

## CHATGPT IN THE PARADIGM OF MODERN EDUCATION

**Iryna Nikitina**

Senior Lecturer, Dnipropetrovsk State University of Internal Affairs, Ukraine  
e-mail: N.I.P@i.ua, orcid.org/0000-0003-3767-7034

**Tetyana Ishchenko**

Senior Lecturer, Dnipropetrovsk State University of Internal Affairs, Ukraine  
e-mail: ishchenkotatiana76@gmail.com, orcid.org/0000-0002-3103-978X

### Summary

The article deals with the impact of the application of the ChatGPT tool in education. There is a contradictory attitude towards chatbots in the world. Some countries ban its use, others try to maximize its potential. Reports from teachers around the world show that the use of ChatGPT in education has a positive impact on teaching and learning. However, special attention should be paid to the importance of training teachers in the correct use of this tool. It is necessary to familiarize teachers with the operating principle of ChatGPT, which can significantly improve the quality of learning and the creative component of the lesson, and, consequently, increase students' interest in learning. When deciding to use AI in education, it is critical to recognize that it brings significant issues with it, such as data privacy, equity in access to education, and the impact on the educator's role in teaching. All this needs to be addressed before AI finally enters the educational process around the world. Modern education necessitates innovation, and GPT technologies provide unique instruments for fostering critical thinking and a creative approach.

**Key words:** ChatGPT, technologies, artificial intelligence, education, innovative teaching methods.

DOI <https://doi.org/10.23856/6112>

### 1. Introduction

We live in an era of globalization when everything new is quickly becoming available to millions of people around the world. Information technology and the Internet have accelerated the exchange of ideas, culture and technology, creating unique opportunities for global interaction and cooperation. This rapid exchange impacts not only the economy, but also education, enriching our society with diversity and perspectives from all corners of the planet (*Nikitina, Ishchenko, 2023*). Over the past few months, generative intelligent systems have been rapidly introduced into educational technologies, the flagship model of which is ChatGPT today. Time has passed since the first “shock”, in which schools and universities around the world introduced total bans on the use of ChatGPT. Some countries are blocking ChatGPT, some are taking a wait-and-see approach, and some are looking for ways to use it. Many teachers believe that it is pointless to fight artificial intelligence technologies. Therefore, it is necessary to make artificial intelligence work for education, telling students how to correctly use ChatGPT so that it becomes an assistant in the learning process, and not a tool for plagiarism.

The advent of GPT chat technologies represents a groundbreaking tool for learning and research, opening new avenues in the realm of education. GPT chats also provide a personalized approach to learning, adapting content to the knowledge level and needs of each learner. The relevance of GPT chat for education lies in its ability to generate content and respond to queries, thereby rendering learning more interactive and accessible.

Overall, the purpose of the article is to analyze the essence of chatGPT as to its capabilities for learning and research. In accordance with the goal, the following research objectives were identified:

- 1) determine the essence of the ChatGPT
- 2) consider the present situation and attitude to it in the globalized world
- 3) focus on benefits and shortcomings of the ChatGPT for dynamic learning processes
- 4) consider the prospects for the educational environment

## 2. Definition of ChatGPT and its capabilities

ChatGPT (from the English Generative Pre-trained Transformer) is a chatbot with generative artificial intelligence developed by OpenAI and capable of working in conversational mode, supporting queries in natural languages (*ChatGPT, 2023*). The system is capable of answering questions and generating texts in different languages related to various subject areas. What sets ChatGPT apart from other conversational tools is its knowledge area. The chatbot is equally well versed in various fields such as mathematics, history, geography, art, medicine, finance and cooking. This is a universal model that you can turn to with any question. The service was launched in November 2022, but its basic algorithm, GPT-3, was created back in 2020. At the time of writing, the current version is GPT-4, released in March 2023. Unlike its predecessors, the developers are positioning it as a large multimodal model. Such algorithms can analyze not only text, but also other types of content such as images, videos and audio. ChatGPT is free to register and use for free. There is also a premium version, which provides priority access to new models, increased generation speed and guaranteed operation during high loads.

The text generation capabilities in ChatGPT are almost unlimited. He can:

- write poems and songs;
- solve mathematical and logical problems;
- write texts in various styles and genres;
- summarize information;
- select recipes based on the list of ingredients;
- create program code;
- search information from your own database;
- to have a dialog;
- adapt to the style and tone of the interlocutor (*Hillelblog, 2023*).

This is not a complete list of ChatGPT features. Some of its features, such as creating simple games, were discovered by users by accident.

Thanks to multimodality, the chatbot can process images and recognize the author, genre, style and other characteristics of pictures and art objects. It can also provide step-by-step solutions to math problems, perform calculations and analysis based on data tables and graphs, check program code, help with language learning, and much more.

### 3. The attitude towards ChatGPT in the world

In general, Europe was not ready for systems like ChatGPT. In the EU, discussions about the impact of ChatGPT on education emerged about a month later than in the US. This is due to the fact that ChatGPT is an English-language education system. Currently, the discussion about the use of ChatGPT in education has completely stopped, but there are concerns about global risks from the use of the education system. Before the complete ban of ChatGPT in Italy, which is caused by the leakage of user data, there is talk of a ban on ChatGPT in Spain and Germany. At the same time, as it turned out, control over the system was more important than development prospects.

The attitude towards ChatGPT in EU education is manifested both in interest in innovative teaching methods and in a careful attitude towards the ethical and safe aspects of using artificial intelligence for educational purposes. The EU is actively exploring the use of technologies such as ChatGPT to improve the learning experience, personalize the student experience and make education more accessible. At the same time, the EU also pays attention to issues of data security, transparency of algorithms and ensuring equal access to educational resources, taking into account the diversity of cultures and languages in its member states.

Great Britain (UK) is showing a tendency to embrace innovation in the educational process. In the UK, educational institutions are closely monitoring developments in technology and are actively exploring the use of ChatGPT to personalize learning, support students and stimulate creative thinking. Important aspects include data security, ethics, and a focus on ensuring that technology not only serves efficiency, but also enhances the educational experience of students.

The adoption of ChatGPT in education in the United States demonstrates a desire for innovation and the use of advanced technologies to improve the educational process. A number of US schools and universities use ChatGPT as a tool to personalize learning, support students with special educational needs and stimulate creative thinking. However, there is also a focus on ethical issues, including algorithm transparency, data security, and ensuring equality of opportunity in the use of technology in education to ensure a fair and accessible educational experience for all students.

China has entered the AI race with the States. The Chinese technological analogue of the generative dialogue system was presented the other day. The Chinese government then published requirements for the development, operation and maintenance of such systems in China. The closedness of the Chinese information space and the closedness of China do not allow us to assess the impact of ChatGPT on the Chinese educational system. However, in general, it is clear that the Chinese will use artificial intelligence systems in education (*Технології, 2023*).

Japan and South Korea show a balanced approach to the introduction of new technologies into the educational process. Both countries, as leaders in the field of education, are interested in integrating ChatGPT to enrich the educational experience of students and provide access to personalized learning materials. Along with this, an important aspect is also attention to ethical issues, data privacy and maintaining a balance between technological innovation and traditional teaching methods, maintaining a high standard of educational quality.

#### 4. Benefits of ChatGPT for education

After its appearance on the market, ChatGPT made an extremely negative impression on teachers. Students actively used it as a cheat sheet for exams, a homework guide, and a resource for writing creative papers.

But many teachers also recognized its benefits. In a traditional education system, students are often limited in resources, such as access to tutors and teachers or high-quality learning materials. ChatGPT can help bridge this gap. Available 24 hours a day, 7 days a week, he can answer questions and teach on a wide range of topics. Students will no longer have to wait to get to class or depend on textbooks.

American schools and universities are reacting differently to the GPT chatbot. For example, to prevent students from cheating on assignments, access to ChatGPT was blocked on all computers, tablets and other devices in Seattle schools in Washington state and Montgomery County schools in Alabama. Other schools, such as in the city of Dallas, Texas, do not consider the introduction of all kinds of bans to be a way out of the situation, and on the contrary, they call for accepting the fact that artificial intelligence technologies are now becoming part of the modern educational process.

An example of trying some creative ideas in education is Peninsula High School in Gig Harbor, an hour outside of Seattle. In a geometry class, students were tasked with using ChatGPT to generate a Kanye West-style rap about vectors and trigonometry, while geometry students used the program to write rap-style math proofs. In an English class, the teacher allowed students to use ChatGPT to translate Shakespeare's *Othello* into modern English. This helped them understand the text and discuss the plot of the work and the themes raised in the tragedy (*Time*, 2023)

Using AI, students can access greater knowledge, but of course, checking all this information and comparing it with other sources. In this way, critical thinking develops. For example, a teacher can ask a student to write his solution to a given question, and then ask him to compare it with the solution written in the GPT chat, and draw conclusions from this analysis. Another task: check the essays created by the program for errors. This provides an opportunity to test students' knowledge of a topic and show them the challenges associated with using AI to do delicate work.

In Panama, International Baccalaureate teacher Anna May Drake asked high school students to critique an essay created by ChatGPT that compared George Orwell's *1984* to Margaret Atwood's *The Handmaid's Tale*. This task aroused keen interest among students who wanted to defeat the AI "tearing" the essay created by the chatbot.

The problem remains: how to recognize whether a student is passing off a paper written by artificial intelligence as his own? It's still not resolved. And although many services for detecting AI plagiarism – such as Turnitin, whose services are used by schools and universities around the world – claim that their programs work quite accurately, they cannot give one hundred percent guarantees (*Yam GPT-4*, 2023). A number of American universities have decided not to use such programs due to concerns that it could lead to students being falsely accused of cheating.

## 5. Identified ChatGPT shortcomings

Despite the wide range of advantages, the chatbot has a number of disadvantages.

As mentioned earlier, ChatGPT understands Russian, Ukrainian, Spanish, German and other common languages. However, when processing non-English requests, the chatbot demonstrates low speed. In addition, in the Russian and Ukrainian languages the algorithm often makes errors such as incorrect declensions or tautologies.

ChatGPT's accuracy is not always as expected. This is especially true for historical events and statistical data. To create the language model, the developers used datasets with texts, the relevance of which dates back to September 2021. Thus, the chatbot is not unaware of some current events, such as the death of Queen Elizabeth II of Great Britain or the collapse of the FTX exchange.

Because of this, it is worth carefully checking the information provided by the chatbot. Errors can be due not only to lack of knowledge, but also to the “hallucination effect” – the mixing of different data, leading to the generation of false statements.

ChatGPT has no limits on the number of messages per conversation. However, the basic model cannot produce texts longer than 3000 words. In GPT-4, the limit was increased to 25,000 words.

The service also often refuses to communicate on certain topics. This is due to internal OpenAI restrictions aimed at combating the generation of offensive and malicious text (*Hillelblog, 2023*).

Almost immediately after the release of ChatGPT, the academic community in many countries expressed deep concern. Schools and universities around the world have reported a sharp increase in students using the algorithm to write essays and homework.

Academics believe this reduces students' critical thinking skills. In addition, the problem of inaccuracy of the algorithm threatens the emergence of scientific papers containing gross errors, fakes and unconfirmed data.

In response, some universities and schools in the US, Australia, France and other countries have banned the use of ChatGPT on educational premises and devices.

## 6. ChatGPT Perspectives

The race for artificial intelligence in education has begun in full force. First place goes to the USA and the English-speaking world. Second place goes to China.

UNESCO has recently been actively involved in the use of AI technologies in education. According to a survey of 450 schools and universities, only about 10 percent have so far developed policies and guidelines for the use of technologies like GPT chat. To make things easier for teachers and students, UNESCO has released its guidance on the ethical and safe use of artificial intelligence in schools and is calling on world governments to start using it in educational settings (*UNESCO, 2023*). Based on a humanistic approach, the Guidance proposes key steps to regulate the GenAI tool, including mandatory data privacy protections and setting age limits for independent negotiations with GenAI platforms. To ensure the appropriate use of tools in education and research, this Guide proposes a participatory and age-appropriate approach to the ethical validation and instructional design processes. Can AI replace live communication between a teacher and a student? The teacher is always next to his students, he is happy and sad with them, he hugs, supports, extends his hand. A computer will never do this. It will never replace the warmth of human communication.

The perspectives of using ChatGPT for learning and research are highly promising. As an innovative language model, ChatGPT offers a versatile and adaptive platform for interactive learning experiences. Its ability to generate contextually relevant responses enhances the efficiency of information retrieval and facilitates a dynamic exchange of knowledge.

In the realm of research, ChatGPT holds significant potential for aiding scholars and scientists in information synthesis, literature review, and idea generation. Its capacity to comprehend and generate coherent text across diverse subjects streamlines the research process, offering valuable insights and accelerating the pace of discovery.

Moreover, the interactive nature of ChatGPT makes it an engaging tool for collaborative learning and brainstorming sessions. Students and researchers can benefit from real-time assistance, personalized guidance, and the exploration of innovative ideas, thereby fostering a more productive and enriched educational environment.

As the technology behind ChatGPT continues to evolve, its integration into learning management systems and research platforms is likely to redefine traditional approaches to education and inquiry. The perspectives for leveraging ChatGPT in learning and research are characterized by efficiency, adaptability, and the potential to enhance both the educational and research landscapes.

## 7. Conclusion

ChatGPT offers several notable benefits, including its ability to generate coherent and contextually relevant text across a wide range of topics. It serves as a versatile tool for tasks such as content creation, brainstorming, and language translation. Additionally, ChatGPT facilitates natural language interactions, enhancing user engagement and accessibility. However, its shortcomings include occasional generation of inaccurate or nonsensical information, sensitivity to input phrasing, and potential biases present in its training data.

From a broader perspective, ChatGPT represents a significant leap in natural language processing technology, paving the way for improved human-computer interactions. It holds promise for applications in customer support, education, and creative writing. Nevertheless, ongoing efforts are necessary to address its limitations and refine its performance for more nuanced and reliable outputs. The ethical considerations surrounding the responsible use of AI, potential misuse, and the need for transparency in its development and deployment remain crucial aspects of its broader perspectives.

Thus, the application of GPT in education offers students and educators the opportunity to exchange ideas, broaden knowledge, and create more dynamic learning processes. GPT chat is becoming a pivotal element in the educational revolution, providing access to an extensive knowledge base and facilitating learning at any time and from any location.

## References

1. Balovsjak N. (2023) Ghlobaljna ghonka za AI-pryborkannja. Rizni krajiny svitu majutj vlasni pidkhody do rehuljuvannja shtuchnoho intelektu. [The global race to AI taming. Different countries around the world have their own approaches to regulating artificial intelligence]. Retrieved from: <https://netfreedom.org.ua/article/globalna-gonka-za-ai-priborkannya-rizni-krayini-svitu-mayut-svoyi-pidhodi-do-regulyuvannya-shtuchnogo-intelektu> (accessed 10 November 2023)

2. ChatGPT. (2023) Retrieved from: <https://uk.wikipedia.org/wiki/ChatGPT> (accessed 14 November 2023)
3. Frąckiewicz M. (2023) Chat GPT-4: jak ce zminjuje osvitu ta navchannja? [Chat GPT-4: How is it changing education and training?] Retrieved from: <https://ts2.space.uk/чат-gpt-4-як-це-змінює-освіту-та-навчання/#gsc.tab=0> (accessed 14 November 2023)
4. Lominsjka M. (2023) Sho take ChatGPT ta jak jogho vykorystovuvaty? [What is ChatGPT and how to use it?] Retrieved from: <https://blog.ithillel.ua/articles/what-is-chatgpt-and-how-to-use-it> (accessed 14 November 2023)
5. Nikitina, I., Ishchenko, T. (2023). Globalization of education: modern experience. *Scientific Journal of Polonia University*, vol. 56, no. 1, pp. 216-223. Retrieved from: <https://doi.org/10.23856/5630> (accessed 23 November 2023)
6. UNESCO (2023) Guidance for generative AI in education and research. Retrieved from: <https://www.unesco.org/en/articles/guidance-generative-ai-education-and-research> (accessed 17 November 2023)
7. Waxman O. (2023) The Creative Ways Teachers Are Using ChatGPT in the Classroom. *Time*. Retrieved from: <https://time.com/6300950/ai-schools-chatgpt-teachers/> (accessed 29 November 2023)