



ADVERSE IMPACT OF CHATGPT IN EDUCATIONAL SETTINGS: A LITERATURE REVIEW

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Abstract

Artificial Intelligence is one of the cutting-edge technology, which has the power to transform the life. AI does not know any boundaries and is impacting everyone around the world. It is impacting the societies, businesses, establishments and humans globally. AI has already started to produce powerful changes in the field of business, teaching, education, health care and banking. Chat Generative Pre-Trained Transformer, commonly known as ChatGPT is a chatbot, which was developed in 2022 by OpenAI. It is a free to use AI system. It uses NLP (natural language processing) to generate the communication dialogues. It can respond to questions, do coding, write content & posts, write emails, create music and can do much more. We all are aware of the advantages of ChatGPT. We can get the accurate completion by sending the appropriate prompts. This is a very beneficial tool that allows the users to send the prompts and providing the humanlike text, video and images. These humanlike images, text or videos are created through AI (Artificial Intelligence). ChatGPT improves the approachability to education by eliminating different kind of barriers. Though it has numerous advantages but like every technology comes with certain drawbacks, same is very true with ChatGPT. The objective of this research paper is to identify the adverse impact of ChatGpt in education settings. In this research article, researcher has done thorough literature review to identify the possible limitations/ disadvantages of ChatGPT.

Keywords: ChatGPT, AI, Chatbot, Educational, Disadvantages of ChatGPT, Prompt, Emotional Intelligence.

I. INTRODUCTION

THE term Artificial Intelligence (AI) is coined by John McCarthy in 1955. He has defined Artificial Intelligence (AI) as “The Science and engineering of making intelligent machines”. In general, AI can be defined as a technique, which is being used for making the machine intelligent. Through the machine can learnt by their own. The machine will learn by the pre-trained data or through experiences. ChatGPT is the AI chatbot, which was developed by OpenAI. It has been released for the use of public in November 2022. It is a free to use Artificial Intelligence system. It is pre-trained language model, which can interact with the users in conversational way and provide them a humanlike response. While making the conversation with ChatGPT, user has to send the prompt (in form of text, image or video) and ChatGPT will provide the response, which is called completion.

Figure – 1 is showing a simple conversation with ChatGPT. Below is the screenshot of the conversation with ChatGPT. Researcher has sent a prompt “give a short note about education”. The response of ChatGPT was “Education is a lifelong process of acquiring knowledge, skills, and values. It occurs through both formal channels, such as schools and universities, and informal experiences. Education fosters intellectual, social and emotional development, emphasizing skills like critical thinking and problem-solving. It encompasses the transformation of cultural values, ethics and moral principles, contributing to character formation. Beyond imparting facts, education aims to cultivate practical skills and prepare individuals for active citizenship. Access to quality education is considered as a fundamental right, promoting equality and lifelong learning to personal and social advancement”. ChatGPT has a capability to understand the prompt and send a most appropriate response, but it lacks the empathy and cannot judge the circumstances, in which the prompt has sent. This is the reason, why some time, the response from ChatGPT is not as per the sender’s requirement and has ambiguity in content.

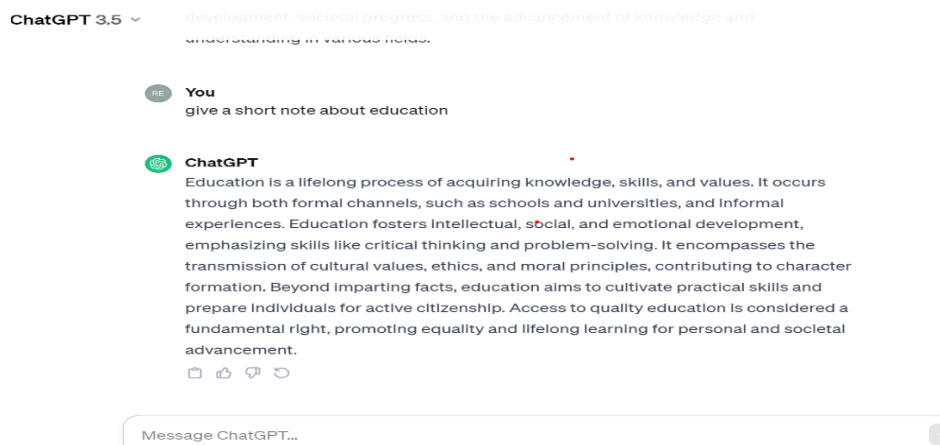


Figure 1. Chat with ChatGPT

In this research paper, the use of ChatGPT is discussed only for the educational settings. ChatGPT is started using rapidly in educational sector. There are numerous advantages of using ChatGPT for educational purposes. Few of them are listed below.

1. It helps the students in preparing for Exams by providing the key notes and set of practice questions. It can also help by providing the quick answers for the student prompts. Students can also use this for getting their homework done in no time.
2. It can help the teachers by generating the quiz, can assist them with the notes, help them in analyzing the answer sheets of the students.
3. ChatGPT provides enhance learning and can provide the response of any form of prompt like video, text, even images too. It can translate the language in which the user is comfortable and thus provide the user specific learning.
4. It can help in writing assignments, improving grammars, spelling and thus providing good quality of the work.
5. Different course content can be also generated with the help of AI capable ChatGPT. Course designing can be much easier with the help of this technology.
6. It can also assist in language learning by providing translation, grammar practice and generating practice schedule for the users.
7. It can also provide the list of available sources for users prompts, thus helping them with the additional information.

8. ChatGPT can provide the constructive feedback to the users by assessing their work output.
9. It can help the researchers by assisting them in Topic selection, information, content and citation too.

10. It can enhance the productivity of the work of teachers, researchers and students by providing them information and organizing their work.

Besides having so many advantages in educational sector, Experts are considering ChatGPT as a double-edge sword. Like any nascent technology, it has its own share of consequences and challenges. It has so many capabilities, which cannot be denied but definitely have several restrictions, limitations, challenges and disadvantages in educational settings. In this paper, researcher has tried to list out main limitations/ disadvantage of this technology.

II. REVIEW OF LITERATURE

Chatare R.D.(2022) has stated that Internet connected technologies are the future of organizations, be it smart manufacturing , Internet of things , Artificial Intelligence, RFID, Cloud Computing, Data Analytics or Block Chain. For sustainable development, these internet of things technologies are the need of the hour.

(Jagdishbhai & Thakkar, 2023) has mentioned the cons of GPT, which includes- limited knowledge, less pre-trained data, lack of emotional intelligence, empathy, less accuracy, risk of misinformation. They have mentioned in their research paper that ChatGPT can give incomplete and inaccurate information, if the pre-trained data is not accurate. Sometime, it may also struggle to understand the context, in which the user needs the information. ChatGPT lacks the emotional intelligence or empathy, if compare with the human expert, so definitely the responses will lack the emotional quotient. If the pre-trained data is not up to date, ChatGPT is not going to give the accurate information.

(Janina, 2023) has mentioned about the disadvantages of ChatGPT in her blog, which includes, limited control over generated content, spreading misinformation, lack of emotional intelligence, private and security concerns, dependency on technology. Sometime the response of ChatGPT can be inaccurate, biased and offensive as it relies on the trained and text data from the internet. There is a risk of spreading mis-information. Sometime it may provide inaccurate or unverified information based on the training data. It also lacks the emotional intelligence of users, so sometime the responses can be misleading.

(Montti, 2023) mentioned eleven disadvantages of ChatGPT. The disadvantages include Non-human phrases kind of responses, inability for expression, insights are not produced, less suitable for critical applications (too wordy), highly organized content (lack of human touch), sometime overly-detailed, hallucinates the facts, unnatural & biased responses. He has stated there are several unwanted qualities of ChatGPT exists, which make it unfit for content generation. It lacks the emotional intelligence to understand the user natural thoughts and cannot generate the artistic expressions. Human review of the content is always needed, to rectify the information, provided by it.

(Ray, 2023) has listed the cons of different versions of GPT and chatbots in his research paper, which are large computational requirements or advanced versions, limited interpretability, language concerns (main trained language is English), controversial text generation, capabilities, ethical concerns and potential dependency.

According to (Rampton, 2023) , the biggest cons of ChatGPT or any AI Chatbot is that it cannot be used as an authoritative source of any information, as the technology relies on the internet content, which is itself not 100 percent reliable. The responses may be ambiguous and full of inaccuracies. It may generate biased responses, which can lead to ethical and legal issues.

(Somani, 2023) has published article in Times of India, stating the pros and cons of ChatGPT in education sector. The cons mentioned by her includes, lack of emotional connection and human interaction, limited context understanding, increased dependency of students on technology, private and security concerns and ethical consideration. According to her Emotional connection or empathy is important for effective learning and support and Any AI tool cannot replace the importance of human connection.

(Khan, 2023) wrote a content on Advantages and disadvantages of ChatGPT for educators and students. The main disadvantages highlighted by him includes exclusive usage of technology, academic misconduct (cheating by students). He has quoted "According to a survey conducted by study.com, "more than one-fourth of teachers have caught students using a chatbot to cheat." He has mentioned that ChatGPT can be a threat to critical thinking skills and creativity. ChatGPT is not going to provide in-depth explanation like any human expert can do.

(Riaz, 2023) has elaborated the benefits and drawback of Learning with AI. She has mentioned few reasons, why the student should not use Online tools and AI to study. These includes Privacy concerns, over reliance on tools, inequality in access, plagiarism risks, reduced human interactions, depersonalized learning and ethical concerns.

(Greene-Harper, 2023) has explored the pros and cons in her article "The rise of AI in learning". The cons, she has stated are ethical concerns raised by using AI, decreased engagement and motivation among learners, lack of empathy, creativity, and adaptability to unique learning needs of students.

(Deng & Lin, 2022) has stated two main challenges of ChatGPT. The first one is security and another one is limited capabilities. He has mentioned security concerns as, if any attacker attempts to manipulate the model by providing malicious inputs then in those cases it can produce incorrect or undesirable responses.

Limitations of ChatGPT, is defined by him, as, "ChatGPT is only can generate text created on the prompt given to it, and it cannot access the external information." "ChatGPT is trained on a very large dataset of human language, so it can produce the biased response and sometime offensive content too".

Wach, Krzysztof & Ejdyś, et al (2023) have described why the regulation of AI market is necessary. They have mentioned that "It is important to regulate the AI/GAI market. Advocating for the regulation of the AI market is crucial to ensure a level playing field, promote fair competition, protect intellectual property rights and privacy, and prevent potential geopolitical risks. To mitigate risks connected with a lack of information quality control, disinformation, deepfake content, and algorithmic bias, the use of diverse and high-quality pre-approved datasets and the implementation of human feedback loop is recommended."

III. OBJECTIVE OF THE STUDY

The objective of this research paper is to identify the adverse impact of ChatGpt in education settings. In this research article researcher has done thorough literature review to identify the possible limitations/ disadvantages of ChatGPT.

IV. RESEARCH METHODOLOGY

This research work is based on the secondary data. Thematic literature review has been done to understand the research gap. Thorough assessment of available literature is done. Researcher has searched major electronic database (Scopus, Web of Science, Google Scholar, Research Gate, Google) to find the appropriate literature.

Keywords searched for finding the relevant literature were AI, Education, Smart education, Disadvantages of AI, Automation, Internet of things, digital learning. This review aims to synthesize existing knowledge, identify key themes, and establish a theoretical framework for the research.

V. FINDINGS

After reviewing different articles, research papers, web contents, ten important limitations / disadvantages of ChatGPT in educational settings have been listed below.

1. **Biased** –ChatGPT is based on AI technique, it completely relies on the trained data. The data, used to train the model may not be the representative of the whole data or information. So, it will always be an inherent biased model.
2. **Limited Context Learning**-ChatGPT has a limit of input-text as well as output text also. There is a limit to prompts. Moreover, it has limited understanding of the context also. If the prompt contains certain specific jargon and belongs to certain specific domain, the response may not be accurate.
3. **Depersonalized** – Learning is all about human interaction, social skills., not just about random learning. Traditional teaching methods provide a touch of personalized learning. AI is just providing the learning, but human interaction is missing.
4. **Inaccuracy**- Factual errors are very common in ChatGPT responses. The model is not very accurate and reliable in case of mathematical and statistical sciences. As the model works on trained data and does not possess the live internet access, so the responses may not be up to date.
5. **Plagiarism**- Students can take the help of ChatGPT for writing assignments without even thinking. It will enhance the Plagiarism issue, which cannot be tracked by the simple plagiarism checker.
6. **Reduction in Brainstorming**- Use of ChatGPT can reduce the brainstorming, problem solving skills and critical thinking in students, as they can get answers to their queries within no time.
7. **Lack of Emotional Intelligence and empathy**- A machine cannot understand the emotions of the students. Human experts can give responses according to the need of the students that cannot be given by any AI tool.
8. **Security Concerns**- It is also possible that, these kinds of models can store the personal information, their patterns, user's private data. It is a threat to their privacy.
9. **Ethical and Legal issues**- Till now these Chatbots, generative AI are not regularized by anyone, hence there is no control of their use. This can lead to several issues like copyright infringement, data ethics, biasness and many more.
10. **Reducing Employment/ endangering Livelihoods**-ChatGPT can be used for generating content, may snatch the jobs of content writers, authors and can increase the risk of unfair practices.

ChatGPT cannot be a substitute for traditional teaching and learning methods. It can be used as a supportive tool for learning and teaching, but over relying on this technology for learning purpose can do more bad than good. There is also a need of strict AI regulations and policies globally. Government should impose clear guidelines and working standards for the use of AI and its related services like Chat GPT. Users should also be careful while using any AI services and checking facts, and avoid disinformation is must.

Despite of ChatGPT pros & cons, it is going to stay here forever, like google and Facebook. As per 2022 report of “Reuter”, ChatGPT has a projected revenue of \$1 billion by 2024.

VI. CONCLUSION

ChatGPT has the capability to transform the educational settings through providing relevant content, generating quiz & assessments, providing feedback on the written content, and helping in language learning and many more. Though ChatGPT having numerous advantages, but still it can not replace the expertise of teachers and researchers. Creative thinking, emotional intelligence and empathy are the few important traits of human conversation, which cannot be focused by the ChatGPT. Plagiarism is the concern for the educational settings, and it is going to be increased with the emerging technologies. ChatGPT is one of them. It is extremely important for the educational institutions to find out the ways to review the content to ensure the quality of communications. Students should use the AI tools for enhancing the human understanding and knowledge but should not be completely dependent on these technologies. If their AI dependency increase, it is going to kill their brainstorming, skills and creativity. Getting inappropriate and misleading responses through AI, is also one of the problems faced by students. To avoid these kinds of problems, they should learn about the prompt structuring. Prompt structuring is going to help them to get more reliable and accurate answers. Educational institutes should also ensure the safety of communications while using any kind of AI tools. It is just the beginning of the AI era, and as the technology will grow stronger, many disadvantages will be overcome and new possibilities in educational institutes will definitely grow.

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