

The Role of Artificial Intelligence as a Transformation of Learning in the Modern Era

Muhammad Gafarurrozi¹, Moh. Fatkur Rohman², Rizal Fathurrohman³

Alma Atta University, Indonesia

mgafarurrozi@almaata.ac.id¹, rahman.mfath@gmail.com², rfathurrohman@almaata.ac.id

Abstract: In today's modern era, the world of education has experienced changes in the learning system. In recent years, artificial intelligence has emerged as a transformative force in the education system in the modern era. This research aims to analyze the role of artificial intelligence in transforming learning in the modern era. The method used in this research is library research. The data collected is in the form of journal articles, research reports, and documents related to the topic discussed in this research. The analysis in this research uses content analysis. The research results show that the role of artificial intelligence in the learning process has a significant role. The use of artificial intelligence technology can provide an independent learning experience. Students can search for material according to their needs, and learning methods using artificial intelligence technology can increase student involvement, thereby creating high motivation in students. Therefore, artificial intelligence has great potential in transforming learning systems in the modern era. On the one hand, artificial intelligence can be a solution in the learning process in the modern era. And on the other hand, artificial intelligence can be a challenge in the world of education. Thus, to make maximum use of artificial intelligence requires caution regarding academic ethical issues.

Keyword: Artificial Intelligence, Transformation of Learning, Modern Era

1. Introduction

Artificial intelligence has emerged as a transformative force in various fields, including education. The presence of artificial intelligence (AI) has resulted in advances and innovations that have affected many aspects of human life. Currently, artificial intelligence (AI) has received great attention worldwide (Douali et al., 2022). The focus of artificial intelligence development is an effort to make technology behave like humans. In this case, computer systems are developed as devices that are able to facilitate, as well as behave like humans when performing certain tasks. Computers and other machines use certain algorithms that will imitate human understanding and judgment in carrying out an activity (Malau et al., 2024).

Artificial intelligence has been utilized since the last 10 years. Starting from utilization in the industrial sector, telecommunications, manufacturing, government, banking, to the provision of service services (Ramadiani et al., 2023). The development of technology has brought many changes to human civilization. Gradually, vital jobs that are usually done by humans are replaced by artificial intelligence. In fact, AI is able to determine a decision, conduct question and answer like person to person, to make predictions about

things that will happen in the future. This ability to think makes the AI system an intelligent system that has many implications for human life.

Currently, AI plays an important role in the world of education. AI always goes hand in hand with human needs, so that currently AI also helps the teaching and learning process, both from the formal and non-formal side. The development of AI is able to provide very creative and innovative updates in adapting to the development of the times (Ramadiani et al., 2023). The integration of AI in the education system has changed the way teachers educate, the way students learn, and the way institutions function (Kamalov et al., 2023). With the existence of AI, humans are able to actively and independently explore various kinds of information and learning materials. Thus, it can broaden personal insight supported by the maximum use of technology. On the other hand, AI also plays an important role in providing learning resources for humans to achieve a desired learning goal.

Teachers as educators must be able to adapt quickly to changes and rapid advances in science and technology. With the presence of AI, teachers must become facilitators and mediators in using AI wisely. Moreover, with the offer of AI convenience, humans have the potential to have a sense of addiction. In other words, the use of AI that is not in accordance with its function will only foster a sense of addiction in a person. The emphasis of AI in the learning process in the classroom can have implications for increasing the efficiency of the learning process (Maola et al., 2024).

Artificial intelligence is here to make it easier and facilitate humans in learning, as an alternative that can be done to prepare the young generation of the future. However, it is necessary to balance between the use of technology and the intensity of use, so that AI is used well, wisely, and becomes a medium for teachers to achieve the desired learning goals (Maola et al., 2024). Therefore, based on the brief description above, researchers in this article will focus on the transformation of AI learning.

2. Method

This study uses a qualitative approach, using the type of library research. The focus of the researcher is to find various sources and references that discuss the role of artificial intelligence (AI) in education. Primary data sources are obtained through literature studies, by referring to works, books, journal articles and other documents related to the focus of the study. Furthermore, data analysis in this study uses the content analysis technique, by analyzing data according to its information content (Mestika Zed, 2023).

3. Results and Discussion

3.1. The Development of Artificial Intelligence in Education

Artificial Intelligence in historical studies is an innovation created to make technology have the same capabilities as the human brain. The creation is based on the desire of western scientists to create an intelligent technology system, which can interact and facilitate human activities. AI was created to have at least some basic capabilities, including thinking and acting like humans, and thinking and acting more rationally (Stuart

Russel, 2010). These computational capabilities are developed using algorithms, which are able to represent basic human traits and capabilities. Then programmed into software, which is embedded in a device.

The use of artificial intelligence in education is currently increasingly massive. The emergence of various AI-based software, ranging from translators, question and answer applications, to applications for compiling scientific papers systematically are increasingly in demand by students. They use the software to answer the academic problems they are facing, such as answering simple questions, to assistance in answering assignments and exams given by teachers. On the other hand, AI is able to be a mediator in providing learning feedback for students (Maola et al., 2024). With AI, students can find out how far they understand the material presented by the teacher, and then carry out independent exploration to increase their insight into the material being taught.

As in the projection of the implementation of learning carried out in a school. AI can have an important role in improving the quality of learning that is being implemented (Maola et al., 2024). AI can provide analytical data related to the development of learning effectiveness, the level of understanding of student learning materials, and provide policy recommendations that can be taken to create innovations and new breakthroughs in the implementation of education policies. This role is equivalent to the physical role of humans. So that the existence of AI in education is a big leap in terms of advancing the quality of education.

On the other hand, the use of AI in education has its own challenges. The potential for misuse of AI in its application, to the high number of potential dependencies for its users, is always a discourse that requires a solution. One of the problems that arises from the misuse of AI and the sense of dependency is the high number of plagiarism of written works, and the decline in critical thinking skills (Lukman et al., 2023).

Those who already have a high dependence on AI will lose the habit of processing and thinking systematically. Because the short work pattern of AI provides answers and information that is so fast in just a matter of seconds. This condition has always been a discourse that is still being debated among academics. Efforts to innovate so that AI can be used properly are still being developed to this day. However, if AI is used wisely, it can increase students' motivation and interest in learning when following the learning process in class (Suariqi Diantama, 2023).

3.2. Artificial Intelligence (AI) as an Educational Innovation

Artificial Intelligence (AI) has emerged as a transformative force in the field of education. Integrating AI technology into the education system offers many benefits, including personalized learning, improved accessibility, and innovative teaching methodologies.

The ability of artificial intelligence (AI) to personalize the learning experience is one of its most significant contributions to education. By leveraging data analytics and machine learning algorithms, AI can adapt educational content to meet the needs of each individual student, providing personalized feedback and support (Tapalova & Zhiyenbayeva, 2022). For example, adaptive learning platforms can analyze student

performance in real-time, allowing educators to change teaching strategies accordingly (Chen et al., 2020; Chisom et al., 2024). This personalized approach not only increases student engagement but also fosters a deeper understanding of the subject matter, as students can get ahead of their peers at their own pace (Lameras & Arnab, 2022; Popenici & Kerr, 2017).

In addition, AI is facilitating the development of innovative teaching methodologies. The concept of the “flipped classroom,” where students engage with instructional content at home and participate in interactive activities in class, has gained traction with the support of AI devices (Rathore et al., 2023). AI technology enables educators to create dynamic learning environments that encourage collaboration and critical thinking, as well as skills for success in the future workforce (Andersen et al., 2022; Celik et al., 2022; Lawrence et al., 2024). Not only that, AI can also simplify administrative tasks, allowing educators to focus more on teaching and reduce bureaucratic responsibilities, thereby increasing overall educational efficiency (Eden et al., 2024; Humble & Mozelius, 2022).

Looking ahead, AI in education looks promising, with rapidly advancing technology poised to further enhance learning outcomes. The concept of “smart universities,” which leverage AI and quantum technology, is a significant evolution in higher education, aiming to create a more personalized and efficient learning environment (George & Wooden, 2023; Kayalı et al., 2023; Schiff, 2021). As educational institutions continue to explore the potential of AI, it is critical to foster a culture of innovation and adaptability among educators and students, ensuring that the benefits of AI are maximized while mitigating associated risks (Lawrence et al., 2024).

Thus, AI is a significant innovation in education, as a transformative way to improve teaching and learning. By personalizing educational experiences, promoting innovative methodologies, and addressing integration challenges, AI has the potential to redefine education for future generations.

3.3. New Paradigm of Using Artificial Intelligence in Education

The use of Artificial Intelligence (AI) in education represents a significant paradigm shift in how we understand and apply technology to enhance the teaching and learning process. With the rapid advancement of technology, AI has become an invaluable tool in creating more personalized, efficient, and inclusive learning experiences.

One of the most prominent aspects of using AI in education is its ability to provide personalized learning experiences. AI can analyze student data to understand their needs and learning styles, allowing for the development of a curriculum that is more tailored to students (Chen et al., 2020; Hutson et al., 2022). For example, adaptive learning systems can adjust teaching materials based on student progress, provide timely feedback, and identify areas that need more attention (Auna & Hamzah, 2024; Mohamed et al., 2022). This not only improves students' understanding of the material, but also encourages their motivation and involvement in the learning process (Hermila A. et al., 2024).

In addition, AI also plays a role in improving interactions between students and teachers. By automating routine tasks such as assessment and administration, teachers can focus more on meaningful interactions with students (Kharis, 2024; Seo et al., 2021). The

use of chatbots and virtual assistants in education allows students to get real-time help, answer questions, and provide learning support outside of school hours (Khare et al., 2018). This creates a more responsive and supportive learning environment, where students feel more connected and supported in their academic journey.

However, while the potential of AI in education is enormous, significant challenges remain. One of the main challenges is the issue of data privacy and security. The use of AI requires the collection and analysis of students' personal data, which can raise concerns about how that data is managed and protected (Khare et al., 2018). In addition, there are also challenges in terms of accessibility, where not all students have equal access to the technology needed to leverage AI in education (Hutson et al., 2022; Seo et al., 2021). Therefore, it is important to develop policies that ensure that all students, regardless of their background, can benefit from these innovations.

In the future, new paradigms of AI use in education are expected to continue to develop, with a focus on deeper integration of technology into curricula and teaching practices. Higher education, for example, is expected to see significant growth in the use of AI to improve learning outcomes and operational efficiency (Hutson et al., 2022; Seo et al., 2021). Thus, it is important for educators and educational institutions to continue to adapt and innovate, ensuring that education not only keeps up with technological developments, but also harnesses the potential of AI to create better learning experiences for all students.

Therefore, the paradigm of using AI in education provides an interesting education to improve the teaching and learning process. By leveraging AI's ability to personalize, enhance interactions, and address existing challenges, we can create a more inclusive and effective educational environment. However, careful attention to ethical and accessibility issues will be essential to ensure that the benefits of AI can be felt by all parties involved.

4. Conclusion

Artificial intelligence (AI) is a new breakthrough in the field of education related to changes in the scientific paradigm that applies in society. AI plays an important mission to be a bridge between humans and knowledge. This is in the field of education, at least AI is able to be a media or a means of supporting learning. On the other hand, the creativity of teachers in using AI during learning can arouse creative and innovative intuition from students, so that it is easier to learn the material being studied. The important role of AI can also influence the occurrence of a better learning experience process, because AI can provide all kinds of information and choices in exploring knowledge. Utilizing AI's ability to personalize, improve interaction, and overcome existing challenges can create a more inclusive and effective educational environment.

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