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ChatGPT's Effects on Students' Academic Performance and Social Human Interactions

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Abstract

The integration of ChatGPT, an advanced conversational AI model, into educational environments, has brought about noticeable changes in students' academic advancements and social interactions. This abstract explores the dual impact of ChatGPT, highlighting its role as a valuable aid in academic progress by offering immediate support in content generation, conceptual understanding, and problem-solving, thereby contributing to a dynamic and adaptive learning environment. However, concerns arise regarding the potential drawbacks to social human interactions, as the increased reliance on AI-driven communication tools may compromise the authenticity and nuances of face-to-face communication. Striking a balance between leveraging ChatGPT's educational benefits and preserving the interpersonal aspects of learning is deemed crucial for shaping a holistic educational experience. The ongoing evolution of the educational landscape calls for continuous reflection and adaptation to optimize the impact of ChatGPT on both academic and social dimensions of students' lives.

Keywords: social interaction; academic advancement; integration; ChatGPT.

Introduction

In the midst of heated debates over the pros and cons of AI in academia, this article takes a look at the various perspectives on how these tools can affect students' intellectual development and interpersonal relationships.

There will be a dramatic change in the world of education and universities as 2022 comes to a close. Following OpenAI's public unveiling of its ChatGPT conversational robot, a flurry of educator reactions were posted across social media and mainstream media. There is a great deal of disagreement and inconsistency in the replies. Some see this as a great new development, however, others are worried about the increased possibility of cheating and plagiarism made possible by ChatGPT. This development is in line with the general adoption of digital technologies in education and the growth of online learning. Nevertheless, the issue that needs to be asked is: what does this situation mean for the future of education, for students, and for people who teach generally?

1.What is ChatGPT?

ChatGPT, short for "Generative Pre-trained Transformer," is an advanced language model developed by OpenAI that uses AI to generate text that looks very much like human writing. A major step forward in language model technology, it was released to the public on November 30, 2022.

It has produced text that is quite similar to human language and has shown a tremendous improvement in understanding it, opening up new possibilities for language models and increasing their versatility. In the context of higher education in particular, its exceptional ability to understand and respond naturally to inputs in the target language makes it highly desirable. Modifying it to accomplish particular goals, such completing sentences or answering questions, is possible. When it comes to research, writing, giving and receiving criticism, and improving interpersonal communication, ChatGPT is an invaluable tool.

2.The Development of AI in a Nutshell

The development of artificial intelligence (AI) has been revolutionary since its official start in the middle of the twentieth century. The idea of artificial intelligence (AI) has been around since ancient times, but it wasn't until the 1940s when Alan Turing introduced the Turing Test—a standard for measuring AI—that it was officially acknowledged (Turing, 1950). At the 1956 Dartmouth Conference, the phrase "artificial intelligence" was first used, which was a watershed moment in the development of AI as its own discipline (Dartmouth Conference, 1956).

A period of "AI winters," defined by reduced funding and scepticism, occurred in the 1970s and 1980s, despite early optimism. Expert systems, which are rule-based programs that mimic human decision-making, became the center of attention at this time. A renaissance of artificial intelligence (AI) with machine learning's significance occurred in the decades that followed, especially in the 1980s and 1990s. The field saw a renaissance in attention after breakthroughs such as Geoffrey Hinton's back propagation algorithm and others (Hinton & Salakhutdinov, 2006).

A new age began in the 2000s with the advent of big data, which made available massive datasets essential for training advanced AI models. Advancements in image identification, natural language processing, and game-playing AI were made possible by deep learning, which was enabled by more powerful hardware and better algorithms.

From virtual assistants to healthcare applications, AI technologies are already smoothly incorporated into many parts of daily life. Reflecting the changing difficulties in the ethical application of AI, concerns like bias, privacy, and transparency have come to the fore (Turing, 1950; Dartmouth Conference, 1956; Hinton & Salakhutdinov, 2006). This concise summary highlights the ever-changing nature of AI and the many ways it has changed our modern environment.

3.Getting to Know ChatGPT's Features

According to Han and Lee (2022), OpenAI's GPT system can manage a wide variety of textual jobs, from simple questions and replies to more intricate queries. The OpenAI ChatGPT is a massively parallel language model with an emphasis on natural speech. With its training on massive datasets, ChatGPT is able to understand natural language (Jamovi, 2021). If you're having trouble coming up with the right words to describe your feelings over a coworker's productivity or if you just need some help composing a message to a colleague, ChatGPT is here to help. Scholars can benefit greatly from ChatGPT's in-depth written content, such as dissertations on subjects like the value of AI, because to its efficient architecture and large data banks.

The capacity of ChatGPT to produce language that sounds natural, similar to information that is created by a human, is its distinctive benefit for academics. With its extensive list of text-generating capabilities, ChatGPT is well-suited for use in conversational AI applications like chatbots and virtual assistants (Han & Lee, 2022). It can also handle tasks like natural language expression, text completion, paraphrasing, summarizing, machine translation, and question answering. It also shows potential as a code writer, which is an additional useful capability. On the other hand, if you need something that requires deep understanding, critical thinking, or up-to-date information, ChatGPT might not be the best option. Its supposed incapacity to conduct complex mathematical calculations or arithmetic computations reveals its limitations and partial lack of rationality.

4.Exploring ChatGPT's Potential in the Classroom

After studying ChatGPT, researchers came to several important conclusions. For instance, phenomenology was used by Boateng & Tindi (2022) to investigate possible effects of AI in the classroom. Their findings, which are based on an evaluation of other fields' perspectives, show the pros and cons for both educators and their students. Also included are suggestions for making the most of AI and avoiding common mistakes. Educators and academics are understandably worried about AI's effects on their field, despite the general optimism about the technology. Furthermore, Fadhil & Villafiorita (2017) sought to illuminate personalized education by investigating the possible advantages of artificial intelligence in adapting lessons to each student. They bring to light the difficulties, owing to high expenses and scarce resources, of attaining one-to-one education on a social level. The exciting new possibilities for personalized learning through AI-driven applications, however, are being presented by

developments in machine learning. Addressing a range of issues impacting its adoption, such as legal, social, and ethical concerns, the study delves into the possible social and technological impacts of AI in individualized education. We also suggest legislative measures to encourage the use of personalized learning apps powered by artificial intelligence.

Chang et al. (2021) introduced the technology and its wide-ranging applications in numerous disciplines, particularly education, adding to the discussion in a different context. Definition, search strategies, advances, and future prospects of AI are all covered. Despite the study's recognition of AI's inherent distinctions from human intelligence, it concludes that AI will not supplant teachers but may have a positive impact on education through human-centered innovations.

From this vantage point, it's fair to state that many studies have looked into chatbots in the classroom, mostly to see if they may help students grasp basic programming principles. The uses and advantages of chatbots in the classroom have been the subject of numerous investigations, including those by Cunningham-Nelson et al. (2019) and Smutny & Schreiberova (2020). One distinctive feature of the one-of-a-kind chatbot ChatGPT is its lightning-fast capacity to produce high-quality text. In their assessment, Rudolph et al. (2023) put ChatGPT ahead of other language models that aim to generate writing that looks and sounds just like human handwriting. This article gives a synopsis of OpenAI and focuses on how the company went from being non-profit to for-profit. This paper is notable for being one of the first of its kind to highlight the value of ChatGPT in academic settings, namely for purposes of evaluation, teaching, and research.

The effects of ChatGPT on classroom instruction are the source of the greatest concern and have received the lion's share of news attention. When given detailed instructions, this conversational robot can produce fairly lengthy sentences. A lot of teachers are worried that students will use ChatGPT to accomplish homework that doesn't include class time. The media has highlighted multiple incidents that demonstrate the tool's inadequacies. Importantly, ChatGPT builds its results on potentially inaccurate or invalid data. Even though the answers sound reasonable, they might be wrong. Data collected from anonymous sources does not provide assurance of accuracy or validity. One must use critical thinking skills, good judgment, and thorough investigation to separate fact from fiction. Furthermore, it is crucial for pupils to have the skill of utilizing credible sources when seeking information.

Accordingly, it is critical to address AI's limitations quickly, according to experts, because the technology is developing so rapidly (Dupuis, January 20, 2023). With AI developing at such a rapid pace, it is becoming increasingly difficult to detect AI-generated content. As an example, GPTZero, a language model that strictly adheres to grammatical rules without word separation, is one of these backup AI systems, but it still has obvious shortcomings.

In the mean time, the possible difficulties in attributing AI-generated work is not viewed as a worry by passionate AI enthusiasts, especially those who view ChatGPT as a fully-fledged author. In their perspective, users of an AI-focused education Facebook page recently debated how to properly cite the conversational robot using the most up-to-date mediagraphic bibliography guidelines. As a result, ChatGPT or any generative transformer that has been pre-trained could produce and even edit a wide range of workshops, analyses, and assessments. Proponents of tech-enhanced learning contend that artificial intelligence (AI) augments the role of educators. There is a fine line, though, between doing instructors' intellectual work and just augmenting it. Most of the time, people put their faith in educators to do intellectual work that is based on their expertise, discipline knowledge, and teaching abilities.

5.Results and Implications

A number of years ago, a trend began towards the technical digitization of education, which includes AI. As a result, researchers have monitored how students' use of technology has affected their growth and education throughout time, and they are also looking at how it has affected teachers.

5.1. The Impact on the Students' Social and Physical Attitudes

Parents, teachers, and researchers are worried about the amount of time sons and daughters spend in front of various displays, such as video game consoles, so-called smart phones, and tablets, which are displacing more conventional media like computers and television. This worry is justified because there are a number of health problems linked to the mental and physical inactivity caused by these interactive devices.

Obesity, cardiovascular disease, and a lack of restorative sleep are just a few of the physical health issues that have been associated with the increasing amount of time people spend sitting down, which is a problem for people of all ages (Delage, 2021). Beyond the weariness from staring at screens all day and the possibility of sleep disruptions caused by blue light from electronics, there is also the high incidence of "text neck" syndrome, which occurs when the user's posture

is incorrect while using a mobile device for more than 30 minutes at a time (Mireault-Germain, 2021). Educational settings may be affected by affective and behavioral hyperactivity, increased irritability, anxiety, and depression in children and older individuals who spend a lot of time in front of screens, including social media (Delage, 2021; Martin and Mussi, 2023).

In addition, AI has a role in the significant changes that occur in human interactions. Social media, online forums, online games, and other types of online communication account for a significant percentage of adult and student social contacts in the year 2022. Our relationships with others are shaped by this. There is a lack of data because algorithms produce a silo effect by filtering social media posts.

According to Turkle, people may lose touch with who they are and what they stand for as a result of their extensive use of virtual and augmented reality experiences, which could cause them to withdraw from their social networks. According to her, "Human relationships are rich, and difficult and demanding. And we purify them with technology. We hope for more from technology and less from each other. From social media to sociable robots, we are designing technologies that give us the illusion of camaraderie without the demands of friendship" (Turkle, 2022). Turkle encourages us to reconsider our connection to technical tools and the functions they serve in our lives, rather than promoting rejection to technology.

Looking back, we wonder how we as a culture went from warning our kids not to watch too much TV to approving or even encouraging long periods of screen time on smartphones, tablets, and computers. Finding a middle ground when it comes to technology in the classroom needs serious consideration. Because different screen-based activities have different impacts, this does not mean that they are all bad. Some students may develop an interest in science through playing video games, while some may find temporary relief from social isolation through participating in online communities. However, stakeholders generally agree that screen time should be limited, particularly for young children, and this is true regardless of the activity in question.

This has led to a decline in face-to-face communication in favor of online contacts. Since robots are seen as more approachable than humans, many people choose to spend time with them rather than with humans. According to Turkle and other experts, this pattern causes people to lose their capacity for empathy in the long run.

5.2. Artificial Intelligence and the Addiction of Students

There are rising concerns regarding the possible addiction that students may experience due to the increasing presence of AI in numerous areas of their lives. Students' screen time has increased due in part to the widespread availability of AI-driven technology like social media, educational apps, and virtual assistants. Students' academic performance and general health could be negatively impacted by the potential development of addictive behaviors brought about by their greater engagement with AI-powered products.

Studies have shown that students' mental health might suffer when they spend too much time in front of screens, especially those powered by artificial intelligence apps. The idea of "digital addiction" is making waves; it refers to an unhealthy preoccupation with technology that can cause problems including insomnia, anxiety, and depression (Twenge & Campbell, 2018).

In addition, the features commonly seen in AI-powered learning platforms have the potential to amplify the risk of addiction. Many students struggle to find a healthy balance between their technology use and other important parts of life, like physical activity and face-to-face social connections. Unfortunately, these systems might unintentionally perpetuate harmful usage habits through their reward mechanisms.

Educators need to take a systemic approach to addressing students' possible AI addiction by implementing programs that teach digital literacy, encourage responsible technology use, and provide guidance on how to strike a good balance between online and offline pursuits.

Finally, while AI has many positive applications in the classroom, its growing use has some worried about the risk of students developing an addiction. If we want AI to continue to be a positive force in the classroom, researchers and teachers will need to work together to identify and resolve these concerns.

5.3 Mental Health Concerns of AI

Prolonged contemplation, a negative mental state, indications of sadness, and other expressions of anxiety might be signs of significant psychological distress that can result from excessive contact with digital gadgets. An acronym for "Fear Of Missing Out," the phrase "FOMO" captures the elevated anxiety over losing out on opportunities for knowledge or enjoyment. Prolonged contemplation, a negative mental state, indications of sadness, and other expressions of anxiety might be signs of significant psychological distress that

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It is clear that digital technology severely disrupts students' attention spans, preventing them from learning both in and out of the classroom during critical periods of personal study, especially as they advance in their academic journey, because concentration is essential for intellectual activities (Hymas, 2018; Durand Folco and Martineau, 2023) when these individuals spend about 34 hours per week online.

5.4 Impact on the Learning Process

According to multiple studies, students of English who prefer to read on paper have better reading skills than their peers who use digital devices. This is in line with the claims made by neuroscientists who have shown that reading on paper and digital devices activate different neurobiological processes and have different effects, as does taking notes by hand vs using digital tools.

In addition, classroom attendance is impacted by changes in cognitive capabilities, memory, and organizing abilities. Video games, internet reading, and artificial intelligence technologies all require split attention digesting information from numerous sources simultaneously, in contrast to school learning, which demands contemplation and concentrated concentration. Since intellectual capacities depend on concentration and focused attention, studies in cognitive neuroscience suggest that children's intellectual performance is severely affected by recreational screen use due to the fragmented attention it causes. The relationship between screen time and attention deficiencies is becoming more and more obvious. Because of this, students are less able to focus on their studies, which has a negative impact on memorizing. On the other hand, the argument that students should not be required to memorize schoolwork is flawed because students can easily access knowledge on a platform whenever they want.

6.Difficulties and Limitations of Using ChatGPT at Universities:

There are a lot of potential benefits to using language models like ChatGPT to improve pedagogy, student engagement, and academic research in higher education, but there are also a lot of drawbacks that need to be considered. From a computational standpoint, there are limitations on the number of characters that can be entered into the console and the frequency at which messages may be transmitted. Concerns that ChatGPT and related language models might reinforce prejudice and bigotry are at the top of the list of obstacles. These models are trained on large datasets, and if those datasets contain bias, the model will produce results that reflect that bias. This shortcoming becomes obvious when applying them to activities that necessitate objectivity and fairness, like grading or hiring. Another concern is that ChatGPT and similar language models could be misused to go against our core principles. To illustrate the point, ChatGPT could be used in ways that go against moral principles.

The risk of harmful abuse of ChatGPT and similar language models is another issue. They may be used to amplify prejudice and other social ills, or they could help establish a state of constant monitoring.

Besides to the inability to understand human feelings, goals, and moral reasoning is another limitation. It is impossible for ChatGPT or any other language model to understand human feelings, goals, or ethics. When hiring them for jobs that demand empathy, like tutoring or counseling, this becomes a problem.

Also, the difficulty of checking the language models' results for errors is another obstacle. Language models aren't perfect; sometimes they give you the wrong answer or make a mistake. This shortcoming becomes noticeable when applying them to jobs that necessitate a great deal of accuracy, such medical diagnosis or essay grading.

Therefore, when using language models, such as ChatGPT, in academic settings, it is critical to keep these restrictions and difficulties in mind. The responsible and ethical use of language models can maximize their positive impact on teaching, learning, and research within higher education if we acknowledge these issues and take steps to mitigate them.

Conclusion:

Students' social connections and academic performance have been significantly enhanced after the use of ChatGPT in classrooms. In terms of academic progress, ChatGPT has been an invaluable tool, offering instant assistance with things like content creation, understanding concepts, and solving problems. A more dynamic and adaptive learning environment can be achieved through its capacity to give tailored feedback. However, there are worries about the possible downsides to human connections due to the increasing reliance on AI-driven communication technologies like ChatGPT. Even if the model is great at coming up with answers, it could miss some of the nuance and genuineness of human conversation. In order to create a well-rounded educational experience for students, it is essential to find a way to incorporate ChatGPT's instructional benefits while also valuing the personal elements of learning. Hence, optimizing the impact of ChatGPT on students' academic and social life will require continual reflection and change as the educational landscape advances.

Consequently, and because AI is going to change the way we live our lives, we need to rethink our social structure and our goals for the planet's future immediately. Traditional adjustments might not be enough to deal with the fast technological radicalization that keeps changing. In addition, with the ever-increasing pace of AI breakthroughs, it is crucial to educate and train people in AI ethics.

Recommendations:

Major shifts have occurred in economics, society, and the environment as a result of the fast development of technology and the growing worldwide connectedness. Modern AI has come a long way from its beginnings, with state-of-the-art examples being ChatGPT and Open AI's. One example of cutting-edge software with the potential to revolutionize education is the ChatGPT language model. In addition to offering some assessments regarding the acceptable and ethical use of ChatGPT in educational contexts, this paper highlighted the dual goal of promoting additional investigation and discussion on this crucial subject. Additionally, this article comes to the conclusion that there are specific requirements that must be fulfilled before implementing ChatGPT in classrooms. These requirements include protecting students' privacy, reducing instances of bias and discrimination, being transparent about how ChatGPT is used, and meeting other specified requirements. Finally, it is critical to stress how important it is to put these suggestions into action in order to keep the worldwide education system's reputation and accountability intact.

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