

## The Impact of AI Chat-GPT Dependence on High School Teenagers in Bandung City

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### Abstract

The development of Artificial Intelligence (AI) technology, especially ChatGPT, has had a major impact on the world of education, including among high school students. This study aims to identify the level of ChatGPT usage and the perceptions of high school teenagers in Bandung City regarding the positive and negative impacts of its use. Using a qualitative descriptive approach, data were collected through questionnaires, interviews, and documentation from 100 respondents selected using stratified random sampling. The results showed that 91% of students use ChatGPT for academic purposes, but only 35% understand how to use it wisely. As many as 77% of respondents are aware of the potential risk of dependency, but many still use it without critical consideration. These findings indicate that although AI can increase productivity and efficiency in learning, ignorance in its use has the potential to interfere with the development of critical and analytical thinking skills, social and collaborative development, and the low accuracy of information generated by Chat-GPT. Therefore, digital literacy and an educational approach are needed that prioritize the use of AI ethically and responsibly in the era of Society 5.0.

**Keywords:** ChatGPT, high school students, dependency,

### INTRODUCTION

The development of Artificial Intelligence (AI) technology has brought significant changes in various aspects of life, including in the world of education. High school students who were born and raised in the digital era, have a high dependence on AI technology, such as ChatGPT, Grammarly, and Socratic, which are used in completing academic needs today (Floridi et al., 2021). The use of AI offers convenience in searching for information and increasing productivity, but on the other hand, it can lead to a decrease in critical thinking skills and creativity in students (Gasser et al., 2018). Thus, it is interesting to know the level of adoption of ChatGPT technology among high school teenagers in the city of Bandung and how they perceive the impact of its use.

One of the main challenges that arise from the increase in technology is the excessive dependence on AI in various life activities (Gunkel, D. J, 2022). In academic activities, AI

is often used in completing assignments. Many students use AI ChatGPT, for example, to answer exam questions, to compose essays, and to understand lesson materials (Harish et al., 2023). Unfortunately, all of this is done without wisdom and without being balanced with deep critical thinking (Kumar & Raj, 2022). Therefore, many previous studies have shown that the increasing of the use of AI Chat-GPT among students has both positive and negative impacts (Lund & Wang, 2023)

In its implementation, ChatGPT as an AI-based language model allows its users to obtain answers and information quickly, making it easier for them to find solutions to academic tasks (Russell & Norvig, 2016; Sehan Rifky, 2024). However, recently many studies have also highlighted the potential negative impacts of using chat-GPT. Reliance on AI to complete tasks can reduce critical thinking skills and individual creativity (Muarif, 2023). ChatGPT that automatically provides answers or solutions

can make users more likely to rely on technology and not develop their own problem-solving skills (Powers, T., & Rothman, 2020).

Talking about Chat-GPT, it is necessary to look more broadly at AI as a whole first. This is important to provide a basic understanding as a review, analysis and evaluation material for AI Chat-GPT technology. The development of AI technology is closely related to the emergence of the Society 5.0 era, which is a continuation of the Industrial Revolution 4.0 (Yadav et al, 2024; Netragaonkar, 2024). This concept was introduced by the Japanese government in 2016 as an answer to social problems that emerged in various fields. This sparked thoughts about the future where technology can help create a better future (Czapran, 2024). The goal of the Society 5.0 era itself is to improve the quality of human life and provide convenience for all through the use of the Internet of Things (IoT) and Artificial Intelligence (AI) (Kapoyos, et al., 2023).

The era of increasingly rapid development has certainly begun to have an impact on many fields that are starting to implement AI, such as health, agriculture, economics, law, business, entertainment, and education. Focusing on the field of education, AI is starting to become one of the fields that does not want to be left behind in facing the challenges of the times, especially in the era of Society 5.0. Tereshchuk and Slobodyanyuk (2024) stated that the model and implementation of AI in the world of education today have the potential to revolutionize the field of education, such as assessing abilities, providing accurate answers, and generating various forms of questions for problem solving (Czapran, 2024).

According to Harish et al., (2023) Integrating AI into the teaching and learning process is considered a potential innovation to

improve learning effectiveness. However, its use must be done carefully and responsibly so as not to cause negative impacts. Therefore, it is important to understand what the strengths and weaknesses of AI are in the world of education. This discussion includes the role of AI, its advantages and disadvantages, and how AI can be utilized in the world of education to welcome the era of Society 5.0.

In the context of modern education, the implementation of AI in the concept of Education 4.0 has become an example of how technology can be integrated into the educational process. Advanced technologies such as the Internet of Things (IoT), machine learning, and artificial intelligence (AI) are incorporated into the learning process (Miranda et al., 2019) and have been shown to improve the quality of educational outcomes. This educational approach can meet the needs of the 21st century by providing students with the skills and knowledge needed in a rapidly evolving digital world (RodríguezAbitia et al., 2020). Through this intervention, students can be exposed to advanced technologies and digital tools that can be used to enhance the learning experience, encourage collaboration and creativity, and improve student learning outcomes (Zhou et al., 2020).

The use of artificial intelligence (AI) is a hot topic in education. One example of AI with the most users in education is ChatGPT. Chat-GPT is an artificial intelligence tool that offers a number of benefits, including increased student engagement, collaboration, and accessibility (Cotton et al., 2023). One of the main benefits of these artificial intelligence language models is that they provide a platform for asynchronous communication. This facility has been shown to increase student engagement and collaboration,

as it allows students to send questions and discuss topics without having to be at the same time (Li & Xing, 2021).

Another benefit of ChatGPT is its ability to facilitate collaboration between students. For example, ChatGPT can be used to form student groups, allowing them to work together on shared projects and assignments (Lewis, 2022). One of the main outcomes of implementing artificial intelligence (AI) is increased student motivation and engagement. AI increases student interest in learning (Lin & Chang, 2020) and uses special tools such as Smart Sparrow, which increases student engagement with the subject matter (Karsenti, 2019). In addition, many studies have shown that the use of artificial intelligence technology significantly improves student academic performance (Khan et al., 2021; Kim et al., 2021). AI also significantly improves student outcomes and satisfaction in learning (Winkler & Soellner, 2018) and maximizes student abilities and achievements in learning (Clarizia et al., 2018). The promotion and enhancement of personalized learning experiences can be one of the reasons for this high motivation and performance (Cunningham-Nelson et al., 2019).

Ultimately, ChatGPT can be used to encourage more optimal learning. This is very beneficial for students, without any limitations of space and time, they can still use this AI to continue the learning process (Barber et al., 2021). The use of AI technology also provides students with 21st-century skills, including critical thinking and creativity, thus facilitating the assessment and assessment of complex skills (Luckin & Holmes, 2016) and encouraging deep thinking through AI (Chiu, Xia, et al., 2023). Even if the impacts above are still questionable, let's discuss them further in the discussion

section below.

## **METHOD**

This study uses a descriptive qualitative approach that aims to analyze the perceptions of high school teenagers in Bandung city towards the impact of Chat-GPT addiction. The descriptive method was chosen to be able to analyze and describe the phenomenon in depth through social activities, attitudes, and perceptions of individuals or groups that are the objects of this study (Cresswell, 2018). Data were collected directly in the field through questionnaires, interviews and document analysis. According to Sugiyono (2022), this method emphasizes meaning, not just numbers, thus allowing a deeper understanding of the student's perception of on dependence of Chat-GPT.

The population in this study were senior high school students in Bandung City, which based on data from the Central Statistics Agency (BPS) of Bandung City in 2024, there were around 192,350 people, which covered 7.46% of the total population of Bandung City. The research sample was taken using the proportional stratified random sampling technique so that each subgroup in the population received a balanced proportion in the sample. Based on calculations using the Slovin Formula, the number of samples to be taken is 100 respondents who have diverse backgrounds, with a margin of error of 10 percent.

This research was conducted from March 10 to May 10, 2025 in Bandung City. Data collection techniques consisted of three main methods, namely questionnaires, interviews, and document analysis. The questionnaire was used as the main instrument to collect data from respondents regarding the use of Chat-GPT and

its impact on its users. The questionnaire used was closed, with predetermined answer choices, so that it could produce more structured and easily analyzed data. In addition to the questionnaire, interviews with both users and experts were conducted to dig deeper into information regarding the mindset, experiences, and views of respondents regarding the use of Chat-GPT. These interviews were semi-structured, allowing flexibility in exploring broader topics according to the answers given by the respondents. To validate the data, a literature study will also be conducted on several literatures.

## **RESULTS AND DISCUSSION**

To find out the impact of dependence on Chat-GPT among high school students, the researcher first conducted a random survey of 100 high school students in the city of Bandung. The data shows that around 91 percent of teenagers in the city of Bandung use Chat-Gpt for educational purposes at school. Most respondents answered Chat-GPT, helping to complete school assignments. This platform is used to find information or references for assignments given at school. This shows that the majority of high school students in the city of Bandung are familiar with Chat-GPT and use it as a productivity tool that is relevant to school needs.

From the research conducted, the author also collected data on students' understanding in using Chat-GPT. This student understanding includes, management of its use in terms of time, use, and impacts caused. The data shows that the level of understanding of this technology varies. Around 35% of students feel that they can use Chat-GPT well. While the remaining 65% of respondents feel that they do

not understand how to use Chat-GPT correctly. This shows that although the majority of high school teenagers can use Chat-GPT, not all of them can use it well.

From the data, researchers also tried to explore respondents' knowledge about the risks of using Chat-GPT. From the data obtained, the majority of respondents around 77% answered that they knew the risks that could arise from using Chat-GPT and the dominant one was the risk of user dependence. While the remaining 23 percent admitted that they did not know about the risks of Chat-GPT dependence.

The findings above have given us an overview that basically, the majority of high school teenagers in the city of Bandung are accustomed to using Chat-GPT as a platform that can help them in the world of education. But unfortunately, their level of understanding of the risks of Chat-GPT dependence is still very low. So that it is possible for students to use it unwisely which can actually cause other impacts in the future.

Several previous studies have examined the importance of AI in supporting educational progress, especially in industry 5.0. Prensky (2019), Gasser (2020), Russell, SJ, & Norvig, P. (2020), Muarif, Lund & Wang, (2023), Rudolph et al. (2023), Gunkel & Coeckelbergh (2024), Provide arguments that artificial intelligence has an important role in improving the quality of education. This technology makes it easier for students to complete academic tasks. This argument is reinforced by data obtained in the field that 91 percent of teenagers in the city of Bandung said the same thing. However, is the high level of users also directly proportional to the long-term benefits generated.

From the data obtained, although the level of Chat-GPT users is very high, it is inversely

proportional to the understanding of its use wisely. Of the 91 percent of Chat-GPT users, only 36 percent can use Chat-GPT properly. Cotton et al, (2023), said that the biggest risk of using ChatGPT is plagiarism. This is also confirmed by several sources who stated that some students tend to directly copy ChatGPT results without further analysis, thereby reducing their academic integration value (Netragaonkar, 2024). This is even worse with students' limitations in terms of digital literacy where students often focus on the final results of answers or instant solutions without understanding the analysis process behind the technology (Miranda, 2019). Understanding the limitations of technology, as well as high analytical power to check the level of accuracy in Chat-GPT results information, needs to be improved through good digital education (Haris, 2023). Therefore, Cotton et al (2023), emphasized that students not only use ChatGPT as an aid, but also understand how to use this technology responsibly, with good digital literacy.

From the research conducted, we also delved deeper into how high their dependence on Chat-GPT is. The majority of respondents said that Chat-GPT would be the first tool they use to search for information related to the tasks they get. However, what is interesting is that they also conveyed the influence of using this technology. All sources stated that the use of Chat-GPT has positive and negative impacts. This is in accordance with the large amount of literature that has previously discussed this. In the research of Zhou, X., Li, M., & Zhang, (2020); Li, C., & Xing, (2021); Susnjak, (2022); Rudolph, J., Tan, S., & Tan, S, (2023); Gunkel, DJ, & Coeckelbergh, (2024) they discussed that technology, one of which is Chat-GPT, has

many positive impacts on students. Especially in getting additional references or understanding certain topics more easily. Students are able to use Chat GPT to enrich their knowledge, insights, and even learning quickly and efficiently.

Other data obtained are related to the negative impacts of excessive use of Chat-GPT. Researchers highlighted several sources who emphasized several conditions they experienced and felt after becoming dependent on using Chat-GPT. From the data obtained, there are at least three serious impacts of Chat-GPT dependence, namely, decreased analytical and critical thinking skills, negative influences on social interaction and collaboration, and low accuracy of Chat-GPT results.

In various literatures, it has been explained that there is a risk of decreasing critical and analytical thinking skills if we depend on Chat-GPT. Zhou et al, (2020) stated that this risk arises from excessive dependence that pampers users. So that there is no analytical reasoning process when a job is done very easily by a machine. This was also conveyed by the sources who stated that students tend to accept answers from ChatGPT raw without further analysis. Everything that is easy and fast is what causes the human thinking process to become dull and not used to being sharpened, which ultimately has an impact on decreasing analytical and critical thinking skills (Christie, & Gentner, 2010).

Research conducted by Ceylan et al. (2023), has also highlighted the impact of Chat-GPT dependence on reducing students' critical thinking skills. Students tend to be passive because they are used to receiving instant answers and without a long and in-depth analytical thinking process. This causes a



decrease in students' mental involvement in understanding and compiling information independently Christie, 2017; Fitria & Aslam, 2023. In the long term, this habit can hinder the development of complex thinking skills (Yuan & Wang, 2023).

In addition, the speed and ease of access to information from ChatGPT make students tend to be lazy to explore other sources. They prefer quick answers rather than comparing, criticizing, or filtering the information they receive. As a result, analytical skills that should be honed through the process of searching and evaluating information become dull (Ceylan et al., 2023). This shows that uncontrolled use of ChatGPT can actually reduce the quality of the learning process. Gunkel, DJ, & Coeckelbergh, (2024). If we relate it to the conventional learning process under direct teacher guidance, then we will find Bloom's theory, in Bloom's taxonomy can be applied relevantly. Because the direct learning process through the process is what allows a person's cognition to continue to grow and be optimal, processes such as knowing, understanding, applying, evaluating, criticizing, comparing and making can only be optimized through learning processes that are not obtained from Chat-GPT which is very easy. (Christi, 2017)

Furthermore, if students continue to rely on AI to complete schoolwork, they will lose the opportunity to practice their ability to evaluate arguments and organize thoughts logically (Cotton et al, 2023). ChatGPT can indeed provide a solution, but when students ignore the independent thinking process, their cognitive abilities do not develop optimally (Yuan & Wang, 2023). Therefore, it is important for educators to monitor the use of ChatGPT and integrate it with learning approaches that

continue to encourage critical thinking (Miranda et al. (2019).

Another impact that is highlighted from the dependence on using Chat-GPT is the decline in students' social and collaboration skills. In various studies, such as Kharis and Indriyani (2023);Zhu et al. (2023); Kim et al. (2024);AndHou et al. (2025), have highlighted concerns about the potential decline in students' social and collaboration skills. Several studies have suggested that reliance on AI may reduce interactions between students and between students and educators, negatively impacting the development of communication and collaboration skills.

Social and collaboration skills can only be obtained from the process of communication and interaction between people. The interaction process allows students to understand each other and develop their emotional mental processes in socializing (Erikson in Rizki 2022). Meanwhile, the use of ChatGPT is the opposite where it can reduce face-to-face interaction between humans, both students and students or also with teachers. This activity is very important for the development of communication and collaboration skills. Research by Hou et al. (2025) even found that students tend to divert questions from their peers to ChatGPT, reducing social interaction and emotional support that is usually obtained through teamwork. This can lead to isolation that leads to anti-social (Kim et al, 2024) In addition, research by Zhu et al. (2023) revealed that the use of ChatGPT in cross-disciplinary collaborative learning can affect students' physical and cognitive engagement. Although AI can help in completing tasks, excessive dependence can reduce active participation and interaction between students, which is considered more

dangerous for reducing the quality of both their cognition and social. So the integration of AI in education must be done wisely, ensuring that human interaction remains an integral part of the teaching and learning process.

The third impact that is an important topic of discussion and needs to be known by many people is related to the accuracy of the information provided by Chat-GPT. If we refer to several studies that have been conducted, it can be said that ChatGPT still faces significant challenges regarding the accuracy of the information it produces. A study by Shen et al. (2023) showed that the accuracy of ChatGPT answers varies greatly depending on the question domain, and even small changes in input can produce striking differences in answers. This means that the level of reliability of Chat-GPT is very low. In the medical context, the accuracy of ChatGPT answers is only around 56%, as shown by the meta-analysis of Wei et al. (2023). So there is a great need for additional verification when using Chat-GPT in various fields, especially critical fields such as health. In addition, the phenomenon of "hallucination" or the tendency of AI to produce false but convincing information is also a major concern in various reviews, as stated in the Financial Times article (2025). Platforms like Chat-GPT are language machines which is trained using a very large amount of text data from various sources on the internet (books, articles, forums, etc.). The purpose of this data is to create a language pattern learning model, such as sentence structure, word meaning, relationships between sentences, and so on. So when ordered to search for something in the form of a question, this machine will understand the context of the question through the keyword domain or keywords and compare it with all

existing sources. Then this machine will predict the answer by shooting the next sentence with the given context. (Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N & Polosukhin, I. 2017).

Furthermore, referring to the research of Kabir et al. (2023), it is known that Chat-GPT often provides invalid academic references. The research was conducted by analyzing 517 questions given to Chat-GPT, and the results found that more than half of the answers contained inaccurate information. In the historical context, as discussed by Puyt and Madsen (2024), ChatGPT is only able to explain concepts in general but is still weak in conveying historical details accurately.

These findings very clearly emphasize the importance of not only relying on ChatGPT as the only source of information, but also the importance of educating every student to always be wise in using AI Chat-GPT.

## CONCLUSION

The study revealed that Chat-GPT has become a very popular tool among high school students in Bandung City, with 91% of respondents using it for educational purposes. This finding reflects the great potential of artificial intelligence in supporting the learning process, such as helping to find information, complete school assignments, and understand certain topics. However, the low level of understanding (only 35% of respondents felt they were able to use it well) and the lack of awareness of the risks involved are important notes, especially regarding excessive dependence on this technology.

Dependence on Chat-GPT has been shown to have significant negative impacts, including a decrease in students' critical thinking and

analytical abilities, reduced social and collaborative skills, and low accuracy of the information obtained. Most students tend to accept the results of Chat-GPT raw without further evaluation, which can weaken the independent thinking process. This dependence also has the potential to reduce the quality of interactions between students and with teachers, and cause unhealthy social isolation. In addition, the phenomenon of hallucinations or false information that sounds convincing is a major risk if Chat-GPT is used without adequate digital literacy.

Therefore, the use of Chat-GPT in education needs to be accompanied by comprehensive digital education. Students must be trained to use this technology wisely, responsibly, and still prioritize critical thinking processes and healthy human interactions. The role of teachers, schools, and education policies is very important in ensuring that technologies such as Chat-GPT become tools that support learning, not replace it. With the right approach, the benefits of Chat-GPT can be maximized without sacrificing fundamental aspects of the education process.

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