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ChatGPT in Education: A New Paradigm for Enhancing Student Learning and Engagement

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ABSTRACT

The digitalization of education continues to evolve, with artificial intelligence (AI) playing a crucial role. ChatGPT, an AI-powered tool, has gained widespread use among students for academic purposes. This study investigates its impact on students' learning abilities, particularly in facilitating independent learning, supporting assignment completion, and broadening knowledge. A mixed-method approach was adopted, combining quantitative survey data from 203 respondents with qualitative analysis of their responses. This methodology provided a comprehensive understanding of students' experiences and perceptions regarding ChatGPT's role in their academic activities. The findings indicate that ChatGPT significantly aids students in completing assignments, encourages independent learning, and serves as a valuable knowledge resource. Respondents reported that ChatGPT's accessibility and functionality contribute to enhanced learning efficiency. The study highlights ChatGPT's potential as a transformative educational tool, emphasizing its role in digital learning environments. While students benefit from its features, considerations regarding academic integrity and critical thinking skills should be addressed. ChatGPT demonstrates considerable advantages in supporting students' academic endeavors. Its effectiveness in fostering independent learning and knowledge expansion underscores its value in modern education. Future research should explore its long-term impact on students' learning habits and critical thinking skills.

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1. INTRODUCTION

The rapid development of artificial intelligence (AI) has begun to revolutionize education, particularly with tools like ChatGPT. As a form of AI that has gained significant traction among students, ChatGPT is reshaping how knowledge is accessed and utilized. Despite its popularity, the actual impact of ChatGPT on students' learning abilities remains unclear. This gap calls for an in-depth

exploration to understand both the benefits and potential challenges of integrating ChatGPT into the educational process. Technological advances, including AI, continue to influence various aspects of education, from student learning styles and teaching patterns to curriculum development. These changes emphasize the need for education systems to remain dynamic and flexible. As the cornerstone of a nation's future, education must adapt to prepare competent and superior resources for the next generation.

One significant aspect of technological transformation in education is digitalization. Digitalization involves integrating technology to facilitate knowledge transfer, enhance learning flexibility, and improve accessibility—an approach that has become a global trend (Cuban, 2010). The emergence of E-Learning platforms exemplifies this shift, providing convenience for both teachers and students (Bygstad et al., 2022). This convenience is a necessity that is difficult to resist, including the presence of artificial intelligence (AI). One AI that has been widely discussed and utilized is ChatGPT, which has recently gained prominence in the world of education, especially among students (Adeshola & Adepoju, 2023). In this context, it becomes crucial to examine how tools like ChatGPT are shaping educational outcomes.

Chat GPT has positive impacts on education. It serves as an application of AI that students can use to complete assignments, find information, and perform similar tasks. Essentially, it provides convenience in learning and completing academic tasks. It functions like a robot that responds to all commands and requests of its users ('Amala et al., 2023). It can generate answers to related keywords with ease and detail, which greatly helps students (Salmi et al., 2023). According to Suharmawan (2023), the effectiveness of ChatGPT is significant in supporting the learning process of students. It has been reported to positively impact students by enhancing the efficiency and effectiveness of understanding course material and completing assignments (Ramadhan et al., 2023). Research by Alejandro Guadalupe Rincón Castillo et al. (2023) also supports the idea that It simplifies learning for students by providing easy access and efficient solutions for academic tasks. With its advanced features, It can act as a learning medium that responds to students' questions in a sophisticated manner (Azzahra & Abimanyu, 2023).

On the other side, Chat GPT also has potential downsides in education. While it offers undeniable advantages, questions remain about whether its use aligns with improving students' learning abilities. Murcahyanto (2023) highlights that while ChatGPT facilitates easier learning, it raises concerns about whether it directly correlates with the enhancement of learning competencies. This creates a dual perspective: on the one hand, ChatGPT opens up opportunities for critical and creative thinking, while on the other hand, its overreliance may lead to reduced competence among students (Aithal & Aithal, 2023). The rapid technological development in educational tools like ChatGPT has made learning resources readily available. However, this convenience brings both advantages and disadvantages (Putri et al., 2024). For instance, while students may find answers easily, this ease of access may inhibit deeper understanding and learning skills (Alfaiz & Julius, 2023). Therefore, further investigation is needed to evaluate whether ChatGPT enhances or diminishes student competence.

However, Learning ability is a key indicator of the success of the educational process. It reflects changes in students' attitudes, knowledge, and skills. These changes are often driven by the materials delivered by lecturers, supported by strategies, methods, and tools like ChatGPT (Nita et al., 2023). The term "learning ability" here refers to the capacity of students to acquire and apply knowledge effectively, while "learning transformation" signifies the shift in educational methods and outcomes facilitated by digital tools.

This research seeks to examine the role of ChatGPT in supporting student abilities and to explore its broader impact on learning competencies. Specifically, this study aims to 1). investigate the positive contributions of ChatGPT to students' academic performance, 2). Analyze potential drawbacks of relying on ChatGPT in educational settings, and 3). Provide insights into the balance between its advantages and disadvantages for student learning. The thesis of this study is that while ChatGPT offers significant opportunities for enhancing educational processes, its impact on students' competencies requires thorough investigation to ensure it contributes positively to the goals of

education. This research will clarify the position of ChatGPT in education, highlighting both its benefits and challenges.

2. METHODS

This study employs a mixed-methods research design, integrating both quantitative and qualitative approaches to provide a comprehensive understanding of the research problem (Mulyadi et al., 2019) (Masrizal, 2012). Specifically, quantitative data were collected using a survey, while both quantitative and qualitative data were analyzed to interpret the findings. The mixed-methods approach allows for a richer exploration of the research questions by triangulating numerical data with deeper qualitative insights (Sari et al., 2020).

The primary data collection method used in this study is a survey**,** chosen for its ability to capture large-scale data from students and align with the study's objectives of examining ChatGPT's impact on learning competencies and character development. A total of 200 respondents were targeted, comprising students from Universitas Dinamika Surabaya and other institutions. Respondents were selected using convenience sampling, ensuring accessibility and diversity in the sample while focusing on individuals who have experience using ChatGPT. The survey instrument consisted of a structured questionnaire designed to measure the students' usage patterns of ChatGPT, the perceptions of its impact on learning competencies, and the influence on character building. The questionnaire included both closed-ended and open-ended questions. Closed-ended questions utilized a Likert scale to measure attitudes, opinions, and perceptions (Sugiyono, 2018). Participants rated their agreement and stated that ChatGPT helps them to understand academic material more efficiently and also to improve their problem-solving skills. Open-ended questions provided respondents with the opportunity to elaborate on their experiences and perspectives regarding ChatGPT usage. This combination of question types ensures a balance between structured quantitative data and richer qualitative insights. The Likert scale is presented below:

Table 1. Likert Scale

Grading Criteria	Assessment Scale
Strongly Agree	4
Agree	3
Fair/Neutral	2
Disagree	1
Strongly Disagree	0

Quantitative data from the survey were analyzed using descriptive statistics to identify trends, frequencies, and patterns in students' responses. Key metrics such as mean scores and percentages were calculated to summarize the findings. On the other hand, qualitative data were analyzed through interpretation, where open-ended responses were reviewed to identify themes and patterns that complement the quantitative results (Purwono et al., 2019)(Hermawan, 2019). This approach allows for the integration of numerical data with narrative explanations, providing a holistic understanding of the research findings. To ensure the validity and reliability of the survey instrument, the questionnaire underwent expert review for content validity, ensuring that the questions aligned with the study's objectives. Additionally, Cronbach's alpha was calculated to assess the internal consistency of the Likert-scale items, which is considered acceptable for social science research. The mixed-methods approach was chosen to leverage the strengths of both quantitative and qualitative data. The survey was selected as the primary data collection method because it enables the efficient collection of data from a large sample while providing the flexibility to include qualitative elements through open-ended questions. This design ensures that the study captures both measurable outcomes and nuanced perspectives related to ChatGPT's role in education. This method will be simplified as shown in the diagram below:

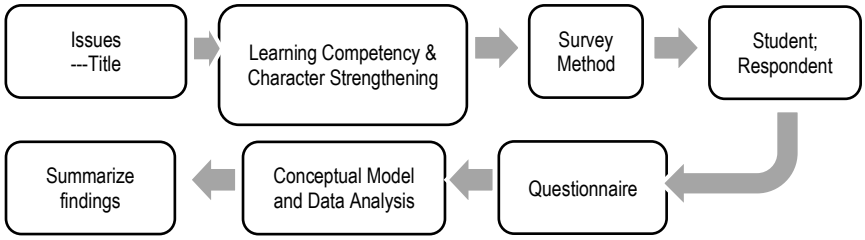

Figure 1 The flow of survey method implementation. source: researcher's process

The diagram illustrates the sequential process followed in this study's research methodology, offering a clear roadmap for understanding how the study was conducted. Each stage of the process is interconnected to ensure a logical flow of data collection, analysis, and reporting. 1) Issues/Title: The process begins by identifying key issues related to learning competency and character strengthening, forming the basis of the research problem and objectives. 2). Learning Competency & Character Strengthening**:** This stage highlights the central theme of the study, focusing on how ChatGPT influences students' learning outcomes and supports character development. 3). Survey Method: To address the research objectives, a survey method was chosen as the primary approach for data collection. This method effectively captures quantitative insights while aligning with the study's focus. 4). Student Respondent: The survey targeted students from both Universitas Dinamika Surabaya and other institutions as respondents. A total of 203 students were selected to ensure sufficient and diverse data. 5). Questionnaire**:** A structured questionnaire served as the primary instrument for data collection. It included Likert-scale items to measure attitudes and perceptions, as well as open-ended questions to provide qualitative insights. 6). Conceptual Model and Data Analysis: The conceptual model guides the analysis process. Quantitative data were processed using descriptive statistics, while qualitative responses were interpreted thematically to uncover deeper insights. 7). Summarize Findings**:** Finally, the findings were summarized to draw conclusions about ChatGPT's impact on students' learning competencies and character strengthening. The diagram serves as a visual representation of these steps, demonstrating the systematic and organized approach taken in this study. It ensures clarity in understanding the research design and methodology. Next, the hypothesized relationship between ChatGPT and Learning Competency are described in this diagram:

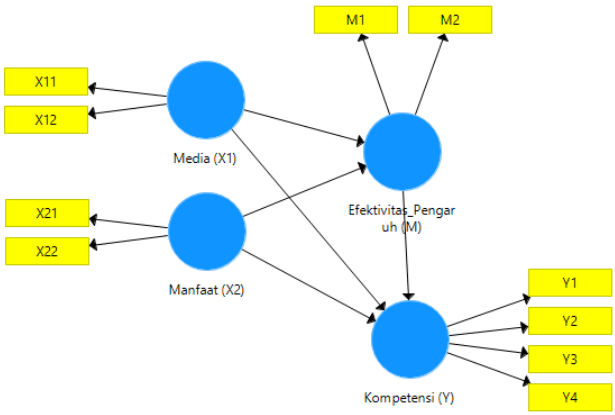

Figure 2 Hypothesized Relationship between ChatGPT and Learning Competency

Hypothesis:

H1 : There is a direct influence of Media (X_1) on Effectiveness_Influence (M)
H2 : There is a direct effect of Benefits (X_2) on the Effectiveness_Influence (M)
H3 : There is a direct effect of Media (X_1) on Competence (Y)
H4 : There is a direct effect of Benefits (X_2) on Competence (Y)
H5 : There is a direct effect of Effectiveness_Influence (M) on Competence (Y)
H6 : There is an indirect effect of Media (X_1) on Competence (Y) through Effectiveness_Influence (M)
H7 : There is an indirect effect of Benefits (X_2) on Competence (Y) through Effectiveness_Influence (M)
Data Analysis

3. FINDINGS AND DISCUSSION

The findings indicate that ChatGPT significantly supports students in completing their class assignments and homework. A survey of 203 respondents (accessible via https://bit.ly/46PdLZe) reveals that ChatGPT is widely used in the learning process, particularly for assignments. Survey results show that most respondents moderately agreed (33.7%), agreed (33.7%), or strongly agreed (15.3%) that ChatGPT aids them in their academic tasks, underscoring its utility as a learning tool. 203 The population consists of students from Dinamika University Surabaya, Walisongo State Islamic University Semarang, Hasyim Asy'ari University Jombang, STIAMAK Barunawati Surabaya, Adi Buana University Blitar, Islamic University Malang, PGRI University Madiun, Muhammadiyah University Tangerang, Hangtuah University Riau, Darmajaya University Lampung, and Mercu Buana University Yogyakarta.

3.1 Validity and Reliability

The validity and reliability of the research model were assessed using the Fornell-Larcker Criterion and Construct Reliability and Validity tests.

a. Discriminant Validity: The AVE values for each construct exceed their correlations with other constructs, confirming adequate discriminant validity. For example, the AVE root for Effectiveness-Effect (M) is 0.941, which is greater than its correlation with Competency (Y) at 0.718, Benefit (X2) at 0.660, and Media (X1) at 0.651.
b. Reliability Analysis: The Composite Reliability values for all constructs are above 0.7, indicating high internal consistency. For instance, the Composite Reliability for Competency (Y) is 0.920, and for Media (X1), it is 0.924.

3.2 Direct Effects

The Path Coefficient analysis highlights the direct relationships between constructs:

a. Media (X1) positively influences Effectiveness-Effect (M) with a coefficient of 0.345, meaning a one-unit increase in Media leads to a 34.5% increase in Effectiveness.
b. Benefit (X2) positively influences Effectiveness-Effect (M) with a coefficient of 0.389, indicating a 38.9% increase in Effectiveness for each unit increase in Benefit.
c. Media (X1) positively influences Competency (Y) with a coefficient of 0.246, while Benefit (X2) has a stronger influence on Competency (Y) with a coefficient of 0.531.
d. Effectiveness-Effect (M) also contributes positively to Competency (Y) with a coefficient of 0.207.

3.3 Indirect Effects

The indirect effects analysis reveals:

a. Media (X1) indirectly influences Competency (Y) through Effectiveness-Effect (M) with a coefficient of 0.071, signifying a 7.1% indirect effect.

b. Benefit (X2) indirectly influences Competency (Y) through Effectiveness-Effect (M) with a coefficient of 0.080, indicating an 8% indirect effect.

3.4 Total Effects

The total effects table summarizes the combined direct and indirect effects:

a. Media (X1) influences Effectiveness-Effect (M) by 34.5% and Competency (Y) by 31.8%.
b. Benefit (X2) has a total effect on Competency (Y) of 61.2%, the strongest observed relationship.

This is shown in the image below as a summary of the results of the field survey:

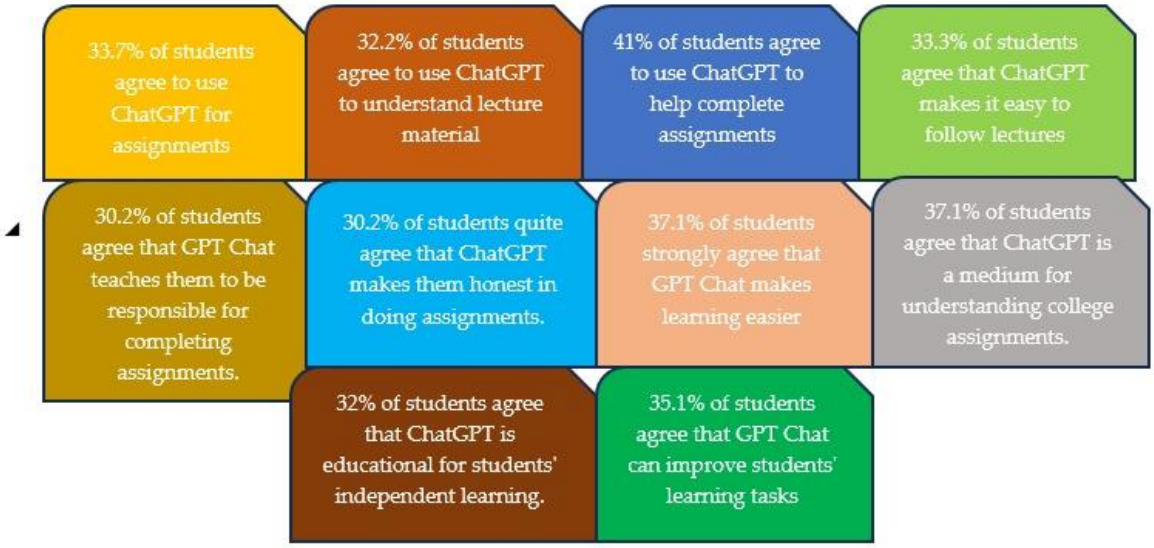

Figure 3 The findings that respondents actively use GPT Chat and get benefits from it. *Source:* https://bit.ly/46PdLZe

This means that some respondents (students) agree that ChatGPT helps them in the learning process and supports them in independent learning as the focus of this study. This provides evidence that the presence of ChatGPT contributes positively to student learning and engagement in learning.

3.5 Interpretation and Implications

These findings underscore the positive role of ChatGPT as a medium and a beneficial tool in enhancing student learning and competency. The significant direct effects of Media and Benefit constructs suggest that ChatGPT not only aids in completing assignments but also improves students' overall learning effectiveness and academic competence. However, the relatively lower indirect effects highlight the need for a balanced approach in integrating AI tools into learning environments.

This study contributes to the broader literature on AI in education by providing empirical evidence of ChatGPT's utility and its impact on academic performance. Educators should leverage these insights to guide responsible use of AI tools, fostering critical thinking alongside technical benefits. Future research should explore strategies to mitigate potential over-reliance on AI, ensuring that it complements rather than substitutes essential cognitive and problem-solving skills.

ChatGPT factually provides ease of access, speed of information, and sophistication of answers that students need. This indicates that ChatGPT can assist students in completing their assignments, thus having an impact on their learning completeness, effectiveness, and efficiency. Research by Sholihatin et al. (2023) states that students are facilitated in their study journey by the existence of an

artificial intelligence application called ChatGPT. It provides answers to their queries, which can be further examined, including the source of the answer. In terms of convenience, students are indeed supported, so that their completeness in doing assignments can be fulfilled.

In line with this, Hong (2023) highlighted that ChatGPT provides free space for students in the learning process, having a positive impact on student completeness and achievement in completing course assignments with full responsibility. This aligns with Rath et al. (2021), who noted that the competencies required in the VUCA era and this century are increasingly comprehensive and integrative. Students cannot solely rely on one competency or knowledge area but must develop creativity and multifaceted skills in depth. ChatGPT's role in addressing these needs enhances its relevance as a supportive tool in modern education.

This aligns with the concept of E-Learning, which emphasizes independent learning. With the independent campus curriculum—a system guiding students to learn more contextually in the real world—education has shifted towards a constructivist paradigm that actively directs students to construct knowledge optimally (Orr, Luebcke, Schmidt, Ebner, Wannemacher, Ebner, et al., 2020). The independent learning approach, widely adopted during the COVID-19 pandemic, allowed universities to embrace this paradigm, with ChatGPT emerging as a valuable tool in fostering independent learning. Al Yakin et al. (2023) noted that ChatGPT supports students' creativity and real-world knowledge acquisition, aligning well with this educational shift. However, Murcahyanto (2023) cautioned that while ChatGPT can increase student independence and provide an alternative learning method, its unregulated use could lead to over-reliance and reduced motivation for independent problem-solving. Lecturers' guidance is crucial in ensuring that ChatGPT remains a supplementary tool rather than a crutch, emphasizing the importance of filtering and directing its application.

The research above reinforces the importance of ChatGPT in supporting student independence, particularly in distance or online learning contexts, where technological aids are critical. However, students' outputs must undergo lecturer evaluation to address errors and inaccuracies, emphasizing that ChatGPT is not an infallible source of absolute truth. As Nailus and Hasanudin (2023) noted, ChatGPT's primary function is to provide automatic responses and feedback, enhancing learning efficiency and productivity. Nonetheless, it is essential to acknowledge that over-reliance on AI can diminish critical thinking and problem-solving skills. This is part of the negative impact of using ChatGPT in totality so that it can reduce the quality of knowledge, abilities and academic independence of students. As research by Agunawan et al. (2024) states, excessive dependence on the use of ChatGPT can reduce the quality of learning. Hanifah & Novebri's research (2025) also emphasizes that ChatGPT has the potential to reduce independent learning motivation for students or students in educational institutions. This finding is a reference that ChatGPT does not always have a positive impact on student learning, but there are also negative sides. Only wise steps are needed to encourage how the use of ChatGPT continues to run while still producing competent and superior graduates both affective, cognitive and psychomotor.

Moreover, Pontjowulan (2023) emphasized the integration of technology in learning, underscoring the need for a balanced and ethical approach to AI use in education. The integration of ChatGPT supports competency development for students and provides convenience in teaching and learning activities. Teachers and lecturers can also benefit from ChatGPT in preparing lesson plans effectively while adhering to ethical standards (Saputra & Serdianus, 2023). Despite its advantages, challenges remain, such as varying levels of technological proficiency among educators, limited access to technology, privacy and data security concerns, and the need to align content with ethical, religious, and moral values. These challenges highlight the need for comprehensive policies and training programs to support responsible AI use in education. As Indriani et al. (2024) explained, ChatGPT's implications for curriculum development, teaching methods, and learning evaluation are significant, enabling a more personalized and adaptive learning experience. In addition, ChatGPT has the potential to transform learning by enhancing student competencies, supporting independent learning, and improving efficiency in both teaching and learning processes. However, its use must be carefully

managed to avoid over-reliance and ensure ethical practices. Educators should guide students in using ChatGPT as a supplementary tool, fostering critical thinking and problem-solving skills. Policymakers should develop frameworks to address accessibility, ethics, and technological literacy, ensuring that the benefits of ChatGPT are maximized while mitigating potential drawbacks. By adopting these measures, ChatGPT can play a vital role in shaping the future of education in a balanced and effective manner.

4. CONCLUSION

Based on the findings of this research, ChatGPT plays a significant role in the transformation of digital learning in the 21st century by supporting students' academic development. Analysis of survey data from 203 respondents indicates that ChatGPT facilitates assignment completion, serves as an effective medium for independent learning, and acts as a versatile tool to address various academic needs. These benefits highlight its positive impact on students' learning abilities and overall academic experience.

However, while the advantages of using ChatGPT in education are evident, it is crucial to address potential challenges, such as over-reliance on the tool and the possible erosion of students' critical thinking skills. To maximize the benefits while minimizing risks, educators should guide students in leveraging ChatGPT responsibly, emphasizing the importance of academic ethics and critical analysis of AI-generated content. Integrating AI literacy into the curriculum can further enhance students' ability to evaluate and utilize AI tools effectively.

In conclusion, ChatGPT demonstrates significant potential as a learning medium in modern education. Its integration into the learning process should be approached thoughtfully, ensuring that it complements traditional teaching methods without undermining essential cognitive skills. Future research should explore the long-term implications of using ChatGPT in education and develop best practices for its application to foster a balanced and enriching learning environment.

Recommendations for further research focus on the development of artificial intelligence-based learning media in supporting student learning satisfaction. This is an effort to bring fun learning based on technology while still paying attention to the ethics and legality of using technology in learning.

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