

Research Article

The Dark Side of AI in Indonesian Education: Understanding Its Impact on the Alpha Generation in the Era of Technological Development

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Abstract: This research was conducted to examine AI technology in education and its impact on Generation Alpha in the era of technological development. Education is the fundamental basis for shaping the character of the nation's generation, and with quality education supported by adequate facilities, the learning process will become more innovative. The presence of AI technology facilitates educational activities, from administration, data collection, to the creation of supporting learning media. In addition, children can learn more easily through any site, thus increasing interest in learning at school. However, AI does not only provide positive aspects, it turns out that various problems have been found for Gen Alpha towards AI, even to the point of addiction to using AI. So the impact on Gen Alpha is the emergence of immoral behavior, cultural changes due to imitating western cultural styles, and impolite attitudes and behaviors due to the influence of content on Tik Tok, Youtube and others. The next effect is a decrease in critical thinking skills due to dependence on finding instant answers through ChatGPT or AI. This is a challenge from the dark side of AI and at the same time a positive side in the progress of technological developments in the field of education. This research method uses a qualitative research approach with a focus on analysis and descriptive data obtained from various relevant sources, through a survey to one of the schools, and information from one of the subject teachers. Other sources used as references in this study mainly focus on journals as the main reference source, supported by news and books. The conclusion obtained from this study is that technology is important to use in the world of education, but there needs to be limitations given by teachers or schools to prevent children from accessing things outside of learning. In addition, teachers must be able to adapt to existing developments to be able to guide and direct their students to utilize AI technology as part of learning equipped with religious values in order to filter various cultural influences that enter without limits..

Keywords: AI Technology, Education, and Generation Alpha, Bad Impact of AI, Dark Side of AI

1. Introduction

Education is the basis for the advancement of a country based on good education for the nation's generation, it will produce quality nation shoots to contribute to the country. However, in various regions there are still many schools that do not get enough attention from the government, even education in the area is still lagging behind (Rifky, 2024). The occurrence of educational disparities is still a complex problem, especially in rural areas. Limitations in facilities and the use of technology, lack of qualified educators, and lack of facilities and infrastructure are the main factors that hinder the development of education in remote areas, this problem has an impact on the lack of students' ability to understand and apply it in everyday life (Sugihyono, 2025).

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In addition to these problems, recently the world of education has been shocked by the advancement of a new technology called AI (Artificial Intelligence). The presence of AI is part of the development of an increasingly complex era with the support of technology as a form of innovation that has affected all parts of life, both in the world of work, business, government, and what is discussed in this paper is in the world of education. The use of AI has a major impact on Indonesian education. This can be seen from the author's observations in local schools, that these search engines can help complete tasks that should be done by human thinking skills. Viewed in the context of education, AI can make various contributions, ranging from improvements in the learning process to personalization of the learning experience (Suariqi Diantama, 2023).

One of the AI sophistication that is currently popular in the community is the use of Chat GPT (Generative Pre-trained Transformer), this access can be used on each user's WhatsApp as if doing human interaction with a computer. The use of Chat Generative Pre-Trained Transformer (Chat GPT) can be called an AI chatbot which is currently widely used, especially by students in educational units. Chat GPT has the ability to generate human-like text by understanding contextual clues in the conversation being asked. In terms of the academic and educational world, the use of GPT Chat can contribute to increasing the effectiveness of learning to obtain relevant information and supporting materials (Westera et al., 2020). The sophistication of AI can provide solutions to change the variety of teaching and learning methods that used to be monotonous now become more varied, also able to adjust the education curriculum to be more contextual in today's needs, and make it easier to collect data to make it tidier, as well as various other advantages that can facilitate human work. However, the use of AI does not only have a positive side in the world of education, but there is also a dark side influence that makes dependence on the younger generation, especially Gen Alpha in the 21st century era.

Based on the results of the analysis of one of the schools SMPN 20 Bandar Lampung, through interviews with one of the teachers, namely the Pancasila Education and Mathematics teacher, it is explained that the use of AI on students has a very high dependence impact, thus affecting the quality of reasoning skills. This is shown through the data results of daily test work with the ability to present the task in front of the class. It is clearly seen that there has been a large gap due to addiction to using AI in doing the task. In addition, it is clear that the difference between the pre-AI period and the post-AI period is the loss of the literacy habit of reading through books and the lack of social interaction due to individualism. This is why there is a dark side to the use of AI in education, especially for students in the classroom, namely problems related to lack of critical thinking, higher plagiarism and lack of collaborative development and student skills (Wilmers, 2024).

Supported by the results of a survey from the Pew Research Center conducted in 2022, 43% of students who often use AI in their learning activities were affected by the decline in critical thinking skills caused by relying too much on AI in solving a problem or problem. This is certainly a challenge for the world of Indonesian education because the basic provision for students is the ability to think critically, have good reasoning in identifying problems and finding solutions in solving problems. However, it cannot be denied that Gen Alpha, namely children born in 2010-2025, are children born in an age of technology that is growing rapidly and has become part of everyday life (Sugihyono. 2024 p-8). Reporting from the findings of Gizmochina on Monday (July 29, 2024), almost half of all parents surveyed (49%) stated that their Alpha Generation children were already familiar with using AI devices. This shows that Gen Alpha cannot be separated from the technology around them, the effort that can be done is to provide supervision and guidance in its use (Nasir, 2024).

Through the results of surveys in several schools conducted by the author, teachers in educational units conveyed that the impact of technological development for Gen Alpha is not always beneficial, but there is a dark side to the use of AI. Based on the journal contained in the article (Sumarni et al., 2024), it is explained that during the current technological era, children are eroding their nationalism and morality due to the influence of globalization. The finding of cases of violence committed by students is one of the impacts of what they watch from social media and various other sites, which in turn is practiced in everyday life. The occurrence of moral degradation in children is due to the shows and sites they see not yet at their age, so that Gen Alpha children are often found in terms of attitude, speech, and actions that are not in accordance with the norms of decency in society (Vieriu & Petrea, 2025).

Therefore, this paper will take a deeper look at the dark side of AI that is growing more and more rapidly and its impact on the world of Indonesian education on Gen Alpha. This

writing is interesting to study because there are two positive and negative sides influenced by AI for Gen Alpha. Educational actors can make these two sides an advantage as well as a challenge to be utilized, watched out for and faced with the right guidance and direction in order to form a generation of creative, innovative, collaborative, and communicative nation shoots in the midst of globalization and growing technological advances.

2. Literature Review

The development of artificial intelligence (AI) in the education sector has brought significant changes in learning methods, education management, and interaction patterns between teachers and learners. On one hand, AI promises efficiency and personalization of learning through adaptive technology, educational chatbots, and automated evaluation systems. However, this approach is not free from criticism. AI integration in education is often influenced by commercial logic that prioritizes efficiency over humanized pedagogical processes. This is a major concern in the context of Indonesian education, which still faces challenges in equalizing quality and access to technology (Widodo, et.al., 2024).

In the context of the Alpha generation-children born after 2010 and growing up in a digital environment-AI plays a dual role as a tool and a source of risk. This generation is highly accustomed to AI-based devices, ranging from learning applications to entertainment media, so there is potential for a shift in the way they think, socialize, and access information. Excessive interaction with smart technology can reduce critical cognitive abilities and social empathy in children. In Indonesia, where digital literacy is uneven and parental supervision of technology use is often minimal, the uncontrolled use of AI has the potential to create inequality and alarming psychosocial impacts on learners (Suryanto, et.al., 2024).

Furthermore, the use of AI in Indonesia's education system has not been fully matched by a strong regulatory and ethical framework. The absence of strict policies related to children's data privacy, algorithmic bias, and dependence on foreign platforms add to the complexity of this issue. In line with Feenberg's critical theory of technology, technology is not a neutral entity; it carries certain values and interests that can distort the purpose of education itself. Therefore, it is important for education stakeholders to not only adopt AI pragmatically, but also critically assess its social, cultural, and psychological implications for the Alpha generation on whom the nation's future depends (Wahyudi & Mahaswa, 2020).

3. Research Method

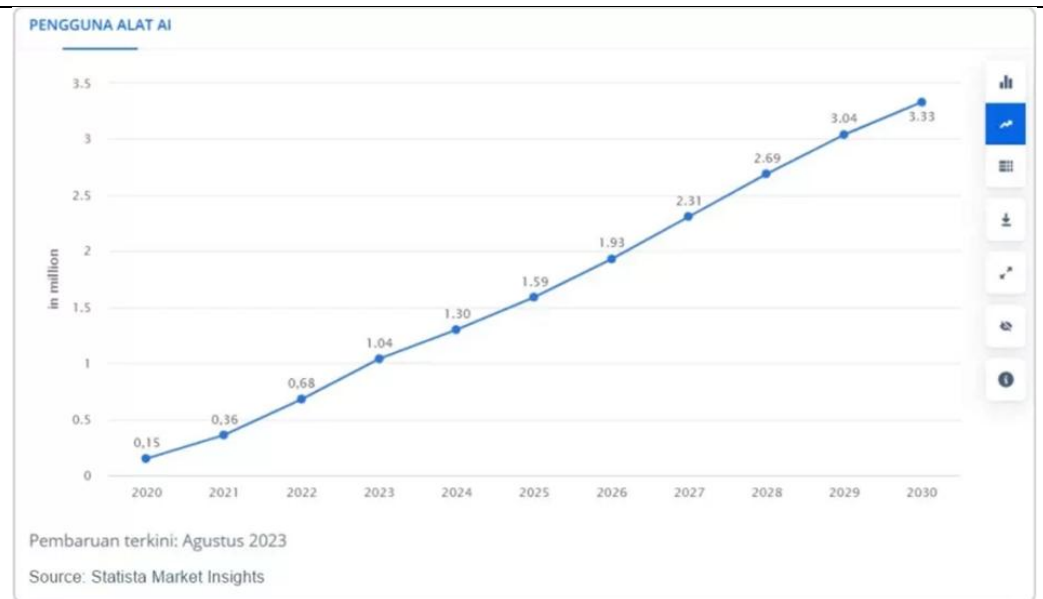
The writing in this study uses a qualitative research approach with a focus on analyzing and descriptive data obtained from various relevant sources. Quoting from his opinion Sugiyono (2013) explains that qualitative research is a research method used to examine natural conditions, researchers who serve as key instruments to find accurate sources and then describe them in the form of explanations, this method uses triangulation (combined) data collection techniques, data analysis is inductive, and qualitative research results emphasize meaning rather than generalization (M. Sobry & Prosmala Hadisaputra, 2020). The main purpose of this research is to analyze and identify problems that arise on the dark side of AI and the use of Artificial Intelligence (AI) in Indonesian education. The sources used as references in this research mainly focus on journals as the main reference source, with the support of news, and books to minimize errors in procedural and conceptual aspects.

4. Results and Discussion

The Development of AI (Artificial Intelligence) in Education

Changes will continue to occur from time to time, accompanied by technological developments that are increasingly rapid and extend to various fields. One of the artificial technologies that are now often used by humans is Artificial Intelligence or often referred to as AI. The sophistication of AI is undoubtedly a tool that can make it easier for humans to do various things. Initially, AI is a pioneer organization in artificial intelligence research developed since 2015 by Elon Musk and Sam Altman, they focused on developing artificial intelligence by creating several revolutionary models such as GPT-2, GPT-3, and finally ChatGPT (Ray, 2023).

The development of AI in education is part of the progress of technology utilization in learning, this is in accordance with the mission of the Ministry of Education and Culture which has set four priorities to be carried out in the 2020-2024 National Medium-Term Development Plan consisting of child learning, institutional structure, driving the mental revolution of society, and technology development in teaching and learning activities (<https://www.gtk.kemendikbud.go.id>). This shows that in education programs technology is one of the supporting tools to improve the quality of learning.



Sumber: satatista <https://www.statista.com/search/?q=pengguna+alat+AI+&Search=&p=1>

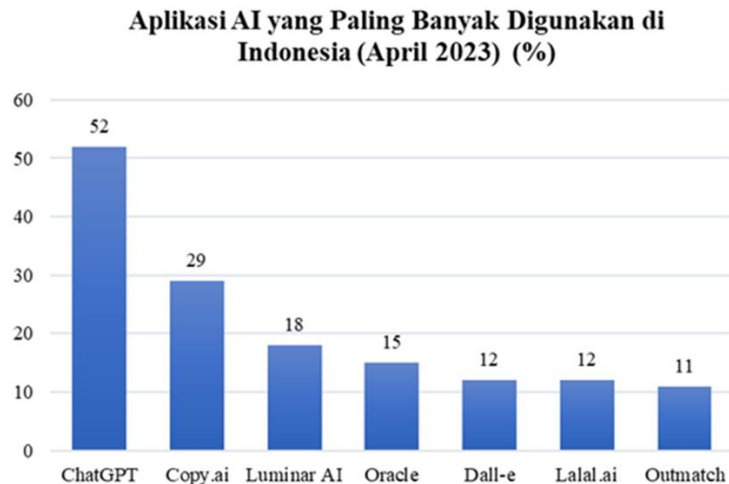
Based on Statista data in 2024, the number of AI tool users in Indonesia is estimated to reach 1.30 million, with predictions that it will continue to increase to 3.33 million by 2030. This shows that the use of AI from year to year will continue to increase due to the demands of an increasingly advanced era. The dark side of this increase in AI is also eroding Gen Alpha, even from an early age between 2-7 years old have been exposed to this technology, so there are very serious indications in terms of social interaction and communication (Sugihyono. 2025, pp. 47-48).

Therefore, teachers are very instrumental in adjusting the times in order to be able to guide and direct their students in utilizing existing technology as a forum for information and making it an innovation in learning. One of the things that is now widely found in the learning process in the classroom is the use of VR (Virtual Tour Reality) which is able to invite students to explore things that they have never reached and met. The use of VR is one of the technological combinations resulting from the integration of AI in education which is seen as a transformative force, so that it can improve learning experiences and prepare students to face a technology-driven world. In addition, reforms are also needed in the world of education so that educators are not just users of technology, but can also improve the quality of education (Sugihyono.2025).

AI technology in education helps in analyzing data quickly and accurately, in addition to the presence of AI can help educational institutions make data-driven decisions, plan educational strategies in line with changing times, and identify changes that occur as a basis for improving the overall quality of education (Jafar et al., 2024). Through the analysis of the school where the author teaches, the development of AI has resulted in a more interactive and adaptive online learning platform. The presence of learning platforms can present learning materials dynamically according to the speed and learning style of each student, so this is in accordance with Ki Hajar Dewantara's principle that teaching adapts to the growth and development of students and keeps up with the times. It cannot be denied that Indonesia is a multicultural society, so that in education you will find various learning styles, the abilities of students, and different socio-cultural cultures, so how as an educator in learning can combine technology and religious values to avoid deviations in the use of technology (Sugihyono. 2025, pp. 69-74).

So the integration of technology and religious values is very important so that students can filter things that are influenced by western culture. Today's students, especially Gen Alpha, have been exposed to foreign cultures but do not recognize the diverse cultures of Indonesia. If not assisted by a foundation of religious understanding, this impact will have a bad influence on Gen Alpha. Based on a survey of schools that have used AI technology as part of learning, it was found that there was an increase in learner motivation and engagement as well as interest in learning (Xia et al., 2022). The two sides of AI appear like two sides of a coin. On the one hand, AI is needed to help education, but on the other hand, there are dark sides due to the use of AI. If the dark side of AI is not addressed together by the government, educators and parents, the positive side of AI will be eroded by the dark side of AI which is

more dominant and bigger. This is because the development of AI is no longer in years, but in weeks and days. AI continues to emerge and will increasingly threaten the world of education, especially in Gen Alpha which is currently so close to using this technology. AI continues to emerge and adapt to educational needs, some of which can be used by students in education are virtual mentors, voice assistants, smart content, and presentation translators. It is certain that in the future, AI will continue to emerge that has a variety and completeness that is increasingly complete.



Sumber: <https://forkas.stis.ac.id/2023/07/perkembangan-ai-yang-mengejutkan.html>

Based on the data above, the results of the Populix survey findings noted that around 45% of workers and employers in Indonesia have utilized artificial intelligence (AI) applications. The graph shows that the use of ChatGPT is the most widely used application in Indonesia in April 2023, which is around 52%. But the current development in 2025, the graph has increased, because ChatGPT has now entered the world of education which is used by teachers and students to support learning. Although in its application, the use of technology does not always provide benefits for students, but in the digital and technological era, students can learn all fields of knowledge efficiently and can be done remotely, so that the role of the teacher becomes a facilitator in charge of directing the learning process. This technology-enhanced learning has a significant impact on improving learning outcomes, maximizing students' learning ability and achievement (Łodzickowski et al., 2023).

The Impact of IA on Gen Alpha in the Era of Revolution 5.0

The influence of globalization, which is currently a challenge as well as progress for the Indonesian nation, may affect the values of nationalism towards the Indonesian nation. This influence has entered into various fields of life ranging from political, economic, ideological, socio-cultural and other aspects of life (Bayuseto et al., 2023). This is due to globalization and the rapid development of technology in the era of revolution 5.0 which has many influences across regions, across countries and across cultures so that it will indirectly affect the ethics, environment and lifestyle of Indonesian society. The number of foreign cultures that enter Indonesia very easily without this limit will be easily absorbed by the nation's generation without considering from the point of view of suitability and national character (Oktaviasary, 2024).

The current digital era is increasingly embedded in human life and it is increasingly difficult to release dependence from the use of developing technology, such as cellphones, computers, the internet, and various other social networks. In this era, humans can easily access the internet to get information anywhere and anytime without limits. Gen Alpha who lives and grows side by side with digital technology has become accustomed to using AI as a medium of play, so Gen Alpha has different characteristics from previous generations in terms of how they think, learn, act, interact, and gain knowledge with the outside world. In this 5.0 Revolution era, Gen Alpha cannot be separated from digital technology, children are so familiar and active in using various digital devices and have a fast ability to adapt to technology (Gunawan et al., 2024).

Technological advances that are easily accessible to Gen Alpha, on the one hand increase their ability to use technology that has never happened in the era of baby boomers, but the negative side also occurs and has become an iceberg phenomenon that makes Gen Alpha difficult to interact and socialize, Gen Alpha is also bad at communicating and expressing

opinions, they are also unable to concentrate for long periods of time. This is because their brains have been exposed to AI that contains short content so that it makes the brain work conditioned to process everything briefly as well, which is why Gen Alpha is psychologically fragile and easily bored when not holding a device that contains content. This phenomenon is a major disaster in the future if there is no real action from policy makers ranging from the government, educators and parents. This is one of the dark sides of the uncontrolled and destructive use of AI in Gen Alpha's life and this will be directly felt in the endurance of reason in the education they undergo and their ability to deal with various problems in school, community or environment.

In addition to the negative side, there is certainly a positive side of AI for these Gen Alpha children, namely the ability to operate smartphones very easily and even very proficient in understanding various AI applications quickly. This can be shown in terms of the skills of Gen Alpha children who are able to access digital learning, so this plays a major role in the education revolution in the 21st century. Another impact is the presence of AI-based learning platforms that are able to adapt subject matter to the needs of fast learning and can also provide feedback with interactive content adjustments. This makes the learning process more effective and fun. Through this technology, Gen Alpha children can access more varied and adaptive learning resources, thereby gaining broad insights to enhance their learning experience.

Based on the opinion of Albert Bandura's figure in research (Mardani & Azizah, 2021) explains that there is a process of learning stages in each individual. This learning process is through the process of observation, imitation, and modeling of the behavior around them. Meanwhile, when Gen Alpha was born in the midst of technological globalization and is constantly exposed to AI technology and various existing content, there will be visible effects on the way they behave and behave, this comes from the spectacles they see through digital content, such as tiktok videos, current music on social media, and the influence of public figures or influencers which will directly have a negative impact on the development of children's reasoning. The next result is the destruction of children's morality and sociality, AI will also hamper their psychological growth and mental health due to the lack of direct interaction with their surroundings. Supported by the opinion of a study by Anderson & Dill (2000), it is explained that exposure to playing online games to children can have an impact on violence in behavior, emotional disturbance and can increase aggressive tendencies in children (Apandi et al., 2025).

In addition, based on the theoretical figure of child cognitive development, Jean Piaget, it is explained that children develop through different stages of development, ranging from sensorimotor, preoperational, concrete, to formal operational stages. Through these stages children develop through direct interaction with their physical world and a learning process that involves hands-on experience, experimentation, and problem solving (Damayanti et al., 2024). There is concern about the potential imbalance between technology-based learning and experiential learning. This problem has been encountered in the real life of children who overuse smartphones or gadgets and are addicted to AI, their ability to think critically has deteriorated and diminished as well as being unable to solve problems independently and an increasingly individualistic attitude has emerged (Madrasah, 2024).

5. Conclusion

The advancement of technology and the development of this era is a necessity that cannot be avoided. The impact of AI has also entered various fields such as economy, social, ideology, and also education. In this industrial revolution 5.0 era, technology is a part of life that is used and needed by society, including in the field of education. The advancement of learning quality can be supported by the use of technology by utilizing it as a medium and means of delivering information. Therefore, the government, teachers and parents must be able to adjust to existing developments, provide guidance in the use of AI and provide measurable supervision of Gen Alpha. Even religious leaders must also give their voice to continue to guide and direct their people so that the morality of this nation is not eroded by AI.

The presence of AI technology in education has many positive and negative impacts. The increasing number of AI users every year shows that on the positive side AI can help human work to be more effective and efficient. In the world of education, AI can facilitate data management to be more accurate, do administrative data collection faster and design more contextual learning. Not only that, the development of AI has produced online learning platforms that are more interactive and adaptive. The presence of learning platforms can

present learning materials dynamically according to the speed and learning style of each student. In terms of progress, Gen Alpha is more creative in using smartphones and various AIs. However, terrible things also parallel and become an iceberg phenomenon in the dark side of the use of AI. Gen Alpha has a huge dependence on gadgets, problem solving is imposed on AI, reasoning power is replaced by AI, even all the difficulties of study questions can be easily found by AI. The next effect is addiction to short shows that “poison” the mindset because children are exposed to short shows viewed through unlimited social media. Unsupervised children are exposed to unfiltered content that can be adult content, immoral content, content that ignores respect for others. This causes a degradation of morality in Gen Alpha towards their social environment, even more terrible is the decline in the ability to think critically in dealing with their own problems, they do not have the fighting power in facing problems, because the dependence on AI is so strong. Social problems such as cases of bullying, sexual violence, and promiscuity have occurred in Gen Alpha. Therefore, the dark side of AI needs to be watched out for by the government, educators, religious leaders and especially by the parents of the students themselves.

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