



# A Study on Students' Critical Thinking Cultivation in English Teaching in the ChatGPT Era

Yizhen Liu <sup>1</sup>, Lifang Wei <sup>2\*</sup>

School of Foreign Languages, Shaoxing University, No. 900 Chengnan Avenue, Yuecheng District, Zhejiang Province, China

<sup>1</sup>yizhenzhenzhen@sina.com; <sup>2</sup>fangzi827@126.com

**Abstract.** The emergence of ChatGPT has had a significant impact on education worldwide today. Among them, students' critical thinking cultivation is one of the affected aspects. National policies and curriculum standards fully focus on students' thinking skills. However, there is currently a severe lack of critical thinking among students. This article analyzes the impact of ChatGPT-type artificial intelligence on the cultivation of critical thinking in English teaching. Based on the possibility of ChatGPT supporting the cultivation of critical thinking in English teaching, it elaborates on the teaching strategies for cultivating students' critical thinking in the English teaching process in the ChatGPT era. The cultivation of critical thinking is an important link in English teaching and student development. In the process of English teaching, teachers of English should pay attention to students' critical thinking cultivation from the aspects of teaching philosophy, teaching methods, and teaching evaluations, improve students' problem-solving ability, and promote the development of English teaching.

**Keywords:** ChatGPT, artificial intelligence, English teaching, cultivation of critical thinking

## 1 Introduction

The ChatGPT launched by Open AI has been popular throughout the network since 2022. For the field of artificial intelligence, ChatGPT is a new starting point. Chomsky believes that ChatGPT is a tool for high-tech plagiarism and evasion of learning <sup>[1]</sup>. Meanwhile, artificial intelligence also helps people solve problems in many fields, including education <sup>[2]</sup>. Its attained assessment is mixed <sup>[3][4]</sup>, but most authors think ChatGPT should not be banned but better understood to help people broaden their thinking and provide new inspiration <sup>[4][5]</sup>. The success of ChatGPT is undoubtedly enormous, so why it was successful and what English learners and educators can learn from it are all worth further analysis. English, the language with the most data in ChatGPT, has become a lingua franca. Chinese students start learning English at an early age and are faced with much English information, data, and viewpoints; they need help to develop critical thinking skills <sup>[6]</sup>. Therefore, in the era of ChatGPT, the cultivation of critical

© The Author(s) 2024

I. A. Khan et al. (eds.), *Proceedings of the 2024 2nd International Conference on Language, Innovative Education and Cultural Communication (CLEC 2024)*, Advances in Social Science, Education and Humanities Research 853, [https://doi.org/10.2991/978-2-38476-263-7\\_10](https://doi.org/10.2991/978-2-38476-263-7_10)

thinking in English teaching has become more important. Musk once said that after ChatGPT, education's core is cultivating critical thinking skills. The Chinese national policy has vigorously promoted digital intelligence education in recent years. Future teachers of English should focus on cultivating critical thinking in future English teaching and teach students wisdom, not just knowledge and skills. Students should learn to ask the right questions, judge the authenticity of the information, and form critical thinking. How to effectively cultivate foreign language learners' critical thinking abilities in using ChatGPT and avoid its negative impact on critical thinking ability is worth considering and exploring in foreign language teaching circles [7]. The research aims to solve two questions: (1) What are the impacts of artificial intelligence on the student's critical thinking cultivation in English teaching in the ChatGPT era? (2) How to cultivate students' critical thinking abilities in English teaching in the ChatGPT era?

## 2 Studies at Home and Abroad

### 2.1 ChatGPT

ChatGPT is a language model developed by OpenAI, based explicitly on the Generative Pre-trained Transformer (henceforth GPT) architecture. It utilizes deep learning techniques, particularly transformer models, to generate human-like responses in natural language conversations [7]. ChatGPT has gained significant attention and has generated a substantial body of research since 2022.

The research on GPT in foreign countries was earlier than in China and initially focused on the impact of the birth of GPT on academic writing [8]. In addition, there are also some introductions to ChatGPT itself, including its operating mode, applications, and future transformation prospects. Researchers are actively investigating ways to improve the capabilities, interpretability, and ethical considerations of ChatGPT and similar language models. Since 2023, many papers have demonstrated the continuous development and exploration of ChatGPT and its predecessor models, focusing on various areas such as medicine, education, and management. Foreign countries pay more attention to the practical application of ChatGPT, while China focuses more on research from the humanities' and social sciences' perspectives. ChatGPT, with its powerful technological advantages, has shown most scholars its enormous potential and broad application prospects in education.

### 2.2 Critical Thinking Cultivation in English Teaching

At first, Dewey proposed "reflective thinking" and the five-stage critical thinking model [9]. From then on, critical thinking entered the research field. Actually, there are various definitions of critical thinking. For example, critical thinking can be defined as the process of rational judgment [10]. It is recognized as a vital cognitive skill that can ensure people engage in reflective and independent thinking, analyze information, solve problems, and make informed decisions. Currently, the most influential framework model of critical thinking was proposed in *the Delphi Report* (1990), which was

classified into six dimensions: interpret, analyze, evaluate, infer, explain, and self-regulation.

With the development of society, cultivating students' critical thinking has gradually aroused great attention in various countries. Critical thinking, as an essential part of creative ability, plays a vital role in English education [6]. Brown pointed out that foreign language courses should focus on language knowledge and the cultivation of critical thinking [11]. Language and thinking are inseparable. At present, more and more attention is paid to cultivating critical thinking ability in regular education. For example, Belda-Medina proved that digital storytelling was an effective way to promote critical thinking skills in an English as a foreign language classroom [12].

Among them, there is much research on the cultivation strategies of critical thinking in listening, speaking, reading, and writing, and most focus on reading and writing. There is relatively little research on cultivating critical thinking in oral and listening classes. The existing research mainly includes the following aspects: (1) The lack of critical thinking and critical thinking ability training, practical significance, and summary; (2) The influence of teachers' teaching methods on the cultivation of critical thinking; (3) The cultivation strategies of critical thinking in English classes of different learning stages and different classes; (4) Other research related to critical thinking, such as English textbooks, research on the cultivation of thinking quality, etc.

Based on the above literature, the research gap is: (1) Since ChatGPT became popular, the research perspective of educational researchers has been relatively macro, such as its impact on education and strategies for educational reform. (2) The impact of ChatGPT on education has received attention. However, there currently needs to be more research on foreign language education; foreign language teaching in the ChatGPT era urgently needs in-depth research. (3) Educators pay much attention to the cultivation of students' critical thinking, but there is little research on the cultivation of critical thinking in English teaching from the perspective of ChatGPT or artificial intelligence.

### **3 Impact of Chatgpt on Critical Thinking Cultivation in English Teaching**

The 2022 International Conference on CALL proposed emerging technologies to promote the prosperity and development of language teaching. A large amount of empirical research elaborates on the two roles of technology as a "tutor" and a "tool". Before focusing on critical thinking cultivation strategies, it is crucial to understand the impact of ChatGPT on the development of students' critical thinking.

#### **3.1 Positive Impact**

Firstly, the ChatGPT interaction system can provide timely perspectives and interpretation, ensuring the integrity of the thinking chain in an English class. In actual English teaching, teachers of English may be busy with various tasks; if English learners raise questions, it takes a long time to achieve quick resolutions for every student for

teachers. Suppose English learners interact through ChatGPT-type artificial intelligence; these technologies can provide foreign language learners with responses about their thinking processes and problem-solving methods within seconds without causing their thinking to be interrupted due to a lack of timely responses. This type of artificial intelligence technology has an extensive database, especially in English, which can simulate different situations and provide timely perspectives and comprehensive explanations for the problems raised by English learners. This immediate feedback and comprehensive explanation can help students quickly understand and correct their existing knowledge errors or biases, promote the thinking process, ensure the completeness of the thinking chain, and encourage them to think more critically, deeply, and comprehensively.

Furthermore, ChatGPT can create diverse interpretations and ideas for inspiration. Since ChatGPT contains a large number of English resources, it can provide diverse perspectives, positions, and ideas for English learners who are temporarily uninspired and stimulate students' divergent and creative thinking. The different perspectives provided by ChatGPT enable foreign language learners to learn to think about problems from different perspectives and explain the nature of problems, thus cultivating critical thinking. In addition, students can consider the feasibility, logic, and rationality of different viewpoints. By trying, students can propose novel problems, try different solutions, and learn to think and evaluate the feasibility and effectiveness of these ideas. They may actively question, debate, and challenge their viewpoints, deepening their understanding and analysis of the problem. In the future, foreign language learners can more easily apply critical thinking to practical situations with the help of ChatGPT.

Lastly, ChatGPT can prepare fundamental analysis and personalized help <sup>[2]</sup>, which is beneficial for improving students' analytical abilities. AI tools such as ChatGPT can serve as private "English foreign teachers," providing personalized thinking solutions and personalized English learning services based on students' needs and interests. Many AI technologies and platforms can help English learners analyze their learning styles, learning advantages, and interests, help them better analyze problems, conduct in-depth thinking and explorations, and thus cultivate critical thinking <sup>[13]</sup>. English learners can practice various oral expressions, academic writing, and reading comprehension skills through conversations with chatbots <sup>[2]</sup>. ChatGPT can also recommend reading materials and English learning resources with corresponding difficulty levels to meet the needs and levels of foreign language learners <sup>[3]</sup>, helping them continuously learn and improve.

### 3.2 Negative Impact

First, ChatGPT leads to English learners' excessive dependence on technology, affecting their ability to think profoundly and infer. In actual English curriculum teaching, teachers of English and learners usually place great emphasis on learning language skills, and there needs to be more emphasis on cultivating the thinking quality of English learners themselves. In the ChatGPT era, English learners use artificial intelligence such as ChatGPT to complete daily assignments such as English writing and reading comprehension questions, which may lead to excessive reliance on technology to solve

problems. Students may tend to accept the answers and viewpoints provided by ChatGPT, forming the thinking pattern of ChatGPT responses without sufficient critical thinking and reasoning evaluation. This may weaken students' independent thinking ability and inference abilities in English and affect the development of critical thinking abilities.

The unclear source of ChatGPT information affects students' judgment and evaluation. ChatGPT sometimes provides answers that are not very accurate and reliable, as it may be affected by data bias, incorrect understanding, or incomplete information. Additionally, ChatGPT's answer is based on the synthesis of big data. As a lingua franca, English has a wide range of data and information sources that are not clear. English learners may face difficulties in evaluating the reliability and accuracy of this information when interacting. This may make students unable to effectively distinguish between true and false information, even taking falsehood as truth, thus affecting their critical thinking ability.

Besides, ChatGPT lacks English learning evaluation and feedback, and English learners overlook self-monitoring and self-supervision during the English learning process. In daily English teachings, such as the interaction between English teachers and students, students can reflect on the questions and suggestions raised by the teachers and continuously improve based on their existing knowledge. English learners can complete the entire process of interpreting, analyzing, and evaluating their viewpoints and arguments. Foreign language learners can also continuously optimize their thinking processes and outcomes under self-supervision and self-regulation. Although ChatGPT can provide a large amount of information and viewpoints, response generation does not require student participation, and ChatGPT does not evaluate students' English learning process. Students are unable to participate in corrections or receive feedback. The lack of assessment of ChatGPT may limit the personal development of students in critical thinking training (self-monitoring).

ChatGPT lacks honest communication and practical application. Frequent use of ChatGPT can turn students into machines that complete tasks without emotions and thinking. Although ChatGPT can simulate problem-solving, interaction, and debate processes, it cannot provide real-world practical scenarios and applications. ChatGPT is a model-generated answer that may lack emotional, contextual, and real-world complexity. This may limit the development of students' humanistic literacy and critical thinking, as they do not face natural human perspectives. The cultivation of critical thinking requires students to be able to apply it to practical problems and situations and interact and apply it to the real world. The use of ChatGPT cannot provide the richness and challenges of communication with honest human communication, which may limit the development of students' comprehensive critical thinking in practical problem-solving.

## 4 Strategies for Students' Critical Thinking Cultivation in English Teaching

In the era of ChatGPT, it is essential for teachers of English to focus on teaching English learners how to engage in critical and creative thinking and use technology responsibly. For the learning characteristics of contemporary learners integrating information technology and artificial intelligence technology, teachers and learners should have a clear understanding and live in harmony with science and technology. Focusing on cultivating learners' critical thinking and improving the core competence of English learners is essential.

### 4.1 Establishing a Critical Teaching Concept

Building a harmonious “teacher-student-artificial intelligence” relationship in English teaching is necessary from the teachers' guidance.

#### **Guide students to “learn to question and ask questions” in English learning.**

Teachers of English should encourage students to question, speculate, and explore boldly and dare to express different opinions from teachers<sup>[7]</sup>. Teachers should praise and reward students who make critical evaluations in the classroom, even if their evaluations are not correct or mature enough. Teachers should have a correct view of artificial intelligence and guide students to establish a correct concept of the “teacher-student-artificial intelligence” relationship. Students can boldly question teachers, authority, and the information provided by ChatGPT<sup>[14]</sup>.

#### **Guide students to “distinguish between facts and viewpoints, true and false information”.**

As proved, ChatGPT is an attractive platform for students<sup>[4]</sup>, so teachers can guide students to dialogue with ChatGPT and think and analyze the topics and perspectives from multiple perspectives. Teachers of English can also encourage students to use various Internet resources and online learning platforms to judge and confirm the source and authenticity of the information, stimulate students' critical thinking, and evaluate and challenge the answers provided by ChatGPT and the content taught by teachers. Distinguishing between facts and viewpoints, students cannot fully believe in external information and should undergo independent thinking and develop a habit of questioning. Such interaction can cultivate students' ability to discern information and encourage them to ask in-depth questions and understand complex viewpoints.

#### **Guide students to “to summarize and reflect”.**

As a language, English is a tool used for communication, thinking, and information acquisition. Teachers can organize students to sort out the knowledge and methods they have learned and examine and analyze their learning emotions and methods. They are setting up summary and reflection tasks to help students develop this skill, such as

using inductive methods, summarizing patterns, experiencing skills, mastering English learning methods, and cultivating the habit of deep thinking.

## **4.2 Innovating English Teaching Methods**

Currently, “people do not teach for problems, but for tools.” Teachers of English should combine language abilities, such as listening, speaking, reading, writing, and reading, with critical thinking and innovative teaching methods to cultivate students' critical thinking. Teachers can give full play to the advantages of advanced teaching methods, optimize classroom teaching design, and expand the space for students to use critical thinking so that English teaching with critical thinking can be carried out.

### **Strengthen discussions and debates among students.**

The cultivation of critical thinking in listening and speaking is insufficient, so teachers can innovate teaching methods and teach with critical thinking. Utilize online discussion platforms and offline real classrooms to simulate ChatGPT interactive modes, such as organizing group discussions, debate activities, etc., to encourage students to think and express their viewpoints from a critical perspective. Teachers of English can provide leading questions to trigger thought collision and debate among students to cultivate critical thinking, logical thinking, and debate skills. Students' thoughts are more important than language accuracy and fluency in teaching.

### **Encourage students to engage in critical exercises.**

Exercise students' ability to express their opinions and provide argumentative support through output tasks such as English writing, speaking, and engaging in deep thinking. Teachers can use ChatGPT as information assistance and support; students can organize arguments and engage in logical thinking based on this. Teachers of English provide critical feedback and guidance to stimulate students' potential for critical thinking. Teachers of English can design questions and discussions on English reading articles with the help of ChatGPT, guide students in deep learning and reading, and engage in critical thinking when reading materials. For example, students must evaluate the author's viewpoint, propose their supporting or opposing viewpoints, and provide reasons and arguments to support their viewpoint, or more open-ended questions to trigger deep thinking among students.

### **Promote the transfer of critical thinking.**

The cultivation of critical thinking in the English classroom should not be limited to the teaching design of a lesson or the solution to a problem. Instead, it should be returned to the specific life situation, and a comprehensive consideration should be made based on the characteristics of the discipline itself. For example, the cultivation of critical thinking in Chinese and English subjects is dedicated to constructing and applying language thinking. In contrast, science subjects must focus on exploring and solving problems with critical thinking. They all require establishing connections with

the world of life in order to help students transfer their abilities. Therefore, in classroom English teaching, rather than pursuing the difficulty of teaching materials, it is better to pursue more specific and real-life tasks to promote the transfer and improvement of students' critical thinking. Besides, teachers can also use ChatGPT input commands to integrate teaching between different subjects, in line with the trend of STEAM education to promote the transfer of critical thinking modes.

### 4.3 Adjusting English Teaching Evaluation

Teachers of English can leverage intelligent platforms such as artificial intelligence to conduct diverse evaluation standards [5]. For instance, teacher-student cooperation evaluation, student-student cooperation evaluation, in and out-of-class student self-evaluation, machine evaluation, human-computer interaction evaluation, etc. Teachers can add the evaluation of critical thinking to the evaluation checklist in daily teaching. Through evaluation, students at different levels can experience the joy brought by criticism and innovation, enabling them to recognize themselves, establish confidence, form independent thinking consciousness and ability, and ultimately achieve their comprehensive development under the motivation of progress and success. For example, in evaluating a writing task, debate scoring, and group collaboration evaluation can be used to encourage students to engage in critical thinking activities, focusing on the cultivation of critical thinking in English teaching supported by ChatGPT. In particular, teachers of English should provide concrete and constructive feedback to help students realize the advantages of their critical thinking and the direction for improvement.

## 5 Conclusion

With the rapid development of global informatization and economic integration, the core of international competition will be the competition for incredibly innovative talents. In the era of ChatGPT, English learners need to do and improve something that ChatGPT is challenging to achieve in future development. Foreign language teachers should first improve their reflective and critical thinking ability, conduct in-depth research on the cultivation methods of critical thinking ability in English teaching, and formulate practical and feasible teaching programs and plans. In the era of ChatGPT, the cultivation of critical thinking in English teaching attaches equal importance to integrity and innovation. Ensure that students master the basic skills of criticism through traditional teaching values and methods; at the same time, innovative technical tools such as ChatGPT are used to create new teaching methods and learning experiences, cultivate students' critical thinking, and improve students' English ability and learning motivation. Cultivating critical thinking in English teaching is not an overnight thing but an inevitable thing that requires long-term efforts. English teachers shall actively respond to this challenge and dare to explore. In daily English teaching, criticism should be considered and externalized in practice. Through teaching methods and teaching evaluation, teachers of English critical thinking cultivation practice can con-



tinuously push forward English education in China and make contributions to cultivating high-quality English innovative talents.

## Project

“A Survey of Critical Thinking Cultivation in Senior High School English Teaching under the Internet+ Background” supported by Educational Commission of Zhejiang Province, China (Grant No. Y202351928).

## References

1. Marshall, C. (2023). Noam Chomsky on ChatGPT: it's “basically high-tech plagiarism” and “a way of avoiding learning”. Open Culture. <https://www.openculture.com/2023/02/noam-chomsky-on-chatgpt.html>.
2. Rahman, M. M., & Watanobe, Y. (2023). ChatGPT for education and research: Opportunities, threats, and strategies. *Applied Sciences*, 13(9), 5783.
3. Farrokhnia, M. et al. (2023). A SWOT analysis of ChatGPT: Implications for educational practice and research. *Innovations in Education and Teaching International*.
4. Shoufan, A. (2023). Exploring students' perceptions of ChatGPT: Thematic analysis and follow-up survey. *IEEE Access*, 11, 38805-38818.
5. Yang, H. (2023). How I use ChatGPT responsibly in my teaching. *Nature*.
6. Veliz, L., & Veliz-Campos, M. (2019). An interrogation of the role of critical thinking in English language pedagogy in Chile. *Teaching in Higher Education*, 24(1), 47–62.
7. Zhang, Z., & Hong, H. (2023). Foreign Language Teaching Supported by ChatGPT: Empowerment, Problems, and Strategies. *Foreign Language World*, 2, 38-44.
8. Yan, D. (2023). Impact of ChatGPT on learners in a L2 writing practicum: An exploratory investigation. *Education and Information Technologies: The Official Journal of the IFIP Technical Committee on Education*, 1–25.
9. Dewey, J. (1909). *Moral Principles in Education*. Boston: Houghton Mifflin Company.
10. Facione, P. A. (1990). Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction (Executive summary of “The Delphi Report”). Millbrae, CA: California Academic Press, 4-11.
11. Brown, H. D. (2004). Some practical thoughts about students' sensitive critical pedagogy. *The Language Teacher*, 28(7), 23-27.
12. Belda-Medina, J. (2022). Promoting inclusiveness, creativity, and critical thinking through digital storytelling among EFL teacher candidates. *International Journal of Inclusive Education*, 26(2), 109–123.
13. Rusandi, M. A. et al. (2023). No worries with ChatGPT: Building bridges between artificial intelligence and education with critical thinking soft skills. *Journal of Public Health (Oxford, England)*.
14. Rospigliosi, P. A. (2023). Artificial intelligence in teaching and learning: what questions should we ask of ChatGPT? *Interactive Learning Environments*, 31(1), 1-3-3.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

