

Exploring the Characteristics of PBL Teaching Mode Analysis in Primary Education in China

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Abstract. To adapt to the diversification of current education development, PBL education has important development significance at all stages. Among them, primary education is the essential stage for developing learning skills. Compared to traditional teaching, the PBL model allows students to develop cooperative learning and independent thinking mode. By analyzing the characteristics of the PBL teaching mode, this paper concludes that the PBL improving teachers' enthusiasm in the primary education stage. Moreover, the PBL mode in China's primary education stage also needs to overcome some problems to better integrate into the teaching classroom and cultivate more students with more learning abilities and comprehensive problem-solving abilities. This article will provide some inspiration for the development of PBL teaching mode in the future.

1 Introduction

PBL originated in Canada in 1969, abbreviated as Problem-based learning. Teachers give guidance, and students learn independently. In this process, students can be fully stimulated to explore the problem and discover interests. In the process of receiving education, the primary education stage is crucial, and this stage even lays the foundation of students' learning styles and mindsets in the future learning process. Therefore, this paper will discuss the practice and application of the PBL teaching method in Chinese primary education from three aspects.

2 Problem-based Learning

2.1 Overview of PBL

At present, the teaching methods in the primary education stage in China include Teaching methods, Case teaching methods, Scenario teaching methods, Discussion methods, Experience learning teaching methods, etc. The most fundamental aspect of education is teaching methods, where teachers arrange and directly impart critical knowledge to students who passively receive it. Examinations are designed according to the course materials, with teachers assuming the main role in the classroom. Historically, primary and secondary school students have primarily adhered to the teacher's arrangement with limited opportunities for self-directed study and group research collabora-

tion. As a result, students who should have studied independently after entering higher education, only have a good command of theoretical knowledge, which cannot be used well in practice or develop their applicable communication skills. Based on the Development process of PBL, PBL is superior to traditional teaching in several ways, including long-term information retention, concept understanding, and self-learning, and can make up for the problem shortcomings of the traditional teaching mode [1].

PBL teaching mode has become one of contemporary society's most important basic learning. Recently, many teachers have adopted this teaching mode in practical teaching. PBL mode is mainly to improve students' interest in learning, it also stimulates students' creativity and enhances students' comprehensive self-learning ability. Unlike traditional teaching methods, the PBL model emphasizes group learning and communication. In this mode, the teacher only plays a guiding role and the actual dominant guide is the students. In the class, the teacher will ask about some problems based on authenticity and let the students explore and find solutions. The solution is not single, and the processes are various in different groups. As a result, students are not restricted in this regard. Because most problems are solved in small groups, it is necessary to debate and express one's own viewpoints to others. During solving problems, students need to look up information on the Internet or in the library. During the solving time, it also can use the students' strengths in different ways, such as by filling out forms and taking surveys. In the end, students will learn lots of things that are different from traditional education.

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In the primary education stage, students of all ages can exert their initiative in the PBL teaching mode. In Chinese language courses, the PBL teaching mode enables students to apply theoretical knowledge better. Wu, a professor at Huaibei Normal University once argues that primary school Chinese language education requires a practical and comprehensive approach, with Chinese language practice serving as an innovative approach. Through this method, students can develop essential skills such as inquiry, group communication, collaboration, problem-solving, and critical thinking [2]. From the viewpoint of this quote, the comprehensive learning of the primary school Chinese curriculum is an expression of the PBL teaching method. Therefore, in the primary education stage, the first condition for students to learn is interesting, and the PBL teaching mode can organize students' motivation and enthusiasm based on students' interests. In secondary schools, where the curriculum is heavier than in primary schools, the PBL teaching mode is also applicable. Within high school Chinese classes in China, the PBL method is commonly used to engage students' interest in the text. One such method employs the article 'Slow Sound' to enhance the quality of teaching. Given the typically mundane learning tasks associated with secondary school, the PBL teaching mode creates a more relaxed learning atmosphere in which students can better engage with problems, acquire knowledge, and apply their skills [3].

2.2 The advantages and development in PBL teaching mode

2.2.1 For students.

(1) The more exploratory tendency of the students

PBL teaching mode is different from traditional teaching mode. It pays more attention to communication and cooperation among students. As mentioned in Section 2.1, the structure of PBL is student-centered, most students work in groups and discuss, have surveys, and find information together. So more cooperation and communication will have in learning content. As described by Lampert et al., The PBL approach helps college students explore and share information [4]. Because this approach not only can encourage students to engage deeply and actively in real work and tasks, but also can find new solutions, and make broader use of more resources and knowledge sharing, collaboration, and social and emotional learning. The PBL teaching method is more flexible and has more advantages in solving complex problems, building students' autonomous learning ability, comprehensive practical ability, and social cooperation ability. The advantages of the PBL mode are more evident in basic primary education than in higher education.

(2) The more targeted and participatory of the students

The PBL mode requires students to analyze and investigates special problems by teachers. That means student surveys are based on teacher questions. They can make better use of what they have learned. Teachers will make more specific suggestions based on student feedback. Compared to traditional modes of education, primary

school students demonstrate greater interest in course content when mutual communication and cooperation are incorporated. In other words, interacting with classmates is often more engaging than listening to lectures, resulting in increased knowledge retention and classroom participation.

PBL classes take students as the main body and require every student to participate in the group, which improves the participation of students in learning. As King Faisal University, Al Ahsa in Saudi Arabia states in their research on the effectiveness of project-based learning (PBL) as a way to engage students in learning, PBL learning allows students to connect their work with what they have learned before and engage them in learning." [5].

(3) Increasing interests in students

Based on one theme, students organize into groups based on their research interests and engage in cooperative learning. Subsequent studies are then carried out to optimize the learning experience, catering to individual research expectations and schedules within different groups. It can also explore students' potential abilities to the greatest extent. Even in primary education, where students practice under the leadership of more teachers than in secondary education, students can still find issues that interest them and focus on them. The choice is critical to student success. Differentiated learning enables students to find their areas of interest and pursue deeper learning. PBL's active learning process takes into account students' various learning styles and preferences [6].

2.2.2 For teachers

The PBL teaching model can not only cultivate students' comprehensive ability but also improve teachers' professional ability. The role of teachers has shifted from the main character in traditional teaching to a guiding one in PBL. Effective guidance is vital in accommodating students with diverse personalities, ensuring smooth PBL implementation. Encouragement and patience are particularly important for introverted students, as the former can help build their confidence, while the latter instills a sense of respect. In contrast, extroverted students may have many ideas, and it is the teacher's responsibility to steer discussions and keep them focused on the topic at hand [7]. Then, for knowledge arrangement, teachers not only lead but also pay more attention to the setting of situations and the skills to guide students on how to learn independently, which helps teachers to become more skillful in familiar knowledge. Teachers respected inquiry-based instruction used in PBL from the outset, but their teaching style preferences changed slowly to inquiry-based over three years of practicing and teacher training [6]. In addition, based on interaction with students, teachers skillfully use the principle of PBL teaching. If they found that the PBL teaching content they arranged was very useful in their teaching class, which could promote teachers' enthusiasm in real teaching and bring diversity to their teaching by centering on the student-centered PBL teaching mode.

2.2.3 PBL Development in the Future

In promoting social development, more and more talents with high comprehensive ability in practice are needed. PBL teaching mode, as an innovative approach, should not be limited to impart, that something that has been happened and has thought deeply about it by some people. PBL is best utilized when addressing real-world problems, such as natural disasters caused by climate change. With an increase in global natural disasters in 2021, it is imperative to find a balance between human activities and environmental preservation. In subjects such as environmental science, teachers can effectively connect these complex issues to education and guide learners toward potential solutions using PBL [7]. In other words, the PBL teaching mode expends more effort into the cultivation of students' solving ability to deal with the actual situation in the future and focuses on the overall development and broader vision. Education in the primary stage is the foundation of learning specialized knowledge. Using PBL teaching form in the whole education stage plays an important role in students' comprehensive development and interest exploration. According to the internal relationship between PBL and ability training, find out the PBL teaching mode which conforms to the actual situation of our country, so as to carry out PBL teaching better and cultivate talents with high quality [8]. Above all, the PBL teaching mode in primary education lays a good foundation.

2.3 Problems and Solutions

2.3.1 Problems

(1) The lack of educational resources

Despite its emergence in the 1990s, the PBL mode still faces many challenges in actual teaching. Education is a continuous and challenging process, and it requires constant refinement and adaptation to achieve positive outcomes. For instance, in China, with its large population and uneven distribution of educational resources, students in many poor areas are unable to fully benefit from the advantages of the PBL teaching method due to the lack of necessary hardware and software, qualified teachers, and self-learning ability. These factors pose significant challenges to the effective implementation of PBL in certain regions. PBL requires that the problem setting and situation creation be in line with or close to the actual situation. The school must have a corresponding laboratory and complete materials; otherwise, it will affect the teaching effect. Most of the current colleges and universities in China do not have these and need to start from scratch. In terms of software conditions, my country's information resources are not as complete as those in Western countries. There are still many students without laptops. Internet fees are not a small expense, and downloading paper materials also requires payment. When implemented in groups, teacher guidance, and participation are needed. The lack of teachers determines that PBL is more suitable for small-scale elite teaching and exploratory teaching, and is not suitable for large-scale deployment. The teaching cost of implementing PBL is also high, and PBL teachers need to

invest more energy and time in preparing lessons, managing and guiding the entire activity process, and providing timely feedback. If the content in the teaching reference is not new enough, it is necessary to make up handouts to supplement the latest knowledge [9]. In impoverished areas of China, teachers often face the challenge of teaching multiple classes, multiple grades, or even multiple disciplines. With such high work intensity, it can be difficult to implement the PBL teaching method effectively, and it may even lead to counterproductive results. The PBL method requires significant preparation time and resources, including technology, training, and support from school administrators. Therefore, it may not be feasible in some schools with limited resources and high workloads for teachers.

(2) The challenges of teachers

At the same time, in elementary school education, the physical and mental development of students has certain regularities, so teachers should respect their physical and mental development and health and guide them reasonably when setting problems and creating situations. Wang once surveyed this and found that most teachers still have many problems in "problem" design, self-learning awareness, self-learning guidance, group cooperation efficiency, and evaluation. According to the interview results, several reasons have been identified for the problems related to PBL implementation. These include the lack of effective design and problem-solving skills among teachers, the neglect of cultivating students' mathematical thinking ability, the influence of traditional teaching concepts on teachers' choice of teaching methods, the inability of teachers to effectively guide students, insufficient organizational skills and group cooperation abilities among teachers, and the inability to comprehensively evaluate the teaching outcomes [10].

2.3.2 Solutions

Due to the immature physical and psychological development of primary school students, when carrying out the PBL teaching method, teachers need to devote more time and energy to the cultivation of students' thinking and interests. First of all, teachers need to adjust the inherent concept of traditional education. The PBL teaching method is to let students learn independently based on problems. Therefore, teachers need to step down from the podium and enter the hearts of students to guide them to solve problems independently. Secondly, it is necessary to determine the purpose of the problem setting, focus on cultivating students' thinking and learning ability, and cultivate students' enthusiasm and interest in learning. Therefore, it is important to teach students according to their aptitude, make reasonable groupings, monitor and regulate their learning in a timely manner, and provide feedback after class when using the PBL teaching method. However, there are still many challenges to implementing PBL effectively in different environments and conditions. Some of the main reasons for these challenges include teachers' lack of effective design and problem-solving skills, insufficient attention to cultivating students' mathematical thinking ability, and the influence of traditional teaching concepts on teachers' choice of teaching methods.

In addition, teachers may struggle to effectively guide students, lack organizational and group cooperation skills, and may struggle with comprehensive evaluation. To achieve the desired teaching effect, it is necessary to adapt the PBL method to the specific conditions and strengths of each situation while minimizing its weaknesses.

3 Conclusion

This article not only describes the expression form and application of PBL mode but also discusses the advantages and disadvantages of PBL mode in primary education. As for the advantages, PBL mode can make students' learning more targeted and exploratory, and improve the professional ability of teachers. But it still has some shortcomings, such as high hardware requirements, knowledge exists some one-sidedness, and so on. These things need to be improved in the future. In conclusion, the PBL mode can be an effective teaching method for developing students' problem-solving abilities and fostering their interest in learning. To achieve the best results, teachers should design and implement the PBL approach in a way that is suitable for the specific educational context and student population. Additionally, the PBL approach should focus on guiding students to solve practical problems that are relevant to their daily lives and the broader society. With these considerations in mind, the PBL mode can be a valuable tool for enhancing the quality of education and preparing students for success in the future.

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9. LIU Yanfang, WANG Jinzhu. Shortcomings of the PBL model[J]. *Modern Enterprise Education*, 2013(16):1. All in all, the PBL teaching method model should still pay attention to the actual situation and avoid weaknesses in order to achieve better teaching results.
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