

Implementation of Problem-based Learning in Reading among Primary School English Teachers in Neijiang City, Sichuan Province, China

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Abstract

Problem-based Learning (PBL) is a student-centered teaching method with teachers as facilitators. In order to promote the mastery and implementation of PBL by primary school English teachers, this study is conducted to determine the knowledge and implementation level of the PBL, and compare the knowledge and implementation level of the PBL between English major and non-English major teachers. A total of 150 English teachers from public primary schools in urban areas of Neijiang City, Sichuan Province, China was involved in the study. The instrument used was an online questionnaire. The result from descriptive statistics and T-test showed that the knowledge and implementation level of PBL among primary school English teachers is high. Besides, there is no significant difference between English major and non-English major primary school English teachers in knowledge and implementation level of PBL. It was found that English major background has no effect on teachers' knowledge and implementation level of PBL in primary school English reading class. Overall, this study explored the implementation of PBL among primary school English teachers in reading and promoted teachers' attention to PBL, improved teachers' ability to apply PBL, enhanced the English reading ability of primary school students, and promoted the reform and development of teaching methods.

Keywords: Problem-based Learning (PBL), primary school English teacher, English reading, English major, non-English major

1. Introduction

Primary school English class is the original place for most students to contact and learn English formally, forming the foundation of students' English ability. Language ability involves four elements: listening, speaking, reading, and writing. In short, reading plays a key role because it's essential in the means of inputting language and knowledge. English reading ability is the main aspect of English comprehensive ability. Good reading ability is conducive to cultivating the comprehensive quality of English. Hence, this study focuses on the improvement of English reading ability in primary schools.

However, due to the exam-oriented education, the traditional teaching method has been carried out for a long time in primary school English classes, which cannot well promote students' English ability, especially the development of English reading ability. Therefore, primary school students generally show low English reading ability. Research by Liu (2020) supports that primary school students have problems in their daily English reading ability performance. There is still a huge gap between primary school students' reading ability and the *English Curriculum Standards for Compulsory Education* in China, and there's a huge room for improvement. To be specific, the ability to read identification and extraction, generalization, analysis, assessment, and sensibility of primary school students is weak.

There are four main factors that lead to the low English reading ability of students: students, teachers, schools, and parents. Among them, the teaching method of teachers plays a leading role. Teachers meticulously plan exercises and games in daily primary school English classes, but lack of reading instruction for students. The English reading instruction that students do most is to get the common idea of the content, but this cannot satisfy the reading needs of

students, so students' reading ability cannot be completely progressed (Xu, 2017).

According to the basic concepts of the *New English Curriculum Standards for Primary Schools (including the newly added and revised parts)* issued by the Ministry of Education of China in 2021, primary school students should be emphasized in learning, individual differences should be respected, active learning approaches should be adopted, and experiential participation should be advocated. The PBL teaching method, which is based on synergic learning, independent learning, and discovery learning, is a student-centered modern teaching method and energizes students to investigate successfully in the process of tackling problems. It meets the requirements of the *New English Curriculum Standards for Primary Schools* in China and plays an active role in advancing English reading capacity in primary schools. Therefore, this study attempted to require the PBL teaching method as a breakthrough to investigate, to develop primary students' English reading ability.

Therefore, this research aims to explore the implementation of the PBL teaching method in English reading in primary school through analyzing the information of knowledge and application of PBL in classroom teaching among primary school English teachers. Besides, another purpose of this study is to investigate whether there is a difference between English major and non-English major primary school English teachers in the knowledge and implementation level of PBL.

1.1 The Hypotheses of the Research

(1) H₀₁: There is no significant difference in the knowledge level of the PBL teaching method in reading between English major and non-English major teachers in Neijiang City, Sichuan Province, China, including the teacher's cognition of the concept, characteristics, structure, and procedures of PBL.

(2) H₀₂: There is no significant difference in the implementation level of the PBL teaching method in reading between English major and non-English major teachers in Neijiang City, Sichuan Province, China, including the implementation of PBL in English reading, creating problems, small groups, and teachers' roles as facilitators.

2. Theoretical Framework

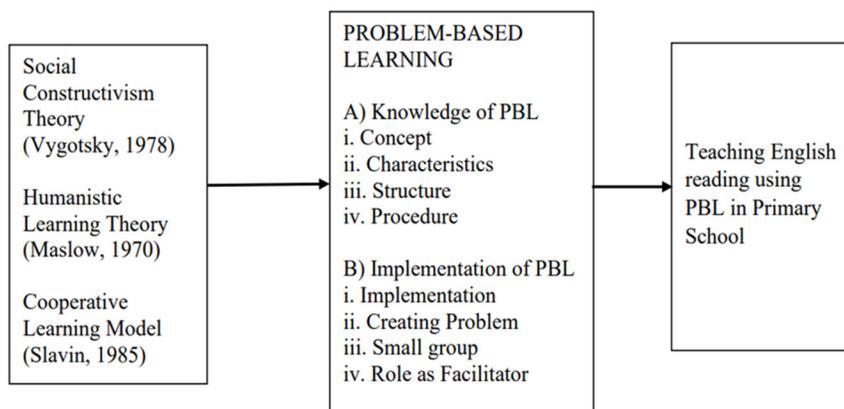


Figure 1. Theoretical Framework of the Study

The theoretical framework of this study mainly includes social constructivism learning theory (Vygotsky, 1978), humanistic learning theory (Maslow, 1970), and the cooperative learning model (Slavin, 1985) as shown in Figure 1. The theoretical framework effectively combines the key concepts of this research, helps to explore research questions, and conforms to research methods.

2.1 Social Constructivism Learning Theory

Social constructivism was introduced in the 1980s, which claims that people are not in a passive state when fathoming problems, but will gather and form their abilities and experience actively. After that, to implement the knowledge that they obtained, people will perform the problem-tackling thoughts. Vygotsky is speaking on behalf of social constructivism. He accepts that constructivism theory can demonstrate the imperative part of social cognition in tackling problems (Chen, 2007). Piaget is another proponent of social constructivism theory. He accepts that people have a solid activity in obtaining information, while constructivism centers on the method of people amassing

knowledge (Luo, 2006).

English teaching and learning using PBL centers on students' investigation of new information in viable circumstances. Social constructivism gives direction for the formation of problems from situations in PBL English reading learning, which is the foundation of the PBL teaching method. By adopting the social constructivism learning theory, this study is helpful for primary school teachers to evaluate the teaching effect of students' active knowledge construction when using the PBL teaching method in English teaching, to facilitate the measurement of primary school teachers' knowledge level of the concept of PBL and the implementation level of creating problems with PBL in this study.

2.2 Humanistic Learning Theory

Humanistic learning theory arose in the 1950s. Maslow, Rogers, and other scholars stress the meaning of people, focusing on their needs, feelings, and inspiration. The goal of learning is to provide support to the best of an individual's capacity and promote oneself. Rogers indicates that the student is the focus in the learning activities. In other words, in a student-centered approach, teachers give learning circumstances and ways, to provide a conducive environment for the advancement of students' potential. In this way, the most significant role of the educator is not the specialist of knowledge, but the "midwife". Moreover, Rogers claims that students need to be energized to characterize problems for themselves, show their thoughts unreservedly, draw up a plan, and take active action (Wang, 2002).

The above characteristics of humanistic learning theory are consistent with the concept of the PBL teaching method, which stresses giving an opportunity to learners' activities, emphasizing learners' feelings and needs, and supporting self-evaluation. This study adopts humanistic learning theory and conforms to the role requirements of teachers and students in the PBL teaching method, in which the teacher changes from the leader of learning to the facilitator, and the students are the main focus of learning. At the same time, humanistic learning theory is helpful for primary school teachers to recognize their role as facilitators of students' learning when adopting the PBL teaching method in English reading teaching, to guarantee the students' role as learning subjects, and ultimately promote the measurement of primary school teachers' knowledge level of the characteristics and structure of PBL and the implementation level of teachers' roles as facilitators of PBL in this study.

2.3 Cooperative Learning Model

The cooperative learning model was developed in the U.S. in the 1970s. Cooperative learning is in which learners are assembled into groups to achieve a common objective, and the objective is to promote the learning impact of the individual and other group members of the group. Cooperative learning, rooted in social participation and interaction in education, can be utilized in the teaching process of different subjects, which can fortify the cognitive process of learning and enhance students' scholarly accomplishments. Slavin (1990) supports that cooperative learning is a framework for educational theories and methodologies. On the basis of diverse identity characteristics, interests, knowledge levels, students frame a group under the direction of the teacher. Individuals in a group share their experiences, demonstrate their superiority, coordinate with one another, and work together to approach the learning goals and achieve the best form of learning impact.

The cooperative learning model is one of the most vital educational techniques in PBL teaching. By cooperating with group members, students illuminate problems. Within the progress of cooperative learning, students' capacity to interflow of ideas and collaboration is developed. The cooperative learning model is adopted in this study, which is in line with the requirements of the procedures of PBL, in which small groups cooperative learning is an important procedure step, to promote the measurement of primary school teachers' knowledge level of the procedures of PBL and the implementation level of small groups of PBL in this study.

3. Literature Review

3.1 Theoretical Foundation

Firstly, according to social constructivism learning theory, which is one of the theoretical foundations of the PBL teaching method, a learner is an active learner who creates his or her understanding of things based on prior original knowledge and experience through social interaction and communication. Therefore, during the learning process, students are both learning subjects and active constructors of knowledge meaning, while teachers only assist and support students in this process (Liang, 2011). In primary school English reading class with the PBL teaching method, students search for information about problems and discuss solutions in groups with the facilitation of teachers to conduct meaningful English reading learning in active construction.

Next, humanistic learning theory, which is founded on humanistic psychology, emphasizes students' direct experience and meaningful learning through the development of their potential and finally realizing themselves. The lack of present knowledge among students makes it challenging for them to integrate what is taught in class. Experiential learning keeps students engaged and aids in their internalization of knowledge through direct experience (Song, 2020). Primary school students' English knowledge capacity is less than that of senior students, and it is difficult to maintain the concentration of learning. Therefore, through the PBL teaching method, primary school students can directly explore and discuss problems, which is conducive to maintaining learning concentration, so that English reading ability can be subtly improved in situational experience.

Besides, learning in groups is a component of the cooperative learning model. The objective of group learning is to increase each group member's learning outcomes, and the performance of the entire group rather than each member's learning outcomes. In the classroom, the cooperative learning model enhances student-to-student interaction. Students' interaction and group projects enhance their capacity for self-learning (Ni & Zhang, 2022). According to the cooperative learning model, in the PBL teaching method, the group discussion part can promote each primary school student to improve their English reading ability and teamwork ability in English reading class.

Moreover, according to Bruner's discovery learning theory, to acquire knowledge, primary school students should be allowed to explore the occurrence and growth of knowledge while encountering and solving problems. Creating the circumstance, putting forward the hypothesis, testing the hypothesis, summarizing and applying are the components of the discovery learning theory process. There are three key characteristics of the discovery learning theory: (1) Students learn through their initiative in a learning environment set up by teachers. (2) Students play an important role in learning. (3) The assisting role of teachers in teaching (Li, 2015). In the PBL teaching method, students learn independently in the problem situation created by teachers, propose solutions in group discussions, and finally verify hypotheses through presentation and discussions, which is consistent with the process of discovery learning theory and reflects the characteristics of the teacher as the auxiliary and students as the subject.

3.2 PBL Teaching Method

PBL teaching method was, to begin with, created in the field of Medicine in the U.S. In the 1950s, it was started and connected to medical education by Barrows (1986), a professor of physiology who worked at McMaster University in Canada. In 1966, the medical school abolished the subject-centered education and executed the "Three-year Plan", which stood for the birth of PBL. In the 1980s and 1990s, the PBL teaching method was presented to North America and Europe and attempted by numerous medical schools progressively. So far, the application of the PBL teaching method is still the foremost mature and far-ranging in the medical field. With the generalization and exploitation of the PBL teaching method in the world, it has been applied to other areas, besides the medical field, proceeds to amplify to engineering, finance, administration, psychology, and numerous other fields, and has accomplished exceptional outcomes and accomplishments.

In the 1990s, PBL authoritatively entered the field of education. Ever since the PBL teaching method is connected to this field, it has gotten broad consideration by instruction analysts and frontline teachers and was at first presented by many developed nations continuously in the vocational education and higher education generalization. And after that, the PBL teaching method started to connect within the field of the fundamental teaching of primary and secondary schools, which has presently gotten to be an exceptionally prevalent teaching method worldwide. PBL is a problem-based teaching method that presents true and significant problems so that students can express their exploration and communication in groups (Wardani, 2010).

Othman and Shah (2013) did a study to explore the impact of PBL on students' language learning from two perspectives: course content and language improvement. One hundred twenty-eight students involved in the experiment and the result indicated that students who learn under the direction of PBL are more noteworthy in terms of communication and argument. Alexandra (2001) applied the PBL teaching method into senior high school English reading teaching and makes significant contributions. It can be displayed as follows: PBL teaching method includes identifying problems, analyzing problems, illuminating problems, assessing problems, summarizing and reflecting. At the same time, PBL focuses on making a significant and complicated problem circumstance, which can fortify students' participation awareness, learning interest, acquisition of new knowledge, and promote reading ability. Jiriyasin (2014) experimented to demonstrate the viability of the PBL teaching method for English speaking in a college setting and to reflect on their positive responses to this teaching method. Muñoz (2017) experimented with English language teachers in Chile to discover the influence on teachers' performances through the PBL teaching method and found some skills fostered by the PBL teaching method, such as high-level thinking skills, and self-management skills.

With the introduction and development of the PBL teaching method in China, many scholars have conducted a lot of research on it. The PBL teaching method was presented in Chinese medical teaching in the 1980s and started to be paid attention to by education researchers in China after the 1990s. After a long period of development, the PBL teaching method has been utilized in the field of education in China and has become one of the most broadly utilized teaching methods.

According to Qiao and Guo (2011), there are five steps in PBL: teacher prepares the problem, students seek information, students discuss in group, presentation and discussion, evaluation and summary. PBL was utilized to progress English reading teaching in primary schools. Another study outcome indicated that PBL is viable and compelling in fortifying students intrigued in reading, developing issue mindfulness, training issue techniques, and moving forward reading capacity (Wang, 2015). As a teaching method, PBL employs an assortment of cognitive tools to assist students secure and handling information and unravelling issues as the education method, which trains students' capacities in different perspectives. The PBL teaching method can meet the needs of progressing the English performance of primary school students and plays a great role in advancing the accumulation of students' knowledge and abilities (Yue & Xu, 2018). Lin (2017) conducted an experimental study to find out the impacts of PBL on English learners' reading comprehension. The results showed that the PBL approach significantly enhanced the students' reading comprehension abilities, including identifying the subject matter and providing supportive details. Besides, the PBL can improve primary school students' active English learning attitude.

3.3 Teaching Method for English Reading in Primary School

Meanwhile, the teaching methods of primary school English reading are developing in a variety of ways. Zhu (2021) puts forward a situation-based teaching method for primary English reading. Situation-based teaching methods for primary school English reading mainly include: making visual situations, utilizing performance situations, utilizing life situations, and making game situations. Situation-based teaching method can create a dynamic classroom teaching atmosphere, attract the attention of primary school students, and significantly improve students' enthusiasm for learning. Additionally, it improves the content of teaching, breaks through students' thinking confinements, and empowers students to master English knowledge more experimentally. Teachers can utilize a scientific and effective situation-based teaching method to invigorate students' enthusiasm and interest in learning. The PBL teaching method and situation-based teaching method are consistent in that they are both based on teaching methods in real problem situations, which is also in line with the student-centered approach emphasized by humanistic learning theory.

Furthermore, Duan (2021) promotes Task-based Language Teaching (TBLT) to apply to primary school English reading, which marked a step in shifting the traditional teaching method into a modern teaching method. Compared to traditional teaching methods, it is an action-based teaching method in which learners handle different tasks via different communication exercises and obtain language knowledge in the end. But without implementation, Duan advised how to plan real communication tasks and how to utilize TBLT in a better way in primary school English reading classes in China only. Although it has not been verified in practice, the similarities between TBLT and PBL are based on the theory of constructivism, which lays some groundwork for the proposal of the PBL teaching method in primary English reading.

Compared with other kinds of English reading, English reading in primary school has its characteristics. There are four major characteristics of primary school English reading (Chen, 2015): word recognition to reading, simple reading content, reading based on real life, reading with pictures. Therefore, based on the characteristics of English reading teaching in primary schools, the requirements for English teachers' professional level are not high. Non-English major teachers who have received general higher education and pre-service training are likely to be equally competent as English major teachers in primary school English reading teaching.

Reviewing the previous studies, the PBL teaching method, and teaching method for English reading in primary school in western countries and China is accommodating to create a comprehensive understanding of the improvement of PBL. The PBL teaching method has been well developed in both western countries and China. However, it is mainly applied in the field of science subjects. There are few studies on English subjects, especially English reading in primary schools. Moreover, primary school English teachers do not have high requirements for English professional backgrounds. Therefore, this study explored the implementation of the PBL teaching method in English reading by Chinese primary school English teachers and compared the knowledge and implementation level of PBL between English major and non-English major primary school English teachers.

4. Methodology

To investigate the implementation of the PBL teaching method in English reading by primary school English teachers, and to compare the implementation of the PBL teaching method in English reading by primary school English teachers with English major and non-English major education backgrounds, this research applied quantitative methods by distributing an online questionnaire to collect data. The target population of this study was the total number of English teachers in 18 public primary schools in the urban areas in Neijiang City, Sichuan Province, China. The samples were selected using simple random sampling.

There are four steps in the data collection procedure in this study. First of all, designing the online questionnaire. After that, distributing 150 questionnaires to the respondents online. The teachers were notified beforehand to answer truthfully to maintain the validity of the data. And all 150 teachers were brief clearly about the objective of this research, why they were selected, what they were expected to do as well as the data confidentiality and the conformance of ethical issues and procedures. Next, collecting and sorting out all the questionnaires after answering by respondents. Finally, analyzing the raw data provided by the questionnaire responses laid a foundation to draw the findings.

The questionnaires which were distributed through the internet take about 10 minutes to complete. In total, 150 returned questionnaires were completely answered by the participants. Each item in the questionnaire consists of 5 answer choices: 1 (Strongly Disagree), 2 (Disagree), 3 (Not Sure), 4 (Agree), and 5 (Strongly Agree). The raw data obtained from the questionnaire was analyzed using SPSS 26 to calculate descriptive statistics of Mean and hypothetical statistics of the T-test. Mean values were used to measure the respondents' level of PBL knowledge and implementation. The knowledge and implementation level of the PBL teaching method in reading between English major and non-English major teachers were compared through a T-test.

5. Result

Table 1. The Mean Value and Level of the Knowledge of PBL

Content	Mean	Level
The concept of PBL	4.13	High
The characteristics of PBL	4.13	High
The structure of PBL	4.17	High
The procedures of PBL	4.18	High
Overall Mean	4.15	High

Mean value (Low = 1.0 - 2.4; Moderate = 2.5 - 3.4; High = 3.5 - 5.0)

The knowledge of PBL includes four parts: the concept of PBL, the characteristics of PBL, the structure of PBL, and the procedures of PBL. As shown in Table 1, the respondents' knowledge level of PBL is high as overall Mean= 4.15 with each Mean value for each part being more than 3.5. The highest level of respondents' knowledge of PBL is the procedures of PBL as Mean=4.18. And the lowest level of respondents' knowledge of PBL is both the concept of PBL with Mean=4.13 and the characteristics of PBL with Mean=4.13.

Table 2. The Group Statistics of the Concept and Characteristics of PBL

	N	The concept of PBL		The characteristics of PBL	
		Mean	Std. Deviation	Mean	Std. Deviation
English major	91	4.17	.670	4.16	.637
Non-English major	59	4.04	.670	4.07	.646

Table 3. The Group Statistics of the Structure and Procedures of PBL

	N	The structure of PBL		The procedures of PBL	
		Mean	Std. Deviation	Mean	Std. Deviation
English major	91	4.19	.641	4.25	.596
Non-English major	59	4.14	.668	4.09	.628

Table 4. T-test of the Knowledge Level of PBL

Content	F	Sig	t	df	Sig. (2-tailed)
The concept of PBL	.009	.924	1.198	148	.233
The characteristics of PBL	.029	.865	.852	148	.396
The structure of PBL	.523	.471	.426	148	.671
The procedures of PBL	.283	.596	1.562	148	.120

* $p > 0.05$

Firstly, there was no significant difference in the scores of the knowledge level of the concept of PBL for English major ($M=4.17$, $SD=0.670$) and non-English major ($M=4.04$, $SD=0.670$) conditions; $t(148)=1.198$, $p=0.233$. Next, there was no significant difference in the scores of the knowledge level of the characteristics of PBL for English major ($M=4.16$, $SD=0.637$) and non-English major ($M=4.07$, $SD=0.646$) conditions; $t(148)=0.852$, $p=0.396$. Then, there was no significant difference in the scores of the knowledge level of the structure of PBL for English major ($M=4.19$, $SD=0.641$) and non-English major ($M=4.14$, $SD=0.668$) conditions; $t(148)=0.426$, $p=0.671$. Moreover, there was no significant difference in the scores of the knowledge level of the procedures of PBL for English major ($M=4.25$, $SD=0.596$) and non-English major ($M=4.09$, $SD=0.628$) conditions; $t(148)=1.562$, $p=0.120$.

According to all the results of the T-test, the value of H_{01} as $p > \alpha$. It can be concluded that there is no significant difference in the knowledge level of the PBL teaching method in reading between English major and non-English major primary school English teachers, including the teacher's cognition of the concept, characteristics, structure, and procedures of PBL. Therefore, the null hypothesis is accepted.

Table 5. The Mean Value and Level of the Implementation of PBL

Content	Mean	Level
The implementation of PBL in English reading	4.19	High
Creating problems	4.19	High
Small groups	4.19	High
Teachers' roles as facilitators	4.25	High
Overall Mean	4.21	High

Mean value (Low = 1.0 - 2.4; Moderate = 2.5 - 3.4; High = 3.5 - 5.0)

The implementation of PBL includes four parts: the implementation of PBL in English reading, creating problems, small groups, and teachers' roles as facilitators. As shown in Table 5, the respondents' implementation level of PBL is high as overall Mean= 4.21 with each Mean value for each part being more than 3.5. The highest level of respondents' implementation of PBL is teachers' roles as facilitators as Mean=4.25. And the rest are all at the same level as Mean=4.19.

Table 6. The Group Statistics of the Implementation of PBL in English Reading and Creating Problem

	N	the implementation of PBL in English reading		creating problems	
		Mean	Std. Deviation	Mean	Std. Deviation
English major	91	4.27	.645	4.25	.570
Non-English major	59	4.06	.507	4.11	.568

Table 7. The Group Statistics of Small Groups and Teachers' Roles as Facilitators

	N	small groups		teachers' roles as facilitators	
		Mean	Std. Deviation	Mean	Std. Deviation
English major	91	4.29	.529	4.33	.554
Non-English major	59	4.04	.538	4.13	.612

Table 8. T-test of the Implementation Level of PBL

Content	F	Sig	t	df	Sig. (2-tailed)
The implementation of PBL in English reading	5.336	.022	2.161	148	.320
Creating problems	.052	.820	1.410	148	.161
Small groups	1.598	.208	2.826	148	.050
Teachers' roles as facilitators	.438	.509	2.050	148	.402

* $p \geq 0.05$

Firstly, there was no significant difference in the scores of the implementation of PBL in English reading for English major ($M=4.27$, $SD=0.645$) and non-English major ($M=4.06$, $SD=0.507$) conditions; $t(148)=2.161$, $p=0.320$. Next, there was no significant difference in the scores of the implementation level of creating problems of PBL for English major ($M=4.25$, $SD=0.570$) and non-English major ($M=4.11$, $SD=0.568$) conditions; $t(148)=1.410$, $p=0.161$. Then, there was a difference in the scores of the implementation level of small groups of PBL for English major ($M=4.29$, $SD=0.529$) and non-English major ($M=4.04$, $SD=0.538$) conditions; $t(148)=2.826$, $p=0.050$. Moreover, there was no significant difference in the scores of the implementation level of teachers' roles as facilitators of PBL for English major ($M=4.33$, $SD=0.554$) and non-English major ($M=4.13$, $SD=0.612$) conditions; $t(148)=2.050$, $p=0.402$.

According to all the results of the T-test, the value of H_0 as $p > \alpha$. It can be concluded that there is no significant difference in the implementation of the PBL teaching method in reading between English major and non-English major primary school English teachers, including the implementation of PBL in English reading, creating problems, and teachers' roles as facilitators. Nevertheless, English major background affects respondents' level of small groups as $p = \alpha$. Therefore, the null hypothesis is accepted in this part.

It can be concluded that the research finding shows that the knowledge level of the PBL teaching method in reading among primary school English teachers in Neijiang City, Sichuan Province, China is high, including teachers' cognition of the concept, characteristics, structure, and procedures of PBL. Furthermore, it can be inferred from the research findings that there is no significant difference in the knowledge level of the PBL teaching method in reading between English major and non-English major teachers, including teachers' cognition of the concept, characteristics, structure, and procedures of PBL. Besides, the research finding also shows that the implementation level of the PBL teaching method in reading among primary school English teachers in Neijiang City, Sichuan Province, China is high, including the implementation of PBL in English reading, creating problems, small groups, and teachers' roles as facilitators. Moreover, it can be generally inferred from the research findings that there is no significant difference in the implementation level of the PBL teaching method in reading between English major and non-English major teachers, including the implementation of PBL in English reading, creating problems, small groups, and teachers' roles as facilitators.

6. Discussion

6.1 Discussion of Research Findings

According to the results of this research, the researchers found that primary school English teachers' high mastery and implementation level of PBL teaching method without significant difference between English majors and non-English majors can create favorable conditions for primary school students who are the center of teaching to improve their English reading ability.

Based on the results of this research, primary school English teachers who master high-level PBL knowledge and implementation ability can promote attention to students' needs and direct experience, which is emphasized by the humanistic learning theory in teaching, to enhance students' autonomous learning ability in English reading. In addition, the high-level ability of primary school English teachers' in creating problems in the implementation of PBL can help them create problem situations according to the real life of society so that students can improve their enthusiasm for English reading learning and promote the active construction of knowledge, which is in line with the viewpoint of social constructivism learning theory. Moreover, the implementation of small groups and teachers' roles as facilitators in PBL among primary school English teachers indicates that teachers can create conditions and provide good assistance for small groups discussions, which is in accord with the interaction among students emphasized by the cooperative learning model. This will promote a conducive environment to enhance students'

sense of participation in English reading learning and can improve their communication and cooperation ability.

Teachers who have a high level of PBL in English reading teaching support the suggestion of “true reading” put forward by Wan (2008), in which the word “true” refers to students’ reading, which includes three “true” characteristics: independence, completeness, and variability. In PBL, primary school students can independently conduct information search, group discussion, and presentation in the real problem situation created by teachers, and finally, get the teacher’s evaluation. It’s a complete self-directed learning process for students. Besides, this research can help to fill the dilemma of the current situation of primary school English reading. Nowadays, students have restricted reading teaching and learning time in class, and the effectiveness of free reading outside of class is not enough, which means they cannot form a meaningful learning atmosphere among students. Over time, it leads those students to lose the initiative in reading, they will not read, and they are afraid of reading (Xu, 2017). In English reading class, teachers’ implementation of the PBL teaching method can create a good reading atmosphere in the limited classroom teaching time, improve students’ meaningful learning in group discussion, and help maintain students’ initiative in reading.

Furthermore, this research contradicts the PWP (Pre-reading, While-reading, Post-reading) teaching method. Chen (2015) builds the practice method of primary school English reading teaching and learning: the PWP teaching method. That is, pre-reading, while-reading, and post-reading. This teaching method is simple and easy to use, but students’ learning is passive. It needs the development of students’ cooperative learning ability and exploratory learning capacity, so it is not appropriate for the long-term development of English reading ability. This study shows that PBL can help to promote students’ cooperative learning ability through group discussion and students’ exploratory learning capacity can be highly obtained in information search, which greatly motivates students’ active learning.

Moreover, this research has improved the shortcomings of the task-based learning case teaching method. Liu (2018) studied the task-based learning case teaching method for primary school English reading teaching and learning. This teaching method can advance students’ investigative learning abilities and mobilize their learning enthusiasm, but the implementation of it needs strong English teaching and learning skills and a lot of planning before class. It is easy to cause the deviation of task-based learning cases as anticipated. This leads to the student’s reading ability not reaching the specified impact. In contrast, in the PBL teaching method, teachers, as facilitators, are easier to prepare for problems before class, which is helpful for less-skilled teachers with a non-English major background to carry out teaching, to better ensure the achievement of teaching effects.

6.2 Implication

In addition, as a “facilitator”, the teacher’s teaching focus in PBL is on cultivating students’ English reading ability, rather than simply instilling English knowledge. This study can be applied to promote the revolution of primary school English teachers’ roles and facilitate their PBL teaching ability, including improving teaching methods, updating teaching concepts, optimizing problem setting, and supporting group learning.

6.2.1 Improve Teaching Methods

The traditional teaching method, which is represented by Herbart, mainly refers to a teacher’s teaching and a student’s learning injection teaching method. The traditional teaching method emphasizes the supremacy of teacher authority and teachers play a leading role in teaching (Fu, 2011). Compared with traditional teaching methods, the PBL teaching method is student-centered, which can better promote students’ learning enthusiasm and subjective initiative, to better improve students’ English reading ability. Teachers are familiar with and master the PBL teaching method, which can effectively promote the reform of traditional teaching methods and improve teaching skills. Especially with the development in today’s information society, computer technology provides teachers with rich teaching resources, which provide a real material basis and the feasibility for teachers to improve their teaching methods. Therefore, this study can improve teachers’ teaching methods by applying PBL.

6.2.2 Update Teaching Concept

Teaching concepts are the basis of teaching practice. Teachers should constantly update teaching concepts to adapt to the present development. To improve students’ learning, language, and communicative ability, the prerequisite is to change the teaching concept and establish subjective education thought (Wu, 2021). Therefore, the premise of the change of teaching method is the update of the teaching concept, which changes the traditional “indoctrinate” into “guiding”. Some teachers, limited by their knowledge and teaching skills, cannot understand PBL teaching properly, or cannot effectively implement PBL due to their limited ability. Schools can organize teachers to participate in PBL teaching training, or invite teachers skilled in operating PBL to demonstrate and explain, to help teachers better

understand and apply PBL and achieve the purpose of updating the teaching concept. At the same time, teachers who are proficient in PBL can share their experience with other teachers who do not know PBL well. In the process of teaching and learning, they can constantly strengthen their knowledge of PBL and help other teachers improve theirs, to promote the common development of teachers. Therefore, this study can help to update teachers' teaching concepts by applying PBL.

6.2.3 Optimize Problem Setting

The design of teaching should start with the knowledge base and cognitive level of all students. In order to effectively improve students' knowledge levels and learning abilities, the teaching design should be closely related to the "zone of proximal development" (ZPD) and the content should be in line with the students' cognitive level. ZPD emphasizes that teachers carry out teaching plans based on the difference between students' "current development level" and "possible level", and carry out teaching activities to promote the development of students' thinking quietly (Li, 2022). Problem setting in the PBL teaching method is, according to ZPD, in line with students' previous knowledge and cognitive level, and can effectively adapt to the development of students' thinking. Thus, the set of problems in PBL can be effectively optimized for teachers through this study.

6.2.4 Support Group Learning

Group learning is a common teaching way in classroom teaching. In group learning, it is easy to appear that some students in a group are too negative to study the problem, and some students are too positive, forcing others to change their views. In group learning, students have to cooperate with others because of the assignment of tasks and the presentation of results, which promotes the growth of students in teamwork. From the perspective of teachers, students can get feedback in time, and give students correct guidance, to achieve the teaching purposes (Wang et al., 2021). Therefore, In PBL teaching, teachers, as facilitators, can ensure that all students participate in the whole process of problem-solving and ensure and promote the development of each student. The PBL teaching method is a good way to support students' group learning by teachers. Thus, support group learning can be effectively improved through this study.

6.3 Limitation and Recommendation

Although this research has made the significant contributions above, there are some limitations, including the questionnaire methodology, sample size, and lack of students' feedback. This study only adopts an online questionnaire survey as a data collection approach, so it is difficult to comprehensively analyze the accuracy of the PBL teaching method in primary school English reading classes. Besides, the sample size in this research is limited, which is too small to represent the knowledge and implementation of PBL in reading by all primary school English teachers in China. Finally, due to limited time and space, this research only studied teachers' teaching and lacked students' feedback, which led to the limitations.

For further study, researchers would better enrich the research methodology, expand the sample size, collect students' feedback, and improve the teacher's PBL knowledge and implementation skills. On the one hand, collecting students' feedback information can reverse verify the authenticity of teachers' implementation of PBL. As the implementor of PBL, teachers normally have subjectivity in their implementation situation. Through the feedback of students, researchers can verify the data provided by teachers themselves, thus improving the objectivity and authenticity of PBL implementation. On the other hand, students' feedback is an important criterion for evaluating teachers' PBL implementation effects. As the main body of the PBL teaching implementation process, students' perception of PBL and improvement of English reading ability are important components to achieving the curriculum objectives.

Furthermore, for further study, teachers should update and expand their knowledge of PBL and renovate teaching concepts. The PBL teaching method has requirements for teachers' professional quality and knowledge. Teachers need to master the theoretical background of PBL, including cognitive psychology, educational psychology, pedagogy, and some other knowledge. Teachers also need to master basic knowledge and professional knowledge of the English subject. With the premise of penetrating theoretical knowledge, teachers can take the initiative to implement PBL and handle teaching problems flexibly during the implementation of PBL. Therefore, in order to effectively implement PBL in primary school English reading classes, teachers should improve their knowledge of PBL.

In addition, to improving PBL knowledge, teachers should also improve their ability to implement PBL. Compared with traditional teaching methods, the PBL teaching method focuses on student-centered teaching, and the role of teachers changes from the leader to the facilitator, which is a great challenge to teachers' teaching awareness and habits. Moreover, the implementation process of the PBL teaching method is more complicated than the traditional

professorial teaching method. Teachers should master the whole implementation process of PBL, including the specific operational requirements of each implementation step. The implementation of PBL is an important part of teachers from theory to practice and is also the key to guaranteeing the teaching effect of the PBL teaching method in primary school English reading class.

7. Conclusion

In conclusion, this study has found that the knowledge and implementation level of the PBL teaching method among primary school English teachers in Neijiang City, Sichuan Province, China is high. Besides, the study findings further reveal that there is no significant difference between English major and non-English major primary school English teachers in knowledge and implementation level of PBL. Moreover, the research findings indicate that English major background has no effect on teachers' knowledge and implementation level of PBL in primary school English reading class. It can be concluded that, in order to effectively implement the PBL teaching method in primary school English reading classes and improve the English reading ability of primary school students, teachers should constantly improve the knowledge level and implementation skills of PBL, help students to develop independent learning ability and teamwork ability.

It can be inferred that the PBL teaching method is well accepted and implemented among teachers in primary school English reading teaching, non-English major background has no restriction on teachers' understanding and implementation of the PBL teaching method. Therefore, to stimulate the realization of teacher-led and student-subjected classroom teaching, in the current and future English reading teaching in primary schools, middle schools, and universities, the knowledge and implementation of the PBL teaching method should be promoted. On the one hand, teachers' teaching activities for students to learn clear goal and direction, without the teacher teaching as leading for students, then students' learning activities are easy to have no goal, even deviate from the direction, on the other hand, the "subject" is the subject position of highlighting students' learning. The activities of highlighting students' learning are the core and key of the whole classroom teaching. Without the establishment of the subject of students' learning, the realization of teaching objectives and the completion of teaching tasks cannot be implemented (Liang, 2021).

It is hoped that this study can contribute to the development of the implementation of the PBL teaching method in reading among primary school English teachers, the exploration of the professional background of primary school English teachers, the promotion of PBL in English teaching, and finally, to enrich the research of PBL teaching method in the field of education.

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