

Problem-Based Learning: an Effective Path to Promote Students' Critical Thinking in High School English Reading Teaching

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Abstract: Problem-Based Learning (PBL) is a student-centered teaching model that emphasizes problem-focused, self-directed and cooperative learning, and prompts students to exercise and improve their critical thinking in the process of inquiry and problem solving. It is crucial to cultivate students' critical thinking in English teaching, especially through problem solving. In the field of education, PBL is widely recognized as an effective method for developing students' critical thinking. PBL prompts students to construct knowledge systems and develop critical thinking by stimulating their learning interest and initiative, and by exploring problems through independent and cooperative learning in authentic or near-authentic problem situations.

Keywords: problem-based learning, critical thinking, reading teaching

Introduction

With the acceleration of globalization and the rapid development of information technology, the 21st century puts higher demands on students' critical thinking. Critical thinking prompts students to think independently and solve problems from multiple perspectives, and is a key ability for students to assess the reliability of information to form their own judgment in the information age. The basic concepts of the English curriculum for general high schools emphasize that students should be able to acquire, interpret and judge the meaning of discourse, express their personal views, intentions and emotional attitudes, analyze the similarities and differences between Chinese and foreign cultures, develop multi-thinking and critical thinking, and improve their ability to learn and use English^[1].

Thinking quality is an important part of the English subject core literacy, and the development of thinking quality helps to improve students' ability to analyze and solve problems, and enables them to learn to do things in English. It is mentioned in the curriculum objectives that "students can analyze specific phenomena in language and culture, sort out and summarize information, construct new concepts, analyze and infer the logical relationship of information, correctly evaluate various ideas and opinions, express their own opinions creatively, and have the awareness of diversified thinking and the ability of innovative thinking"^[1]. Among them, "analyzing and inferring the logical relationship of information, correctly evaluating various ideas and viewpoints" and "having the awareness of diversified thinking" all point to critical thinking, highlighting the important role of critical thinking in the development of thinking and language comprehension.

What is critical thinking? Zhou distilled the essential attributes of critical thinking based on existing research, and understood critical thinking as "building on certain logical basics, based on criteria such as clarity, accuracy, precision, relevance, and logic, considering others' or one's own thinking process, including purpose, position, point of view, inference, assumptions, and justifications, etc, and making interpretations, analyses, evaluations, inferences to identify

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problems and form decisions about them. Certainly, this process is accompanied by the formation and development of such mental dispositions as self-confidence, courage, fairness, and caution^[2]. "This definition is a more comprehensive overview of the research that has been done on the definition of critical thinking and covers all aspects of critical thinking. This type of thinking emphasizes rational judgment and self-regulation and aims to form reasoned conclusions through reflection and scrutiny. The English Curriculum Standards for General High Schools (2017 Edition, 2020 Revision) states that critical thinking is an important part of the thinking quality in the English subject core literacy^[1]. Through PBL students are able to develop critical thinking skills and dispositions in English reading teaching, which is important for students to adapt to the needs of the future society.

1. Problem-Based Learning

PBL is a problem-solving-centered teaching model that emphasizes students' independent and cooperative learning under the guidance of the teacher. PBL, as a teaching model, is centered on the promotion of independent learning and in-depth understanding by solving specific problems. PBL stimulates students' curiosity and desire for inquiry by providing near-real-life problematic situations, prompting students to develop critical thinking in the process of problem solving. PBL allows students to become the masters of the classroom, allows learning to take place in the classroom, allows thinking to be fully active in the classroom, and allows subject knowledge to gain full meaning in the context and to be dynamically constructed in thinking.

1.1 History of Problem-Based Learning

PBL originated in the teaching reform of North American university medical schools more than half a century ago, when it was adopted to solve the knowledge transfer and retention problems faced by medical schools and to improve the quality of teaching instead of the traditional teaching model. Subsequently, many universities joined the reform and adopted PBL. Since 1980, as society has transitioned from the Industrial Age to the Information Age, and then to a knowledge-based society that encourages innovation and is committed to fostering creative talent, a series of emerging concepts of knowledge have begun to emphasize constructive, interactive, complex, and contextual knowledge. These concepts are becoming key factors in driving new models of creative knowledge generation and application. Through continuous practice, PBL has formed a stable structure of activities and operational procedures, and its pedagogical theories are constantly evolving.

Liu introduced PBL from the perspective of pedagogy and provided useful insights into curriculum and teaching reform^[3]. Since 2008, the Action Research Group has turned its attention to PBL theory and conducted practical research on PBL in the field of English language teaching. They have tried to integrate the concepts of "action research" and "action education" into the theory of "Problem-Based Learning", and conducted experimental teaching in English linguistics, reading and writing courses. Significant teaching results have been achieved^{[4][5]}.

1.2 Definition of Problem-Based Learning

Since its introduction, although PBL has been applied to numerous fields and good results have been achieved, so far PBL has not yet formed a universally accepted definition. PBL focuses on the students' needs, interests and initiative, and emphasizes the students' subjective position, rather than the teacher or textbook. PBL is seen as a teaching method placed in a certain context. Based on previous research, Tang and Shen argued that PBL, a teaching model, specifically, places students in authentic problem situations and encourages them to engage in independent learning and cooperative communication around problems in order to solve them^[6]. Lian suggested that with the deepening of practice and the development of theory, PBL has evolved into a teaching model that facilitates learning by confronting students with specific problems and stimulating them to explore them systematically and deeply through self-directed and collaborative learning^[7].

Although many scholars have given different definitions of PBL from different perspectives, most of them agree that PBL is a problem-centered, student-centered, and problem-solving oriented teaching model based on self-directed, cooperative, and inquiry learning, which aims to help students construct new knowledge and meanings based on problems to solve practical problems.

1.3 Characteristics of Problem-Based Learning

The diversity of PBL definitions has led many scholars to have different understandings of its characteristics. Based on students' active participation in learning, PBL evokes students' desire to improve their knowledge system and promotes their in-depth understanding of the connotations of knowledge by linking knowledge with practical problems. Numerous scholars have explored the basic features of PBL from different perspectives, but most of them can be summarized as follows.

Problem as the core. The PBL teaching model emphasizes the problem as the starting point of learning and orientates the whole learning process through problem solving. Hmelo-Silver argued that the problem is the core of PBL, which triggers inquiry and requires students to solve problems by using a variety of resources^[8]. Teachers need to ensure that problems are sufficiently complex and challenging to stimulate students' thinking and interest in learning. At the same time, problems need to be contextualized, i.e., integrated with a particular situation or context, so that students can learn and apply their knowledge in the process of solving real-world problems. In addition, the design of problems needs to take into account students' knowledge base and cognitive level to ensure that they are able to solve problems step by step under the guidance of the teacher. Only open-ended problems can stimulate students' thinking and develop their problem-solving ability.

Self-directed learning. Instead of passively receiving knowledge, students actively engage in problem exploration and solving, thereby developing their critical thinking and problem-solving skills. Ansarian and Teoh viewed self-directed learning as a key feature of PBL and emphasize the importance of students taking responsibility for their own learning^[9]. In the PBL, students pose questions that stimulate curiosity through exploration and reflection, and actively seek information, methods, and strategies related to the questions under the guidance of the teacher. In the PBL teaching model, students' self-directed learning is a core component, which requires students to actively participate in the learning process and develop self-directed learning skills and critical thinking, while also emphasizing the guiding and supporting role of the teacher.

Cooperative learning. Skinner et al. argued that ideal group practices include discussion and negotiation, and ideal group dynamics include cooperation and mutual contact^[10]. This model of PBL emphasizes communication and cooperation among students, as well as the importance of external support and guidance in the exploratory learning process. PBL facilitates the teacher to rationally organize the teaching and learning, and allows students to experience cooperative learning in real or simulated real problem scenarios.

1.4 Activity Structure of Problem-Based Learning

The diversity of PBL definitions and characteristics has led numerous scholars to construct different PBL activity structures as well. Hmelo-Silver proposed a model for classroom implementation of PBL, which summarizes PBL as an activity structure consisting of the following steps^[8]: creating a problem situation, identifying facts, formulating hypotheses, discovering factual deficiencies, applying new knowledge, and generalizing. In addition, a detailed framework for problem presentation is constituted by optimizing the key components of PBL. Thus, Hung constructed the 3C3R model. The model consists of two main components; the core components consist of content, context, and connection; while the supporting components consist of research, reasoning, and reflection^[11]. The effective integration and implementation of each of these components helps to promote the development of students' critical thinking.

Jiriyasin proposed a systematic activity structure for PBL implemented in English language classrooms. The process consists of six stages: activity introduction, problem presentation, problem analysis and learning issues, discovery and reporting, solution and presentation, and summary, integration and evaluation^[12]. The process is guided by a core problem, and students work in groups to explore different learning issues in order to develop a problem-solving solution. This process helps to develop students' critical thinking skills of interpretation, analysis, synthesis, and evaluation, as well as critical thinking dispositions such as truth-seeking, systematic, and open-mindedness. Ansarian and Teoh argued that implementing PBL in the language classroom involves more complexity than in other disciplines, which calls for a more specific and prioritized language learning process needs of the PBL model^[9]. Therefore, Ansarian and Teoh proposed a

problem-based model of language learning^[9]. The model is oriented towards self-directed learning and includes problem creation, inquiry, investigation, reasoning, synthesis, application, reapplication, reflection, and ultimately the acquisition of knowledge and skills. Such a learning model overcomes the lecture-based closed learning, puts more emphasis on students' cooperative inquiry learning, encourages students to dare to question, and seeks to create an open, inquisitive, and challenging learning atmosphere to build a critical thinking classroom.

1.5 Research on Problem-Based Learning in the Field of Language Learning

Although there are relatively few studies on the application of PBL in the field of language learning, there are existing studies that show the significant positive impact of PBL on language learning. These studies have mainly focused on exploring the impact of PBL on enhancing students' language skills, including speaking, writing and reading skills. Attempts have been made to test the effect of PBL on language learning. Sy et al. conducted a study on the effect of PBL on speaking skills^[13]. Jiriyasin conducted an experimental study^[12]. The results of the study showed that the subjects' performance in spoken English was more fluent and accurate. Lin conducted a study on the effect of PBL on language learners' reading comprehension^[14]. The results of the study showed that the subjects had enjoyed the online reading program through PBL. All these studies reflect the effective application of PBL in English classrooms, which enhances students' language skills in different ways. It can be seen that the application of PBL has promoted students' language learning and thinking development in different ways.

2. The Application of Problem-Based Learning in High School English Reading Teaching

Under the background of the new curriculum reform, reading, as one of the components of high school English teaching and an important position for the cultivation of students' thinking quality, needs to be further optimized. According to Wang, when teaching English reading, many teachers are accustomed to following the process of "first reading through to grasp the general idea of the text, then reading carefully to understand the details, and finally explaining the language knowledge points". Their teaching focuses on the main content and linguistic knowledge of the text, but they do not think deeply enough about the ideas, concepts and values expressed in the text, and they lack an in-depth interpretation and evaluation of the unit theme and the meaning of the theme of the text^[15]. These status quo of English reading teaching is obviously not conducive to the development of students' critical thinking. Teaching only stays at a shallow level of learning, focusing only on the surface meaning of knowledge. On the contrary, reading teaching should focus on the meaning behind reading, and teachers should guide students to deep learning, deep understanding of knowledge and constructing meaning.

According to Liu, in secondary school, students are quick-witted and curious, and if the cultivation of critical thinking is integrated into the process of English teaching, it will help to improve their logical thinking ability^[16]. Therefore, it is important to cultivate students' critical thinking in high school English reading teaching, which makes them more capable of independent thinking and analyzing problems in their daily life and study. This ability helps students to form their own unique opinions, not blindly accepting others' views, but being able to think and judge independently based on facts and logic. In the process of reading, students need to constantly analyze, reason, judge and evaluate the author's emotional attitudes and values in the text, and these thinking processes are the gradual development of students' critical thinking.

The purpose of applying PBL in English reading teaching is to develop students' critical thinking in the process by guiding them to solve problems. Therefore, it is necessary to clarify what problem solving in English reading is. According to Zhang et al, problem solving in English reading usually refers to teachers helping students to solve critical problems in reading materials. The process of problem solving is the process of pushing students to study the text in depth, think about the problems in the text and solve the problems, as well as the process of students' continuous development of critical thinking^[17]. Students' questioning and asking questions can help them identify real problems. In the activity of exploring solutions to problems, students' qualities of openness, self-confidence and perseverance can motivate them to engage in cooperative learning and in-depth investigation, to understand the essence of the problem and to find solutions to it. These processes are precisely the most effective ways to develop students' critical thinking skills and dispositions. To maximize the role of PBL in fostering critical thinking, teachers need to guide students appropriately, build effective learning

supports, and promote efficient collaboration within learning groups.

3. Conclusion

With the exchange and integration of Eastern and Western educational concepts, PBL, a mature teaching model originated from the West, is gradually accepted and promoted by the Eastern education system. Compared with the traditional teaching model, PBL can significantly enhance students' enjoyment of the teaching and classroom environment, and show a higher degree of inspiration and interest. Meanwhile, PBL, as a kind of experiential learning, has shown positive influence and achieved good results in the field of language learning and applied linguistics, but the exploration of many aspects of foreign language learning, such as reading, listening, grammar and phonetics, and other specific skills and linguistic knowledge is still limited, which provides a broad space for further research on the comprehensive application of PBL in language classrooms. PBL is in line with the trend of teaching innovation, and is an important way to deepen the teaching reform. Future research should further explore the effects of PBL in different language learning environments and teaching phases, in order to optimize this teaching model and provide more effective ways to promote the development of students' critical thinking.

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