



Education Transformation in Palangka Raya: Optimizing Technology Management through Artificial Intelligence Towards Quality Improvement

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Abstract

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The aim of this research is to determine the role of artificial intelligence (AI) in education, especially in the field of institutional education. Specifically, the aim of this research is to answer the role of AI in helping students and teachers find new teaching materials that are more efficient and effective in increasing student competence. The method used is a literature study using a systematic literature review approach. In a systematic literature review, all reading is analyzed and placed in the preparation of background, theory and discussion. The number of journals used was 35 journals, some of which were books and other online manuscripts. Data were analyzed using five steps, namely tracing primary and secondary sources; data processing/citation of references; presenting data; interpret data; and draw conclusions. The research results found that artificial intelligence has gained widespread acceptance and use in the field of education, especially in the field of institutional education which is the main topic of this research. The research also found that AI robots can now be used as stand-alone co-teachers or educators, as well as robots to perform similar tasks to educators or instructors. Utilization of these resources has been able to increase the efficiency and effectiveness of educators, so that the quality of teaching is richer or better. Furthermore, the research results found that, artificial intelligence has given students access to a better learning experience because Artificial Intelligence allows the adjustment of learning resources according to students' needs and abilities. In general, the research results found that, artificial intelligence has influenced education significantly, especially in the fields of management, teaching and learning both in the educational sector or personal situations teaching educational institutions.

Keywords:

AI, Education quality, Education technology, leadership

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INTRODUCTION

In the era of globalization and rapid technological progress, education is one sector that is constantly transforming. These changes not only include subject matter, but also teaching methods. Teaching techniques that develop over time are the main key in ensuring that students can utilize and master knowledge and skills that are relevant to the demands of the times.

Technological advances, especially in the field of education, have had a major impact on the way educators convey information and students understand it (Mantiri 2019). The application of technology in teaching techniques is no longer just an option, but an urgent need. The integration of technology in the learning



process opens the door to a more dynamic, interactive and relevant learning experience. Technology provides a platform for more creative and innovative teaching methods (Serdianus and Saputra 2023) . Through the use of educational software, online learning applications, and digital resources, teachers can create a more engaging learning atmosphere. Teaching techniques can be tailored to students' individual needs, facilitating understanding of concepts, and awakening their interest in learning.

Additionally, advances in technology also create opportunities to combine a variety of learning resources, including videos, interactive simulations, and other multimedia content. This not only helps clarify complex concepts, but also provides a new dimension in knowledge exploration. Teachers can leverage various online learning platforms and smart devices to create more diverse and entertaining learning experiences.

Technological developments, especially artificial intelligence (AI), have had a significant impact on various aspects of human life, including in the field of education (Putri et al. 2023) . AI is not only a technological innovation, but also a potential catalyst in improving the overall quality of education. In an era where information is developing rapidly, the challenge of creating a responsive, efficient and inclusive education system is increasingly urgent. Therefore, the role of AI in improving the quality of education is very important.

Education is the foundation for character formation and increasing individual capacity to face changing times (Mantiri 2019) . Through the integration of AI in the educational context, various innovations can be realized to provide solutions to the challenges faced by educational institutions, teachers and students. AI can play a strategic role in personalizing learning experiences, identifying individual needs, and providing more effective learning solutions. One of the main contributions of AI in education is its ability to analyze big data related to student performance. By using machine learning algorithms, AI systems can identify patterns in students' learning behavior, understand their strengths and weaknesses, and provide appropriate learning recommendations (Gusli et al. 2023) . This can help teachers to develop teaching strategies that are more targeted and support individual students. Apart from that, AI can also improve the administrative efficiency of educational institutions (Cintamulya 2015) . Automation systems and data management using AI can help reduce administrative burdens, allowing education staff to focus more on teaching activities and curriculum development. The use of chatbots or intelligent virtual assistants can also provide instant assistance with students' questions, guide them in understanding lesson material, and provide psychological support.

However, it needs to be acknowledged that the implementation of AI in education also raises various challenges, such as data security issues, unequal access, and changes in the role of teachers. Therefore, discussions regarding the role of AI in improving the quality of education not only include its positive potential, but also need to discuss the policy and ethical steps needed to ensure that the application of AI in education has a positive and inclusive impact for all parties involved.

One very important part of educational development is learning planning. Learning planning is the act of formulating learning objectives including

approaches, models, strategies, methods and techniques that will be used in learning (Suryapermana 2017) . Learning planning also includes consideration of material, how to deliver it, as well as preparing the tools and media used. All of this is chosen in planning with the hope that learning will achieve predetermined goals. So, it can be understood that learning planning is the act of specifying learning conditions so that learning strategies and products can be determined at both macro and micro levels (Ananda 2019) . Therefore, it is important to prepare a good learning plan.

Learning planning is a very important thing to implement in the learning process. This is related to the understanding of learning itself as an action in which students and educators interact, so that two-way communication occurs. (Iverson and Dervan, nd) Considering that learning is an interaction between educators and students, careful planning is very necessary. Teachers as educational actors must have the ability to *graduate* from university level law and economics exams. (Ananda 2019) However, it must be acknowledged that the presence of *AI* is still a polemic for academics. (Suryapermana, 2017)

In this context, this research will delve deeper into the role of *AI* in improving the quality of education, explore its impact on teaching and learning, and discuss the challenges and opportunities that arise with the development of artificial intelligence technology. In this way, we can embrace *AI* innovation as an effective means of creating an adaptive education system and providing better learning opportunities for future generations. However, along with all the advantages of technology in education, it needs to be acknowledged that its application also brings its own challenges. Inequality of access, changes in teacher roles, and digital security are some aspects that need attention.

The results of previous research show that *AI* has been used in schools by teachers and students (Ester, 2003). The results of other research show that *AI* is capable of aspiration and looking for interesting things (Sari, 2023). Research results show that *AI* has many uses in creating things that are beyond the limits of capabilities (Revolusi et al., 2022). *AI* provides assistance in composing sentences (Rachmawati, 2021). *AI* plays a role in helping teachers in preparing learning program plans (Suyitno & Et.al, 2023). *AI* plays a role in helping create teaching materials. *AI* can be used by teachers and students to solve difficult problems (Khoiriah, 2023).

Reading previous research, this research seeks to explore the combination of innovative teaching techniques with technological advances in an educational context that has never been studied by previous research. In this way, we can understand how technology can be an effective tool in achieving educational goals, while also responding to the challenges that arise as it develops.

Therefore, the aim of this research is to explore the combination of innovative teaching techniques with technological advances in an educational context. In this way, we can understand how technology can be an effective tool in achieving educational goals, while also responding to the challenges that arise as it develops. The element of novelty of this research is in the use of *AI* in learning planning. Referring to this element of novelty, the urgency of the research lies in the importance of researching the use of *AI* in learning planning. It is hoped that this finding can become a consideration for the use of *AI* in education, thus

providing a glimmer of insight into the polemic in the academic world which considers AI to be a threat to the world of education.

METHODS

The method used is a literature study using a systematic literature review approach. In a systematic literature review, all reading is analyzed and placed in the preparation of background, theory and discussion. Various primary reading sources such as journals, books, proceedings, and various other relevant sources are used to solve the problems raised. The number of journals used was 35 journals, some of which were books and other online manuscripts. Data were analyzed using five steps, namely a. tracing primary and secondary sources; b. data processing/citation of references; c. presenting data; d. interpret data; e. draw a conclusion.

RESULTS & DISCUSSION

Technological developments that can help improve the quality of student learning

The era of the industrial revolution 4.0 is increasingly having an impact with the presence of AI as the newest revolution in human life. The history of this industry began in the 18-19 century, namely the emergence of changes in various fields, especially at the production stage which began to be replaced by machines. Technological developments in the era of industrial revolution 2.0 advanced to industrial revolution 3.0 in the mid-20th century. Industrial development in the 3.0 era is marked by renewal of energy sources, digitalization and business networks based on digital technology. This revolution presents production on a global scale based on digital technology. Industrial revolutions 1.0, 2.0, and 3.0 are an excellent foundation for the presence of industrial revolution 4.0. (Serdianus and Saputra 2023).

In (Gusli et al. 2023) stated several developments in technology and AI that can help improve the quality of student learning, namely: 1) Virtual Mentor. Virtual mentors are AI assistance to help organize and teach students if teachers can make good use of them. Like Blackboard, it is a tool used in overseas educational institutions. AI is also widely used by educators abroad, lecturers to publish their work or used to complete homework, quizzes and test students' abilities in the teaching and learning process. This AI can also be like humans in that it can renew itself following the times (Arief, 2023).

Second, voice Assistant (Voice Assistant). Voice assistants are a novelty in technology and AI that has been widely used by teaching staff, especially in educational institutions, to facilitate the teaching and learning process. This is often seen and can be seen in every school or college today, such as; Google, Microsoft, chatgpt and others. This is considered to make things easier for students or teaching staff and can also save time (Bayu Pratama et al., 2024).

Third, smart content. Smart content is a technological development that can also be used to share and search for material content, books and online articles that

have been designed in applications in such a way that their use can be more effective and efficient (Widijawan et al., 2023).

Fourth, presentation Translator. Translator is a technological development that is similar to voice assistant, only the translator does not use voice when using it, but the difference is that this application is able to translate various languages that we want so that we can also use this technology and AI for various languages, whether in the form of text, journals, books without needing to read them first. By utilizing technological developments and AI, we can translate various languages quickly, effectively and efficiently (Siska et al., 2023).

Fifth, global Courses (global courses). Global courses are one of the current developments in technology and AI that can be used by educators and students to take online courses through this application. Students or teaching staff can also choose the type of course they want according to their requirements online. Therefore, current developments in AI or technology can really help develop the quality of education (Wihartiko et al., 2021).

Sixth, automatic Assessment (Automatic Assessment). Most teaching staff or educational institutions have widely used automatic assessment to check questions automatically or online. By utilizing one of these technological advances, teaching staff or educational institutions can work effectively and efficiently (Raup et al., 2022).

Seventh, personalized learning (Personalized Learning). Personalized learning is a development of technology and AI that can be used as a personal assistant. AI will summarize the learning activities that have been carried out by the user and then provide alternative learning solutions that suit the user's needs. AI can also provide recommendations, provide study schedules and other important functions (Fauzan et al., n.d.).

Dewanto 2023 Utilizing the role of AI in the education sector should create good opportunities to improve the quality of education. Overall the role of AI is innovation as it makes teachers and students more engaging, easy and effective. The development of technology and AI can have a big influence in shaping a better teaching and learning atmosphere, developing education, and preparing students to become a generation that can advance the country (Wijasena, 2021).

On the other hand (Putri et al. 2023) classifies types of AI into several types, namely: 1) Weak *Artificial Intelligence (Weak AI)*. Namely a system designed to perform certain tasks using predetermined algorithms and data, such as search engines, virtual assistants, voice recognition and facial recognition. 2) Strong *Artificial Intelligence (Strong AI)*. Namely a system that is able to understand and stimulate general human cognitive abilities, including reasoning and problem solving, creativity and awareness. This *Artificial Intelligence* has not yet been circulated or used, but this is the goal of researchers to develop, apart from having great benefits for humans, *Artificial Intelligence* can be a threat to humans depending on how it is used (Islam, 2023).

The Role of AI in Increasing Student Competence in Learning

According to (Sahara, Ilmi, and Silalahi 2023) *artificial intelligence* has changed the world of education a lot. The role of AI can be used to help and remind human work, especially teaching staff, to be more effective. The results of his research found that there were quite big changes in the use of time, especially in

organizing teaching materials for teaching staff with the help of technology and AI. This means that the use of technology and AI has had a significant positive impact on life and the teaching process.

According to (Chassignol et al. 2018), the results of his research found that in the learning process, AI has helped students in providing recommendations for additional material, identifying weaknesses in students' understanding and providing appropriate solutions to improve their understanding. In this research, AI has taken an important role in the learning process and facilitates an easy learning process. However, researchers also found that although AI is quite helpful in the teaching and learning process, researchers also found that there are still many students who are still not able to adapt to AI, therefore there needs to be preparation for students to be given training and explanations about technology and AI for the future, which today's students are future leaders and workers, they must be prepared to face the significant changes that AI will cause in various aspects of life.

In research (Setiawi et al. 2024) found a positive impact in their research that naturally AI has a positive impact and makes it easier for teachers or teaching staff in teaching and learning activities and preparing or storing data. Another impact of AI is that students tend to be more lazy in taking notes or store information from the teacher. Therefore, the competencies that AI or students must have are to encourage students to think critically, be creative and communicative, have a good personality and good literacy skills such as reading, writing and calculating. Apart from that, students and teachers or teaching staff need to be taught how to use technology and AI. In research (Sahara, Ilmi, and Silalahi 2023), the results showed that students and teachers became more understanding in the use of technology and AI after being given training and said that these activities really helped students, especially teachers, in improving their skills and understanding of the latest technology in order to prepare themselves to face it. the world of work in the future.

The results of research conducted by (Hidayanti and Azmiyanti 2023) state that a comprehensive and comprehensive understanding of the impact of GPT chat provides recommendations for universities in integrating policies so that it becomes an ethical consideration related to academic honesty as well as excessive dependence on GPT chat which can lead to reduced student competence. accountancy. Therefore, the use of GPT chat must be done responsibly and based on strong ethical values. So that threats and opportunities can optimize the benefits and risks associated with using GPT chat. This research is expected to be one of the considerations in the use of AI in the field of education. Apart from that, researchers also stated that the use of AI technology such as GPT chat will continue to experience rapid development and has the potential to become more optimal. Universities should determine policies to face the era of artificial intelligence and the impacts related to student academics and competency. In this way, universities can agree that the use of GPT chat is an ethical violation or is permitted under certain conditions (Hidayanti and Azmiyanti 2023) . The use of GPT chat is a reason why the competence of accounting students needs to be considered. Accountants today need skills and competencies to maintain relevance in world developments. These very important competencies must create effectiveness and efficiency in the accounting profession in the future. The use of GPT chat should make accounting

students *aware* of the development of artificial intelligence by seeing the opportunities that exist by controlling data and being responsible for its use so that it does not threaten students' competence in the future (Nico Christian Hartono* and Thio Lie Sha 2022) .

In research (Ghufron 2018) stated the results of his research that technological progress calls humans to continue to use and apply technological progress as something new. One form of this application is the use of AI robots to replace human labor so that it is cheaper, more effective and efficient. Industry 4.0 as a phase of the technological revolution changes the way human activities are done in scale, scope, complexity and transformation from previous life experiences. Humans will even live in global uncertainty; therefore, humans must have the ability to predict a future that is changing very quickly. Each country must respond to these changes in an integrated and comprehensive manner. This response involves all global political stakeholders, from the public, private, academic, to civil society sectors so that the challenges of Industry 4.0 can be managed into opportunities.

On the other hand, it comes from the science of physics (Ahmad Sudi Pratikno 2017). The application of *artificial intelligence* is carried out on an *offline basis* because the internet connection conditions in Indonesia are less stable and evenly distributed. This philosophical view of technology is that cutting-edge technology should be used for positive purposes, especially for the benefit of humanity, not used for negative things such as war, mass destruction, or other things that can damage the presence of the technology itself. The competence of parents and teachers in understanding developments in Science and Technology (IPTEK) can be trained and improved with the presence of artificial intelligence technology. Therefore, researchers hope that the research carried out will trigger the emergence of new innovations in the field of education in the future.

Chassignol et al. 2018 research results found that artificial intelligence with technology and AI has become a tool that cannot be avoided by its use. In his research, he found that technological advances, especially in AI, have been accepted and entered into society as an addiction. Therefore, it is found that the majority of AI users are teaching staff and are then taught to students. The same thing is from research conducted by (Susanto 2023) that most students or the education sector in Indonesia have recommended AI as a tool to help students learn even though there is a negative impact from its use, namely that students become lazier and cannot think critically because it is considered too relying on tools from technological advances and AI.

Artificial intelligence solutions better analyze learning data and enable students to customize each learner's education to fit their unique needs. According to the combined research findings, Smart Web Based Education takes into account various factors such as learner's knowledge and skills, learning, compatibility capabilities and develops a platform to enhance education and learning experience. Another important finding from various sources is that since educational resources can now be accessed via the Internet, using the platform instructors perform certain administrative tasks. For example, seeing or evaluating students working more efficiently and effectively will certainly result in higher quality teaching methods.

CONCLUSION

The aim or objective of this research is to determine the role of artificial intelligence (AI) in education. A qualitative research project, using a literature review as a research methodology and the methodology used. The creation and application of computers and computer-related technology is a sign of analysis and innovation that has encouraged the development and use of artificial intelligence in various fields. In particular, the development of personal computers and subsequent developments have increased computing power and processing, along with the capacity to combine or integrate computing technologies into many machines, equipment, and devices. The growth and application of artificial intelligence, has been proven to significantly impact the industry. Artificial intelligence has gained widespread acceptance and use in the field of education, especially in the field of institutional education which is the main topic of this research.

This research focuses on assessing how artificial intelligence influences aspects. The use of artificial intelligence in the classroom first in computer hardware and software, then in the form of the web and online learning platforms. AI robots can now be used thanks to embedded systems, both as robots or human robots as stand-alone co-teachers or educators, as well as robots to perform similar tasks to educators or instructors. Utilization of these resources has been able to increase the efficiency and effectiveness of educators, so that the quality of teaching is richer or better. Similarly, artificial intelligence has given students access to better learning experiences as Artificial Intelligence allows customization of learning resources according to students' needs and abilities. In general, artificial intelligence has influenced education significantly, especially in the areas of management, teaching, and learning whether in the educational sector or personal situations teaching educational institutions.

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