

Opportunities and Challenges in the Cognition of ChatGPT of College Students: An Empirical Study

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ABSTRACT

The rapid development of ChatGPT has brought new challenges to different fields. In the field of teaching, many universities and education practitioners hold different views on the emergence of ChatGPT, some believe that it assists the education industry, and some would like to block it completely. For the emerging artificial intelligence, people's perception of it is still built on the surface. To better understand the advantages and disadvantages of ChatGPT, this paper focuses on the college students' experiences and ideas of using ChatGPT in their studies. The aim of study is to provide a cognitive foundation which can ensure the future direction of human-computer symbiosis. In this paper, semi-structured interview is used to conduct one-on-one interviews with the subjects, and then narrative analysis is used to organize and summarize the interviews context. The results show that college students have a positive attitude towards ChatGPT-assisted learning and hope to reach the level of human-computer symbiosis. To reach the level of human-computer symbiosis in the future, it is necessary to improve from various aspects, such as teachers' teaching techniques, students' self-control ability, and ChatGPT technology.

KEYWORDS

ChatGPT; Cognition; College students; Human-machine symbiosis

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On March 31, Italy's Personal Data Protection Authority announced a ban on the use of ChatGPT, restricting OpenAI from processing the information of Italian users. It had opened an investigation into OpenAI, the company behind ChatGPT. On April 3, the German federal data protection commissioner, said that Germany may join Italy in "restrict" ChatGPT over data security concerns. Privacy regulators in France and Ireland have contacted their Italian counterparts to find out more about the ban and said they would coordinate the matter with EU data protection authorities. On April 11, China issued normative policies for the first time for the current explosive generative AI industry. Although many countries shout "containment" of artificial intelligence, it is also a "delaying strategy", they will secretly continue to desperately develop their own AI models. Every country hopes to develop its strengths and avoid its weaknesses. Different countries also hope to form comparative advantages through competition.

1 Introduction

On November 30, 2022, OpenAI released ChatGPT. As a representative of a new generation of artificial intelligence, ChatGPT heralds the beginning of a revolution in human-machine symbiosis^[1].

The rapid development of ChatGPT has triggered a new round of discussion on artificial intelligence, especially in the field of education and teaching. ChatGPT brings a lot of opportunities and risks^[2]. Since then, whether use it has triggered multiple controversies, and different people have brought different opinions. The powerful ability of ChatGPT on understanding and generate natural language and analyzing contextual information not only simplifies the tedious learning but also relieves the monotonous and single teaching. In the cognition of some people, ChatGPT can bring some positive effects for their needs, while many people also show negative attitudes towards it. Many well-known foreign journals and some universities in China have put forward their attitudes towards "banning" ChatGPT. In addition, in the field of education and teaching, the cognition of the intellectual property risks behind ChatGPT remains whether it is plagiarism or creation^[3]. The attitudes of teachers and workers in the education industry towards ChatGPT are based on their cognition. As a group that often uses ChatGPT, the cognitive attitudes of students towards ChatGPT have not been widely concerned by the education sector. Based on the above problems, this paper focuses on studying the cognitive attitude of college students toward ChatGPT. Analyzing the evaluation and cognitive attitude of contemporary college students toward ChatGPT can predict the change of students' learning methods and human-computer symbiosis conditions.

2 Literature Review

(1) ChatGPT attitude evaluation and risk research

ChatGPT is a new type of artificial intelligence, it has amazing language understanding and generation ability. Therefore, ChatGPT can help complete many tasks such as question answering and translation through the dialogue between humans and machines^[4]. In addition, it can help users quickly write programs or find bugs. Therefore, different people express their different cognitive attitudes and evaluations when using ChatGPT. Zhang Zhenyu and Hong Huaqing believe that ChatGPT's ease of use and operability enable students to learn^[5]. ChatGPT has potential advantages in language teaching and learning^[6], including English listening^[7], speaking, reading^[8], and writing learning. Human-machine dialogue during oral practice can improve learners' interest in learning and enrich the conversation experience^[9]. ChatGPT has gained popularity in many fields. Professor John Naughton of the Open University in the UK believes ChatGPT will soon become as essential a tool as Excell. However, ChatGPT offers prospects as well as challenges in different fields, that is the reason why artificial intelligence have generated multiple controversies. In the eyes of MIT linguistics professor Noam Chomsky, ChatGPT is essentially a form of "high-tech plagiarism" and "a way to avoid learning"^[10]. Many universities in China and abroad have banned students from using ChatGPT-like artificial intelligence to complete educational tasks on campus^[11]. For example, the University of Hong Kong sent an email to all students to warn students that ChatGPT and other AI tools should not appear in any form of their studies. If teacher finds students using ChatGPT, they need to take additional examinations. In addition, the ability to verify the correctness of information in ChatGPT is not mature at present^[12].

(2) Research on the perspective of human-machine symbiosis

Hong Kong's South China Morning Post once put forward a view that for the management of artificial intelligence tools such as ChatGPT, it should not be a total boycott, but to find suitable conditions for coexistence^[13]. Whether humans and machines can co-exist is up to us. In the era of artificial intelligence, people need to learn the concepts, methods, and skills to coexist with machines

^[12]. The correct cognitive attitude towards ChatGPT can provide the foundation for human-machine coexistence in the future. In addition, when using ChatGPT for learning, we should not only focus on knowledge learning but also focus on critical thinking training ^[14]. Let students learn how to think critically and solve problems is the development direction of human-computer symbiosis in the future ^[6].

After reading relevant literature, it is found that researchers in different fields have put forward their evaluations and attitudes toward the use of ChatGPT, but there is a lack of research on specific groups. For college students, ChatGPT often appears in the menu of their learning tools. Therefore, the use strategies and evaluation of ChatGPT by college students need to be studied. It can help to judge the opportunities and challenges of ChatGPT.

(3) Research problems

This study aims to explore the analysis of opportunities and challenges of ChatGPT in college students' perceptions. The research questions are:

- 1) What are the strategies and evaluation of ChatGPT in the group of college students?
- 2) What are the conditions and attitudes to realize human-machine symbiosis in college students' cognition?

3 Study Design

This study adopted the qualitative research method of the semi-structured interview, and narrated the interview content using narrative analysis. The aim is to collect the real feelings and evaluations of the interviewed students on the use of ChatGPT.

(1) Participants

All qualified individuals have been selected by purpose sampling. Five participants, three female and two male, were all selected from a university in Hong Kong. The summary of the participants' information is shown in Table 1. Five students have used ChatGPT in their studies. Student A is majoring in Academic English with a Master's degree in Education. She mainly uses ChatGPT to translate English sentences and correct grammatical errors. Student B is a Master of Global Education Studies (Master of Arts). She mainly uses ChatGPT for translation and writing of thesis framework. Students C is majoring in Academic English with a Master's degree in Education too. She mainly uses it for IELTS speaking practice and translation. As for student D, he uses it for data inquiry and grammar checking. For the last student E, he is majoring in Educational and Developmental Psychology with a Master's degree in Education. ChatGPT can help him on providing perspectives, data collection and organization. There was a one-on-one semi-structured interview between the interviewer and interviewee, and the interview media was mobile phone.

Table.1 Participant information summary

Interviewees	Gender	Degree	Branch of specialty	Interview modes	Purposes
Student A	Female	MED	Academic English	Telephone	Translation, grammar proofreading
Student B	Female	MA	Global Education	Telephone	Translation, paper content framework writing and polishing
Student C	Female	MED	Academic English	Telephone	Translation, IELTS speaking practice
Student D	Male	MED	Education Leadership	Telephone	Check grammar errors, data inquiry
Student E	Male	MED	Educational and Developmental Psychology	Telephone	Collect and organize data, provide perspective

(2) Tools

This study adopts the semi-structured interview method. The interview content is more focused, which can dig deeper information^[15], and reveal the participants' thoughts, evaluations, and experiences to the maximum extent^[16]. The semi-structured interview method is based on college students' use strategies and evaluation of ChatGPT. The questions include "What aspects will you use ChatGPT to help you complete in English learning? (such as translation, dialogue practice, writing papers, collecting materials, helping to provide ideas and perspectives, etc.), "Many well-known foreign journals and some domestic universities have clearly stated their attitude towards the" banning "of ChatGPT. What do you think?" "Some people say that the use of ChatGPT will involve the problem of academic plagiarism. What's your opinion?" "In your perception, whether ChatGPT has positive or negative effects? You can discuss." In addition, based on the future opportunities of ChatGPT, the questions include "If the school allows it, will you actively try to use it?" "Is it possible to achieve peaceful co-existence between humans and machines in the future?" "What else do we need to do to achieve human-machine symbiosis?"

(3) Process

All interviews were conducted in Chinese, in the form of online phone calls, and recorded with the consent of participants to facilitate the later research and analysis of this experiment. For five of them, the duration of the interview was controlled within 10-15 minutes.

4 Analysis

(1) The use strategies and reviews of ChatGPT

Student A often uses ChatGPT for translation and grammar correction. When asked whether ChatGPT would give wrong information, student A mentioned that "the number of errors is relatively small, but ChatGPT will always translate two similar expressions, and it is verbose if translated twice. In addition, Student A thinks that ChatGPT has more positive influence than negative influence. Because ChatGPT can provide some more authentic expressions and help correct subtle grammatical errors that students cannot find. While student A holding neutral attitude on whether to ban ChatGPT, she puts forward the opinion that "ChatGPT is beneficial to students' study and harmful. If ChatGPT is used for oral training and grammar correction, it is very convenient. If some students use ChatGPT to write papers, it is not good, which is academic dishonesty." In the study on whether there is plagiarism by using ChatGPT, Student A replied, "If students directly ask ChatGPT to write a paper, it is plagiarism, but if students know what they need in each part of their paper, it is not plagiarism to use ChatGPT to find some difficult quotes. Designing a lesson plan or designing a class is not considered plagiarism too, because it is a bit similar to asking Baidu. It is more convenient to summarize some answers and give you directly." She gives an example, which is that "computer students around me illustrates the risk of ChatGPT. Students may rely too much on ChatGPT and lose their ability to think independently."

However, compared with student A, student B has different attitudes toward some opinions. Student B mainly used ChatGPT to translate, write the paper framework, polish the paper, summarize, and so on. Student B pointed out that the advantages of ChatGPT outweigh its disadvantages, and ChatGPT should not be banned extremely. In the face of the development and progress of science and technology, strategies and measures can be taken to deal with ChatGPT instead of being complacent. As for whether the use of ChatGPT is plagiarism, Student B's opinion is different from that of Student

A. Student B said, "I don't think the use of ChatGPT to write A paper is plagiarism because ChatGPT only does some simple repetitive tasks, which cannot be done by thinking in the human brain. When there was no ChatGPT, many papers were copied. ChatGPT was just a language tool, so copying or not copying was nothing because there would be a lot of references for the paper itself, which was just a good way for reference." In addition, student B mentioned in the interview, "Although ChatGPT has many advantages, such as providing some good ideas in addition to study. It can give many logical suggestions, ideas and life advice. However, if ChatGPT is used for a long time, it may reduce some necessary thinking. Depending on its framework, people will be too lazy to think, and cannot think independently." The above are Student B's comments and attitudes towards ChatGPT.

Student C mentioned the purpose of using ChatGPT, which was different from other interviewees. She said that she used ChatGPT to assist him in IELTS oral practice. Through oral dialogue, ChatGPT could simulate an environment for communicating with locals. It can enhance the language atmosphere and improving his oral level. In the question of whether ChatGPT should be banned, she mentioned that ChatGPT should not be banned, and she believed that its advantages and disadvantages are equal. But as technology evolves, ChatGPT should be constantly updated to perfection, not banned outright. In addition, student C and student A have the same opinion on whether there is plagiarism by using it. Student C thought that copying and pasting the content of ChatGPT at large length without indicating the source is plagiarism. But if students use it after adding the source through your own editorial changes, it is not plagiarism. For oral practice, ChatGPT may have shortcomings. For example, sometimes it cannot answer the question, unable to deeply explore the topic or perceive and understand the hidden information in some situations as humans do, which in some cases limits its application scope and effect.

Student D mainly used ChatGPT to query grammar errors and data. Checking for grammatical errors can help polish the whole sentence, thus ensuring a more accurate expression. In addition, student D mentioned that "ChatGPT is the best tool to help students learn and improve learning efficiency, and it should not be banned. Although ChatGPT has some shortcomings, as long as students have the ability to distinguish and analyze it, they can use ChatGPT to learn a lot of knowledge and improve their English expression ability." Then Student D does not think there is plagiarism in ChatGPT, because ChatGPT serves as an intermediate search medium in paper writing. "It can search and summarize everyone's needs through a huge database, which can help students reduce the time of looking through documents and books. ChatGPT is just a search engine that can help students to reduce the search for books or literature that suit their opinions." In addition, ChatGPT also has shortcomings. "After finding the convenience of ChatGPT, students may become dependent on it, which is not conducive to the cultivation of students' autonomy. It can also affect their ability to judge the most important things."

Student E usually uses ChatGPT to collect information and provide opinions. he said that "Usually when finishing the paper, he will use ChatGPT to provide him with a variety of ideas to help write the paper, but also to expand vision." In addition, student E believes that everything has pros and cons and ChatGPT should not be banned. However, student E holds a neutral attitude on whether ChatGPT is plagiarizing. He mentioned that "If ChatGPT can be used correctly, it will help him a lot when he writes papers or needs to collect ideas and materials, and it can also provide him with a large number of materials. This process is equivalent to searching for information on the Internet and making proper use of it, which is not called plagiarism. But if it is used incorrectly, for example, copy all the content on ChatGPT, it is called plagiarism." Although ChatGPT has a lot of benefits, student E thinks that ChatGPT has more negative effects than positive ones, because the students will use ChatGPT to complete class assignments and paper writing. "Their behavior of directly copying ChatGPT without understanding

and reasonable use is plagiarism, which will lead to unfair competition."

(2) The condition analysis of human-computer symbiosis

Student A mentioned that "human-machine coexistence is possible, but it needs to be divided into schools. For example, " to provide ChatGPT for primary and junior high school students will make students dependent because of their low self-control. If it can be implemented in universities, students need to be on guard and make scientific and reasonable use of ChatGPT to help them learn". For the question "Can human-machine symbiosis be achieved in the future?" Student B gave this answer: "Human-machine symbiosis will be realized, but I think it will take a long time to realize. Although the professors tell the students that the content of ChatGPT in the paper can be found, I do not think some technologies to deal with ChatGPT are perfect yet." To achieve human-machine symbiosis faster, student B thought, "For students, it is necessary to control the strategy of using ChatGPT to ensure that they do not rely too much on it. For the development of ChatGPT, high-level talents can handle it." Student C mentioned that "human-machine symbiosis will be realized in the future, but it also needs continuous technical improvement and optimization, and it also needs human's deep understanding and management of artificial intelligence technology to ensure the realization of human-machine symbiosis." As for student D, he thought that "To achieve human-machine symbiosis, first of all, people need to constantly learn to use and adapt to the generation of new machines. Secondly, machines need to be constantly updated to help humans reduce the tedious and difficult things in work or study. Human-machine symbiosis will be realized in the future." Student E mentioned that "Human-machine symbiosis can be achieved, but humans need to do some corresponding measures to prevent it. It will gradually become the mainstream of human beings, which will bring more convenient and rapid living conditions to human beings, and also bring a better future. However, some measures are needed, such as plagiarism. When students use ChatGPT to complete the task, they should cite the ChatGPT, or save the screenshot, and show it to the teacher when handing in the homework. But I actually think it's a little more challenging for people, and we need to do more to strike a balance between humans and machines."

5 Discussion

(1) Evaluation of ChatGPT in college student cognition

ChatGPT does have certain advantages in language teaching and learning, and college students use ChatGPT to improve the accuracy of English expression. Five students all believe that ChatGPT should not be completely banned, because it has many advantages, and the advantages outweigh the disadvantages. However, Student A,C,E and Student B,D hold different opinions on whether the use of ChatGPT is plagiarism. This also indicates that college students have disputes over the use of ChatGPT. Some students may consider the use of ChatGPT in paper creation without indicating the source as plagiarism, while some students may think that ChatGPT is just a simple reference tool for papers. The use of ChatGPT to write a paper does not involve any form of plagiarism. It can be seen that the attitude of college students towards ChatGPT is also double-sided. When there is no technology to deal with whether there is plagiarism in ChatGPT, college students' cognition of plagiarism in ChatGPT cannot be measured and judged.

(2) Potential problems with ChatGPT

Before the advent of technology such as dealing with ChatGPT, some learners will use ChatGPT as a

cheating tool to help them write papers or assignments, which undermines the fairness and integrity of learning to some extent. This kind of behavior is regarded as academic dishonesty in the current academic circle and is very detrimental to the development of the future academic circle. In addition, fake grades are not conducive to judging a person's real grades and level, which will eventually lead to the decline of learners' grades and form a vicious circle.

Both students A and B argue that ChatGPT will lead to excessive dependence on users. Therefore, it can be found that excessive dependence on ChatGPT is not conducive to the stimulation of students' innovative thinking and the development of critical thinking. The cultivation of critical thinking is the most important core element of students' learning. Critical thinking is to make students learn to think independently instead of blindly believing the answers provided by ChatGPT. When receiving the answer, students need to think about why the answer is produced, and examine it from multiple angles to grasp the true and correct knowledge, because the result is not as important as the process^[4].

(3) The conditions to realize human-machine symbiosis

In the era of artificial intelligence, the field of education and teaching needs to realize human-machine symbiosis^[17]. For ChatGPT, the system needs to be constantly updated to solve the current problem of generating incorrect replies or wordy and useless content.

In the face of emerging artificial intelligence, everyone will be cautious about its reliability and safety. To ensure the development of human-computer symbiosis, teachers need to have certain technical and operational capabilities. Therefore, to achieve full marks in the teaching of teachers, it is necessary to carry out targeted training for teachers to ensure that their technical level matches.

In addition, for students, the school needs to set standards for the use of ChatGPT to standardize the use of students, for example, (1) learners can only use ChatGPT to query the knowledge of words, phrases, and grammar, (2) learners can use ChatGPT to query the errors in articles or sentences and gain guidance. (3) In listening and speaking learning, learners can learn the topic many times and immerse themselves in the atmosphere of English learning; (4) learners should hold the attitude of not copying and use ChatGPT for experiment design, experiment evaluation, or other aspects of improvement.

6 Conclusion

This study mainly focuses on the cognitive analysis of ChatGPT among college students. To understand the attitudes of college students on ChatGPT can better judge the development direction of human-machine symbiosis in the future and the conditions for realizing human-machine symbiosis. The sample data collected in this study is small, so it cannot represent the attitude of all college students. In addition, this study is based on the semi-structured interview method in the form of voice telephone, which lacks the consideration of the feelings of the interviewer and the record of the body movements, language, and expressions of specific significance shown by the interviewees. All in all, expanding the sample data collection can better represent the views of college students. In addition, adopting offline face-to-face semi-structured interviews can accurately judge the attitude of interviewees according to their facial expressions and behaviors, which makes the whole study more representative and persuasive.

About the Author

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