



The Potential Utilizing ChatGPT for Education and Teaching Students: Understanding, Prospects, Challenges, and Utilization"

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ABSTRACT

This research aims to analyze the development of the ChatGPT topic in the context of its utilization and the challenges in supporting 21st-century education and learning programs that require the development of learning media as well as mapping the risks associated with the presence of AI (Artificial Intelligence) phenomenon, specifically ChatGPT. This requires the development of learning media as well as the mapping of risks associated with the presence of AI phenomenon, specifically ChatGPT. The method used in this study is a literature review related to ChatGPT, gathered from the Google database using the Google Advanced search strategy. The keywords "ChatGPT," "education," and "learning" were used to access various publications, particularly national and international scholarly articles that discuss relevant topics. The research findings generally indicate that ChatGPT is currently popular and dynamic, and it is predicted to continue growing in the future. However, discussions specifically related to ChatGPT in the field of education and learning are still the subject of debate, with both supporters and dissenters presenting rational arguments. Several examples demonstrate the significant positive benefits of ChatGPT's presence. To avoid confusion, it is crucial to establish policies formulated by authorized entities and implement them nationally with various supporting regulations.

Keyword: *Artificial Intelligence, ChatGPT, Education 4.0, Open AI*

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INTRODUCTION

Teachers nowadays are increasingly facilitated with wide and abundant access to information and knowledge, including learning sources and media. Technological advancements should be utilized by teachers to provide innovative learning sources and media that have practical value and constructive benefits (Afif, 1970). For example, the "Broad-based Learning Method" (BBLM) as a framework adopts a holistic approach with practice-based learning, serving as a solution to various concerns and challenges in the present time (Ikejiaku & Tembo, 2023).

The current actual situation demands that the information and knowledge provided to students by teachers as educators should be more abundant and diverse. Considering that students' learning styles nowadays tend to be convergent, where students are more inclined to receive or explore information randomly and beyond what has conventionally been taught (Winastwan Gora and Sunarto, 2018). In another sense, there is a need for the development of competencies that accommodate the concept of 21st-

century skills, one of which is a way to enhance the instructional quality of teachers (Kim et al., 2019), with the hope that it can be used in accordance with the context, culture, and interventions (Bruns, 2011; Crouch, 2008).

Learning media plays a significant role as it can serve as a guide for teachers to explain learning materials in a more systematic, effective, and efficient manner. Additionally, it can help in presenting the material in an engaging way to enhance the quality of learning, student motivation, and interest (Teni Nurrita, 2018). Typically, teachers can use various objects or equipment as learning media in the classroom. Furthermore, the utilization of new media such as audio, images, or videos and various social media applications like YouTube, Instagram, Facebook, and Twitter. Similarly, TikTok, according to Nurin Salma Ramdani et al.'s research, can be used as an alternative and interactive learning media, especially in online learning (Ramdani et al., 2021). Technological advancements provide opportunities for utilizing various tools as innovative and widely utilized learning resources.

In recent times, the global community has been captivated by the emergence of AI known as ChatGPT (Chat Generative Pre-trained Transformer), a chatbot developed by the artificial intelligence research lab called OpenAI in the United States. This machine, which is a natural language processing (NLP) technology, is capable of responding to human questions in text format. In the academic field, this application is even believed to be used for composing scientific articles and assisting in book writing in a much shorter time compared to conventional methods.

Behind all the sensations, many people are left wondering and feeling anxious about the ethical aspects of its use, such as privacy, data security, and the various accompanying threats. If this continues, it could either revolutionize the existing systems or disrupt the established order. One prevailing view is that among the victims, the field of education and teaching would be the first to be affected. For a long time, there has been a balance in the concept and practice of pedagogy with a humanistic background, focusing on "how we teach children to research, think, and write." The entire tradition that has endured for generations would be disrupted at its core, as noted by Stephen Marche in *The Atlantic* (Stephen Marche, 2022).

If it is true that ChatGPT can quickly generate various academic works covering a wide range of study topics, the question arises: what is the future of the scope and field of education and teaching? A similar question was posed by the host of the YouTube channel EduKitchen to Noam Chomsky, a philosopher and educational thinker, whose views are considered reliable by many. "For years, it has been necessary to use a program application to detect and check essays suspected of plagiarism," Chomsky said. "Now, it will undoubtedly become much more difficult because with AI, it will be much easier to engage in plagiarism. However, behind that, there will still be opportunities for positive contributions of AI, such as ChatGPT in the field of education and teaching. Currently, Chomsky himself acknowledges that his thoughts have not yet formulated those values." (Ananya Gairola, 2023).

Although ChatGPT is a new technology and is still in the development stage, and even for many parties, it is still under further research and study. It is undeniable that there are various types of chatbots, and there have been several research studies and writings that aim to explore the benefits and potential use of chatbots in the field of education, particularly as a learning medium for students.

ChatGPT is an example of an artificial intelligence technology application that continues to evolve and gain popularity in various fields, including customer service, healthcare, and even in the context of education and learning. In the context of student learning, considering the remarkable capabilities of ChatGPT, can AI be used to facilitate learning for both students and teachers? Certainly, one example, as explained by James W. Pennebaker, a psychology professor at the University of Texas at Austin, is that ChatGPT can also serve to facilitate students in the classroom to ask better questions and then defend their ideas and opinions. This approach has the potential to enhance understanding and the ability to become better learners (Ashley Abramson, 2023).

In addition, there is also related research conducted by Jaeseok Yang (2022) on the Perceptions of Preservice Teachers on AI Chatbots in English Education, which found that the presence of AI chatbots proved to be useful as teaching and learning aids for both teachers and students, particularly in enhancing EFL learners' confidence in speaking English. Furthermore, when applying various learner data to chatbot technology, such as learner assessment and diagnosis, a guided approach is necessary to have conversations that are appropriate for the learner's level and characteristics. The findings indicate that AI chatbots can enhance interactive communication in the target language, serve as teaching and learning aids, and improve learners' confidence and motivation in speaking English. Guided approaches are necessary for utilizing

learner data and adapting the chatbot's conversation to the learner's level and characteristics (Yang Jaeseok, 2022).

So far, in a relatively short period, there have also been studies in Indonesia on the utilization of ChatGPT. Research by Hastuti et al. indicates that, in general, the presence of AI chatbot ChatGPT brings positive opportunities and prospects to accelerate education for Indonesian children. Several components can be developed, particularly in the competency skills of students and learners, as required in the 21st century. There are at least six competencies: critical thinking, communication, collaboration, and creativity, along with two other supporting competencies, namely citizenship and character education (Hastuti, Aristin, & Fani, 2022). Furthermore, as described by Nisa, these competencies can be honed and transformed into writing skills (Nisa, 2016).

Based on these various thoughts, this research aims to examine the potential and challenges of utilizing ChatGPT to support the teaching and learning process in schools in Indonesia. Moreover, on a broader scale, it is hoped that this study will be able to capture the possibilities of legally and systematically utilizing ChatGPT to foster enthusiasm and motivate students in developing their academic potential in various Indonesian schools, both public and private.

RESEARCH METHOD

This research is a qualitative study that focuses on exploring the potential and challenges of utilizing ChatGPT for the learning and education process in schools, with a specific emphasis on literature review and digital observations. Data collection techniques utilize various information recorded from indexed search engine sources, such as Google. Searches are conducted using Advanced Google Search strategies. Various data and information are obtained and treated as part of the analytical units, including journal articles, mass media sources, personal blogs, and secondary literature discussing the use of ChatGPT. Subsequently, data processing and analysis employ the Miles and Huberman data analysis model, which consists of four stages: data collection, data reduction, data display, and conclusion drawing (Miles, M. B., & Huberman, A. M., 1994). To achieve comprehensive results and discussions that provide a clearer depiction of the issues at hand, data processing and analysis follow the guidelines and stages formulated by Anthony J. et al. for literature-based research, while extracting the data analysis model of Miles and Huberman (Onwuegbuzie & Weinbaum, 2016). This is done with the hope of producing a work on the potential and challenges of utilizing ChatGPT to support the educational process, designed to be informative and presented in a reader-friendly and visually appealing manner.

RESULTS AND DISCUSSION

Understanding in Depth ChatGPT

In late March 2023, the AI-based application, ChatGPT, faced temporary bans in various countries. One of them was Italy, which became the first Western country to block this advanced chatbot (Shiona McCallum, 2023). The prohibition was primarily related to issues of privacy, verification, transparency, and the rights of both users and non-users that were not fully clear (Elvira Pollina and Supantha Mukherjee, 2023). From this, it is evident that the dynamics of developments in various cases in many countries are also occurring very dynamically. For instance, after a few days of the access ban in Italy, the public was able to regain access to the AI system, ChatGPT, on April 28, 2023. ChatGPT was able to resume its services in Italy after its developer company, OpenAI, fulfilled most of the requirements requested by Garante, the governing authority responsible for this in Italy (Ioanna Lykiardopoulou, 2023).

According to information gathered by the BBC, OpenAI has deactivated ChatGPT for users in Italy, as requested by the Italian data protection regulator, Garante. The ban on the use of artificial intelligence based technology is reportedly based on explanations and recommendations from the competent authority in Italy, which found that ChatGPT lacks transparency regarding user data usage and lacks age verification. "ChatGPT does not comply with the laws on personal data and does not have a system to verify the age of underage users," said the Italian Data Protection Authority, Garante, as quoted from Forbes on Thursday, April 6, 2023. Lund and Wang (2023) says, ChatGPT has significant potential to advance academia and librarianship in new ways. However, it is important to consider how to use this technology responsibly and ethically in order to work together through this technology to enhance the quality of work, create new scientific knowledge, and educate future professionals.

The learning process by applying technological media such as ChatGPT provides a pathway for educators to serve as facilitators who can facilitate learning, rather than just being the sole providers of information. Educators not only impart knowledge but also become partners (collaborators) with students, making it easier for students to share their learning with educators. Educators can utilize technology associated with the subjects they teach, ensuring that the learning characteristics using technological media do not diminish the essence of knowledge (Munir, 2017: 104). However, even though there are media available, it doesn't mean that educators should remain passive.

Educators also need to be educating facilitators to prevent the misuse of media. The role of technological media is merely an effort to achieve curriculum targets, deepening the understanding of the subject matter and relating it to real-life situations (Munir, 2017: 104). However, the presence of ChatGPT needs to be approached wisely. Although convenience can be obtained by asking ChatGPT, users themselves must be equipped with a good understanding of moral values to ensure that the use of ChatGPT, especially in the field of education, does not erode their critical thinking abilities.

Usage rules for ChatGPT have been implemented at UNPAD, for example, where students who become complacent with the use of ChatGPT or copy and paste answers from ChatGPT will face penalties. This is to prevent plagiarism, which violates ethical and moral standards in the academic realm. If a student is found to have plagiarized from ChatGPT, a reduction in grade will be imposed (Ningrum, 2023). Therefore, this article emphasizes what educators need to prepare for in order to maintain the quality of learning and preserve the critical, creative, collaborative, and communicative thinking aspects of students.

The Dynamics of the ChatGPT Usage Debate

ChatGPT has great potential to be used to support education or the learning process. With its ability to generate human-like text based on large amounts of data, ChatGPT is believed to be able to support individuals and communities in making informed decisions about education and learning. Several studies or experiments have been conducted using the chatbot ChatGPT in the field of education and teaching, one of which is the experiment conducted by Zhai, an expert in artificial intelligence, which was published in an article titled "Artificial Intelligence for Education."

In general, Zhai's assessment states that the articles or works created with the assistance of the chatbot are coherent, relative, accurate, informative, and systematic. Furthermore, it is mentioned that ChatGPT's ability to provide information according to needs, in other words, can be far more efficient compared to the average human's ability, particularly in terms of writing skills, which surpasses the average student's ability. It is impressive that, in general, the process required by Zhai to produce an article takes only around 2-3 hours, including minor editing and reorganizing the article (Zhai Xiaoming, 2022). In another article, Aydin and Karaarslan attempted to compare paraphrased articles using ChatGPT from abstracts of journals published between 2020 and 2022, which were collected through a Google Scholar search with the topic of "digital twin in healthcare," with articles generated by ChatGPT based on the input prompts "what is digital twin?" and "digital twin in healthcare." The comparison was conducted using the plagiarism detection tool Ithenticate. The results concluded that the paraphrasing process performed by ChatGPT did not produce original writing and was detected by Ithenticate as plagiarism with a significant similarity of 40% (Aydin & Karaarslan, 2022).

Seeing the various capabilities of ChatGPT in generating well-structured writing, it has sparked significant reactions from various stakeholders in the education sector. Schools in the Los Angeles and Baltimore districts are following the policy previously implemented by the New York City Department of Education, which has blocked access to ChatGPT, while other districts are evaluating its benefits and accompanying risks (Julian Shen-Berro, 2023). The prohibition and blocking of ChatGPT usage are based on the belief that it does not support the effort to develop problem-solving skills and critical thinking among students as essential assets for academic success and lifelong learning (Rosenzweig-Ziff, D., 2023).

On the other hand, a philosophy professor at Northern Michigan University, USA, has a different perspective (Tangermann, 2023). The professor, Antony Aumann, believes that the development rate of tools like ChatGPT is already very fast. Even if there were tools available to detect writing produced by an AI chatbot, they would still not be able to keep up with the speed at which applications like ChatGPT are evolving. He himself once caught one of his students suspected of submitting a paper written by ChatGPT on the topic of the burqa ban, due to its highly structured and coherent writing. However, he only asked the student to rewrite the assignment.

Previously, there was also a similar case involving a philosophy professor named Darren Hick from Furman University in Greenville, South Carolina, USA (Mitchell, 2022). He discovered that his student's writing on 18th-century philosopher David Hume was very well-written but had a structural pattern that resembled the output of an AI chatbot. He then tested it by inputting a prompt that he believed ChatGPT would produce a similar response to the student's work. The result turned out to be indeed remarkably similar, with a similarity rate of up to 99.9 percent.

Based on the explanation above, the utilization of ChatGPT is currently still under debate due to ethical considerations, data security concerns, dependence on technology, and serious concerns about OpenAI violating General Data Protection Regulations, privacy laws, and its potential implications for education and teaching.

Prospects and Challenges of Using ChatGPT

Utilizing AI, specifically ChatGPT, to support education and teaching programs in Indonesian schools presents several challenges. Among these challenges, one of the biggest is the diversity of AI applications and the limited knowledge of AI usage among education stakeholders. In addition to ethical considerations on how to effectively and efficiently integrate AI technology, particularly ChatGPT, into the education and teaching processes.

Referring to the literature study method used in this research, various writings attempting to explore ChatGPT and various journal articles examining the theoretical and empirical possibilities of utilizing artificial intelligence and ChatGPT to support education and teaching processes were found. As a learning strategy, as Maulana (2021) mentioned, it should be as flexible as possible and tailored to the needs of students, the class, and the subject matter taught by the teacher. Mastering various learning strategies is already half the effort for teachers to overcome issues in the learning process (Maulana Akbar Sanjani, 2021).

The presence of ChatGPT can actually facilitate the implementation of such learning strategies. However, its potential usage has not been fully explored. The common situation at present is that the presence of ChatGPT is mostly responded to with various comments that tend to be negative, causing serious concerns for many parties, especially in the educational field. The current major concern often revolves around academic integrity, particularly in higher education institutions or universities (Cotton et al., 2023). Similarly and more explicitly, Noam Chomsky once referred to AI systems like ChatGPT as highly susceptible to "basically high-tech plagiarism" and a way of avoiding learning (Colin Marshall, 2023). It is clear that academic integrity issues do exist (Rosenblatt, 2023), even more evident when considering various tools available to detect plagiarism in information obtained from ChatGPT.

However, despite the identified weaknesses, it should not be an absolute reason to conclude that ChatGPT does not bring any positive benefits and that addressing academic integrity issues makes the use of such technologies a mistake. This technology has the potential to fundamentally transform the classroom experience and the knowledge and skills of our students. Due to the extraordinary potential offered by generative artificial intelligence, we provide suggestions that can be used by higher education instructors to deeply engage with this disruptive technology. Therefore, to initiate the integration of ChatGPT into the field of education, synergistic and close collaboration between educators and IT experts is required to ensure that the use of ChatGPT technology aligns with its goals and targets, aiming to improve the quality of children's learning in schools.

Utilizing ChatGPT for Students' Education and Teaching

Using the plug-in offered by ChatGPT to transcribe the proceedings of a Focus Group Discussion (FGD) stored and disseminated on social media channels like YouTube. The results are quite reliable, with tools that can easily and quickly transcribe the entire conversation from the FGD. Interestingly, as an example, this AI also has the ability to differentiate between question texts and answer texts, and can even generate direct conversation texts in the form of quotes.

Another capability that can be utilized in the field of education and teaching is for students in schools, where they can use ChatGPT to create text in the form of digital stories or interactive fiction. This can be done by giving simple commands to start a story. Then, one can add details from their imagination by typing prompts that will help guide the story. Additionally, ChatGPT can also be asked to perform data coding by writing prompts (instructional text), and most of the results are highly relevant, although upon closer analysis, some of the results may not align with reality. The activities mentioned above are examples of the

utilization and implementation of ChatGPT in the field of education and learning. If these activities were carried out conventionally, without the touch or assistance of ChatGPT, they would require much more time and complexity. Furthermore, another utilization can be done to assist in writing or producing a written work that requires a significant amount of effort, both in terms of energy and time, which can be made easier and time-saving by incorporating ChatGPT into the process. Why spend so much time writing when it typically requires a long time? This is because every writing activity involves various competency development activities, such as critical thinking skills, creating an outline, preparing written materials from various reading sources that have been read, and making an effort to understand a number of references obtained from the library or information obtained through Google searches. However, it is not the case when done using ChatGPT, which is much more concise and quick in delivering results.

Nevertheless, there are aspects of education and learning that are concerned about being lost if ChatGPT is fully utilized, such as group learning and problem-solving exercises. These activities should train students to collaborate and express diverse ideas in written form. It is important to consider this because engaging in group activities can enhance various aspects, including both hard and soft skills, such as communication skills, creativity in finding attention-grabbing titles, and most importantly, character education that should be formed through the accumulation of these activities. Hence, the question remains: How can the application of AI, specifically ChatGPT, help in the development of these competencies and skills?

From the two testing examples above, it is undeniable that ChatGPT offers convenience and flexibility. However, on the other hand, there will be certain competencies that are lost, and various filtering processes are needed to maximize the benefits offered by artificial intelligence and address any unexpected bugs or outcomes. It can be said that there are challenges and issues that must be faced and collectively resolved to find solutions.

Furthermore, various chatbots inherently have benefits in terms of affective aspects, and therefore ChatGPT can also be used to enhance students' self-confidence in fostering motivation to learn. And equally important, working with the assistance of technology generally involves an element of fun, so there is a strong expectation that using ChatGPT will provide a sense of satisfaction. When students are able to create a complete and enjoyable piece of writing in their creative process, it will also enhance their writing skills. Based on these considerations, the use of artificial intelligence technology, such as ChatGPT, must be done wisely through various studies and evaluations by all parties involved, in order to approach the certainty of obtaining maximum benefits for the education and learning of students, including the aspects of character such as honesty, trustworthiness, and responsibility, which can be clearly observed.

This is where the space and opportunity lie for an educator to equip their students with knowledge about a technology that can be useful in assisting their work, training, and teaching, enabling students to find solutions to the challenges they face with the help of technology (Savitri, A, 2019). It is not necessary to debate the fact that adopting a certain type of technology in the learning process is a response to the challenges of lifelong learning and the needs of students' skills. This is a consequence of the fact that students nowadays grow and develop in a different era compared to the previous generations.

Conceptually, as an example, if we refer to the teachings of Islam, as stated in the hadith of Prophet Muhammad, "*Allimu auladikum fainnahum makhluqun li zamanin ghairi zamanikum.*" (peace be upon him), it is mentioned, "Educate your children, for they will live in a time different from yours" (Munadi, M., 2020). Therefore, educators and policymakers should not be overly averse to the presence of AI technology, such as ChatGPT. By trying and using it as often as possible, over time, they will develop a sense of how ChatGPT can bring many benefits to the process of education and teaching.

CONCLUSION

There are various benefits of instructional media. First, it provides guidance for teachers to achieve learning objectives, allowing them to explain the learning materials in a systematic order and aid in presenting the materials in an engaging manner to enhance the quality of learning. Second, it can increase students' motivation and interest in learning, enabling them to think and analyze the taught subjects effectively within a enjoyable learning environment, thus facilitating their understanding of the materials. Overall, various types of AI, including ChatGPT, fundamentally offer numerous opportunities to optimize the functions of education and teaching to be more effective and efficient, in line with advancements. The key lies in the willingness and ability to explore the capabilities of ChatGPT to facilitate adaptive and

personalized learning and instructional media. This can be achieved through a process-oriented strategy over time and continuous feedback to optimize the utilization of ChatGPT in assisting learning, benefiting both teachers and students in obtaining a better learning experience and keeping up with technological developments. Teknologi. ChatGPT is an intelligent machine trained to mimic human conversation using Natural Language Processing (NLP) technology. In reality, ChatGPT can be utilized to generate fairly academic writing with well-formulated prompts and effective techniques. Therefore, there are extensive opportunities for innovative use of chatbot technology, specifically ChatGPT, in the field of education and teaching in Indonesia. However, the most important aspect that stakeholders need to realize is that AI technology, including ChatGPT, is not a quick-fix solution to address all educational challenges and learning issues in schools. There are several challenges that still need to be addressed regarding the utilization of ChatGPT as an advanced language model that can support the education and learning process. These challenges include concerns about AI bias, the potential for dependence and inability to filter information. Additionally, there are practical challenges that have not been extensively tested, such as the ability to integrate AI into the curriculum, facilitate teacher training, and ensure equal access for all students in terms of resources, infrastructure, and technology availability. Legal aspects, including privacy issues and copyright, as well as ethical concerns that are not inherently addressed in ChatGPT, also need attention. Therefore, the best response to the ChatGPT phenomenon is adaptation. This can be implemented by adjusting academic policies in the field of education at the national level.

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