



A Study on the Application of the PBL Teaching Method in English Majors' Reading Teaching

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Abstract. The purpose of this paper is to study the feasibility and effectiveness of Problem-Based Learning (PBL) method in English majors' reading teaching. In this paper, data collection and analysis are carried out by questionnaire, test and combined with teaching experiment to explore how to apply PBL teaching method in reading teaching and whether it can improve students' thinking ability and reading comprehension proficiency or not. It is found that the use of PBL teaching method in English reading can greatly arouse students' enthusiasm in learning and build a student-oriented class in learning activities; the post-rest result of the experimental class are higher which indicates the improvement of students' reading performance.

Keywords: the PBL Teaching Model · English reading teaching · English majors

1 Introduction

PBL was found by American professor Howard Barrows of neurology in 1969 at the School of Medicine of McMaster University in Canada. Since then, it has been refined and developed continuously. So far, it has been applied to many disciplines: including medicine, biology, psychology, physiology, engineering education, business education, social work education and so on. It is also beginning to penetrate into primary and secondary education. Because PBL is so effective in developing students' problem solving skills, it is gaining more and more attention.

There are still some problems in traditional English reading teaching. First of all, teachers pay much attention to the grammar and vocabulary in the English reading class, which is too dull and tedious. In the process of learning, students only passively accept the knowledge from teachers and lack active analysis and critical thinking on the problems. Secondly, teachers are usually taken as the center in class and students' main position is neglected. Under this circumstance, reading teaching can not well cultivate students' ability to analyze and solve problems. Problem-Based Learning takes guiding students to find problems as its starting point and solve problems as its foothold. It aims to enhance students' ability of learning independently and make learners good at asking questions. Teachers create situations of problems to stimulate students' thirst for knowledge, let students actively think and learn to analyze independently and solve problems in the process of constantly raising questions, so as to improve students' overall quality.

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2 Literature Review

2.1 The Definition of the PBL Teaching Method

Problem-based Learning, abbreviated as PBL, is a kind of teaching mode that is centered on problem solving which was initiated by American neurology professor Howard Barrows. In China, there are many kinds of translation of PBL teaching method, such as problem-oriented learning, problem-centered learning and so on.

Barrows & Tamblyn (1980) initially defined PBL approach: Learning is generated in the step of understanding and resolution of a question. Problem-based Learning puts learning in real and complex problem situations. Learners solve problems through self-inquiry and cooperative discussion, so as to deeply understand the knowledge hidden behind the problems and finally form the ability to solve problems and learn independently [1]. Melovitz-Vasan et al. (2018: 5) believe that PBL is a teaching method that allows students to discover and solve problems with the help of small groups. It can promote the students' ability of analyzing and solving problems and train the student's critical thinking [11].

To sum up, PBL is a problem-oriented teaching method that emphasizes teachers should set learning in a complex and meaningful situation, and guide students to find problems and solve problems on their own initiative, so as to cultivate learners' problem awareness, creative thinking and problem-solving ability, and finally form the ability of autonomous learning and lifelong learning.

2.2 The Case of the Implementation of the PBL Teaching Method

The characters of PBL teaching method are learner-centered, problem-centered, cooperative learning, teachers act as facilitators and guides in learning. And there are five procedures when conduct the PBL teaching method: 1. organize groups, 2. teachers and students select reading problems together before class, 3. self-study, 4. lecture in classroom, 5. summary evaluation. The PBL teaching method in reading teaching is generally divided into three parts: pre-reading, while-reading and post-reading [5, 7]. Based on the above three reading teaching steps, the author explores the application of the PBL teaching method in English majors' reading teaching, and takes Commutative English for Chinese Learners-Reading Course I (Foreign Language Teaching and Research Press) Unit 1 *Do You Think You Will Have Your Own Robot?* as an example.

2.3 The Related Research at Home and Abroad

As early as 1969, Howard Barrows, a professor of Neurology at McMaster University in Canada, studied and implemented the PBL approach for the first time. Howard Barrows presents the knowledge points of the textbook by the way of asking questions, and enables students to develop their problem awareness through cooperative learning in the thinking activities of exploring problems, and realize the meaning construction of knowledge in the process of analyzing and solving problems [1]. Bower et al. (2004: 60) explore how students can develop their problem-solving ability in problem-based teaching and become lifelong learners [2]. Kumar & Refaci (2017: 11) designed a series

Table 1. A Sample of Lesson Plan

Teaching steps:		
	Teacher activities	Student activities
Choose pre-reading questions	<ol style="list-style-type: none"> 1. Ask Students to preview article and discuss in groups 2. Give the thought of questioning: Firstly, the question is related to the theme or background of the article; secondly, according to the content of paragraphs 3. Teachers and students discuss together and select pre-reading questions. 	<ol style="list-style-type: none"> 1. Preview article 2. Group discussion and put forward at least two questions related to reading articles each group
Self-study	Remind students to use their spare time to find relevant information about the questions they put forward and to check out the unfamiliar words in the article	<ol style="list-style-type: none"> 1. Use the Internet or other sources to find information related to the questions raised by themselves 2. Refer to the unfamiliar words in the article
Pre-reading	<ol style="list-style-type: none"> 1. Play a video about future robots and ask: Do you think you will have your own robot? Arouse students' interest 2. Continue to ask questions and allow students to engage in dialogue in the form of questions: What is the video about? What do you want to know about the robots? 3. Ask student to scan article and match each paragraph to the questions: Q1: Will robots think like humans in the future? Q2: What will robots be like in the future? Q3: What can robots do today? Q4: What are robots like in movies? 	<ol style="list-style-type: none"> 1. watch the video and discuss question 2. Answer the question, such as: It's about robots. What do they look like now? What can they do? How much are they? Will they think like people? 3. Scan article and match each paragraph to the questions

(continued)

Table 1. (continued)

Teaching steps:		
	Teacher activities	Student activities
While-reading	<ol style="list-style-type: none"> 1. Ask students to read each paragraph carefully and put forward at least two questions about the content of each paragraph. 2. Assign tasks to each group. Paragraph 1: Group 1, 2, 3; paragraph 2: group 4, 5, 6; paragraph 3: group 7, 8; paragraph 4: group 9, 10 3. Invite representative of each group to speak 4. Supplement and summary 	<ol style="list-style-type: none"> 1. According to the learning task, read paragraph of article carefully 2. Prepare at least 2 questions about the details of each paragraph in groups 3. The representatives of each group present the questions prepared by their own groups, and invite anyone of other groups or a group to answer questions.
Post-reading	<ol style="list-style-type: none"> 1. Set up open questions for students to discuss in groups, such as: If you will have a robot, what will you ask him to do? 2. Invite two students to speak 3. Assign assignments: write a composition of not less than 100 words under the title "My Robot" 	<ol style="list-style-type: none"> 1. Make discussion on the open problem in groups 2. Make speech 3. Write a composition of not less than 100 words under the title "My Robot"
(1) Summary and evaluation	<ol style="list-style-type: none"> 1. Ask Students to make self-assessment and mutual evaluation on their classroom performance 2. Make summary and comments 	Make self-assessment and mutual evaluation on their classroom performance

of questions for students in the second grade writing course and used PBL in teaching. The results show that students' critical thinking has been improved under PBL teaching [4, 6].

Since the 1990s, foreign language scholars in China began to focus on and introduce PBL theory. Zhi Yongbi (2009: 35) proposed that PBL teaching mode is a problem-driven inquiry teaching mode. The problem is the core and the focus of the teaching mode [8, 12]. Shi Baoguo (2005: 57) believes that an effective PBL problem must be able to attract students' interest, and its initial problem should be open and contradictory, based on previously acquired knowledge, so as to stimulate students to actively explore and understand the concepts provided by teachers [3]. Many studies have shown that the teaching of cultivating critical thinking should be based on the problem-solving strategy

and takes solving problems as the core (Chen Xiaodan, 2013: 68) [9]. PBL teaching method makes learners produce critical thinking and creative thinking by dealing with all kinds of difficult problems, which is called the excellent container of promoting thinking (Zhi Yongbi, 2009: 35) [10, 12]. Searching for PBL as a key word in CNKI, it is found that many scholars in China have written articles to discuss the application of PBL teaching method in foreign language education, but the number of studies on how to apply PBL method to English reading teaching is relatively small. Therefore, it is a beneficial attempt to apply PBL method in English reading teaching.

3 Experimental Design

3.1 Experimental Subjects

In this study, 102 Sophomore of English majors were selected from the Class 1, and Class 2 in the authors' college, which including 86 female students and 16 male students. The two classes are ordinary classes. Judging from the reading scores, there is no obvious difference between the two classes. The learning levels are equal, so the reading abilities of the two classes are at similar levels. Class 1 is the experimental class and Class 2 is the control class. The experimental class uses the teaching method of PBL teaching model. The control class uses traditional reading teaching methods for a period of 12 weeks, and students will undergo reading training every two weeks.

3.2 Experimental Tool

3.2.1 Questionnaires

The questionnaires for the students in the experimental class include pre-experimental questionnaires and post-experimental questionnaires. The first questionnaire consists of 16 questions, which investigates students' English writing learning status. The second questionnaire is filled after the teaching experiment and contains 20 questions, which is to investigate the changes in student's interest in English reading after conducting the PBL teaching method. The questionnaire is conducted anonymously. All questionnaires are filled out on the spot and withdrawn on the spot.

3.2.2 Pre-test and Post-test

In order to that ensuring the credibility and authenticity of the data of the control class and the experimental class, this study takes the English reading scores of the academic evaluation test in the mid-semester of the 2022-2023-1 school year as the pre-test scores. After 12 weeks of teaching experiments, the experimental class and the control class also participated in the final exam of the first semester of the 2022-2023-1 school year of the author's college. The test paper is moderate in difficulty and has a certain degree of educational significance.

4 Analysis of the Experiment Results and Discussion

4.1 Analysis of the Pre-experimental and Post-experimental Questionnaire

Before the experiment, a questionnaire analysis was performed on the students, which included the current reading status of the students and their current interest in reading. From the questionnaire data, we can find that the students who like reading classes increased from 25.86% to 48.28%. Students who often read English books in spare time increased from 15.52% to 18.97%. What's more, students who actively participated in class activities has increased by 17.24%. Students are more interested in English reading class after experiment. From the data, the number of students who actively cooperate with the group members to complete study tasks has increased from 29.31% to 43.10% now. Students who think that group cooperation can effectively solve the problem increased from 31.03% before the experiment to 56.90%, This data fully proves that the cooperation consciousness of students has been improved under the problem teaching method. The application of PBL teaching method in English majors' reading class can make students more active in class activities, promote teaching atmosphere, and greatly enhance students' interest and enthusiasm in English reading learning.

4.2 Analysis of Pre-test and Post-test Result

To ensure the credibility and authenticity of the data, this study takes the English reading scores of the Academic Assessment Test in the mid-semester 2022-2023-1 school year as the pretest scores. By using SPSS analysis, the average score of the experimental class is 27.83, with a standard deviation of 5.831, and the average of the control class is 27.97, with a standard deviation of 6.772. Therefore, we can see that the reading scores of the two classes are both average, Standard deviation, or standard error of the mean are all closer. In order to achieve statistical significance analysis, an independent sample T test was performed, and the results are as follows: The Levene test P value of variance is $.906 > 0.05$, assuming that the population variances are equal. Under the null hypothesis that the population variances are equal, the p-value for interpreting the T test result is $.953 > 0.05$, then the mean values of the two classes are considered equal. Therefore, there is no significant difference in the overall level of the two classes, and experiments can be performed.

The following experimental class is abbreviated as EC and the following control class is abbreviated as CC. Table 2 is the Independent Samples test of post-test results of the experimental class and the control class, where the post-test results of the Sig. (2-tailed) is $.012 < 0.05$, so the difference is significant at the 95% confidence level, and it is illustrating that there is a significant difference between the post-test results of EC and CC. The reading performance of EC is higher after experiment (Table 2).

The results show that the pre-test and post-rest results of experimental class are $t = -8.051$, Sig. (2-tailed) is $.000$; ($P < 0.05$). Therefore, the pre-test and post-rest results of the experimental class are different, and the post-test result of the experimental class are higher. The pre-test and post-rest results of control class are $t = -1$, Sig. (2-tailed) is $.321$ ($P > 0.05$), which is obviously larger than 0.05, indicating that there is no big

Table 2. The Independent Samples Test of the Post-test Results between EC and CC

		N	95% Confidence Interval of the Difference		Sig.
Experimental class	Pre-test results & Post-Test Results	52	Lower .694	Upper 5.459	.012
Control class	Pre-test results & Post-Test Results	50	.698	5.455	.012

difference in pre-test and post-test of CC. so pre-test and post-rest results of control class are basically the same.

The average scores of post test of the experimental class and the control class was measured. They were 31.52 and 28.44. The “Levene test of the variance equation” has a P value of $0.075 > 0.05$, assuming that the variances are equal. The t-test sig (two-sided) of the interpretation equation = $.012 < 0.05$, so reject the null hypothesis that the two groups of means are equal. And the average difference between the two post-test results is 3.077. There are obvious differences. Therefore, the research problem of this study was verified again: the application of the PBL teaching mode in English majors’ reading teaching in college can improve students’ English reading performance.

4.3 Implications of PBL Model in English Reading Teaching

In reading class, using PBL teaching method can improve students’ learning enthusiasm, promote class atmosphere, train students’ ability of analysis and problem-solving, etc. But teachers will meet many difficulties in the process of implementation. The author puts forward several suggestions for English reading teaching in the future.

(1) Teachers should strengthen the study of related theory. Only by having a full understanding of the theory of PBL, can the teacher better implement the PBL teaching method in class teaching. In addition, teachers should strengthen the study of professional knowledge and accumulate teaching experience so as to be more mature in the use of PBL teaching method. (2) Teachers should prepare their lessons carefully ahead of time. In PBL teaching, teachers are not providers of knowledge but facilitators and guides. It requires teachers to have a wide range of knowledge so they can better set up teaching situations and problems, and deal with all kinds of problems raised by students. (3) For the introverted and timid students, teachers should give more encouragement to make them participate in group discussions, speak actively in class, and enhance their confidence in English reading.

5 Conclusion

This paper proves that the PBL teaching has a positive effect on students' English reading in English majors by means of experimental research. The main conclusions drawn from the teaching practice are as follows:

The experiment shows that the use of PBL teaching method in reading teaching can encourage more students to actively participate in class activities, promote the atmosphere of the class, and improve students' enthusiasm for English reading learning. Students' interest in learning English and reading performance can be improved under PBL teaching method. In addition, students' team spirit and innovative thinking ability can be fully developed. The teacher-student relationship and class atmosphere become better. First of all, teachers as designers need to keep up with the actual needs of students, combine students' life with reading materials, and design class activities that conducive to improving reading teaching skills. Second, teachers as participants only provide help when students need learning guidance, without too much interference, so as to promote the development of democratic relations between teachers and students.

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