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Navigating Educational Challenges: The Resilience-Boosting Power of AI in Students' Interest
(Mengemudi Cabaran Pendidikan: Kuasa Meningkatkan Daya Tahan AI dalam Minat Pelajar)

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ABSTRACT

Artificial Intelligence (AI) powered tools and platforms have the potential to offer personalised learning experiences, catering to individual needs and providing innovative solutions to students' challenges. The study explored the transformative potential of AI in increasing students' engagement, interest, and resilience. The method used in this paper was a literature study employing the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analysis) model, which was a systematic and transparent method for identifying, selecting, and synthesising relevant literature in research. The total number of articles reviewed was five articles from 30 articles from various sources. Implementing these AI-based methods has the potential to enhance students' engagement and resilience throughout their learning journey. However, it was crucial to acknowledge that the effectiveness of these approaches might have varied depending on the specific educational context andindividual students' needs. This research significantly contributed to the knowledge related to AI's potential to fulfil teachers' limitations in designing creative, innovative classrooms. It is a roadmap to further investigate AI's potential applications in educational settings, aiming to address issues in the field of education, particularly in teaching and learning.

Keywords – Artificial Intelligence (AI), Education, Students' Interest

ABSTRAK

Alat dan platform yang dikuasakan Kecerdasan Buatan (AI) berpotensi untuk menawarkan pengalaman pembelajaran yang diperibadikan, memenuhi keperluan individu dan menyediakan penyelesaian inovatif kepada cabaran pelajar. Kajian itu meneroka potensi transformatif AI dalam meningkatkan penglibatan, minat dan daya tahan pelajar. Kaedah yang digunakan dalam kertas ini ialah kajian literatur yang menggunakan model PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analysis), yang merupakan kaedah yang sistematik dan telus untuk mengenal pasti, memilih dan mensintesis literatur yang berkaitan dalam penyelidikan. Jumlah artikel yang disemak ialah lima artikel daripada 30 artikel daripada pelbagai sumber. Melaksanakan kaedah berasaskan AI ini berpotensi untuk meningkatkan penglibatan dan daya tahan pelajar sepanjang perjalanan pembelajaran mereka. Walau bagaimanapun, adalah penting untuk mengakui bahawa keberkesanan pendekatan ini mungkin berbeza-beza bergantung pada konteks pendidikan khusus dan keperluan individu pelajar. Penyelidikan ini menyumbang secara signifikan kepada pengetahuan berkaitan potensi AI untuk memenuhi batasan guru dalam mereka bentuk bilik darjah yang kreatif dan inovatif. Ia adalah peta jalan untuk menyiasat lebih lanjut potensi aplikasi AI dalam tetapan pendidikan, bertujuan untuk menangani isu dalam bidang pendidikan, khususnya dalam pengajaran dan pembelajaran.

Kata Kunci – Kecerdasan Buatan (AI), Pendidikan, Minat Pelajar

INTRODUCTION

In the aftermath of the global COVID-19 pandemic, the education sector has undergone profound changes, ushering in unprecedented challenges (Jiahong Su et al., 2023). The ripple effects of the coronavirus outbreak have significantly reshaped various aspects of human life, prominently affecting the realm of education. This shift in educational paradigms was catalysed by the Minister of Education and Culture's issuance of the Circular Letter on March 17, 2020. This directive mandated a departure from the traditional classroom setup, prompting educational institutions to expedite their transformational endeavours. However, several pertinent issues have surfaced amidst this transition, demanding immediate attention.

Chief among these issues is the palpable lack of enthusiasm for learning, which significantly impedes achieving optimal educational outcomes. Additionally, rigid teaching methodologies and the inability to flexibly cater to individual needs have emerged as crucial areas needing rectification. The glaring disparities in access to high-quality education have further compounded the challenges, with not all students resources. Moreover, the pervasive discourse surrounding Artificial intelligence's (AI) potential displacement of human jobs has evoked concerns among educators and students alike.

Conventional classroom instruction inherently lacks the capacity to provide hands-on learning environments, expedited evaluations, and heightened engagement. This transformative phase underscores the urgency for innovative and inclusive approaches to redress these challenges, thereby sculpting a learning milieu that is adaptive, open, and finely tuned to the contemporary needs of the learning community.

AI emerges as a potent force in offering solutions to these educational quandaries. AI-driven technologies have steadily gained prominence in our daily lives, gradually influencing our cognition, behaviours, and social interactions. The preceding decade has witnessed substantial attention towards AI, with an increasing number of nations fast-tracking the development of their AI sectors and intensifying research and application in various domains.

The swift proliferation of AI technologies in educational settings has profoundly reshaped the landscape of classroom instruction. UNESCO's 2019 publication, "Artificial Intelligence in Education: Challenges and Opportunities for Sustainable Development," extensively covers AI applications in education across multiple countries, elucidating how AI advocacy has contributed to educational equity and quality. This comprehensive study exemplifies how AI can impact student access to education, academic performance, and teaching methodologies.

AI possesses the capacity to personalise learning experiences in diverse ways. It aids in cultivating a more professional environment foreducators to engage with students facing challenges and a lack of interest in learning (Al-Ansi et al., 2023). With AI-powered dual-teacher models, integrating both a teacher and a virtual teaching assistant to manage routine tasks, educators gain valuable time to focus on student interaction and supervision (Al-Ansi et al., 2023). Collaborations between teachers and AI assistants have yielded exemplary outcomes for students.

Several AI technologies, including Zoom, Google Meet, ChatGPT, Wordwall, Kahoot!, and Quizizz, have been applied in education to support collaborative learning. The presence of AI enhances student engagement by providing a variety of learning options through easily accessible AI platforms. Furthermore, educators can craft a more adaptable and diversified learning environment through a spectrum of learning methods.

As the education sector grapples with the challenges precipitated by the COVID-19 pandemic, the role of AI in bolstering resilience to waning student interest becomes increasingly evident. By harnessing AI-powered tools, educators can transcend the confines of traditional teaching methodologies and curate personalised learning experiences that captivate and motivate students. The transformative potential of AI in education is unequivocal, ushering in fresh prospects for educational equity and quality. As AI evolves, its burgeoning impact on the educational sphere will continue to empower students and educators alike to confront the evolving educational landscape.

This research embarks on a comprehensive exploration of AI's applications in education, aiming to illuminate how AI can alleviate these challenges. It delves into the array of AI technologies gaining prominence in educational settings, showcasing their ability to personalise learning, streamline administrative tasks, and engender diverse and adaptive learning environments.

Furthermore, the study underscores AI's pivotal role in cultivating resilience against student disengagement by crafting tailored and engaging learning experiences. Through AI-powered tools, educators can transcend the limitations posed by traditional teaching methodologies, catering to individual students' unique needs thereby augmenting educational equity and quality.

Ultimately, this extended abstract delineates

the evolving educational landscape amidst the AI era. It emphasises the imperativeness of embracing AI technologies as a conduit to augment teaching practices, embolden educators, and foster a more inclusive and dynamic learning milieu. As AI continues its evolution, its integration into education stands as a promising avenue to address the multifaceted challenges confronting the educational sector in the contemporary era.

RESEARCH SIGNIFICANCE

This study significantly contributes to educators, instructors, and upcoming researchers. Theoretically, it imparts knowledge to teachers andeducators concerning the possibility of enhancing classroom teaching methods through integrating AI within virtual reality, fostering innovative and creative learning experiences, and cultivating heightened student engagement in the learning process. On a practical note, prospective researchers can use this research as a roadmap for further investigations into the potential applications of AI within educational settings, aiming to address issues within the realm of education, particularly within the teaching and learning domains. Consequently, this research lays a robust groundwork for advancing more sophisticated and adaptable educational practices in an era of rapid technological developments.

MATERIALS AND METHODS

Writing Approach

The writing approach using literature review refers to the PRISMA model (Preferred Reporting Items for Systematic Reviews and Meta-analysis), a systematic and transparent method for identifying, selecting, and synthesising relevant literature in research. The PRISMA model provides a clear framework for designing, conducting, and accurately reporting literatureresearch. By following the PRISMA guidelines, authors can ensure that their literature research includes relevant sources and that the literature selection process is conducted objectively. Thus, the PRISMA approach to literature review helps to maintain the quality and validity of literature research and enhances the ability to draw strong conclusions based on evidence.

Source of Writing

The data sources for this scientific paper are articles published in the last three years, from 2020 to 2023. The research model uses a scientific strategy that focuses on the overall question and with explicit scientific methods through identifying, selecting, assessing, and summarising findings from similar studies. Systematic review is a research activity that uses techniques to identify, evaluate, and interpret the results of research that are in accordance with the research taken.

Writing Process

The preparation of this paper went through systematic stages. The steps taken in preparing thispaper using the PRISMA research design are listed in Figure 1 below.

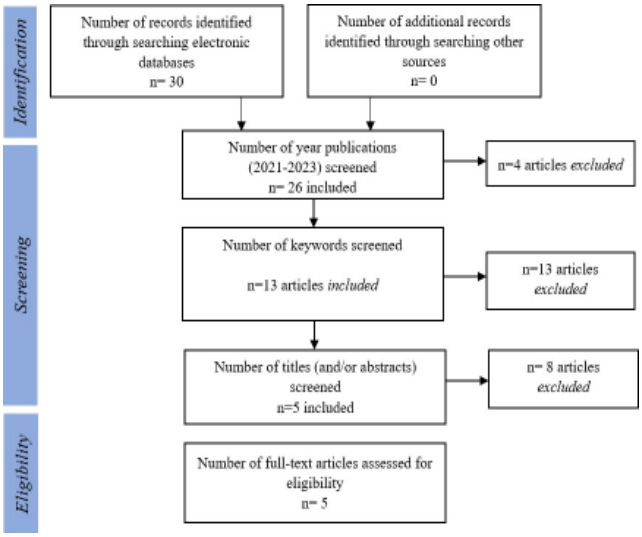

FIGURE 1. PRISMA diagram: Systematic Review Stages

From the articles identified, the data is compiled into a Microsoft Excel table with columns for title, author, year of publication, publication source, keywords, methods, and abstracts. This step facilitates the screening of articles for review.

The next stage is screening. In the context of AI, there is a limit to the article's publication year from 2021 to 2023. Of the 30 articles, four articles that did not comply with the provisions were excluded. Then 26 articles were left, which were then identified based on keywords, namely "Artificial Intelligence", "Education", Students' Interest", which resulted in 13 articles which were not included in the provisions. The articles obtained in this process are 13 articles to enter the eligibility stage.

The next stage is eligibility, this stage analyses the articles that have been reviewed. Each article is manually analysed for eligibility in terms of title and abstract. 5 articles are included in the selection, and excluded as many as 8 articles.

TABLE 1. The main articles reviewedrelated to the objective research

Title of Article	Instruments		
	Author	Year	Keywords
Model of Learning Management System Basedon Artificial Intelligence inTeam-Based Learning Framework	B. Pardameanet.al	2021	Artificial Intelligence,Team-Based Learning, PersonalizedLearning, MOODLE
Artificial Intelligence (AI) Literacy inEarly Childhood Education: The Challenges andOpportunities	Jiahong Suet.al	2023	AI AI literacy AI educationLearning and teaching AI Early childhoodeducation Challenges andopportunities
Implementing Artificial Intelligence Education for Middle School Technology in the Republic ofKorea	Woobin Park, HyuksooKwon	2023	Artificial Intelligence Education Free semesterTechnology Education AI Competency Attitudes Toward Technology
Impact of Artificial Intelligence on Human Loss inDecision Making, Laziness, and Safety in Education (Ahmad et al., 2023)	Sayed Fayaz Ahmad et al.	2023	Artificial intelligence,Human, Safety Education
A ComprehensiveAI Policy Education Framework for University Teaching and Learning	Cecilia KaYuk Chan	2023	AI policy framework, Artificial intelligence, ChatGPT, Ethics,assessment

RESULTS AND DISCUSSION

Results

The role of AI as digital transformation in education

Increase Students Interest

Based on the literature study, it was found that AI as a digital transformation brings about a positive impact among students and teachers regarding the positive impact of integrating AI technologies into higher education. According to Chan (2023), it was found that there is a level of time to gain maximum experience. To achieve good learning intensity, the learning process also needs to be supported by a learning style that suits the characteristics of the students.

In the current technological era, teaching and learning systems must adapt to current developments, where students are now close to technology. Automatically, to create learning intensity, an approach to the characteristics of today's students is needed, namely creating technology-based learning.

Therefore, utilising AI as a digital transformation is the right choice to create learning intensity, as research by Pardamean et al. (2021) shows that the integration of AI into learning management systems allows the creation of personalised learning experiences that meet unique needs, each student's learning style and preferences, ultimately increasing the effectiveness and engagement of the learning process optimism among students and teachers regarding the positive impact of integrating AI technologies into higher education, with both groups expressing interest in using AI in areas such as personalised learning or teacher professional development.

These findings provide valuable insights into the perception and usage of generative AI technologies in education, highlighting the potential for growth in adoption and thepositive impact that these technologies can have on teaching and learning practices. AI significantly enhances students' interest in learning by leveraging models that recommend teaching materials tailored to individual learning styles. As Pardamean et al. (2021) highlight, this ensures that the resources align with students' unique needs and preferences, optimizing their learning experience. Furthermore, AI is utilised to form study groups with balanced learning styles to facilitate team-based learning, enhancing the collaborative learning experience for students.

Created Learning Intensity

Learning intensity is a person's persistence, ability, strength and enthusiasm in learning to achieve their learning goals. This is in line with the opinion of Dashtaki et al. (2020) that learning intensity is the frequency or number of students studying within a certain

AI enhances Student Engagement Strategiesin Education, Interest, and Resilience in the Teaching and Learning System.

In obtaining strategies for student involvement in learning, interest, and resilience in the teaching and learning system, teachers need to personalise learning based on student learning styles and provide recommendations for learning resources using technology. AI is the technology that can make this happen because AI provides Smart Content, Virtual Reality, and Automatic Assessments.

Smart Content

Using AI technology can overcome teachers' limitations in creating good learning content that attracts students' attention. Smart content from AI refers to content that is generated or curated using technology to provide personalised and relevant information to users. This can include personalised recommendations, automatic content creation, and smart content creation based on student's preferences and behaviour.

Smart content from AI aims to improve user experience by providing personalised and valuable information. According to Chan (2023), generative AI technology such as ChatGPT can be used to create smart content by generating personalised responses to user questions or providing customised educational material based on individual learning needs.

Additionally, AI-powered recommendation systems can analyse user data to suggest relevant content, such as articles, videos, or courses that align with user interests and goals. By using AI technology, teachers will be greatly helped to create learning that suits students' needs using smart content.

Virtual Reality

Virtual Reality (VR) has transformed modern education by offering immersive and interactive learning experiences through VR headsets. It enables students to explore subjects like geography, human anatomy, and space exploration in novel ways, using interactive

simulations to grasp real-life scenarios.

VR also fosters global collaboration by connecting students worldwide in shared virtual environments, promoting cross-cultural learning. It aids in visualising complex concepts in three dimensions and facilitates practical training in fields like robotics and healthcare. Personalised learning becomes more accessible through VR, enhancing students' understanding of their past experiences and cultural backgrounds. Despite technical and financial challenges, VR technology's continuous development is poisedto enrich education further.

An instance of how AI is employed within VR can be seen within the realm of education. Using AI systems, VR educational experiences can be tailored to match students' individual advancement and inclinations, resulting in a more individualised and efficient learning process. AI can also be employed to design AI avatars within VR settings that are capable of realistically reacting to userinteractions.

Automatic Assessments

Automatic assessment from AI refers to the use of AI technologies to evaluate and provide feedback on students' work, such as assignments, exams, and projects. AI-powered assessment tools can analyse and grade written responses, code, and other types of student work, providing immediate feedback and reducing the burden on educators. These tools can also offer personalised feedback to students, helping them identify areas for improvement and adaptively supporting their learning.

Automated grading from AI refers to the use of AI technology to evaluate and provide feedback on student work, such as assignments, exams, and projects. Chan (2023) said that AI-powered assessment tools can analyse and grade students' written responses, code, and other types of work, providing immediate feedback and reducing the burden on educators. These tools can also provide personalised feedback to students, helping them identify areas for improvement and adaptively supporting their learning.

Furthermore, AI can provide recommendations for review material based onuser performance. Examples of implementing Automated Assessments are Quizzes and Word walls. This feature simplifies the process of creating quizzes and tests for educators. They only need to determine parameters such as subject type, difficulty level, number of questions, and various other options. Next, educators can share the quiz link with studentsso they can take it easily online. This AI technology really helps teachers provide creative assessments that are not too burdensome.

Discussion

One of the significant challenges in the Indonesian education system is the diminished enthusiasm for learning, which can be attributed to factors such as an uninteresting curriculum, inflexible teaching methods, and gaps in accessing high-quality education.

To foster greater interest in learning among Indonesian learners, it is imperative to implement comprehensive measures, including changing teaching methods, incorporating more exciting and relevant elements into the curriculum, and providing more significant support to educators and learners to foster a more stimulating and motivating educational environment.

Researchers found the potential for better education, especially in developing countries, ifactors in educational institutions can apply AI in designing education and learning. Educational institutions can slowly adapt to this AI technology to increase students' interest in learning, creating interesting, creative and engaging learning and making students interested in learning.

However, the use of AI must remain under the supervision of several parties, such as teachers, lecturers, and parents, to keep the use of AI in a good corridor and provide many benefits. Then, future students and researchers can further use the research to find what AI technology is more suitable for use in increasing students' interest in learning.

The difference between this article and other articles is that this article focuses on gathering conclusions regarding the potential of AI in the field of education in increasing the resilience of students' interest in learning. In contrast to the above research, which focuses on experimental research and proving whether AI has potential or not in education, for example, the article by Park and Kwon (2023) focuses on experiments applying AI education to high school technology education in the Republic of Korea, then Pardamean et al. (2021) focuses on experiments using Team-Based Learning (TBL) as an Artificial Intelligence-Based Learning Management System Model in Framework Team-Based Learning. So, they only obtained answers related to the experiments they conducted, and this research is here to summarise and draw conclusions regarding the potential of AI.

AI is for effective communication and collaboration. AI has emerged as a transformative force in education, increasing students' interest in learning and improving their resilience.

CONCLUSION

The COVID-19 pandemic has caused significant changes in the world of education, with distance learning and hybrid learning models relying on AI for effective communication and collaboration.AI has emerged as a transformative force in education, increasing students' interest in learning and increasing their resilience. This research, conducted with a qualitative approach and systematic literature review using the PRISMA technique, highlights the transformative power of AI in education, offering personalised learning experiences, improved learning outcomes, and ethical considerations. AI plays an essential role in virtual reality, enhancing interactive and immersive learning experiences through intelligent content, helping teachers create automatic assessments, presenting virtual reality and simplifying the sharing and retrieval of content to foster students' interest in learning and create learning intensity. In the era of Society 5.0, students have an important role as the next generation of education, so educating students from now on to make good use of AI will make them even more interested in learning.

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