

The Impact of ChatGPT on the Interaction Between Teachers and Students in Primary and Middle School English Classes: Taking Problems-Based Learning as an Example

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Abstract: With the increasing science and technological development, Artificial Intelligence is used in many relevant areas in the modern epoch. In the field of education, ChatGPT has realized the combination of innovative teaching methods, such as Problem-Based Learning (PBL) teaching methods. This teaching method has changed the role of students and teachers, improved the inherent relationship between teachers and students, and made the classroom more active. The combination of ChatGPT and PBL teaching methods breaks the traditional classroom model. It integrates artificial intelligence into the PBL classroom so that the roles of teachers and students have changed and the education system is perfect. Teachers and students have richer learning resources, and the communication between teachers and students is smoother. But at the same time, there are still some problems and topics in integrating artificial intelligence and PBL education classrooms. To promote the further application of ChatGPT in PBL classrooms, people must continue to actively explore the field of education, discover coping strategies, and improve their abilities. Based on the existing research, the essay will discuss how ChatGPT affects the interaction between teachers and students in the classroom under the PBL teaching method and what problems still exist.

Keywords: ChatGPT, PBL, teachers, student, interaction

1. Introduction

In the traditional meaning of English lessons in primary and high schools, the teachers impart the textbook knowledge to the students. Then, the students apply the inside to the examination directly through memorization. This traditional teaching method limits students' thinking and can not satisfy students' individual personality development. The relationship between teachers and students is only limited to the teacher and the recipient, and there is a lack of more active teacher-student interaction activities, which cannot stimulate students' interest in English learning.

The PBL (Problem-Based Learning) teaching method regards students as the main body of the classroom and makes students become the master of the school [1]. After receiving the task target assigned by the teacher, students start self-study through group cooperation, access to materials, etc. So, facing the new knowledge, how can students expand their information? How can one get some materials that match one's cognitive background? How can teachers interact with students? The

answer is technical support. Following the continuous development of social technology, Artificial Intelligence technology has been used widely in many fields, including teaching. One of the hottest Artificial Intelligence technologies——ChatGPT(chatbot), is an artificial intelligence dialogue system that has excellent potential to improve the preparation of classroom knowledge and the interaction between teachers and students in the classroom.

2. The Interaction Between Teachers and Students in PBL Classes

2.1. The Changing Role of Teachers

In the traditional English classroom, teachers seem to be in the dominant position, better than students. As a lecturer and authoritative figures, teachers unilaterally instilled classroom knowledge to explain the teaching methods of traditional problems to students. The so-called education is to pass on the knowledge learned by teachers to students. In most existing educational cases, the problematic educational method is the most commonly used educational method and the oldest educational method [2]. Many teachers are committed to entering knowledge directly into the hearts of students. Students are generally believed to master problem-solving strategies after understanding and listening. Still, they ignore the application of problem-learning methods, that is, the method of students learning new knowledge and missing the state of students' subjects. Applying PBL education methods has transformed the role of teachers from traditional teachers to student coaches and supporters. Teachers no longer impart knowledge in the PBL education classroom but also guide students to learn. Teachers teach students to learn and explore independently, help students establish ideas and methods to solve problems, and provide problems, situations, and resources. Teachers stimulate students' thinking by asking questions and guiding students to think and explore independently. At the same time, they are also responsible for supervising and evaluating students' learning processes.

Through applying PBL's educational methods, the teacher's educational methods in the classroom have also undergone specific changes. First, teachers should expect to achieve the educational goal, that is, what problems students should solve. Secondly, the PBL education model predicts teachers to cultivate students' cooperative ability so that students can learn together. On that issue, the teacher divides the students into groups and allows them to study independently in the group discussion mode. At this time, the teacher changed from a teacher to an audience [3]. In addition, teachers play an auxiliary role in providing students with corresponding knowledge guidance and information sources in group learning. After the group discussion, the teacher listens to the students' discussion results, states the related opinions, and plays a guiding role. Finally, after class, the teacher evaluates the students' learning projects. Under the PBL education model, the evaluation method of classroom education has changed. Teachers can conduct group evaluations simultaneously as personal evaluations of students [4]. The PBL teaching method not only cares about the individual training of students but also improves the cooperation ability of students.

2.2. The Changing Role of Students

On the same side, in the traditional teaching classroom, students are in a position that their teacher controls as the audience and passive receivers of the whole class. Students strictly recite the knowledge taught by the teacher and try to apply it to answer questions before understanding the critical points of the command. For a long time, students are in a state of education of knowledge, which is the position of teachers. Students regard teachers as their support, rely heavily on teachers, and lack opportunities for personality development, expansion of thinking, and lack of development ability and innovation abilities [5]. At the same time, for the long-term advantages of teachers, students lack the opportunity and ability to learn independently. Students may be distracted when the teacher gives a lecture [6]. In the teaching classroom of PBL mode, the role of students changes from

recipients of traditional knowledge to problem solvers. After receiving the tasks assigned by the teacher or the questions raised by the students, they will cooperate with the group and finally answer the form of absorbing knowledge. In this process, students become the main body of the classroom, and their status has risen. Through discussion with students, there are conflicts of ideas and exchange of ideas. Since then, students have had the “right to speak” and have carried out individual thinking activities. So, the teaching method of PBL is a change in the role of students.

In the classroom of the whole PBL education model, students can get a considerable part of educational activities from teachers. These educational activities are different and cultivate students' different abilities. Students can complete them independently or through cooperation to develop personal advantages, promote cooperation ability, grow friendships, etc. In addition, the inherent role of students' tradition has also changed, and more importantly, cooperative learning with teachers has also been reflected. Under the PBL education model, the relationship between teachers and students has been further eased. Students rely too much on teachers, from treating teachers as authority to formulating class themes and educational activities with teachers. Through the preview before the class and other means, they can understand the content of the course and the whole class first. The content has better control [4]. Students participate in the study on an equal footing with the teacher and cooperate with the teacher to complete the problems related to this class.

3. The Application of ChatGPT in PBL Lessons

3.1. Teaching Design with ChatGPT in PBL Classes

Some people once thought that the birth of artificial intelligence and the application of artificial intelligence in school classrooms would replace the position of teachers and the profession of teachers. This statement has aroused heated discussion, and everyone has different opinions. However, the vast majority of people believe that teachers are still the leaders in the ranks of education and are still the central part of the teaching classroom, and the teaching industry will not be replaced. As Peter Greene, an English teacher who has been working for 39 years, said, ChatGPT is not the end of the English classroom but an auxiliary tool for teachers [7]. ChatGPT can provide an intelligent learning scene for the whole class in English classroom teaching, and the teacher's teaching links are mainly divided into pre-class preparation, in-class instruction, and class summary. In the course preparation, ChatGPT can help teachers prepare materials, help teachers list syllabuses, and provide personal teaching guidance according to students' individual needs. Teachers need to read many relevant background materials in preparing lessons, and ChatGPT, as a considerable corpus, can provide teachers with materials consistent with classroom knowledge. In the teaching process, teachers can cooperate with ChatGPT to participate in the group discussion of students' cooperation, use ChatGPT to appropriately evaluate students' cooperation results, and provide relevant knowledge support for students' cooperation projects. At the same time, teachers can also use ChatGPT to randomly design some teaching activities to stimulate students' interest in learning and improve classroom activity [8].

As people all know, most scholars with good English scores or oral skills are cultivated in a relatively complete environment system with English as the primary language. What is lacking in English teaching now is a good English learning environment teachers can create for students through ChatGPT. There is a learning environment full of a robust English atmosphere. For example, the background music is mainly English songs, and the man-computer dialogue is in English. In such a language environment, it will be easier for students to learn and grow up in English. After a complete English class, teachers can use ChatGPT to evaluate and evaluate students' class performance. After the students' test results or test results come out, teachers can also use ChatGPT to assist them in classifying, arranging, and collecting students' results. It saves the time of making tables and data processing, thus significantly reducing teachers' workload [9].

3.2. Students' Using of ChatGPT in PBL Classes

Some scholars point out that in the school stage of students, students are closed to the school and focus on campus life, so their understanding of the outside world is slightly insufficient. Students' access to information sources from the outside world has not increased, and there is little understanding of the outside world. Hence, students' overall knowledge reserve and cognitive ability are meager [6]. Under such circumstances, students who lack language knowledge and language background support think that they will not say anything or say something wrong in front of the teacher, so they dare not communicate with the teacher. While learning English in class, some knowledge background is also lacking. If you don't understand the foreign background, the problem, or the foreign culture, there may be a cultural shock. Therefore, using artificial intelligence, or ChatGPT, in the English classroom can help students find and complete the lack of knowledge. For example, in the English class of the PBL education model, the teacher used the English article's title to ask students questions about African adventures, arousing students' thinking and allowing students to talk about African understanding [2]. However, Africa is not a tourist destination that everyone often goes to. For students, their knowledge of Africa is not so complete. Students can now obtain relevant information through ChatGPT to bridge the cognitive gap.

Another example is the translation software people often use. Traditional translation software only converts the language entered in the text box directly into other languages that lack specific aesthetics and translation skills. If students use ChatGPT for translation, they can add additional conditions so the translation results have distinct human beings' emotional colors [10]. At the same time, with the help of ChatGPT, the integration of people and machines is possible. In the face of ignorant learning tasks, students can use ChatGPT to create an English writing framework or make a learning plan [11]. In this way, students can spend more time on a concise and tedious learning process, improve learning efficiency, expand extracurricular knowledge, etc.

3.3. The Role of ChatGPT in Teacher-Student Interaction

Li Huichun explained in the article "The challenge and strategies of educational revolution under the trend of ChatGPT" that education has often been regarded as an interactive art for thousands of years [11]. He said that in classroom teaching, the interaction between teachers and students is an essential link, and this link is regarded as artistic. Socrates' teaching method, Dewey's interactive principle, and Vygowski's views on interpersonal interaction all believe that teacher-student interaction can promote students' construction, understanding, learning, and absorption of knowledge, which is of great significance for cultivating students' personality, ability, quality, and other aspects. However, the interaction between teachers and students in the traditional classroom is only the dual interaction between teachers and students, that is, the interaction between people, and the addition of new technologies has transformed the dual interaction in the traditional sense into ternary interaction, that is, from teacher-student dualism to the ternary theory of artificial intelligence for teachers and students. The integration of ChatGPT and the classroom has given students sufficient tools and opportunities for independent learning and provided teachers with necessary assistance, significantly improving classroom efficiency and creating conditions for interaction between teachers and students. There is a significant age gap between some teachers and students, and their thoughts have also created a vast generation gap with students. They cannot fully understand the trends of the times and the use of some modern network languages. As an "intermediate" between teachers and students, ChatGPT can not only achieve barrier-free communication with students and understand students' intentions, but It can also effectively convey the teacher's instructions to students and feedback on the students' ideological results to the teacher to achieve effective interaction between teachers and students.

4. The Impact of ChatGPT on Teacher-Student Interaction in PBL Classes

4.1. The Advantages of ChatGPT in Promoting Teacher-Student Interaction in PBL Classes

4.1.1. Provide Individual Study Support

ChatGPT can provide personal learning support and feedback according to student's learning needs and ability levels. By analyzing the learning data reflected by students, the ChatGPT system can help teachers formulate learning resources and guidance in line with students' learning according to their characteristics and learning progress and help them better solve their learning problems [12].

4.1.2. Promote the Cooperation and Interaction Between Teachers and Students

ChatGPT technology can provide online collaboration platforms and tools for students and teachers to promote cooperation and interaction between teachers and students. Students can share and discuss problems through the online platform, formulate solutions with teachers, and jointly complete the learning tasks assigned by teachers. With the help of artificial intelligence, the cooperation and interaction between teachers and students can enhance students' teamwork ability and communication skills with others.

4.1.3. Provide Timely Feedback and Evaluation

ChatGPT technology can monitor students' learning progress in real-time and provide timely feedback and evaluation to form an automated evaluation system. Students can also receive evaluation opinions from teachers to help them correct mistakes and improve learning strategies. This feedback can help students better adjust the learning direction, improve the learning effect, achieve efficient communication with teachers, and provide better ideas for future communication and interaction between teachers and students.

4.2. The Disadvantages of ChatGPT in Promoting Teacher-Student Interaction in PBL Classes

While improving students' learning efficiency and teachers' teaching efficiency, ChatGPT may make teachers and students rely too much on artificial intelligence technology. Teachers and students have tasted the benefits of artificial intelligence and reduced a lot of learning and work burdens with the help of artificial intelligence. Artificial intelligence is likely to weaken students' learning ability to a certain extent [8]. Students rely too much upon artificial intelligence to get answers to questions, and their ability to think with their brains cannot be exercised. Moreover, the interaction and communication between students and teachers may be overly dependent on ChatGPT, a third-party tool, so much so that students and teachers cannot interact independently and actively without the assistance of artificial intelligence technology.

ChatGPT technology may need to collect and analyze students' learning data and teachers' lesson preparation data, which may involve personal privacy and data security issues between students and teachers.

The application of ChatGPT technology in the PBL classroom needs to rely on advanced technical equipment and network support. Still, if the supply of specialized equipment and network conditions in schools and students' homes is insufficient, it may limit the application effect of artificial intelligence technology. Artificial intelligence systems may be unable to understand and explain complex learning problems fully. For some subjective learning tasks involving human emotional expression, the application of ChatGPT technology may be limited to a certain extent. In addition,

not all existing corpus materials can be applied by ChatGPT, so the answers given by ChatGPT may lack some reliability and authenticity [8].

4.3. Suggestions for Optimizing the Application of ChatGPT

Regarding the ethical relationship between teachers and students, teachers and students should jointly change traditional concepts and accept the application of artificial intelligence in English classes. Teachers and students should recognize the existence of ChatGPT, the ternary relationship between man-machine and man, and dialogue with artificial intelligence democratically and equally. At the same time, in the context of human-computer collaboration, teachers and students should achieve the most significant degree of cognitive balance with each other and coordinate each other's mental and behavioral conflicts. As students, we should strive to take the initiative to cooperate with teachers and artificial intelligence to the greatest extent. Teachers and students should jointly improve and improve the various links between "teaching" and "learning." But teachers and students should also realize the cost of artificial intelligence like ChatGPT on English classroom reform. For example, people will rely too much on artificial intelligence and think that what they present is correct, so teachers and students should improve their critical thinking ability. They should not lose their thoughts and the ability to judge right and wrong [11]. Teachers should be at the forefront, be the leaders of students, be the leaders of education, and shape the new ethical relationship between teachers and students in the new epoch [9].

5. Conclusion

ChatGPT could do many things for humans as a new product in the new generation. ChatGPT helps teachers teach students in the school, and as an assistant, it can efficiently increase the efficiency of classes. In the meantime, students can implement their ideas through ChatGPT and get more information about the lesson background. Although it can be witnessed there are a lot of merits in ChatGPT, the shortcomings, such as teachers and students may depend on artificial intelligence too much to improve their abilities, and the lack of technological support should never be ignored either. In addition, as an artificial intelligence, ChatGPT does not fully have the unique emotional processing function of human beings. Some students may need the emotional comfort of teachers and flexible communication when they encounter difficulties. And despite recognizing the merits and drawbacks behind the ChatGPT, most people are inclined to believe it has more advantages. So people should admit that ChatGPT is actually in English class. It is ChatGPT that further brings the relationship between teachers and students closer, provides more teaching materials for teachers, and provides more voice for students so that students can become masters of the classroom, which is in line with the teaching goals of modern English teaching. It has indeed enlivened the classroom atmosphere and melted the traditional barriers. If people want to make ChatGPT our helper, the teachers and students should follow the relevant roles correctly. Society should take some measures, such as setting up applicable policies and standardizing laws and regulations. Everyone needs to put their effort into the creation of a bright future for education. This article only illustrates the changes in the roles of teachers and students in the PBL teaching classroom with the participation of chatGPT and the advantages and disadvantages of its application in the school. Hope that there will be more teaching examples for research reference in the future.

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