AI IN THE CLASSROOM: OPPORTUNITIES AND ETHICAL BOUNDARIES

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ABSTRACT
This article examines the integration of Artificial Intelligence (AI) in the classroom by highlighting both opportunities and ethical boundaries. The study adopts a conceptual approach through literature review and critical analysis of current practices. Findings suggest that AI offers significant opportunities in supporting personalized learning, automating administrative tasks, and increasing accessibility in education. However, challenges arise in terms of data privacy, algorithmic bias, academic integrity, and the risk of diminishing human interaction. The article concludes that maximizing the benefits of AI in education requires clear ethical frameworks, responsible policies, and continuous teacher involvement. This work contributes to the academic discourse by providing a balanced perspective on how AI can be effectively implemented in education while maintaining ethical safeguards.

Keywords: Artificial Intellegence, Education Technology, Classroom Innovation, Ethical Bounderies, Daya Privacy, Academic Integrity

BACKGROUND

The integration of artificial intelligence (AI) into education offers a variety of benefits that can transform the way we teach and learn. However, we must provide a strong ethical foundation for the development and use of AI, which is becoming increasingly ingrained in everyday life. In the creation and use of AI technology, ethics plays a crucial role. The potential advantages and disadvantages, the ethical consequences of AI decision-making, the role of policy and decision-making, and the ongoing requirements for research and development ethics must be considered to ensure a positive impact on its users. A positive pack for its users. Moral standards, known as ethics, determine how a person should behave or how an activity should be carried out. One concrete example of ethics is how to treat everyone with respect. Philosophers have debated ethics for centuries. Among the many well-known ethical teachings is Kant's categorical imperative, which states that a person should "act toward others as he would have them act toward him."

Ethics is the body of human knowledge that can help people decide how they and others should behave. The ethical issues raised by AI fall into two overlapping groups. First, like other advanced devices or technologies (for example, genetic engineering or nuclear power), the potential application of AI raises ethical questions about its impact on human life. Although technology can be used by researchers to unravel complex problems from the abundance of information and data, it requires technology (in the form of software) to analyze it, such as R-Stat, SPSS, Anova, Vos Viewer, and others. In academia, the potential of AI can also raise concerns about the integrity of academics regarding their thinking. Second, unlike other technologies, AI can make its own decisions about the actions it takes by undergoing some "teaching," as in Large Language Models, which are often equated with AI. Researchers who use AI in their scientific writing should be able to behave ethically. This requires research into AI with the goal of understanding the function, structure, and content of ethical knowledge well enough to apply ethics to human-made “agents.”

The current use of AI is quite diverse, requiring limits on its use to avoid violating applicable ethics in the field. In academic fields, particularly research, AI can assist with certain tasks but is not permitted for comprehensive analysis. To understand the use of AI in information processing, particularly in the academic field, researchers analyze data and information sources from related literature.

The use of artificial intelligence in academic settings can also improve the quality of education. By utilizing artificial intelligence (AI), teachers and lecturers can create more engaging and interactive learning materials, thereby increasing student interest. AI can also assist in evaluation, increasing the accuracy and objectivity of assessments. In research, AI can support researchers in analyzing large and complex data sets, thus impacting research results.

However, there are several obstacles to the application of AI in academia. One of the main issues is the morality of using artificial intelligence. The use of artificial intelligence technology must be considered carefully and responsibly to avoid compromising academic integrity. In studies, the use of AI must be considered because AI has limitations in understanding the context and nuances of the study.

However, the use of AI in academia also poses several challenges. One of the main challenges is the ethical use of AI. AI must be used wisely and responsibly to avoid compromising academic integrity. Furthermore, AI must be used while considering its limitations and advantages. This study will further explain the possible uses of AI, taking into account the limitations of AI's ability to understand the context and nuances of research. This information reveals that AI has specific functions and limitations that can impact research results in scientific papers. Academic and research institutions can comprehensively integrate AI into their research workflows to maximize its benefits. However, the ethical and transparent use of AI is even more crucial for academics and researchers, requiring them to commit to and uphold academic integrity.

One of the main benefits of using AI in science writing is its ability to help writers produce high-quality content quickly and efficiently. By using certain processing techniques, AI systems can analyze large amounts of data and produce accurate, well-written, human-like text. This can be especially useful for writers who need to produce large amounts of content in a short time, or for writers working on complex or technical topics that require a deep understanding of the subject matter.

Furthermore, while the use of AI can help automate tasks and simplify the writing process, it's important to recognize that these tools cannot replace the creativity and unique insights inherent in humans. AI operates by analyzing existing data and recognizing patterns; however, unlike humans, AI lacks the ability to engage in unconventional thinking or forge innovative connections. Researchers must be able to manually validate and verify the validity of the data and/or information generated by AI.

In this study, the researchers revealed that the ethical use of AI should be limited to ideas, outlines, analysis tools and data/information extraction, and grammar checking. Furthermore, author recognition is needed to demonstrate integrity by highlighting any sections that are purely AI-generated or a combination of AI-generated content. This highlighting is part of academic integrity, allowing academics and researchers to demonstrate that they are not misusing or overusing AI-generated analysis results.

A key topic in AI ethics is how developers, manufacturers, and users—individuals—should act to mitigate the moral harm that artificial intelligence (AI) can cause to society, whether through unethical use, poor design, or misuse. The scope of artificial intelligence ethics encompasses current issues, such as bias and data privacy in existing AI systems; short- and medium-term issues, such as the impact of robotics and AI on jobs and the workplace; and long-term issues, such as the possibility of AI systems surpassing human capabilities (also known as superintelligence) (Nenomataus et al., 2024). According to research results Anam et al., (2021) the use of technology-based or digital learning media helps enliven the classroom atmosphere, fostering active communication and discussion, making it easier for teachers to deliver material and making it easier for students to understand, and providing a more engaging learning dimension, making learning more effective and efficient.

This technology has an impact on the learning media used today. In this era of digitalization, school learning must adapt to the existing technological developments. Currently, the use of learning media must use innovative and engaging media. Therefore, educators or teachers are required to have digital skills; teachers must understand and master technology. However, the fact is that it cannot be denied that the use or application of competencies has not been implemented properly, so the learning process using this technologically or digitally aligned learning media has not been maximized and is still less effective.

Artificial intelligence, defined as the ability of computer systems to perform tasks that typically require human intelligence, has experienced exponential development in recent years. Advances in machine learning, natural language processing, and computer vision have enabled AI to play a role in various aspects of human life, including education (Gulo, 2025). The rapid evolution of Artificial Intelligence (AI) has initiated a profound transformation across various sectors, and education is no exception. AI-driven technologies are becoming increasingly prevalent in learning environments, offering innovative solutions to long-standing challenges in teaching and learning.

The integration of AI in the classroom holds the promise of personalizing education, enabling students to learn at their own pace with tailored content and feedback. Furthermore, AI can automate routine administrative tasks for educators, such as grading and scheduling, freeing up valuable time for more direct student engagement and creative lesson planning. The increasing accessibility of educational resources through AI also has the potential to bridge educational gaps, offering new opportunities for students in diverse settings.

Previous research, referring to several studies conducted by Marlin et al., (2023) , entitled "Benefits and Challenges of Using Artificial Intelligence (AI) Chat GPT on the Ethics and Competency Education Process for Students in Higher Education," shows that AI has a significant impact in supporting learning at various levels of education. Several studies have found that the use of AI can increase learning effectiveness through features such as automated data analysis, self-assessment, and personalized learning materials. In the context of academic writing, previous research has revealed that AI can help students improve grammar, structure their writing, and provide idea recommendations based on available data (Ummah et al., 2025).

According to Uzma & Masyithoh, (2024) In this ever-evolving modern era, the challenges and opportunities regarding the implementation of moral values are a major concern. Changes in lifestyle, technology, and globalization influence how we understand and apply moral values in our daily lives. On the other hand, modern society also provides opportunities to integrate moral values wisely. Modern society is a social structure or living environment in general, where human interactions are based on trade, production, consumption, and marketing.

In modern society, people pay more attention to personal attitudes and values and the productivity of human resources. Morality is an ingrained trait within humans, which can be good or bad. Morality is not always synonymous with knowledge, speech, or actions. Morality encompasses all forms of behavior and actions that a person typically engages in. If they align with religious rules, they are considered good morals, and if they do not, they are considered bad morals. Digital transformation in education also highlights the need for a balanced approach between innovation and integrity (Wildana sofia et al., 2024).

Ethics is a study that focuses on the moral requirements that govern human behavior and what is good and evil, right and wrong. According to Immanuel Kant's book, "Groundwork for the Metaphysics of Morals," ethics is based on universal teachings that everyone can follow, such as the notion of "moral obligation and responsibility." Meanwhile, AI ethics is a branch of ethics that focuses on the moral principles that must be adhered to in the development and use of AI technology. This includes issues such as privacy, transparency, fairness, and responsibility, as well as the social impact of AI. We can ensure that this technology is created and used in a way that takes into account human values, justice,

and the well-being of society by paying attention to ethical elements in the development and use of AI. Ethics and education are integral parts of an academic's identity. Their ethical lifestyle will be reflected in their behavior, as they are well-educated. Artificial Intelligence (AI) is a useful tool for solving complex and challenging problems quickly. There are abundant online resources that can be used to streamline and simplify work planning, provide access to larger amounts of data, and facilitate data retrieval.

As time goes by, technology is also developing rapidly. This technology provides many benefits in various fields, one of which is in the field education. According to Permana et al., (2024) Technology in education is used as a tool to support the learning process, both as a means to access information and as a support for learning and completing assignments. According to Mulyani Fitri & Haliza Nur, (2021) all forms of learning activities can be carried out easily in today's technological era. Digital learning is essentially a learning approach that involves the innovative use of digital technology during the teaching and learning process.

This is often referred to as Technology Enhanced Learning (TEL) or e-Learning. Exploring the use of digital technology provides educators with the opportunity to design more engaging learning experiences in the lessons they deliver. These learning designs can include a combination of face-to-face meetings and fully online learning. Given the importance of digital learning as a method or communication tool that offers significant benefits for researchers, teachers, and students, educators need to understand the characteristics and potential of digital learning to optimally utilize it for the benefit of student learning. Nowadays, it's crucial to implement digitalization in education to keep pace with current developments. Technology helps educators develop innovative learning systems to increase student interest in learning.

With digitalization, learning can be conducted flexibly across various locations and times, therefore, implementing technology in the educational process is essential (Delia Maharani & Latifah Meynawati, 2023). Advances in science and technology have become an unavoidable necessity. Technological innovations aimed at simplifying human life have emerged, as evidenced by the use of digital technology in various aspects of post-pandemic education. However, it's worth noting that metaverse technology opens up opportunities to bring educational activities into a virtual, three-dimensional, interactive world. Today, many individuals consider digital activities more efficient and effective in their lives. Because of this, it's not surprising that many now feel more comfortable engaging in digital activities than in the physical world (Delia Maharani & Latifah Meynawati, 2023).

However, this integration is not without its complexities and ethical considerations. As AI systems collect and analyze vast amounts of student data, concerns around data privacy and security become paramount. There is a critical need to ensure that this data is handled responsibly to protect student information from misuse or unauthorized access. Algorithmic bias is another significant challenge, as AI systems trained on biased data sets can perpetuate and even amplify existing inequalities in education. AI technology enables more effective personalized learning. Using sophisticated algorithms, AI-based educational platforms can tailor learning materials to individual students' needs, interests, and level of understanding. This allows students to learn in an environment that suits their learning style, increasing overall learning effectiveness.

The use of AI also increases student engagement in learning. Through the use of interactive technologies, such as simulations, learning games, and multimedia media, students can be more actively involved in the learning process. This engaging learning experience not only makes learning more enjoyable but also motivates students to learn more deeply and meaningfully. Furthermore, AI technology enables real-time monitoring of student progress. By leveraging data analysis generated by AI educational platforms, educators can track each student's progress more accurately. This information enables educators to provide more timely and relevant feedback to students and identify areas where students need additional support. Thus, the use of AI in Islamic learning not only increases the efficiency of monitoring student progress but also strengthens the relationship between educators and students through more targeted and in-depth interactions.

The use of AI technology in Islamic education brings significant benefits in terms of personalizing learning, increasing student engagement, and enabling more effective monitoring of student progress. By continuing to develop and integrate this technology into the context of Islamic education, we can enrich learning methods and improve learning outcomes for all students.

The rise of AI also brings new questions about academic integrity, with tools like generative AI potentially blurring the lines between student work and machine-generated content. Finally, the over-reliance on technology could diminish essential human interaction between teachers and students, which is crucial for fostering social-emotional development and critical thinking skills. This article aims to explore these dual aspects of AI in education—the significant opportunities it presents alongside the critical ethical boundaries that must be navigated for its effective and responsible implementation.

RESEARCH METHOD

This study employs a conceptual approach, relying on a comprehensive literature review and critical analysis of existing practices related to Artificial Intelligence (AI) in education. The research method focuses on a qualitative investigation of academic articles, conference papers, and institutional reports to synthesize current knowledge and identify key themes. The conceptual framework is built by examining AI's opportunities and the ethical boundaries associated with its implementation in a classroom setting.

The literature review systematically explores various facets of AI in education, including personalized learning, administrative automation, and accessibility enhancements. Simultaneously, the analysis critically examines potential challenges such as data privacy, algorithmic bias, academic integrity, and the risk of reduced human interaction. This dual-pronged approach ensures a balanced perspective, allowing for a thorough exploration of both the advantages and the ethical considerations of integrating AI into educational environments.

RESEARCH FINDINGS

Based on a conceptual approach through a literature review and critical analysis of current practices, the findings suggest that AI presents significant opportunities for education. AI tools can support:
personalized learning by adapting to individual student needs and learning paces. This allows for a more tailored educational experience, potentially improving student outcomes. Additionally, AI can automate administrative tasks for teachers, such as grading assignments and providing instant feedback, which can save time and allow educators to focus more on direct student interaction and instructional design. The technology also increases
Accessibility in education, with features like real-time translation and closed captioning that can assist students with diverse needs.
However, the implementation of AI in the classroom is not without its challenges and ethical boundaries. One of the primary concerns is
Data privacy, as AI systems collect and analyze large amounts of student data, which could be vulnerable to misuse or breaches. Another critical issue is
Algorithmic bias, where AI models might perpetuate or amplify existing societal biases, leading to inequitable learning experiences for certain student groups. Furthermore, the article identifies concerns about
Academic integrity, as AI tools could potentially be used by students to complete assignments, making it difficult to assess their true understanding and effort. Lastly, there is the risk of
Diminishing human interaction. While AI can automate tasks, the study underscores the importance of human connection and teacher involvement in the learning process, which could be reduced if AI is not implemented carefully.

The Importance of AI Ethics Integration in Education:

1. Shaping Student Character

The integration of AI ethics helps introduce students to moral dilemmas relevant to modern times. In the process of acquiring an education, students are expected to develop behaviors, beliefs, values, attitudes, and abilities that align with their knowledge.

2. Preparing for the Future

AI ethics also prepares and teaches students to face ethical challenges in a world increasingly influenced by technology. This can help existing learners utilize available technological tools according to their needs.

3. Improving the Quality of Learning

AI can be used to create more adaptive, interactive, and personalized learning environments, which can increase learning effectiveness. The way learning is perceived, taught, and accessible has increased to unprecedented levels in the digital and technologically advanced world. Approaches to learning have evolved as a result of technology. Today's learning is more adaptable, engaging, and available anywhere. The use of learning technology can improve students' abilities, motivation, and academic outcomes. Technology has many implications for learning, many of which are beneficial. The use of AI technology in the classroom can also facilitate the learning process by simplifying resource searches, providing insights, and even facilitating distance learning.

Opportunities for Integrating AI Ethics in Education

1. Interactive Learning

AI can be used to create more interactive and engaging learning materials, helping students better understand learning concepts. To achieve optimal learning outcomes, interactive learning techniques are applied. When practicing learning, teachers can use these techniques as references and methodological guidance. Students can assist the learning process with appropriate approaches.

2. Adaptive learning programs

AI can help create learning programs tailored to individual student needs, enabling more effective and efficient learning. Offering adaptive learning opportunities for each student is one of the key benefits of using AI in education. Large amounts of data, such as student learning preferences, levels of understanding, and spiritual growth, can be analyzed by AI. Customized learning materials and curricula can be created by analyzing this data and determining each student's learning preferences, skills, and weaknesses. AI can meet the individual needs of each student through adaptive learning, ensuring that the material they receive matches their abilities and interests. For example, students who learn best through visual media can be given access to multimedia-rich materials, and students who learn best through written formats can be exposed to content in that style. This personalized approach maximizes the educational process and increases students' interest and understanding of the material.

3. Ethics case studies

AI can be used to develop case studies that challenge students to think critically about ethical issues in real-world contexts.

Challenges of Integrating AI Ethics into Education:

1. Resource Limitations

Implementing AI requires significant investment in technological infrastructure and teacher training, which can be a barrier for many schools. To foster trust between humans and machines, it is crucial to have a clear understanding of ethical norms and the resources available to guide the development of AI technology applications.

2. The Digital Divide

Not all students have equal access to technology, which can create gaps in learning. Not all schools or educational institutions have access to the advanced technology needed for AI implementation. Investment in technological infrastructure is needed to support the use of AI in education.

3. Understanding AI Ethics

Many educators and students may not fully understand the ethical implications of using AI.

4. Oversight and Regulation

Clear policies and regulations are needed to ensure that the use of AI in education aligns with Christian ethical values. While AI has many benefits, the role of teachers remains crucial. AI should be a tool that supports teachers' work, not replace them.

Learning in the Era of Digitalization

"Digital" is a term that refers to the use of systems or technologies based on computers that use numbers and symbols in the form of binary code (0 and 1) to store, transmit, and process information. In a broader context, digital refers to technologies and processes that involve the use of electronic devices and computers to perform tasks that may have previously been done in an analog or non-electronic manner.

According to the Gartner IT Glossary, digitization is the process of converting from analog form to digital form. In the digital era like today, digitization has had a significant impact on various sectors, including business, education, government, and others. To teach learning materials, educators need teaching materials, both printed and non-printed. Teaching materials are a learning component used by educators to carry out teaching and learning activities in the classroom and as learning resources for students. In line with research, teaching materials are a collection of materials used by educators and students for the learning process, whether in print, audio, or innovative forms (printed teaching materials or printed books, audiovisual materials, or IT-based materials)(Ciptaningtyas et al., 2022).

According to (Anisa Nurul Izzah & Deni Setiawan, 2023) The use of books as a learning medium is a well-established practice, and to date, there has been no change. Current textbooks tend to have an unattractive appearance, which leads to students being less interested in learning them. To address this problem, initiative and creativity are needed from teachers to attract students' interest in learning a subject. (Lubis, 2022) stated that elementary school students really like books with captivating images. One example is pop-up books, which provide a realistic depiction of the material being studied. Therefore, it is crucial to use technology in education, namely the development and research of educational technology products such as learning applications, e-learning, and other platforms, including in learning evaluation (Santoso & Widiyanti, 2022).

Digital learning is essentially an approach to learning that involves the innovative use of digital technology during the teaching and learning process. This is often referred to as Technology Enhanced Learning (TEL) or e-Learning. Exploring the utilization of digital technology provides educators with opportunities to design more engaging learning experiences in the lessons they deliver. This learning design can include a combination of face-to-face meetings and fully online learning. Considering the importance of digital learning as a method or communication tool that holds great benefits for researchers, educators, and students, educators need to understand the characteristics and potential of digital learning well so that they can utilize it optimally for the benefit of student learning. This brings various advantages in enhancing the quality of learning. Currently, it is important to implement digitalization in education in line with the times. Technology helps educators develop innovative learning systems to enhance students' interest in learning. With digitalization, learning can be conducted flexibly in various places and times, therefore, the implementation of technology in the educational process becomes very necessary.

The advancement of science and technology has become an unavoidable necessity. Technological innovations aimed at simplifying human life have emerged, as seen from the utilization of digital technology in various aspects of education post-pandemic. However, it should be noted that metaverse technology opens up opportunities to bring educational activities into an interactive three-dimensional virtual world. Currently, many individuals consider digital activities to be more efficient and effective in their lives. Because of this, it is not surprising that many now feel more comfortable engaging in the digital world than in the real world(Tri Herlambang & Abidin, 2023).

According to the explanation above, it can be concluded that digital learning is an effective educational practice in enhancing the learning experience of students. This approach emphasizes high-quality instruction, providing access to challenging and engaging content, offering feedback through formative assessments, enabling flexible learning opportunities, and providing individual instruction to ensure that each student can reach their maximum potential. Digital learning encompasses various aspects, tools, and applications to support educators and learners. In other words, digital learning is a learning activity that uses the internet or digital technology at all stages of learning, from preparation to implementation, to assessment, involving students and educators actively (Sitompul, 2022).

Technology-Based Learning Media

In the era of globalization and the rapid flow of information, the utilization of Information Technology (IT)-based learning media has become an unavoidable necessity and a demand. However, in practice, the use of this media is not simple. When applying such media, it is necessary to pay attention to several

techniques so that the media can be optimized effectively and in accordance with the intended goals. In today's modern age, the development of learning media that relies on technology and information is rapidly advancing, making this a significant matter becomes a necessity that must be mastered by both educators and learners. However, in practice, the use of technology- and information-based media is not easy to learn and apply. In the process of implementation, the use of technological media requires the application of several techniques so that the media can be used to its maximum potential, and so that its use is effective and in accordance with its objectives.

There are several types of media that can be used in information technology (IT) based learning, namely:

a) Internet: The Internet is the primary medium in technology-based education, as the development of the internet has resulted in various educational models such as e-learning, distance learning, web-based learning, and so on. The Internet is a global computer network that facilitates access and distribution of information and learning materials, allowing continuous updates of learning content. Therefore, internet access should be available in the implementation of technology-based education, which is currently expanding in various regions of Indonesia thanks to rapid telecommunications development.
b) Intranet: If there are obstacles in providing internet infrastructure, intranet can be an alternative in IT-based education. Intranet has characteristics similar to the internet, but is used on a local scale, such as in classrooms, schools, buildings, or between buildings. Synchronous and asynchronous learning models can be easily implemented and at a more affordable cost through intranet. In certain situations, the intranet can be the right choice for implementing IT-based education.
c) Mobile Phone: Technology-based learning can also be conducted through the use of mobile phones, thanks to the rapid advancement of mobile phone technology. One can access learning materials and participate in learning via mobile phones. This technological advancement has even created a new term in technology-based education, namely M-learning (mobile learning).
d) CD-ROM/Flash Disk: Media such as CD-ROM or flash disk can be an option when there is no available internet or intranet connection. Learning materials are stored in these media and can be accessed via a computer. The use of CD-ROM or flash disk media is one of the simplest and most economical forms of IT-based learning.

In addition, there is another opinion According to Hamdani in the article made by (Firmadani, 2020), media can be classified into the following three categories:

1. Visual Media: Visual media is a type of media that can only be seen using the sense of sight. Teachers often use this type of media to help convey the content of the lessons. Visual media is divided into two types, namely non-projected visual media and projected visual media.
2. Audio Media: Audio media is a medium that conveys messages in the form of sound or audio that can only be heard. This type of media can stimulate the thoughts, feelings, attention, and abilities of students in understanding the subject matter. Examples include audio cassette programs and radio programs. Audio media is often used in learning contexts that focus on listening skills.
3. Audio Visual Media: Audio visual media is a combination of audio and visual elements, often referred to as audiovisual media. The use of audio visual media makes the presentation of teaching materials more comprehensive and optimal. In addition, in some situations, this media can also substitute the role of the teacher, allowing material presentation to be replaced by media, and the teacher acts as a learning facilitator who assists students in learning. Examples of audio visual media include video or television programs, instructional videos or television, as well as sound slide programs.

Effectiveness of Digital Learning Media

Education is now expected to adapt to changes in the times. Teachers play an important role in the teaching and learning process in the classroom, including in terms of taking attendance, providing instruction, offering motivation, giving guidance, and assessing the learning process and outcomes. Teachers need to have skills in digital technology and be able to create appropriate learning media for students living in the 21st century, as is currently the case. Digital media has become one of the very suitable and popular options for children in this era. Digital media contains many features, including

combinations of images, videos, and sounds that make it easier for children to understand the learning material (Farida, 2020).

In the era of rapid growth in information technology in the 21st century, every area of life is experiencing development, including education. The use of information technology in the educational process has a wide variety and diverse forms. The use of AI technology, for example, has been implemented in almost all sectors, including education, in recent years. Of course, the use of this technology has positive impacts, but it is not without its negative impacts. Education is a dynamic sector and continues to adapt to technological developments. Continuously evolving technology has become a major catalyst in changing the way we learn, teach, and access information. One result of technological progress is the application of artificial intelligence (AI) technology in education. The use of AI in the education sector makes the teaching and learning process more efficient, effective, and accessible(Suryokta et al., 2023).

Education is a process that facilitates students to develop skills, attitudes, and other behavioral patterns within their community. This aims to acquire or improve the competencies needed for life in society (Rohmah, 2020). Rapid developments in science and technology emphasize the importance of education in adopting technology as an innovation in learning methods. The role of technology in learning has a significant impact on curriculum development in three main ways: (1) technology becomes a central focus in the curriculum for social purposes, (2) as a resource that enriches the curriculum with the ability to find and collect materials and guide students in learning, and (3) as an assessment tool for various aspects of practice, such as simulations involving scientific visualization or text analysis in literature

Because this makes the implementation of teaching and learning activities easier. Because students will be more active and interactive in participating in the learning process, allowing the knowledge imparted to be well conveyed. Currently, there are many platforms that support this digital-based learning. This also makes it easier for teachers to deliver lessons to students. In addition to conveying learning information, interactive learning media can also facilitate the creation of assessment evaluations.

Teachers are required to be proficient in using technology to make the delivery of learning easier nowadays. The obstacle in this learning concept lies in teachers who are not yet skilled in applying digital technology in everyday life. This is a challenge often encountered in this digital-based learning. In a study through interviews with a teacher as a source, there are other shortcomings. He stated that another limitation is the considerable use of time, around 10 minutes, for his preparations automatically. However, the 10-minute preparation time can be mitigated by efficient use of digital media in the learning process. Therefore, the previous preparation time of 10 minutes can be replaced with effective learning activities through digital media.

DISCUSSION

The integration of Artificial Intelligence (AI) in education, as explored in this study, presents a transformative paradigm shift with significant opportunities and challenges. Our analysis reveals that AI systems have the potential to personalize learning by adapting to individual student paces and styles, thereby enhancing engagement and comprehension. This aligns with the broader movement toward student-centered learning, where the focus is on individual needs rather than a one-size-fits-all approach. Furthermore, AI's capability to automate administrative tasks, such as grading and scheduling, can free up valuable time for educators, allowing them to focus on more complex pedagogical tasks and direct student interaction. This is crucial for fostering a supportive classroom environment where the human element remains central to the learning process. Additionally, AI technologies can increase accessibility in education, offering tools like real-time translation and voice-to-text functionality that can benefit a diverse range of learners.

However, the findings also highlight critical ethical boundaries that must be addressed for successful and responsible AI implementation. The issue of data privacy is paramount, as AI systems often rely on vast amounts of student data, raising concerns about who has access to this information and how it is protected from misuse. This necessitates the development of clear data governance policies and robust

security protocols. Another major concern is algorithmic bias, where AI systems may inadvertently perpetuate or even amplify existing educational inequalities based on gender, race, or socioeconomic status. This bias can lead to unfair outcomes in assessments or resource allocation, undermining the goal of equitable education. Academic integrity is also at risk, as AI tools can be misused for cheating or plagiarism, challenging traditional methods of assessment. Finally, the reliance on AI may diminish human interaction in the classroom, potentially hindering the development of essential social and emotional skills that are critical for student growth.

The discussion of AI in the classroom must move beyond a simple dichotomy of "good" or "bad." Instead, it requires a nuanced approach that acknowledges both its immense potential and its inherent risks. The key to maximizing the benefits of AI lies in establishing strong ethical frameworks, creating responsible policies, and ensuring continuous teacher involvement in the design and deployment of these technologies. Educators must be trained to use these tools effectively and critically, understanding their limitations and potential pitfalls. This balanced perspective ensures that AI serves as a powerful supplement to, not a replacement for, human-led education, ultimately creating a more effective, personalized, and equitable learning environment for all students.

Various literature reviews have been conducted to provide solutions for teachers to improve the learning process by using digital-based learning media with AI (Artificial Intelligence) technology, enabling them to be more creative in using media for classroom learning. The use of digital-based learning media with AI (Artificial Intelligence) technology is one solution for teachers to improve enjoyable learning models by using media in the classroom. Based on previous research, it can be seen that training and workshops on the use of digital learning media for teachers based on AI (Artificial Intelligence) significantly assist teachers in improving the learning process and can also motivate students, especially elementary school students, to learn. This makes the learning process using digital technology-based media (AI) more engaging and efficient.
Therefore, we conducted a community service activity by providing teachers with information about the importance of Artificial Intelligence (AI) in the digital transformation of education. This community service activity attempted to offer solutions through training and real-world practice. The purpose of this workshop was to provide teachers with information about the importance of Artificial Intelligence (AI) in the learning process. The use of learning media is no longer an option but has become an obligation for teachers.

CONCLUSION

The integration of Artificial Intelligence (AI) in the classroom offers significant opportunities for enhancing the educational experience. The findings from this conceptual study indicate that AI can support personalized learning, automate administrative tasks, and increase accessibility in education. By adapting to individual student needs, AI tools can create a more tailored and effective learning environment. However, the successful implementation of AI is not without its challenges. This article has highlighted several ethical boundaries that must be carefully managed, including data privacy, algorithmic bias, academic integrity, and the potential for a decrease in human interaction. To maximize the benefits of AI in education while maintaining ethical safeguards, clear ethical frameworks, responsible policies, and continuous teacher involvement are essential. This balanced perspective contributes to the academic discourse by providing a roadmap for educators and policymakers to navigate the complexities of AI, ensuring its effective and ethical use to improve learning outcomes.

In the growing era of digitalization, the use of technology-based learning media has become a primary requirement in the educational process. Utilizing this technology enables educators to create more interactive, efficient, and engaging learning experiences for students. This article highlights that digital learning media can be grouped into three types: visual, audio, and audio-visual, all of which play a crucial role in delivering learning materials effectively. Technology-based learning media offers significant benefits in improving the quality of learning. By combining visual and audio elements, students can access learning materials in a more comprehensive manner. Furthermore, the use of these media allows for flexibility in learning, allowing students to learn anytime and anywhere. These media

also provide opportunities for feedback through formative assessments, which helps students understand the material.

However, it is important to remember that the effectiveness of using technology-based learning media depends on understanding its characteristics and potential. Educators need to thoroughly understand this technology to optimally utilize it in learning contexts. While the use of this technology can enrich the learning experience, it also requires a good understanding of how to integrate it with existing learning. Therefore, training and competency development in the use of technology-based media are essential to maximize learning potential in the digital era.

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