

The Influence and Application of ChatGPT in the Teaching Reflection of International Chinese Teachers

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Abstract. The appearance and use of Chat Generative Pre-Trained Transformer (ChatGPT) has a great impact on the field of international Chinese education. The research on the combination of Artificial Intelligence (AI) and Teaching Chinese as a Foreign Language has attracted extensive attention from scholars, but there are relatively few studies on the combination of AI and teaching reflection of international Chinese teachers. This paper is to analyze the influence and application of ChatGPT in the teaching reflection of international Chinese teachers. It is concluded that ChatGPT plays a certain role in the reflection which is about teachers, students, and teaching media and environment. Based on this conclusion, the paper proposes the following suggestions: Through ChatGPT, these teachers could ensure that their attention continues to focus on information related to students' knowledge growth, and they can also provide individualized language practice and learning resources for students according to their language background. But at the same time, teachers need to pay attention to the maintenance of professional level and the improvement of human-AI interactive negotiation competence (HAINC).

Keywords: International Chinese teachers, teaching reflection, ChatGPT.

1. Introduction

Chat Generative Pre-Trained Transformer (ChatGPT) is a large language model (LLM) created by Open AI for natural language processing and generating dialogues. It is a tool, which is based on Artificial intelligence technology and neural network algorithms in deep learning, for directional reasoning and generating natural language and knowledge by inputting a large amount of corpus data [1]. The emergence of ChatGPT not only brought great impact to the field of education but also brought new development opportunities for this industry. With the appearance and use of ChatGPT, governments have actively promulgated relevant policies to guide and support the development and application of ChatGPT. In the field of international Chinese education, it has become a popular topic to explore the impact which is about the working principle, technical architecture, and application scenarios of AI on global Chinese education and how to combine it with the "Chinese +" field.

Teaching reflection, as the main internal driving force for teacher professional development, is of great significance in the personal growth and development process of teachers. The stronger the teacher's ability to reflect on teaching, the faster they will be able to recognize the situational characteristics and information related to teaching effectiveness, and thus make teaching decisions and improvements [2]. With the progress and development of the times, it is difficult to meet the needs of teachers to improve their reflective ability solely through text analysis or theoretical exploration of teaching reflection. Therefore, combining and using information technology plays an important role in improving the professional level and ability of teachers. The characteristics of information technology could not only revolutionize the methods of teacher reflection (e.g. collaborative reflection) but also serialize teacher reflection [3].

With the rise of ChatGPT, scholars have also paid attention to how to promote the development of teachers' teaching reflection ability through such artificial intelligence technologies. Integrating ChatGPT into the teacher reflection process is beneficial for teachers to conduct guided reflection on teaching, gain insight into classroom pivotal information and characteristics, and help teachers form their educational theories. At the same time, it is also expected to help international Chinese teachers more effectively use AI, improve teaching quality, and enhance the teaching experience. Therefore,

this article will discuss the impact and application of ChatGPT in the teaching reflection of international Chinese teachers, and analyze the changes brought by the integration of AI into teaching reflection for these teachers.

2. Literature Review

2.1. Conceptual and Theoretical Foundation

John Dewey conducted a preliminary exploration of reflection, proposing that reflective thinking is a form of repeated, serious, and persistent contemplation of problems in an individual's mind [4]. For any hypothesis, actively, persistently, and meticulously consider it based on its foundation and further derived conclusions, to make suspicious situations clear and organized.

Based on Dewey's exposition, D.A. Schon supplemented the connotation of reflection from the perspective of rational practice, combining "reflection" with "action" and proposing the concepts of Reflection-in-action and Reflection-on-action [5]. Among them, reflection-in-action refers to an individual's conscious or subconscious continuous reconstruction of problem situations that do not align with past experiences and are unexpected. While reflection-on-action refers to an individual's retrospective reflection on the behavior that has already occurred, which also includes reflection on the results and processes of reflection-in-action. In addition, Schon also proposed the concept of Tacit knowledge, which refers to the knowledge that people unconsciously acquire through reflection. If teachers can be aware of and activate tacit knowledge, they can gradually form and develop their educational theories.

The influence of this trend gradually expanded in the 1980s, and the educational community of various countries quickly included teaching reflection in teacher education projects. Zeichner, K. M., & Liston, D. argue that reflective teaching not only enables teachers to focus more on self-development but also increases their enthusiasm for formulating educational policies [6]. This can provide teachers with a new path for reflection.

Scholars have also divided the content and level of teaching reflection. Van Manen and Zeichner & Liston divided reflection into three levels: technical rationality, practical action, and critical reflection [7, 8]. Among them, technical rationality refers to the purposeless reflection of events by teachers based on personal experience. Teachers at this level of reflection emphasize the efficiency and effectiveness of the methods, rather than the rationality of their objectives. Practical action refers to the teacher's ability to perceive problems in teaching events but cannot handle them without bias, and teachers can only subjectively perceive and explain the teaching situation. Teachers at the critical reflection level could integrate moral and ethical standards into their discourse on practical behavior with an open mind, without bias, focusing on the value of knowledge and social environment that is beneficial to student development.

The construction of this framework has also had a profound impact on subsequent research. Jiliang Shen and Jiaxia Liu further elaborated on the level of teaching reflection based on Van Manen, dividing it into three levels: pre-reflection level (evaluating teaching from a technical perspective), quasi-reflection level (explaining teaching behavior and results based on personal experience and subjective recognition of the environment), and reflection level (comprehensively considering moral ethics and social background) [9].

Regarding the content of teaching reflection, Eby elaborated on reflective behavior from a holistic perspective in his book *Reflective Planning and Teaching Evaluation*. He concluded that teaching reflection should not only be a review of course content but also include the teacher's pre-class preparation and post-class activities [10]. Lockhart et al. refined the content of teaching reflection based on previous research. They propose that the main content of teaching reflection should include: The teacher's evaluation of their teaching activities; The understanding of learning by students in the classroom; Evaluation of teaching activities; Teacher role; The structural approach of the class; Second language classroom interaction; The nature of language activities; Teacher's classroom language [11]. Jiaxia Liu and Jiliang Shen have expanded and refined the content direction of teaching

reflection in response to the limitations of Van Manen's theory. It mainly includes five dimensions: classroom teaching, student development, teacher development, educational reform, and interpersonal relationships [9]. The content of teaching reflection has been extended to the process and strategy level of reflection.

In China, with the increasingly mature development of teaching reflection theory, scholars in the field of international Chinese education have gradually paid attention to the importance of teaching reflection. Li Xiong pointed out in her article *The Tradition of Reflection in Chinese Language Teaching* that Chinese language teaching, as a second language, is still in its infancy. From a historical perspective, the issue of teaching reflection has always been highly valued, and even the development history of Chinese language teaching can be recognized as a continuous process of teaching reflection [12]. However, there are relatively few studies related to it and exploring it in the field of "Chinese +".

2.2. ChatGPT's Application to Teaching Chinese to Speakers of Other Languages: Contingency and Necessity

The application of artificial intelligence in the field of Chinese education often focuses on two aspects: search and analysis. Search-based artificial intelligence revolves around big data computing models and algorithm optimization, such as language translation and text diagnosis correction terminal systems; Analytical artificial intelligence relies on natural language processing and image recognition technologies, such as big data language structure models for Chinese pronunciation and tone exercises [13]. Compared to search-based or analytical artificial intelligence, ChatGPT, as a new generation of communication-based artificial intelligence that can generate content around text semantics, has the advantage of utilizing context and reasoning for interaction. It can reshape teacher-student relationships and achieve process reengineering in Chinese education. The application of ChatGPT in Chinese teaching can be summarized as four points: firstly, it can be used for the construction of Chinese teaching resources; Secondly, personalized Chinese teaching services can be provided; Thirdly, software suitable for Chinese language teaching can be developed using basic models and ChatGPT; Fourthly, it can assist teachers in teaching [14].

For the international Chinese education industry, the application of ChatGPT can provide new impetus for the digital transformation of digital resources in international Chinese education. Regarding educational resource construction, ChatGPT can achieve more powerful functions, and the automatic emergence of resources will expand the space and field of Chinese learning and cultural dissemination. ChatGPT can also provide personalized training programs for Chinese language learners, producing a large number of localized, personalized, and three-dimensional learning resources according to learning needs, and expanding the content construction of teaching resources.

For international Chinese language teachers, ChatGPT can serve as an extremely powerful "teaching assistant" to integrate into teaching. It can provide highly operational course design, lesson preparation plans, classroom exercises, homework assessments, etc. for international Chinese teachers. It can also help international Chinese teachers implement personalized teaching: ChatGPT can predict learners' preferences and biases in international Chinese learning based on their regional and national characteristics, learning motivation, mother tongue background, age, and other conditions, design personalized learning conversation materials and reading texts for learners with different needs, and help teachers flexibly optimize and adjust teaching content, teaching methods, etc., improve teacher preparation efficiency, and reduce teacher workload [1].

3. Discussion

3.1. Construction of Teaching Reflection Framework for TCSOL

As shown in Figure 1, this paper proposes a framework for analyzing the teaching reflection of international Chinese teachers by further summarizing the theory of teaching reflection. The paper refers to Van Manen's classification of the level of reflective thinking in teaching and divides the

growth of reflective thinking in international Chinese language teachers into three stages [7]. In the first stage, teachers focus on whether they have completed teaching behaviors and pay attention to teaching efficiency and effectiveness. In the second stage, teachers focus on the effectiveness of teaching behavior and prefer to analyze teaching behavior based on their own experience. In the third stage, teachers consider the teaching process and environment as a whole and integrate all possible content that may affect teaching effectiveness into their thinking as variables, to achieve unbiased examination and analysis of teaching behavior.

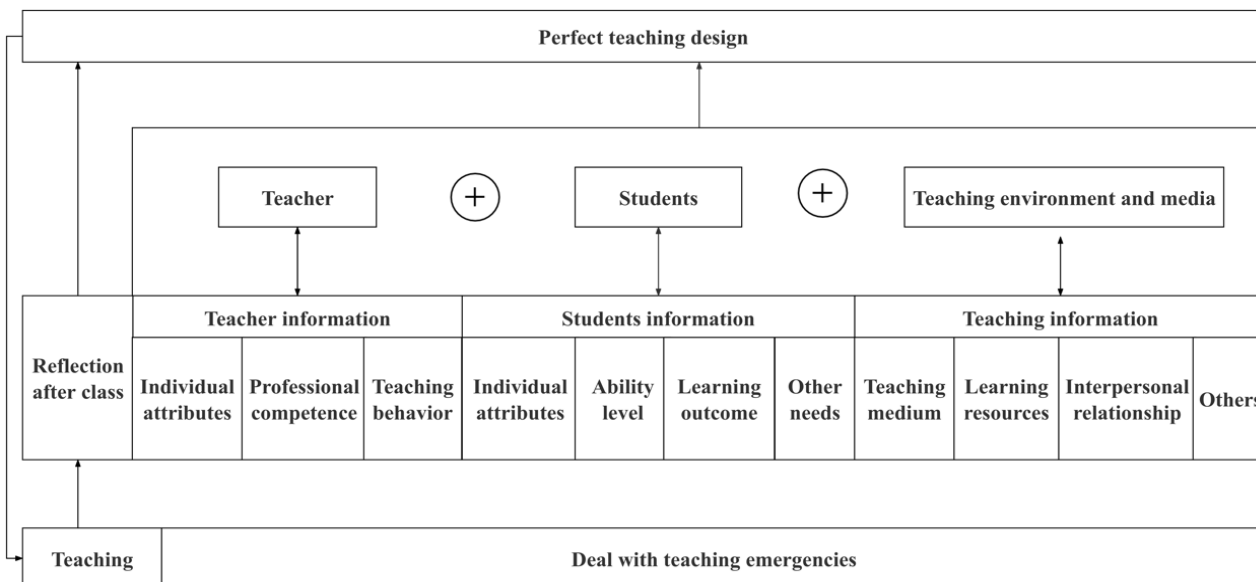


Figure 1. Teaching reflection framework

Regarding the content of teacher reflection, this paper refers to the theory proposed by Schon and Jiliang Shen & Jiaxia Liu and divides teacher teaching reflection behavior into two aspects [5, 9]. One is the experience gained in dealing with teaching emergencies, which belongs to tacit knowledge. The acquisition and growth of this experience is purposeless, and can gradually be transformed into a teacher's teaching theory after being consciously activated by the teacher, helping them form their teaching methods and concepts. The second type is retrospective reflection conducted by teachers after teaching. Compared to the first type, the content of the second is more complex. This article mainly divides it into three parts: reflection on teacher development, student development, and teaching environment and media.

Reflection on the aspect of teachers. This article divides it into three aspects: individual attributes, professional competence, and teaching behavior. Among them, teachers need to focus on reviewing the aspect of teaching behavior when reflecting. Based on the criteria of pre-class, in-class, and post-class, teachers should mainly consider whether the pre-class preparation and teaching design are reasonable and whether they are in line with the learning situation of students. Whether the implementation of teaching activities in class is rich, the use of teaching methods is appropriate, the teacher's discourse is appropriate, and the teaching behavior is effective, that is, whether students have indeed gained something through the classroom. The review after class should focus on student evaluation, colleague evaluation, and teacher self-evaluation.

Reflection on student aspects. Due to the particularity of the teaching object, teachers need to consider not only the differences in student learning outcomes, but also the level of Chinese language proficiency, whether there is a special need for learning content, whether learning strategies and methods are formed, and whether the emotional needs of students in the classroom are met.

Regarding the teaching environment and media. Teachers can think from four aspects: the use of teaching aids or media by teachers. Are the learning resources for students appropriate and sufficient? The interpersonal relationship between teachers and students, including classroom interaction and

cross-cultural communication. And the situation of education reform and the promulgation of education policies.

3.2. The Reasonable Application of ChatGPT in Teaching Reflection

In promoting teacher development, ChatGPT can help teachers focus their attention on information related to students. Bimei Wang analyzed the cognitive processing mechanisms of teaching reflection among teachers with different levels of experience based on eye-tracking technology and teacher oral reports. She detects that the root cause of differences in teacher reflection thinking levels lies in differences in their insight into classroom teaching behavior and risk perception [3]. She pointed out that the way to enhance the level of reflective thinking lies in adjusting the focus of reflection, multiple attributions, and deep reflection. Therefore, when teachers reflect on their teaching, they should pay more attention to information related to the growth of students' knowledge and abilities, such as the achievement of teaching objectives, the use of teaching strategies, and the reasons for teaching difficulties. For some teachers, especially novice teachers, it may be difficult to focus on students, resulting in difficulties for teachers to preset the learning level of students. By pre-set learner profiles, ChatGPT can help teachers accurately assess the level of learners and clarify the changes in their level before and after class. Even if the teacher's reflective focus is slightly shifted, ChatGPT can help teachers make up for the neglect of student learning caused by the shift in focus, better understand the achievement of teaching objectives, and improve teaching methods and strategies.

In terms of enhancing student development, Chinese language learners can use ChatGPT for more effective language practice. In traditional teaching and learning, Chinese learners often rely on reference books or information retrieval tools for learning, and early developments in artificial intelligence technology mostly helped learners learn Chinese by improving retrieval efficiency. Due to its powerful natural language processing capabilities, ChatGPT can achieve discourse coherence through multi-stage question-and-answer style human-computer interaction, allowing for repeated questioning of a certain question. If students could scientifically set guiding language and use standardized preset questions to ask ChatGPT, they can generate relevant explanations, demonstrations, exercises, and even repeat exercises, error analysis, and periodic reviews on Chinese words, syntax, grammar, and other content, helping learners create a more complete preview-learning-review cycle.

In improving the teaching environment and media, ChatGPT could help teachers integrate teaching resources and extract relevant materials according to their needs. The development of technology has brought great convenience to teachers. Powerful mature algorithms and generative artificial intelligence technology for data statistics integrate a large amount of complex information into a processable database. By extracting and analyzing interactive keywords, the most relevant data is selected from the deeply processed data. Then, through sorting and processing of relevant data, language, and expression are organized to express the data information in a form that is easy for humans to accept and understand [15].

To integrate ChatGPT into international Chinese education, one should not only consider whether to use it but also how to effectively use it. Qiufang Wen & Maocheng Liang found through various practices using ChatGPT that human-AI interactive negotiation competence (HAINC) is the key to effectively leveraging the powerful functions of AI [16]. The stronger the HAINC, the more help one can get from AI. In the theory proposed by Qiufang Wen & Maocheng Liang, for teachers to truly and effectively utilize ChatGPT for teaching reflection, they should follow the five steps: understanding AI, setting goals, issuing instructions, analyzing feedback, and adjusting strategies. The first step is for teachers to clarify what ChatGPT can do and interact with clear and specific instructions to facilitate AI understanding and feedback. The second step is to provide AI with feasible goals and try to supplement details as much as possible. The third step is to include the following three aspects when issuing instructions to AI: the roles of both parties; the Information that needs to be processed; and the results that people hope AI can produce. Namely, preset the identity of AI to complete the tasks that need to be done under that identity. Step four, evaluate the content generated

by ChatGPT to see if it meets the preset requirements and actual situation before putting it into use. The fifth step is to investigate or modify the original instructions based on the previously discovered issues. Through the cycle of these steps, a complete iteration cycle is formed until the expected results are continuously approached or even achieved.

In summary, teachers could use ChatGPT to observe and ensure that their focus is on information related to student knowledge and ability growth. They could also use AI to assign more scientific and effective practice tasks to students, helping them better master and use Chinese. In addition, through the powerful search and extraction functions of AI, learning resources and materials related to teaching content can also be collected and reorganized. Provide these resources to students in a hierarchical and phased manner based on their learning situation, to help them improve personalized learning and achieve better teaching outcomes. However, at the same time, teachers should also improve their professional level and HAINC to accurately and timely identify errors and deviations in AI feedback, and adjust instructions as soon as possible.

4. Conclusion

As a powerful generative artificial intelligence, ChatGPT has a huge impact on the field of international Chinese education. In the teaching reflection of international Chinese language teachers, ChatGPT can help teachers preset learner profiles, and also assist teachers in providing differentiated guidance to Chinese language learners, managing students according to different countries, mother tongue backgrounds, and Chinese language proficiency. Secondly, it is also possible to integrate teaching and learning resources, avoiding the dilemma of teachers dealing with large and complex resources during the teaching and after-class review process, and completing the review process more efficiently, thereby improving the enthusiasm and initiative of teachers in teaching reflection. However, while ChatGPT brings convenience to teachers, it also has certain requirements for users, that is, teachers must have a certain level of HAINC. Teachers should be able to issue clear instructions evaluate the results of ChatGPT feedback with a high level of professionalism, and make corrections to the instructions. Through this, teachers can more effectively use ChatGPT, integrate it into teaching practice, and promote the improvement of teaching reflection efficiency.

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