

The Construction of Personalized Language Learning System under the Guidance of ChatGPT

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Abstract: With the development of artificial intelligence technology, AI-powered chatbots are gradually being applied to language teaching and learning. Among them, ChatGPT, as a generative language intelligence model, plays its unique advantage in promoting personalized language learning. Hence, this article starts by elucidating recent research on the use of ChatGPT in language teaching and learning, giving some evidence about the possibility of personalized language learning under the guidance of ChatGPT. Then advantages associated with its usage in personalized language learning are discussed, including providing personalized language input, cultivating personalized language learning abilities and giving personalized language feedback for language learners. Based on these advantages, this article compares the traditional personalized language learning with the one under the guidance of ChatGPT and try to put forward a three-step personalized language learning system under the guidance of ChatGPT, hoping to improve the effectiveness of language learning and realize the truly personalized language learning in the future.

Keywords: ChatGPT; Language Learning; Personalized Language Learning System.

1. Introduction

Recently, ChatGPT has caught the attention of language educators because it can interact with learners in their target language instantly and realistically. Its potential benefits for language learning are diverse, including assistance in language skill development, the provision of personalized practice materials, and support for writing, research, and problem-solving tasks [1].

Xiao & Zhi's [2] findings support the possibility of integrating technology enhanced tools, such as ChatGPT, into the language classroom. In fact, while AI language processing used to focus on the formal and semantic aspects of language, ChatGPT is now moving towards inference and pragmatics. As ChatGPT continues to be upgraded, it brings language learning a new opportunity to make it more personalized.

However, most of the current research on ChatGPT and language learning focus on the macro level. For example, to discuss the opportunities that ChatGPT brings to language teaching and learning, such as stimulating enthusiasm for learning and tailoring teaching to the needs of the students [3], facilitating synergy in interaction and communication, and empowering self-directed learning [4]; to explore the transformation of language teachers' role under the influence of ChatGPT [5, 6]; and to find out the challenges that ChatGPT brings to foreign language teaching and learning, such as copyright and plagiarism issues, data privacy and security [1]. However, fewer researchers have focused on how ChatGPT should be used for language learning at the micro level like personalized language learning.

Although some researchers have shown that ChatGPT enables language learners to achieve more personalized learning [1, 7], and it can suggest customized resources and learning activities depending on a learner's needs and learning style [8]. Besides, it functions as a learning partner or personal tutor by providing personalized, easily accessible, and immediate feedback [9, 10].

However, the specific operation system of personalized

language learning assisted by ChatGPT has not been formed for the time being. Therefore, on the basis of the current research on ChatGPT for language learning, this article sorts out the advantages of ChatGPT in personalized language learning including providing personalized language input, cultivating personalized language learning abilities and giving personalized language feedback for language learners. Based on these advantages, the author tries to put forward a three-step language learning system of how to carry out personalized language learning with the help of ChatGPT by comparing the traditional personalized language learning with the one under the guidance of ChatGPT, hoping to provide language learners with appropriate methods for efficient language learning in accordance with the development of AI technology.

2. The Definition of ChatGPT and Personalized Language

2.1. ChatGPT

ChatGPT (Chat Generative Pre-Trained Transformer), an artificial intelligence generated content (AIGC) model developed by OpenAI, is capable of dealing with challenging language understanding and generating new content based on a large-scale language database [11], which introduces numerous opportunities and challenges in the field of language education.

It acquires linguistic knowledge and world knowledge through the training of super-large text corpora, and at the same time introduces reinforcement learning methods based on human preferences and applies them to natural language modeling. In addition to the huge amount of unlabeled data, ChatGPT is also trained with a specialized corpus of finely labeled texts for better adaptability and more accurate knowledge. The creativity of ChatGPT lies in the adoption of the training mechanism of human feedback reinforcement learning and prompt guidance mode based on the large model, so that the model gradually conforms to the logic of human

thinking and tends to human cognition and habits [12].

2.2. Personalized Learning and Personalized Language Learning

Personalized learning refers to a way of learning in which the content and methods of teaching are tailored to the needs and abilities of each student according to his or her individual differences and characteristics. In personalized learning, the instructor designs a personalized learning plan by understanding students' learning styles and needs so that students can learn more efficiently and achieve better learning outcomes [13].

Personalized language learning focuses on the individual differences of students in language learning. By considering learners' language learning interests, learning abilities and learning styles, they will be provided suitable learning resources and learning strategies in order to better meet their different learning needs to improve learners' motivation and language learning outcome.

3. The Advantages of Personalized Language Learning under the Guidance of ChatGPT

Traditional personalized learning is accomplished by both teachers and students, and the main implementer is the teacher. After analyzing students' learning abilities and learning styles, teachers provide students with different teaching contents and methods to achieve the purpose of personalized teaching. However, it is difficult to achieve the real personalized learning under the traditional teaching style in China, where large class teaching is the main teaching mode.

Luckily, the emergence of ChatGPT provides the possibility of real personalized language learning. It can understand and respond to the needs and abilities of learners and provide a personalized language learning way for each learner by analyzing data related to the learner's learning history, academic performance, and behavior patterns [14].

3.1. Provide Personalized Language Learning Input

Rich input is essential for successful language learning and acquisition. On the one hand, ChatGPT can provide comprehensible input content for different learners [15]. Learners can send prompts to ChatGPT according to their own language level, and then ChatGPT will generate comprehensible language input resources according to the level of students based on $i+1$ theory (Yang 2024). Moreover, if the learner finds the input challenging, ChatGPT can adjust the proficiency level, provide personalized learning materials, and suggest customized learning paths [16].

On the other hand, learners can benefit from authentic and interactive resources provided by ChatGPT [17]. It will supply language learners with a wide range of authentic language materials, such as videos, online articles, and podcasts, which reflect real-life language use. What's more, with the ChatGPT, learners can practice their language skills anytime and anywhere, which can enhance learners' learning by creating opportunities to interact and providing learners with opportunities to modify their output in communication.

3.2. Cultivate Personalized Language Learning Abilities

The real-time chat function of ChatGPT helps learners

improve listening and reading comprehension abilities through explaining complex concepts and providing information on language usage and cultural context [18]. What's more, if the learner is at a higher level, it can provide more challenging responses to help learners improve their language learning skills.

Sun [3] also pointed out that ChatGPT can help students to experience the cultures of different countries and enhance intercultural communication abilities. ChatGPT can provide dialogues in multiple languages and cultural contexts, so that learners can experience the differences and similarities between different cultures through simulated dialogues. Besides, it can provide learning materials with different cultural backgrounds and customs to help learners feel the specific features of different cultures. Additionally, with an online cultural exchange platform made by ChatGPT, learners can interact with people from different countries and regions to share their cultures and experiences with each other.

3.3. Give Personalized Language Learning Feedback

A study made by Xiao & Zhi [2] has been supported the idea that ChatGPT can work as an effective tool for providing students with immediate feedback and personalized learning experiences. Hu & Chi [19] agreed that ChatGPT can provide feedback based on students' individual needs and learning, which can correct students' mistakes, reinforce their strengths to improve their learning.

Additionally, ChatGPT can monitor the progress of language learning. It provides personalized learning analysis of the language learner's learning patterns and data by recording their learning history, understanding how fast learners processing information in order to give them the learning reports, which can let learners know their current learning situation. On the basis of understanding the language learner's learning progress, it will adjust its response, accordingly, thus helping the learner to learn more proactively. In addition, by monitoring the learning progress of language learners, it can provide feedback and correction of written assignments in time, help them adjust learning methods and strategies according to feedback, and identify errors in a more efficient and personalized way.

4. The Construction of Personalized Language Learning System under the Guidance of ChatGPT

4.1. Construct Prompts to Assess Personalized Language Learning Styles

The most common method to identify learners' styles is a self-check questionnaire in which the learner responds to various questions, usually along a scale of points of agreement and disagreement, such as Oxford's [20] Strategy Inventory for Language Learning (SILL).

However, the traditional method of measuring learning style is subjective and complicated, so there is a certain error rate in the judgment of learning style. While the measuring way of learners' styles made by ChatGPT mainly relies on data analysis, which is more scientific and reliable.

ChatGPT runs on prompts that allow tens of thousands of characters of input, and the quality of the responses depends on the accuracy and richness of the prompts. It will operate on user-constructed prompts, so learners need to construct

reasonable prompts when using ChatGPT for the first time to identify their learning styles. The prompts can include roles, learner's information, learning objectives and learning tasks. The role refers to the current application situation and service object, so as to better understand the learner's concerns, background and learning needs to improve the relevance of the recommendations. The learner's information includes the language learning habits, interests, achievements of the relevant knowledge points, the strategies used by the learner to learn, and the evaluation of the difficulty level of the learning materials, etc. After analyzing the information according to a specific model, ChatGPT will comprehensively identify learners' language learning style.

Take spoken language learning as an example. If a learner wants ChatGPT to understand his or her spoken language learning style, the learner should construct the prompts in the following way:

(1) Describe role and learning objectives: You are expected to act as a sparring partner for oral English learning who is a native British university student, and you are required to use authentic British pronunciation and daily English expressions. The situation of this practice is "watching the live broadcast of the table tennis match at the Olympic Games". As a British friend, please discuss the content of the game with me based on my questions and spoken responses and explain the specialized expressions for me.

(2) Explain learner's information: I am a Chinese college student; my English level is at the level of Grade 4 of English major. My spoken language level is low with less vocabulary of Olympic games, therefore, this topic is difficult for me; in addition, I am an introvert, and I am less used to oral communication but more satisfied in writing tasks, so I will be nervous in oral speaking activities.

4.2. Generate Recommendations to Provide Personalized Language Learning Resources

In the traditional personalized learning system, the learning material library is set up in advance and limited. In the process of personalized learning, the learner can only select the learning material from the material library but cannot dynamically generate new learning material according to the learner's dynamic needs. Therefore, the traditional personalized learning system is a retrieval recommendation, while ChatGPT can make generative recommendation possible.

By learning from a large amount of training data on learners' learning styles, ChatGPT accumulates a large amount of data and principles about language learner, which give it an opportunity to obtain a very strong generalization ability and scalability. It allows learners to construct prompts, and the system selects recommendation resources that meet the requirements based on the data and potential principles of learner under the condition of satisfying multi-objective constraints. In language learning, it provides different levels of difficulty and type of learning materials as well as targeted practice questions according to the learner's language level.

For example, in the spoken language practice above, after ChatGPT collects data on the learner's spoken language learning style and language level during several repeated discourse rounds with the learner, it can generate recommendations suitable for the learner's learning interests and language level based on the learner's feedback of his or her oral performance. Furthermore, combined with the

previous prompts that constructed by the learner, personalized speaking practice topics are recommended for the learner to do a further learning practice to achieve the purpose of personalized learning.

4.3. Give Feedback to Adjust Personalized Language Learning Mechanisms

Traditional personalized learning prefers a one-time formed learning mechanism, in which the teacher or learner determines the learner's learning style and personalized learning content at the initial stage, and then carries out a series of language learning practice with a series of determined learning resources. However, in fact, the learner's learning style will change with the change of learning content and situation, so the learning mechanism also needs to be changed, but it is difficult for the traditional personalized learning to achieve the adaptive change.

Unlike traditional personalized learning mechanisms, ChatGPT can collect and analyze data based on learners' feedback. The data can be provided by learners in the way of giving scores of the recommendations explicitly, or collected implicitly through analyzing learner's clicks and learning time to evaluate whether ChatGPT's recommendation results meet their personalized needs, learning preferences, learning interests and styles, etc. On the one hand, these feedbacks can be used to guide learners in their own language learning; on the other hand, they can be used to train and strengthen the learning mode of ChatGPT so that it can continuously adjust the unique language learning mechanism of learners according to their feedback in a series of conversations, and improve the accuracy and personalization of the resource's recommendation.

5. Abilities to Improve under the Guidance of ChatGPT

5.1. Improve the Human-AI Interactive Negotiation Competence

Wen & Liang [21] pointed out that human-AI interactive negotiation competence (HAINC) is the key to whether AI can give full play to its function. In the interactive learning process with ChatGPT, the learner is always in the dominant position. It is up to the learner to decide on the formulation of each goal, the issuance of instructions, the analysis of feedback, and the adjustment of strategies. ChatGPT is only a passive adapter, reacting and performing tasks within its capacity. Therefore, if learners want to use ChatGPT to achieve the best effect of personalized language learning, they must improve their HAINC in the process of language learning, such as constructing reasonable prompts, judging the usability of the generated recommendations, and learning to give critical feedback on the generated content to strengthen the training of ChatGPT as a private language tutor.

5.2. Develop Critical Thinking Ability

ChatGPT is a data-driven model that lacks sufficient knowledge of the situation, principles and rules of the real world behind the data. Hence, the results it provides sometimes do not conform to the objective facts and realistic logic, which lead to the factual errors. Therefore, when learners use ChatGPT for language learning, they need to examine and evaluate the information generated by ChatGPT, as it may produce irrelevant or inaccurate information. What's more, Xiao & Zhi's [2] study approved that it could assist in

improving language proficiency when learners apply critical thinking ability, such as modifying prompts, training the model, and verifying and selectively accepting its outputs.

5.3. Raise Awareness of Innovation

ChatGPT has a broad understanding of general knowledge, but it is unable to provide more specialized, in-depth and insightful answers to questions or learning content. It can answer simple or general questions well, but as the difficulty increases, the error rate of the answers becomes higher and higher, which indicates that the knowledge acquired by ChatGPT is only limited to the scope of the data it has learned, and it does not yet can innovate. This requires language learners to improve their awareness of innovation and use ChatGPT as an aid in personalized language learning instead of relying on ChatGPT completely, so as to avoid substantive errors that may hinder their language learning process.

6. Conclusion

This article discussed the advantages of ChatGPT for personalized language learning in the era of intelligence and proposed a personalized language learning system based on its advantages. However, language learners should note that though ChatGPT has more advantages than traditional personalized learning, it also contains some specific limitations, such as the need to provide accurate prompts, errors in the recommendations, etc. Therefore, learners should strengthen their own abilities to make up for the limitations of ChatGPT.

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