

The Development of Learning Achievement on English Reading Comprehension Using the Problem-Based Learning of Freshmen Majoring in E-commerce of Guangxi Agricultural Vocational and Technical University

Xue Lin ¹ Sirikarn Thanawutpornphinit ²

Abstract

The objectives of this research were : 1) to compare Learning Achievement be that Pre-test and Post-test study PBL for freshmen majoring in E-commerce. 2) to compare be that Post-test learning achievement 75% 3) Post-test learning achievement is higher than 75% criterion. The samples were students randomly selected from the first-year E-commerce major at Guangxi Agricultural Vocational and Technical University, of 40 students obtained by simple random sampling. The research instruments included a teaching plan employing PBL, a performance test consisting of 30 questions, and a satisfaction questionnaire containing 15 items. These tools exhibited Item Objective Congruence values ($0.60 \leq IOC \leq 1.00$), difficulty values (0.40–0.68), discriminant values (0.35–0.52), and a Lovett reliability value (0.74). The 15-item satisfaction questionnaire showed an Alpha Cronbach reliability value of 0.72.

The research adopted a one-group pretest-posttest design and employed statistical methods were mean, percentage, standard deviation, and t-test for data analysis.

The research results were as follows 1) Posttest scores were significantly higher than pretest scores at the 0.01 level, and posttest scores significantly exceeded the 75% criterion. 2) Students expressed high satisfaction with the learning activities, with an average satisfaction score of 4.82, reaching the highest level of satisfaction

¹ M.Ed. Student of Innovative Curriculum and Learning Management, Pathum Thani University. Thailand, e-Mail: rotastisarus@hotmail.com

² Lecturer of Innovative Curriculum and Learning Management, Pathum Thani University. Thailand, e-mail: Sirikarnt@gmail.com

Keywords: Problem Based Learning, , Reading Comprehension, Learning Achievement, Satisfaction

Introduction

With the globalization of economy and information, the further development of the integration of science and technology, English as a universal language has become the most important information media in various fields. Most of universities and academic circles pay more attention to the foreign language education. College English Teaching is mainly public English teaching, as a language communication tool, English has been integrated into the development of other disciplines.

Since the permanent establishment of China-ASEAN Expo in Nanning, Guangxi and ASEAN agricultural exchanges and cooperation have become increasingly frequent. Guangxi Agricultural Vocational and Technical University, as the only agricultural vocational college in China, has been engaged in agricultural cooperation and exchanges with Vietnam, Laos, Indonesia, Myanmar, and other countries in the past ten years. As college English teachers, it is urgent to train students to become high-quality agricultural English talents proficient in agricultural science and technology and competent for international conferences and negotiations, so as to serve for the win-win cooperation and exchange of agricultural technology between Guangxi, China and ASEAN countries.

Problem-based learning emerged in North America in the 1960s. It considers students as the center of the class, while the teacher is a facilitator, who should not give direct answers to students but guide them to explore the results themselves. When the class is over, the teacher should not judge students only from their scores but from all aspects of their learning. In the 1980s, this method is introduced into China, with the purpose to guide students to solve problems through their learning and promote their ability of detecting problems.

Reading is not merely one of the purposes of learning English, but also a key strategy for learning English. As "the most basic method of cognition" and "the most basic language use" (Chen Xianchun, 1998), reading has always been an important part in College English reading, based on nine-year compulsory education, helps students to further develop their language skills. Meanwhile, English reading teaching should inspire

students' interest in learning English, improve their confidence in mastering strategies, understand the differences between Chinese and western cultures, and cultivate positive attitudes.

In recent years, in university keeps expanding its recruitment of students, while the quality of students has been declining year by year. In the university I work, E-commerce major students generally have the following problems in English learning:

1. Students have learning disabilities and weak reading comprehension;
2. Most students lack enthusiasm in English learning;
3. Students lack good habits of learning English;
4. Students lack confidence and willpower.

Many of them constantly keep a low score often fail to complete the test-paper within the prescribed time.

Based on the author's survey and observation of the causes of the above problems, it can be found that many E-commerce students are from secondary training colleges and their basic English knowledge is weak. A majority of students in E-commerce major spend their spare time developing professional skills rather than reading English. Most of them lack a deep understanding over the reading content. They are reluctant to spend extra time on English learning. A few students take reciting the vocabulary as an expanded learning content, but they would find it hard to stick to the monotonous reciting. What's worse, some of them even give up learning English.

To sum up, for students in E-commerce major, English reading teaching has been constantly in a time-consuming and inefficient state. Due to the pivotal position of English reading in English learning, it is necessary to put forward some new methods to improve their English reading ability. PBL teaching method creates the possibility for achieving this goal. In PBL teaching process, teachers set the teaching content as certain social and cultural exploration process and propose active use of strategies for English reading.

The Research objectives

1. To compare learning achievement on English reading comprehension between pre-test and post-test

2. To compare learning achievement on English reading comprehension with the 75% criteria

3. To study students' satisfaction on English reading using the Problem-Based Learning of Freshmen Majoring in E-commerce teaching

Research hypotheses

1. Post-test learning achievement on English reading is higher than pre-test
2. Post-test learning achievement on English reading is higher than the 75% criteria
3. The students' satisfaction on English reading using the Problem-Based Learning at high level.

Scope of research

Population and sample

The population were freshmen majoring in E-commerce at Guangxi Agricultural Vocational and Technical University. Total population (80students)

The samples were freshmen majoring in E-commerce at Guangxi Agricultural Vocational and Technical University, Guangxi Province, the second semester of the academic year 2022, of 40students obtained by simple random sampling.

Content scope

The content used in this research was College English course. College English is a compulsory basic course for non-English majors in higher vocational colleges. This course is guided by foreign language teaching theories, with English language knowledge and applied skills, cross-cultural communication and learning strategies as the main content, and integrates a variety of teaching modes and teaching methods. The course code is 0107002, and consists of content reading comprehension from various media. broken down as follows:

- 1) Reading Comprehension from Practical writing, 2 hours.
- 2) Reading comprehension from Expository writing, 2 hours.
- 3) Reading comprehension from Narrative essay, 2 hours.
- 4) Reading comprehension from Essay, 2 hours.
- 5) Reading comprehension from Integrated media material, 2 hours.

Variables

Independent Variable: managing group in using the Problem-Based Learning Method. Dependent Variable: learning achievement in College English reading comprehension.

Length of time spent in research

Duration of learning management reading comprehension A cooperative learning with PBL in the second semester of the academic year 2022 using 10 hours, 7 days a week, 2 hours a day.

Significance of the Study

Through the relevant study at home and abroad, I have found that scholars and teachers at present have conducted a lot of research on the application of PBL teaching method in English reading teaching, which makes the PBL teaching mode fully applies in English reading teaching and receives a marked effect. However, the studies taking university students in E-commerce major as the research subjects are relatively few. Considering the present situation of college English reading teaching concerning students in E-commerce major, the importance of reading teaching in college English teaching and the necessity of applying PBL teaching mode in English reading teaching, the current study carries on an exploration and practice in E-commerce major college English reading teaching. The aim is to testify the role of PBL in improving the effectiveness of college English reading teaching for E-commerce majors.

"For many learners, reading is the most important part of the four language skills, especially when English is taken as a second foreign language." (Carrell, 2006) The empirical study in this thesis attempts to explore the role of PBL teaching mode in the teaching process of E-commerce-majored college English reading. "PBL mode puts learning into a responsible and meaningful problem context and cultivates learner's capability of solving problem so as to learn the connotative knowledge behind problems." (Barrows, 1980) In the English reading teaching process, through the corresponding teaching activities, students' enthusiasm in learning can be fully mobilized and students' learning motivation can be stimulated. Meanwhile, their autonomous English reading comprehension ability can be cultivated with their consciousness of learning problems.

Terminology definitions

1. Learning using Problem based learning meant learning method that the researcher used to develop students' learning achievement with FIVE steps of learning activities as follows: Step 1: Problem situation, Step 2: Problem analysis, Step 3: Problem solving, Step 4: Problem evaluation and Step 5: Summarize and reflect

2. The achievement of reading comprehension was obtained by comparing the scores of the pre-test and the post-test. Pre-test, the researcher selects the content I like reading comprehension. This is a 30-item, four-choice, single-choice test. Post-test, the researcher chooses the content I like reading comprehension. This is also a 30-item, four-choice, single-choice test.

Academic achievement was defined as the scores of freshmen majoring in E-commerce of Guangxi Agricultural Vocational and Technical University demonstrating their subjective learning ability after using PBL together with the College English reading comprehension. It was measured from the achievement test, which was measured by using a four-choice, single-choice test of 30 items, with the students having higher academic achievement post-test and pre-test after learning that was 75% higher than the criteria.

3. Satisfaction with College English reading refers to the feelings and opinions of freshmen majoring in E-commerce of Guangxi Agricultural Vocational and Technical University after using PBL together with the College English reading comprehension. They were divided into 5 levels: Most Satisfied, Very Satisfied, Moderately Satisfied, Satisfied, Least Satisfied.

Research instruments and Creation

1. English reading Learning Management Plan with the PBL for freshmen majoring in E-commerce of Guangxi Normal University for Nationalities.

1.1 Analysis standard metrics and subject to the core curriculum to bring the mean to the story of English reading comprehension for the freshmen majoring in E-commerce Study the guidelines for writing a learning management plan from various documents and research as it involves writing a learning management plan.

1.2 Write an English reading Comprehension learning management plan, passed the thesis advisor examined Accuracy already and making recommendations to experts; and consistency of the essence of learning. Learning management process

learning materials measurement and evaluation using the criteria to consider the suitability of a 5- level scale as follows: the most appropriate, very appropriate, moderate suitability, less suitable and least appropriate.

The findings were based on an average of the requirements of the criteria. Boonchom Srisaat. (2002 : 102 – 103) as follows; 4.51 – 5.00 most suitable, 3.51 – 4.50 Very appropriate, 2.51 – 3.50 Moderately appropriate, 1.51 – 2.00 Less appropriate

The results of the expert review found that the learning management plan created. The mean value of 4.90 means that the learning management plan created is appropriate at the highest level

2. Pre-test and post-test achievement test

The test Achievement was built. Propose to an advisor Thesis and making recommendations to the expert, match the content (a Content Our site is valid considered by experts. Coverage of the content of the purpose Consistency between the test and its objectives Appropriateness for testing time. The difficulty and the suitability of the question and options. The criteria for consideration of conformity are as follows:

+1 means when you are sure that the test measures the purpose.

0 means when you are not sure whether the test measures the purpose.

- 1 means when you are sure that the test does not measure the purpose.

Record the results of each expert's consideration, then find the index. Consistency (the Item-is Objective Congruence; IOC) is an item that is making the assessment of consistency between exams with the aim of learning analysis of the IOC values, from 0.60 – 1.00.

3. Students' satisfaction of the freshmen majoring in E-commerce towards PBL with English reading assessment 5 level is more moderate than most and the least amount of 15 questions; Level 5 means satisfaction at the highest level, Level 4 means there is a high level of satisfaction, Level 3 means satisfaction at a moderate level, Level 2 means there is a low level of satisfaction, Level 1 refers to the satisfaction of the minimum. Then set the criteria for interpreting the mean level according to the following criteria (Somnuk Phatthiyathani, 2003)

4.51 – 5.00 means satisfaction at the highest level

3.51 – 4.50 means that there is a high level of satisfaction

2.51 – 3.50 means that the satisfaction is at a moderate level.

1.51 – 2.50 means having a low level of satisfaction.

1.00 – 1.50 means having the lowest level of satisfaction

Propose the satisfaction questionnaires to the experts to review the accuracy of making inquiries and appropriate use of language and meaning of the content.. The activity English reading comprehension by the IOC is 1.00.

The sequence of presenting the results of the data analysis

1. The result of student achievement in reading of first-year students majoring in E-commerce, using the Problem-Based Learning Method with a series of reading comprehension activities between Post-test and pre-test

2. The result of students' learning achievement on reading comprehension of first-year students majoring in E-commerce, using Problem-Based Learning between post-test and 75% criteria.

3. The results of the students' satisfaction evaluation on reading comprehension using Problem-Based Learning Method.

Data analysis results

1.The comparison of students' learning achievement on reading comprehension of first-year students majoring in E-commerce, using Problem-Based Learning between post-test and pre-test.

Table 1 Comparison of learning achievement on reading comprehension of first-year students majoring in E-commerce in Guangxi Vocational University of Agriculture by using the Problem-Based Learning Method.

		N	MEAN	SD	Df	t
Pair 1	Pre-test	40	19.15	4.91	39	6.721
	Post-test	40	24.60	2.22		

**Statistical significance at the 0.01 level, $t(0.01, 20) = 2.5280$.

Table 1 was shown the statistics of paired samples, the comparison of English reading scores of the first year students of e-commerce majors of in Guangxi Vocational University of Agriculture first-year students majoring in E-business by using the Problem-Based Learning Method, the mean value of the pre-test was 19.15 with a standard

deviation of 4.91, and the post-test mean score was 24.6 with a standard deviation of 2.22. The test differences between the pre-test scores and the post-test scores were calculated using the t-value formula (t-test) and found that the t-value was 39. This has improved substantially, learning achievement post-test than the pre-test of the learning achievement at the statistically significance at 0.01 level, which is based on the assumptions.

Table 2 The comparison of student achievement in reading of first-year students majoring in E-business, using Problem-Based Learning Method with a series of activities reading Comprehension between Post-test and 75% of the criteria.

Table 2 One Samples Test

test score	n	Full score	Threshold score	df	SD	(%)	t
Post-test	40	30	22.50	25.24	2.00	81.26	14.55

** Statistical significance at the .01 level , $t(0.01; 20) = 2.5280$.

Table 2 showed the comparison of students' achievement using PBL pedagogy in reading instruction with a threshold value of 75%, with standard deviation equal to 2.00 to test the difference. The t-value formula (t-test) was used to test the academic achievement and the result shows that the t-value is 14.55 and 81.26%, which indicates that the academic achievement of the students who received the PBL method of instruction in the use of reading comprehension in English was higher than the threshold value of 75% and the level of significance is .01, which was based on the hypothesis.

It could be seen from the above data that the author teaches reading by using different teaching methods under the premise of controlling variables. The test scores of English readings in the Try-out class were analyzed by comparing the pre-test and post-test scores, and the post-test scores were significantly higher than the pre-test scores. It can be proved that the reading teaching of PBL teaching method makes the students' English reading scores improved significantly.

2. The results of the satisfaction of students using the Problem-Based Learning Method with a series of reading comprehension activities.

Table 3 Results of students' satisfaction Assessment of Guangxi Vocational University of Agriculture first-year students majoring in E-business with the use of the Problem-Based Learning Method.

No.	List	Satisfaction		Interpret
		Means	SD	
1	I now have a deep understanding of the theory of PBL pedagogy.	4.64	0.59	the most
2	I like PBL as a type of English reading class.	4.69	0.52	the most
3	I have adapted to PBL as a mode of reading teaching.	4.81	0.52	the most
4	I hope the teacher will continue to use the PBL teaching method.	4.81	0.40	the most
5	I can find the main idea of a text better through PBL.	4.75	0.55	the most
6	Through PBL, I can accurately grasp the articulation and detailed information of a text.	4.69	0.62	the most
7	Through PBL English reading instruction, my accuracy in reading comprehension questions has improved.	4.67	0.68	the most
8	I have actively participated in heterogeneous group activities in PBL English reading instruction.	4.67	0.63	the most
9	In PBL English reading instruction, I am more confident in tackling difficult reading activities.	4.67	0.63	the most
10	I think the PBL method is an effective teaching method to improve reading skills.	4.64	0.64	the most
11	I think that in PBL English reading teaching, I can also improve my language use skills	4.81	0.52	the most
12	I think the PBL method is useful not only in the field of reading, but also in other fields of learning.	4.75	0.55	the most
13	The content included in the learning activities is interesting.	4.64	0.54	the most
14	Learning opportunities for students to express their opinions during the course of the study.	4.69	0.58	the most
15	The duration of the learning activities for each content is appropriate.	4.81	0.47	the most
Together		4.71	0.56	the most

Table 3 showed that students were satisfied on learning reading comprehension using Problem-Based Learning Method overall in all aspects at the highest level. The Mean was 4.71, standard deviation was 0.56.

Research Discussion

1. Students' English reading scores were significantly improved.

The author analyzed the reading scores before and after the experiment, and the scores of the two classes before the experiment were almost the same. As for the experimental class itself, the reading scores of the students in the experimental class showed an upward trend after the PBL English reading teaching. After the experiment, it was found that the performance of the experimental class increased even more, that is, the PBL teaching method can improve the students' reading performance in college English. According to Guo Mingjuan (2013), taking into account the characteristics of higher vocational students, pointed out in her study that before and after the use of PBL teaching method, although there is no significant difference in the critical thinking of students, there is a significant difference in terms of analytical ability and self-confidence. It can be seen that PBL teaching method plays a role in developing students' critical thinking to some extent. In their article, Liu Hui and Yang Yang (2015) found that the effect of PBL training was significantly improved and the students' sense of independent learning was significantly enhanced compared with the traditional teaching effect by conducting a study on college English reading teaching. The article of Huang Qingbin (2018) points out the importance of applying PBL in business English teaching. Not only that, but also put forward specific application strategies. In her article, Song Lina (2019) discusses the current ESP reading teaching on the cultivation of science and engineering students' ability to read professional articles to obtain information from the PBL teaching mode.

2. PBL has a positive effect on students' reading interest and attitude.

Through the analysis of the questionnaire in this study, students, under the guidance of PBL teaching method, greatly improved the interest of reading classroom, enriched the diversity of reading activities, reduced the resistance and fear of English reading, reading is no longer "have to read" under the requirement of the teacher, and

the students began to look forward to reading, and the confidence and interest in reading were greatly improved. Students began to look forward to reading, and their confidence and interest in reading increased greatly.. According to Xu Bing and Ding Suping (2003) pointed out that in the traditional classroom, the teaching mode of reading largely inhibits students from playing their own subjective role, which leads to poorer learning results. Problem-based learning, on the other hand, can improve the current students' learning of reading. Emphasizing the importance of reading materials, it effectively promotes the teaching of English reading and tries to develop comprehensive application skills. According to Cai Minjun (2014), the combination of PBL teaching method based on the theory of single intelligences and high school English reading can promote the communication between teachers and students and improve the interest in learning. Zhou Chuanjin and Hong Dan (2016) pointed out that with the support of constructivism theory, PBL teaching method provides a theoretical basis for the development of comprehensive English teaching. It not only enables teachers to extend their teaching beyond the classroom and get in-depth development. It also promotes various aspects of students' learning such as their interest in learning.

Recommendations

1. Recommendations for utilizing the research results

1.1 Teachers should change their roles.

In traditional teaching, English reading teaching is always teacher- led, imparting knowledge to students. Students learn actively in the problem situations created by the teacher. Teachers, on the other hand, act as guides to give guidance and assistance to students and promote students' independent learning.

1.2 Teachers should cultivate students' sense of group cooperation.

As the research was found that the use of heterogeneous cooperative group activities has a great positive effect on students' independent learning ability and communicative competence. Therefore, teachers should cultivate students' team consciousness, generate a sense of collective honor and competition in cooperative learning, improve the learning effect and interest in learning, and make the atmosphere of high school English reading classroom become active, and students grow and make progress together in a harmonious and open environment.

1.3 Teachers should provide space for students to show their skills.

Through the classroom display, each group member not only gets the opportunity to display to enhance self-confidence, but also can consolidate knowledge and improve their communication skills. Therefore, teachers should make timely adjustments to teaching activities according to the actual situation.

2. Recommendations for further research

China's education reform has been deepening, and core literacy has become the focus of the education process. Therefore, the importance of English reading is beyond doubt, and research on English reading teaching will continue. In addition, with the renewal of educational concepts, various educational methods are emerging. All of these have an impact on everyone's traditional cultural education methods, and it is urgent to reform and innovate the traditional English reading teaching methods. With the increasing research on PBL teaching method, this teaching method has gradually become a hot spot in the future development prospect by virtue of its own advantages.

First, teacher should deepen the depth of experimental research. Discuss how to further apply this teaching method in specific classroom teaching practice activities, grasp its advantages and characteristics, improve the shortcomings, and apply it flexibly.

Second, teacher should expand the breadth of experimental research. We will continue to develop the research scope of PBL teaching method. It will not only be limited to reading teaching, but also be used more deeply in listening and writing teaching; thirdly, the target of the experimental research will be expanded, not only in vocational universities, but also in all kinds of students, including those in compulsory education, higher education, and vocational colleges and universities. The theoretical and empirical research on PBL teaching method will be further explored and improved to ensure that the basic theory can be used in practical teaching activities.

References

Normala Othman & Mohamed Ismail Ahamad Shah. *Problem-Based Learning in the English Language Classroom*. Thesis on English Language Teaching, 2013, (3): 125-135.

- Antonietti, A(2001) *Problem-based Learning: A research perspective on learning interactions*. Thesis on The British Journal of Educational Psychology 2: 37.
- Melovitz-Vasan, C.Gentile, M. Huff, S. & Vasan, N(2018) *Student Perception of Active Learning Group in a Problem-Based Learning Curricular Environment*. Thesis on Medical Science Educator 3: 5.
- Somnuk Phatthiyathani. 2003. *Educational measurement*. 4th printing. Kalasin: Prasarn printing.
- Xu, B., & Ding, S. (2003). Applying Constructivism to Implement “Problem-Based Learning”: An Attempt to Innovate the English Reading Teaching Model]. *Jiàoxué Yánjiū* (Teaching and Research), (6), 155–156, 160. Cai Minjun (2014),