

Technology and Impact of ChatGPT in Education System

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ABSTRACT

Today's life the Artificial intelligence (AI) is one of the key components of students as well as teachers and researchers. In education system artificial intelligence become a backbone and most helpful tools which is playing vital role in higher education system. Artificial intelligence has become one of the biggest challenges facing our education system related to quality of services delivered. It may seems that artificial intelligence become a smart tool for students which can make smart not a alternate of teachers which take lecture and students emotions. Education is one of the most affected fields where the impact of artificial intelligence leads to positive and sometimes negative outcomes. The broad consensus is that effective pedagogy leads to high-quality educational outcomes. Therefore, AI-powered tools and techniques automate tasks, personalize the learning process, and deliver real-time feedback. Chatbots like ChatGPT are one of the beneficial ways to use artificial intelligence in education.

Keywords: Artificial Intelligence, NLP, ChatGPT, Chatbots.

INTRODUCTION

Artificial intelligence (AI) is a terminology with different meanings based on each one's perspective. "A lot of cutting-edge AI has filtered into general applications, often without being called AI because once something becomes useful enough and common enough, it is not labeled AI anymore". Based on the previous definition of AI and because AI is a contribution from various parties, it can be defined as a computer system that can interact through multiple technologies, such as visual perception and speech recognition, in an intelligent behavior. Plenty of AI applications around us have become part of our daily lives, and the education sector is extensively affected by these applications, such as ChatGPT, Bard, and much more. AI-powered tools and technologies are being applied to automate obligations, customize studying, and provide real-time feedback. ChatGPT is considered one of the most significant language models able to write a variety of creative material, translate languages, and offer intelligent answers to any subject matter. This research focuses on reviewing the impact of the AI tool ChatGPT on the outcomes of education systems, the challenges that educators face to deliver the knowledge and guarantee the quality of teaching they provide, and finally, to provide a list of recommendations for better future educational environments. The primary goal of this study is to summarize and highlight the main issues of AI tools in reference to the education quality. Hence, the next step is to deploy and try new innovative examination methods that will guarantee the quality of education level regardless of the dependency of students on the integrated AI tools such as ChatGPT.

Now the days ChatGPT is transforming education by offering 24x7 personalized tutoring, automating lesson planning, and enhancing personalized learning experiences as per demand of students as well as teachers also, but it poses significant risks of academic dishonesty, reduced critical thinking, and inaccurate information. It acts as a versatile AI-driven assistant for both students and teachers, though requiring careful ethical management.

Technology Underlying ChatGPT in Education

In technological perspective the ChatGPT uses large language models to understand and generate human-

like text, providing instant, conversational feedback etc. In other aspect Natural Language Processing (NLP) enables the tool to understand complex queries and provide tailored responses, simulating a tutoring dialogue. ChatGPT has automation capabilities and it can be used to create quizzes, grade assignments, and draft curriculum content.

Positive Impact on Education

- **Personalized Learning:** Students receive tailored support, helping them build on specific topics at their own pace.
- **24x7 Tutoring:** Acts as an on-demand tutor, providing immediate help and reducing anxiety around assignment completion.
- **Teacher Efficiency:** Saves time on administrative tasks, lesson planning, and generating educational materials.
- **Accessibility:** Provides assistive technology for students with disabilities and language learners.

Negative Impact and Challenges

- **Academic Integrity:** It is misused for cheating on assignments and exams, often bypassing traditional plagiarism software.
- **Reduced Critical Thinking:** Reliance on AI-generated answers can diminish student analytical and decision-making skills.
- **Inaccuracy and Bias:** ChatGPT can generate false information ("hallucinations") and perpetuate biased content.
- **Digital Literacy Gap:** Unequal access to premium, more advanced AI tools may widen educational disparities

Usage of ChatGPT

The features of AI tools in software development and suggested AI tools for debugging codes are observed on many research papers and studies, that provide the characteristics of ChatGPT in finding and fixing bugs for computer codes. The observed capabilities are-

- **Natural Language Processing (NLP) Capabilities:** ChatGPT is a powerful tool for understanding and analyzing human-like text like NLP. Moreover, it allows the model to detect the idea behind the code and recognize the significant bugs based on the language used.
- **Knowledge Representation:** ChatGPT depends on continuous learning techniques that use massive amounts of text data, including information about software development and programming languages. Hence, it provides excellent practical knowledge in detecting and fixing code errors and bugs.
- **Pattern Recognition:** It is common in computer codes to have patterns associated with specific types of bugs. ChatGPT can detect such patterns in text data, which will help to figure out the code bugs quickly.
- **Error Correction:** As mentioned in the previous point, ChatGPT is based on a continuous training model that uses vast text data with diverse types of errors. The feature of the continuous learning method provides ChatGPT with error detection and correction ability.

Impact of Ai Tools on Education System

AI Tools like ChatGPT offers incredible potential tools to support traditional learning; they are separate from the learning experience provided by humans. A blended approach, where AI complements traditional learning, is the ultimate solution for the educational system.

The effects of AI on education can be translated as follows:

- 1. Learning reachability:** AI and its different tools can improve learning reachability by providing students with specialized education and remarks. Students can study at their velocity by concentrating on the regions wherein they need the maximum help.
- 2. Fast Feedback and Response:** The intelligent and powerful mechanism of AI tools allows students to explore real-time feedback and get immediate remarks on their work, so they can improve their responses by having the ability to solve problems and detect errors.
- 3. Reducing human administrative work:** Administrative tasks, like grading assignments, booking appointments, sending emails, and many more, can be automated using AI. By doing so, instructors may have extra time to improve their coaching techniques and build a solid court with students.

ChatGPT is become the most robust and effective language manipulation tool for students and teachers but their consequences will be not good and students leaning capability may be decreased. In another advanced tool is Chatbot, which is an advanced method of OpenAI. AI's various modules and elements can convert teaching and learning in multiple manners. ChatGPT is one of these elements, providing a important shift and many educational advantages. Some of these advantages are but not limited to:

- Improvement of Language Skills:** ChatGPT has proven to be a powerful technique to improve student's writing skills, who can interact with the system to prepare professional texts without errors. Moreover, students can have fast responses and feedback about their text with correct suggestions to improve their writing.
- Development of Teaching Methods:** ChatGPT can convert teaching methods from the traditional way to entirely new interactive methods in various techniques, such as learning through interactive activities, role-playing video games, simulations, and discussions. Hence, students can learn in a fun and engaging environment.
- Feedback and support:** ChatGPT can guide students when solving complex problems and provide rapid feedback for better assistance. Students' knowledge and skills can be enhanced here.
- Ease of Use:** Delivering knowledge should not be limited to only regular students and educators. At the same time, it should be expanded to all interested individuals willing to share in ormination, including people with disabilities. ChatGPT can offer accessibility to information in different contexts to match the various needs for gaining knowledge.

As an example of the power of using ChatGPT in education from teachers' and students' perspectives, the following can be summarized:

- Teachers can create lesson plans, activities, and assessments specific to their students' requirements.
- Develop customized learning modules for students with difficulties or who require further assistance.
- Students can receive immediate feedback on their writing and other tasks.
- Provide interactive simulations and games to teach students complex concepts pleasantly and excitingly.

- Even if a student's native language is a minority language, it can give them access to educational materials in that language.

However, using such powerful technology may raise some challenges and risks. Some of these limitations are listed below:

- Decrease interaction and engagement among students.
- Overreliance on AI by students.
- Passive learning environment.
- Reduce critical thinking and problem-solving skills.
- Reduce creativity and restrict students' freedom to express their own thoughts.
- Provide biased answers.

Advantages of AI Tools:

1. Increase accessibility of information quickly.
2. Improving teaching learning methods.
3. Reduce human administrative works in workplace.
4. Improve different language skills and ideas.
5. Fast responses and feedback system.
6. Ease of use.

Disadvantages of AI Tools:

1. Data Privacy and confidentiality.
2. Job losses for teachers and other staff.
3. Biasness.
4. Lack of creativity.
5. Privacy risk and security.

Opportunities of ChatGPT in Education

ChatGPT is a powerful tool in AI, and it can open the way to gain plenty of advantages by using this technique, as discussed above. To chase the advantages of ChatGPT, we need to focus and be aware of its strengths and opportunities. According to some extensive research on the opportunities of employing ChatGPT in education, below are some of the most significant opportunities:

1. **Increasing accessibility of information:** Based on a SWOT analysis, it is concluded that ChatGPT can offer students and instructors smooth access to information through various platforms (e.g., a website or a smartphone app) and in various fields. In addition, it is a more powerful tool than traditional search engines as it offers a written-out answer rather than just a list of sources.

2. **Improving teaching methods:** For teachers, ChatGPT can assist them in identifying and creating relevant teaching materials. It can also help them to generate lesson plans for teaching with a set of parameters and constraints.
3. **Optimizing personalized learning:** ChatGPT has the strength to provide personalized support and feedback to students at various levels of complexity.

CONCLUSION, RECOMMENDATIONS AND FUTURE SCOPE

In this paper I have observed that the AI tools are very effective in teaching learning system but we can't recommend such tools for students as well as teachers because of many lacking of robust data and decrease students think capability. My recommendation to guarantee that AI and ChatGPT are utilized securely and efficiently without harming students or the quality of education tools only. AI tools never become the alternate of teachers but it can enhance teaching methodology and become teaching aid only. First, teachers should receive essential training on how to use ChatGPT and AI efficiently. The potential advantages and risks of ChatGPT and the best ways to use them in the classroom should be covered in the training. Additionally, policies and procedures for the usage of ChatGPT and AI should be developed by schools, universities, and governments. These regulations should cover topics like data security and privacy, as well as the role of teachers in implementing those tools in the right way to benefit the educational process. Moreover, the positive and negative impact of AI and ChatGPT on education should be further investigated, studied, and developed by researchers. As a future work, experiments are to be conducted to test the impact of deploying ChatGPT on university students.

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