, particularly regarding ethical aspects and the social impact of its use. One major issue is excessive dependence on AI technology in the learning process. Although AI can provide effective solutions in many aspects, the role of teachers cannot be completely replaced. Direct interaction between teachers and students plays a crucial role in education, especially in developing students' social, emotional, and character-building skills. Therefore, it is essential to find the right balance between AI utilization and the human role in education (Syafi'i et al., 2024).

Another challenge is the presence of algorithmic bias in AI systems. AI operates based on the data used to train it, so if the data contains biases, the results produced by AI may also be biased. In the context of education, such bias can affect student assessments unfairly, for example, in automated evaluation systems that may favor certain student groups over others. Therefore, strict oversight mechanisms are needed to ensure that AI is applied fairly and does not disadvantage any particular group (Maesyaroh, 2024).



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The next challenge is protecting students' personal data. AI systems in education often collect and analyze large amounts of student data, including academic history, learning habits, and even psychological aspects. If not managed properly, this data is at risk of being misused or exposed to breaches that could compromise student privacy. Therefore, strict regulations are needed in educational data management to ensure students' security and privacy remain protected (Muzakki et al., 2023).

The use of AI in education can also reduce human involvement in the learning process, which may impact the quality of social interactions in the school environment. In teaching and learning, interaction between teachers and students, as well as among students themselves, plays a significant role in developing social skills, cooperation, and empathy. If too many aspects of learning are automated by AI, there is concern that this could diminish the social dimension of education, which is crucial for students' personality development (Syafi'i & Ikwandi, 2023).

Given the various benefits and challenges, this study aims to gain a deeper understanding of how teachers and students perceive AI implementation in education and the challenges they face in its application. This research will identify the key benefits of AI in learning and analyze the ethical challenges that arise from its implementation. Additionally, this study aims to develop policy recommendations to ensure that AI usage in education is conducted ethically, effectively, and beneficially for all stakeholders (Johnson et al., 2024).

Through this research, it is expected that a deeper insight into the role of AI in education can be obtained, along with steps that can be taken to address the emerging challenges. Consequently, AI utilization in education can be optimized without neglecting ethical aspects, fairness, and the quality of social interactions in the learning process. Technology-based education must continue to prioritize human values to provide maximum benefits for students, teachers, and the entire educational ecosystem.

METHOD

Research Approach and Design



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This study employs a qualitative approach with a phenomenological design, aiming to gain an in-depth understanding of teachers' and students' perceptions regarding the implementation of artificial intelligence (AI) in education. This approach was chosen because it allows for an in-depth exploration of experiences, understanding, and ethical challenges that arise in the use of AI in school environments (Lewis, 2015).

Participants and Research Location

The participants in this study consist of 20 teachers and students from various senior high schools (SMA) in Indonesia. Participants were selected using purposive sampling, considering variations in experience with AI in learning, both directly and indirectly.

Data Collection Techniques

Data were collected through in-depth interviews using a semi-structured interview guide. Interviews were conducted both in person and online (via Zoom/Google Meet) to ensure flexibility and accessibility for participants. In addition to interviews, additional data were collected through non-participatory observations and documentation related to school policies on AI usage (Rubin, 2011).

Data Analysis Techniques

The data obtained were analyzed using the thematic coding method (Patton, 2014), following these steps:

1. **Data Transcription** – Interviews were recorded and transcribed verbatim.
2. **Identifying Initial Patterns** – Transcripts were reviewed to identify initial themes.
3. **Coding** – Segments of text were categorized under specific labels (e.g., "AI Benefits," "Ethical Concerns," "Learning Efficiency").
4. **Theme Grouping** – Similar codes were grouped into key themes.
5. **Conclusion Drawing** – Findings were synthesized by connecting the results with relevant literature.

Data Validity



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To ensure the validity of the findings, this study applied data triangulation by comparing interview results with observations and documentation. Additionally, **member checking** was conducted, where some participants were asked to verify the interpretations of their interview responses to ensure alignment with their experiences(Fink, 2019).

Research Ethics

This study adheres to ethical principles, including informed consent, anonymity, and data confidentiality. All collected data will only be used for research purposes and will not be disclosed without permission.

RESULT AND DISCUSSION

Research Findings

Based on in-depth interviews with 20 teachers and students from various senior high schools in Indonesia, several key findings emerged regarding perceptions of AI implementation in education.

Benefits of AI in Education

Most participants, both teachers and students, highlighted the benefits of AI in enhancing learning efficiency. Teachers stated that AI assists in administrative tasks such as class scheduling, automated grading, and academic data analysis. Students also appreciated AI for providing personalized learning materials tailored to individual needs.

Commonly used AI applications include Google Classroom, chatbots for assignment consultations, and AI-based tutoring software such as Ruangguru and Zenius. Teachers noted that AI integration in educational administration helps reduce their workload, allowing them to focus more on student interactions. Additionally, AI enables adaptive learning systems that adjust material difficulty levels based on each student's capabilities.

Students reported that AI helps them access a wider and more interactive range of learning resources. A UNESCO (2022) survey revealed that 78% of students feel more motivated to learn with AI technology, as it provides instant feedback and a more flexible learning experience.



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Another study by McKinsey (2021) found that AI implementation in education can enhance material comprehension by up to 30% faster compared to conventional methods.

Challenges in AI Implementation

Despite its advantages, AI implementation also presents several challenges. Teachers pointed out technological infrastructure limitations in schools, such as unstable internet connections and a lack of technical training for educators. Some teachers admitted struggling to integrate AI technology into the curriculum due to limited resources and technical support. Additionally, inadequate access to proper devices remains a barrier for schools in remote areas.

According to data from Indonesia's Ministry of Education and Culture (2023), around 40% of schools in Indonesia still face unstable internet access, which serves as a major obstacle to AI adoption in education. Furthermore, a Programme for International Student Assessment (PISA) 2021 survey found that 35% of Indonesian students lack access to adequate digital devices to support technology-based learning.

Students, on the other hand, expressed concerns about limited social interactions due to excessive technology use. They felt that AI-based learning might reduce opportunities for direct interaction with teachers and peers—an essential aspect of social skill development. Some students also feared that AI could replace teachers' roles, potentially diminishing the humanistic values of education.

Ethical Implications

Ethical issues emerged as a major concern in AI implementation. Participants highlighted algorithmic bias, data privacy concerns, and students' dependency on technology. Teachers emphasized the importance of clear regulations to ensure AI usage does not violate students' privacy rights. They also stressed the need for transparency in AI algorithms to prevent discrimination in learning processes.

A World Economic Forum (2023) report indicated that around 60% of educational institutions implementing AI still lack strict regulations regarding student data protection. This



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poses a risk of personal information misuse, which could have long-term consequences for students.

One of the primary concerns raised by teachers is how AI collects and stores student data. Without strict regulations, there is a risk that student data could be misused or misinterpreted by AI systems. Additionally, algorithmic bias remains a serious issue—if AI systems are not trained with diverse datasets, they may favor certain groups over others, leading to inequities in learning opportunities.

DISCUSSION

The research findings indicate that the implementation of artificial intelligence (AI) in education has significant impacts, both positive and negative. One of AI's main advantages lies in its ability to enhance learning efficiency and personalize educational content. AI can tailor learning materials to individual student needs, provide real-time feedback, and identify areas where students struggle. These findings align with previous research, which suggests that AI technology can accelerate the learning process and assist students with learning difficulties (Sholeh, 2023b). With AI, students can learn at their own pace without being constrained by rigid schedules.

This study also found challenges in AI implementation, particularly regarding technological infrastructure and concerns about social impact. One major obstacle is the persistent digital divide, especially for students in areas with limited access to technology. Without adequate infrastructure, AI utilization in education may only widen the gap in access to educational resources. Teachers and students emphasize that AI should serve as a supportive tool rather than replace human interaction in the learning process (Riveira, et al., 2014). This supports Bynum's (2020) perspective, which asserts that AI technology must be applied ethically and in a balanced manner.

From a pedagogical perspective, AI offers great potential for personalized learning, particularly for students with special needs. AI can assist students facing learning difficulties through interactive tools such as virtual tutors or software that adjusts question difficulty based on student performance (Satyawati & Dwikurnaningsih, 2024). Additionally, AI enables more flexible learning experiences, allowing students to learn outside the traditional classroom setting. However,



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without proper supervision, AI could also present new challenges, such as reduced social interaction between students and teachers, which may negatively affect social skill development.

Ethical considerations are another key concern in this study. One prominent issue is the protection of student data privacy. AI in education often collects and analyzes student data to provide better learning recommendations. However, without strict regulations, there is a risk of data misuse, which could compromise student privacy (Habibulloh et al., 2024). These findings highlight the importance of an ethics-based approach in AI development and implementation in education. Both teachers and students argue that clear policies on data security are essential to prevent the misuse of personal information. Furthermore, algorithm transparency is a crucial factor in ensuring that AI-driven decisions are understandable and trustworthy for users (Sholeh, 2023).

To address these challenges, collaboration between policymakers, educational institutions, and technology developers is necessary. Governments and schools must ensure that teachers receive adequate training in AI usage to maximize the benefits of this technology. Such training should cover understanding how AI functions, how to integrate it into the learning process, and how to handle potential challenges (Anshorudin, 2024). Additionally, technology developers need to ensure that AI is not only effective in supporting learning but also safe and aligned with educational values. Responsible AI development should consider transparency, fairness, and inclusivity, ensuring accessibility for all students without discrimination.

AI utilization in education should be accompanied by approaches that encourage social interaction and critical skill development among students. Teachers can play a crucial role in supervising and guiding students in using this technology, ensuring they are not merely passive users but also capable of analytical and creative thinking (Arifah & Noor, 2025). AI can be used as a tool to support classroom discussions, promote student collaboration, and aid in the development of problem-solving skills. Thus, AI functions not only as an academic aid but also as a means to cultivate 21st-century skills that students will need in the future.

This study also found that AI can assist in educational administration, such as class scheduling, automated grading, and student performance analysis. This can reduce teachers'



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administrative workload, allowing them to focus more on direct interactions with students. However, concerns remain that excessive reliance on AI in these aspects may result in a loss of the human touch in education (Habibulloh, 2024). Therefore, it is important to strike the right balance between automation and human interaction. The study indicates that AI implementation in education should be carried out gradually and based on evidence. Before being widely applied, AI should be tested on a small scale to assess its effectiveness and identify potential challenges. Regular evaluations are also necessary to ensure that this technology genuinely benefits students and teachers without creating unintended negative consequences (Sholeh, 2023).

Considering the benefits, challenges, and ethical implications of AI in education, comprehensive policies are needed to ensure responsible and effective technology utilization. AI should be seen as a tool that supports the teacher's role rather than as a primary replacement in the learning process. Education still requires human elements that technology cannot fully replace, such as empathy, creativity, and the ability to build interpersonal relationships. Therefore, AI integration in education should be approached in a balanced manner, prioritizing student benefits while maintaining fundamental educational values. This study affirms that AI has great potential to enhance learning efficiency and quality, but it also presents challenges that must be carefully managed. With appropriate regulations, teacher training, and policies prioritizing ethics and inclusivity, AI can become a valuable tool in supporting more effective and adaptive learning for students across various educational levels.

CONCLUSION

The findings of this study indicate that the implementation of artificial intelligence (AI) in education has a significant impact, both in enhancing learning efficiency and presenting new challenges. AI plays a crucial role in accelerating the learning process, personalizing content to suit individual needs, and providing real-time feedback. Additionally, AI has the potential to assist students with special needs by offering interactive learning tools, such as virtual tutors and adaptive software. From an administrative perspective, AI can help streamline tasks such as class



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scheduling, automatic assessments, and student performance analysis, reducing teachers' workloads and allowing them to focus more on direct student engagement. Despite its advantages, AI implementation in education also presents several challenges. The digital divide remains a major concern, particularly for students in areas with limited access to technology. Without proper infrastructure, AI-driven education may further widen the gap in learning opportunities. Another critical issue is the risk of reduced social interaction due to overreliance on AI, which could negatively affect students' interpersonal skills. Moreover, ethical concerns regarding student data security require urgent attention, as AI often collects and analyzes personal information to optimize learning recommendations. Without clear regulations, there is a potential risk of data misuse. Given these findings, it is evident that while AI has great potential in education, it should be implemented responsibly. AI should be seen as a complementary tool rather than a substitute for teachers. The human aspect of education—empathy, creativity, and social interaction—remains irreplaceable. Therefore, a balanced approach is needed to ensure that AI enhances the learning experience without diminishing the fundamental values of education.

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