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REVOLUTIONIZING EDUCATION: HARNESSING THE POWER OF ARTIFICIAL INTELLIGENCE FOR PERSONALIZED LEARNING

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Abstract

Rapid advances in artificial intelligence (AI) have opened up new possibilities in various fields, and education is no exception. Traditional one-size-fits-all teaching methods are gradually being replaced by personalized learning experiences made possible through AI technology. This article explores how AI is revolutionizing education by tailoring the learning experience to individual students' needs, increasing engagement, and improving overall learning outcomes. The research method used in this study is a qualitative descriptive method by utilizing questionnaires, interviews, observations and documentation in data collection. The results of the questionnaire related to the Importance of AI in Learning, obtained data that 88% of students strongly agree, 9% agree, 2% disagree, and 1% strongly disagree about the importance of AI in helping learning. The results of the questionnaire related to AI as an Alternative to Self-Learning, obtained data that 74% of students strongly agree, 7% agree, 14% disagree, and 5% strongly disagree about AI as an alternative to independent learning. The results of the questionnaire related to AI becoming Virtual Tutors and Smart Assistants, obtained data that 88% of students strongly agree, 9% agree, 2% disagree, and 1% strongly disagree about AI as being able to be used as a virtual teacher or intelligent assistant. The results of the questionnaire related to AI can replace teachers / lecturers, data were obtained that 11% of students strongly agreed, 9% agreed, 23% disagreed, and 57% strongly disagreed regarding AI can replace teachers / lecturers.

Keywords: *Artificial Intelligence, Education Revolution, Learning Outcomes.*

INTRODUCTION

Technology and science are developing rapidly(Bergdahl et al., 2020; H. et al., 2021; Shohel & Kirkwood, 2012). Technology in the modern era is very

advanced and sophisticated, and almost all types of jobs depend on these technological advances (Pratama et al., 2022). Technological advances have transformed education in recent years. The integration of Artificial Intelligence (AI) and Machine Learning (ML) technologies is one of the most promising and influential developments in this field. These powerful tools have changed many sectors, and their impact on education has been enormous. This research aims to study how artificial intelligence and machine learning (ML) technologies can improve teaching and learning outcomes (Zalte, 2023). Traditional education systems are often unable to meet the different needs and learning styles of students, resulting in unsatisfactory results. However, with the advent of AI and ML, there are new opportunities to customize and personalize each student's learning experience. Educators can find out the strengths, weaknesses, and learning patterns of each student by using data analysis skills and machine learning algorithms. With this knowledge, they can create customized learning paths, set targeted intervention goals, and provide timely feedback. Ultimately, this will result in more efficient learning.

Artificial intelligence has finally entered the world of education. The world of education must adapt to technological advances to improve the quality of education, especially information and communication technology, thanks to AI systems. Technology-based learning is personalized and helps students become more independent, enhancing their learning experience. With AI, creating teaching materials and media becomes easier and teachers don't need to understand technology in depth. Teachers just need to choose from the many platforms and apps available.

Some applications are used to facilitate humans in managing their resources as well as in the industrial world and the world of education (Wahyono, n.d.). Applications in the field of research in the industrial world and the world of education continue to grow, one of which is the artificial intelligence platform used as and educational media for human needs. One of the important components in community development and human advancement is education. However, education must also change in order to remain relevant and able to prepare future generations to face technological developments and increasingly complex global challenges (Liriwati, 2023). Artificial intelligence (AI) has emerged as a transformational force in an ever-evolving digital age that has the ability to transform the educational landscape. The use of artificial intelligence to transform curricula is essential to building relevant and adaptive education of the future. The ability of machines to learn and adapt is known as artificial intelligence. With this technology, the school curriculum can be transformed into a dynamic curriculum that is tailored to individual needs and focuses on developing skills that are relevant to the times. AI can be used to analyze large data sets and identify patterns that can inform instructional design and improve learning outcomes (Renz &; Vladova, 2021; Rienties et al., 2020)

In addition, the use of AI in education enables adaptive learning approaches. AI can in real-time identify students' levels of understanding and tailor learning content to meet individual needs, enabling students to reach their

best potential and handle challenges more efficiently (Liriwati, 2023). However, existing problems and obstacles must be recognized when applying artificial intelligence in the curriculum. One is concern about data security and student privacy. In addition, there are technological limitations, as well as moral and ethical issues that must be considered. The future of relevant and flexible education awaits us. Expert systems, computer vision, machine learning, natural language processing, and fuzzy logic are some of the different techniques and approaches to artificial intelligence (Karyadi, 2015).

AI technology has been a breakthrough in education as it can help students learn more easily and become more independent. This does not necessarily entail the overly dominant role of the teacher, but allows the teacher to move to an enlightening level with important keywords. More importantly, teachers must return to the essence of teaching, which is moral education. There are two ways to use AI in education. First, the transfer of teacher responsibility to the AI system, which serves as a tutor for all students. Smart tutor systems, which use smart technology to tailor content for each student, have been widely used in many classrooms (Moleenar, 2021). Improving human intelligence and assisting humans in learning activities is an alternative role of artificial intelligence. AI has the potential to improve the quality of teaching and learning by providing personalized feedback, identifying patterns in data, and supporting collaborative learning. However, there are also challenges in integrating AI in educational institutions, such as addressing privacy and ethical concerns and ensuring that AI-based systems are aligned with human values (Renz &; Vladova, 2021).

Artificial Intelligence or Artificial Intelligence which is growing rapidly today is a technological development that cannot be contained, especially in the world of education. One of the main reasons why AI is increasingly in demand and used in various fields, including in education, is the ability to process and analyze data more quickly and efficiently than humans. Computer basics is one of the meta lectures that can be used for the application of AI. The computer basics course is one of the courses that requires concrete examples in its implementation. Personalization of learning in the era of technological development, especially AI, is one of the inseparable things. Therefore, a system that can capture differences in learner characteristics, needs, and preferences is needed to provide personalized learning that takes those differences into account. On the basis of these developments, the purpose of this study aims to provide an overview of the importance of AI and how it relates to learning.

METHOD

The research method used in this study is a qualitative descriptive method by utilizing questionnaires, interviews, observations and documentation in data collection. This qualitative descriptive method is used to find out perceptions, problems and alternatives that students expect about the use of Artificial Intelligence in higher education learning. This research is located at Campus 1 Makale, Indonesian Christian University of Toraja. The subject of this research is a student from the 2022 educational technology study program, Faculty of

Teacher Training and Education, Indonesian Christian University of Toraja. The number of samples taken in this study was 29 students of educational technology classes A1 and A2. Qualitative methods are used in order to obtain data and questionnaires through google form in detail, considering that this study focuses on the perception of Educational Technology students regarding Quizizz as a Learning Evaluation Media for computer basics courses. The source of data from this study was questionnaires. In the questionnaire there are respondents as parties who provide responses or answers to the questions asked. Google form questionnaires are intended to conduct a study to find out something and want to understand the opinion of the instructions given.

FINDINGS AND DISCUSSION

Findings

The rapid development of technology, especially in education, makes all learning processes today inseparable from media related to technology. While it is possible that some students feel uncomfortable or worried about the use of artificial intelligence or AI in learning computer basics, some students will welcome it. This is because AI can assist them in carrying out the process and find pronunciation errors, provide feedback faster, and provide them with additional resources to help them learn to speak. In this case, it is important to consider students' wishes and preferences about the use of AI in speaking learning. Based on the results of using a questionnaire, this activity obtained the following results:

The Importance of AI in Learning

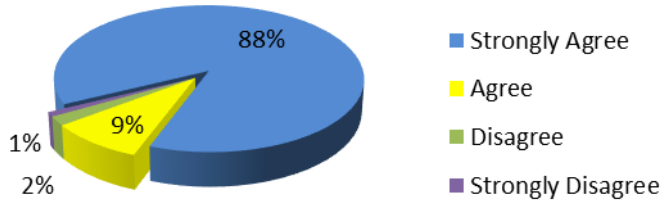

Figure 1. Student Perceptions Related to the Importance of AI in Learning

In Figure 1. Based on the results of the questionnaire, data was obtained that 88% of students strongly agreed, 9% agreed, 2% disagreed, and 1% strongly disagreed regarding the importance of AI in helping learning. According to the results of the study, students are greatly helped, especially for learning, especially in finding learning topics to follow up the learning process in class. They can find out quickly what information they need. It can analyze students' learning styles

and provide customized feedback and support. They can also identify areas where students may need additional assistance and provide targeted interventions to address these gaps. The use of smart tutors can help improve student learning outcomes and reduce the need for additional support outside the classroom.

AI as an Alternative to Self-Learning

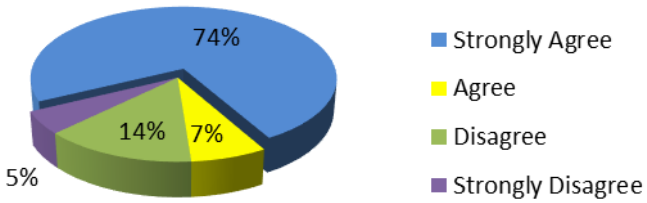

Figure 2. Quizizz response results that make it easy to create questions

In Figure 2. Based on the results of the questionnaire, data was obtained that 74% of students strongly agreed, 7% agreed, 14% disagreed, and 5% strongly disagreed regarding AI as an alternative to independent learning. This result is in line with Bambang Karyadi's research, In the era of information and communication technology in education today, students can do learning independently by utilizing applications built with artificial intelligence (Karyadi, 2015). The existence of artificial intelligence technology and its benefits, students can have a learning experience that is more adaptive, personalized, and focuses on individual needs both to improve their abilities and intelligence.

AI becomes Virtual Tutor and Smart Assistant

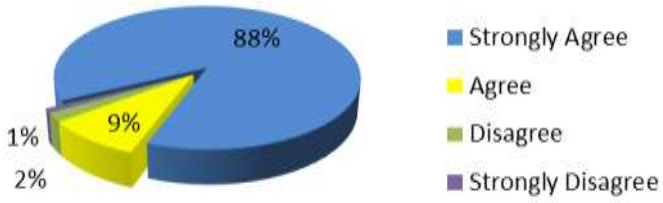

Figure 3. AI as a Virtual Tutor

In Figure 3. Based on the results of the questionnaire, data was obtained that 88% of students strongly agreed, 9% agreed, 2% disagreed, and 1% strongly disagreed

regarding AI as being able to be used as a virtual teacher or intelligent assistant. Artificial intelligence (AI) can function as a personalized virtual tutor that provides individual guidance based on the needs and weaknesses of learners. Virtual tutors can provide additional material, exercises, and appropriate feedback to help learners improve their understanding on a particular topic. AI-powered virtual tutors provide on-demand support to students outside the classroom. These virtual assistants can answer questions, provide explanations, and offer additional resources, encouraging independent learning. By simulating one-on-one interactions, virtual tutors create an environment where students feel comfortable seeking help and explanations. With the help of artificial intelligence, intelligent lecturers can assess students' learning styles, strengths, and weaknesses to provide tailored support and feedback. This method allows students to learn at their own pace and be able to find areas where they may need additional help. In addition, lecturers can use artificial intelligence to create learning plans tailored to each student's unique needs. This AI can provide personalized support to students, answer questions, and guide them through their studies. Virtual assistants can also help students manage their time effectively, creating schedules and reminders to keep them on track. In addition, virtual assistants can give students access to many educational resources, including textbooks, articles, and videos.

AI can Replace Teachers / Lecturers

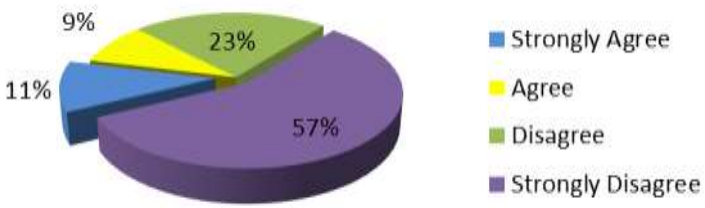

Figure 4. AI as a Virtual Teacher

In Figure 4. Based on the results of the questionnaire, data was obtained that 11% of students strongly agreed, 9% agreed, 23% disagreed, and 57% strongly disagreed regarding AI can replace teachers / lecturers. With AI, students can access educational resources from around the world online. This allows access to the required subject matter and an extensive learning experience. In this regard, AI can be a key facilitator in facilitating effective and connected distance learning. Although AI has the potential to aid in the learning process, it is important to consider aspects of ethics and human interaction. The emotional, social, and moral aspects of education may be difficult to replace by technology. The role of teachers or lecturers in providing guidance, inspiration, and human connection remains important in character building and student development.

Discussion

This qualitative descriptive method is used to find out perceptions, problems and alternatives that students expect about the use of Artificial Intelligence in higher education learning. The results of the questionnaire related to the Importance of AI in Learning, obtained data that 88% of students strongly agree, 9% agree, 2% disagree, and 1% strongly disagree about the importance of AI in helping learning. The results of the questionnaire related to AI as an Alternative to Self-Learning, obtained data that 74% of students strongly agree, 7% agree, 14% disagree, and 5% strongly disagree about AI as an alternative to independent learning. The results of the questionnaire related to AI becoming Virtual Tutors and Smart Assistants, obtained data that 88% of students strongly agree, 9% agree, 2% disagree, and 1% strongly disagree about AI as being able to be used as a virtual teacher or intelligent assistant. The results of the questionnaire related to AI can replace teachers / lecturers, data were obtained that 11% of students strongly agreed, 9% agreed, 23% disagreed, and 57% strongly disagreed regarding AI can replace teachers / lecturers. With AI, students can access educational resources from around the world online. The results of this research are in line with the research that has been conducted by suciati related to the contribution of research results that can contribute to lecturers, students, and subsequent researchers to design teaching methods/strategies/techniques as well as books that integrate speaking materials and AI applications (Suciati et al., 2021).

CONCLUSION

The future of AI in higher education is exciting because there are always innovations and new developments. With the development of technology, we will see more advanced AI-powered tools and platforms that can enhance the learning experience of students. AI will also grow in importance in administrative tasks, helping reduce costs and streamline processes. Although artificial intelligence has great potential in improving learning and providing access to a wider range of educational resources, the full replacement of the role of teacher or lecturer by AI is still a complex debate. We should look at Artificial Intelligence as a tool that can enhance the role of educators, aid in personalization of learning, and facilitate access to knowledge. However, the role of humans in providing guidance, building relationships, and stimulating creative minds remains irreplaceable in shaping an educated and ethical generation. This research can benefit future teachers, students, and researchers by building teaching strategies, methods, and techniques as well as books that incorporate speech materials and AI applications.

REFERENCES

Bergdahl, N., Nouri, J., & Fors, U. (2020). Disengagement , engagement and digital skills in technology-enhanced learning Content courtesy of Springer Nature , terms of use apply . Rights reserved . Content courtesy of Springer Nature , terms of use apply . Rights reserved . *Education and Information Technologies*, *25*, 957–983.

H., N., Gani, H. A., Pratama, M. P., & Wijaya, H. (2021). Development of an Android-based Computer Based Test (CBT) In Middle School. *Journal of Education Technology*, *5*(2), 272–281. https://doi.org/10.23887/jet.v5i2.33527

Karyadi, B. (2015). Jurnal Teknologi Pendidikan. *Jurnal Teknologi Pendidikan (JTP)*, *8*(2), 253–258. https://doi.org/10.24114/jtp.v8i2.3329

Liriwati, F. Y. (2023). *Transformasi Kurikulum ; Kecerdasan Buatan Untuk Membangun Pendidikan Yang Relevan di Masa Depan*. *1*, 62–71.

Moleenar, I. (2021). *Personalisation of learning: Towards hybrid human-AI learning technologies", in OECD Digital Education Outlook 2021: Pushing the Frontiers with Artificial Intelligence, Blockchain and Robots*. OECD Publishing.

Pratama, M. P., Al-gifari, M. K. G., & Pertiwi, A. (2022). Aplikasi Notifikasi Tagihan Penggunaan Air Pelanggan PDAM Kota Makassar Berbasis SMS Gateway Menggunakan Metode FIFO (First In First Out). *Patria Artha Technological Journal*, *6*(2), 168–173.

Renz, A., & Vladova, G. (2021). *Reinvigorating the Discourse on Human-Centered Artificial Intelligence in Educational Technologies*. *11*(5).

Rienties, B., Simonsen, H. K., Herodotou, C., & Levy, J. (2020). *Defining the Boundaries Between Artificial Intelligence in Education , Computer-Supported Collaborative Learning , Educational Data Mining , and Learning Analytics : A Need for Coherence*. *5*(July), 1–5. https://doi.org/10.3389/feduc.2020.00128

Shohel, M. M. C., & Kirkwood, A. (2012). Using technology for enhancing teaching and learning in Bangladesh: challenges and consequences. *Learning, Media and Technology*, *37*(4), 414–428.

Suciati, S., Faridi, A., Mujiyanto, J., & Arifani, Y. (2021). *Artificial Intelligence Application dalam Pembelajaran Speaking : Persepsi dan Solusi*. 1111–1115.

Wahyono, I. D. (n.d.). *Personalisasi virtual laboratory menggunakan kecerdasan buatan*. *29*(1), 86–96.

Zalte, S. M. (2023). *REVOLUTIONIZING EDUCATION: LEVERAGING AI-ML TECHNOLOGIES TO ENHANCE TEACHING AND LEARNING OUTCOMES*. *12*(12), 679–688. https://doi.org/10.48047/ecb/2023.12.si12.058