THE USE OF PROJECT-BASED LEARNING TO ENHANCE CHINESE GRADE 10 STUDENTS' ENGLISH-SPEAKING ABILITIES

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ABSTRACT

Chinese students have consistently demonstrated lower proficiency in oral English. Consequently, there is a need to focus on studying and improving their oral English skills. This research aims to investigate the efficacy of project-based learning (PBL) in enhancing the English-speaking abilities of Grade 10 Chinese students. Additionally, it sought to determine the satisfaction levels of Grade 10 Chinese students with the implementation of the PBL method in oral English teaching. The study employed quantitative and quasi-experimental research methods, with a sample consisting of 32 students from Class 7, Grade 10, at Shanghai No. 1 High School in China. Research instruments included lesson plans, pretest, post-test, and a questionnaire. The data collected from these sources were analyzed using SPSS to conduct descriptive statistics and *t*-test analysis to compare the difference in pre-post test and questionnaire. The results revealed that students' average score in the post-test was 1.5 points higher than that in the pretest, with a significance value (P-value) of less than 0.0001. The research findings indicate that the project-based learning method effectively improves the English-speaking abilities of Chinese Grade 10 students. The questionnaire results further substantiate this conclusion, Furthermore, the average score for each questionnaire item exceeded 4, with a significance value (P-value) of less than 0.0001, demonstrating the satisfaction of Chinese Grade 10 students with the project-based learning method. To enhance the English-speaking abilities of Chinese students, it is recommended to promote the adoption of the PBL method across various regions of China, not limiting its application solely to English language teaching but also extending it to other subject areas.

Keywords: Project-based Learning (PBL), English-speaking Abilities, Chinese Grade 10 Students, Oral English

1. Introduction

Nowadays, English plays a vital role in formal education (Hua & Hu, 2011; Ranga, 2019) and has become one of the most studied languages in the world. English is used worldwide as a lingua franca among people from different cultures, ethnic, and social backgrounds (Dewi, 2015). The official data from IELTS in 2020 revealed that China ranked among the bottom eight countries, with category G securing the 27th position in the global IELTS examinee ranking. This ranking highlights the relatively low performance of Chinese students in terms of IELTS scores on the global scale. Speaking English presents particular challenges for second-language learners. Given the enduring inferiority of Chinese students' oral English abilities, there is substantial merit in studying and enhancing their oral English skills.

The English study involves four parts: reading, speaking, listening, and writing. As a productive skill in English learning, speaking is more difficult for students than other skills (Rivers, 2018). Despite ongoing improvements in traditional oral English teaching, several issues persist in contemporary approaches. Firstly, there is a lack of adequate distribution of students' autonomous learning within the classroom, resulting in insufficient initiative towards autonomous learning. In this case, it cannot stimulate and enhance students' learning enthusiasm. However, also curb the play of interest and initiative (Sun, 2010). Secondly, there is a limitation on teaching time, leading to minimal opportunities for students to engage in autonomous oral training during each class. Teachers primarily focus on delivering curriculum content, leaving little time for students to actively practice speaking English. Consequently, students struggle to develop effective language output and may even exhibit a reluctance to engage in English conversation. Thirdly, there is a deeply ingrained mindset prioritizing test results. Students who pass written English exams may neglect the importance of oral English proficiency, leading to superficial efforts or lack of genuine commitment in developing their speaking skills.

Apart from the influence of students' prior knowledge, another significant factor that impacts students' oral English abilities is the teaching methods employed by teachers. Within the classroom environment, teachers play a crucial role as knowledge providers. However, this approach often creates a one-way learning process, where students assume a passive role and heavily rely on the guidance of their teachers. The traditional teaching method, grammar-translation, is now considered unable to improve communicative Competence (Horst, 2003). Therefore, teachers should consider more effective ways to encourage students to be more active in class, students play an essential role in learning, and teachers play an essential role in guiding students' role as promoters (Baybourdiani, Zohrabi & Torabi, 2012). Therefore, if teachers' learning activities are suitable for students, it will help them enhance their motivation to learn and create new ideas. This Meaningful knowledge is constructed by students themselves, meaning they can construct their knowledge and have it rather than obtaining knowledge from teachers (Flynn, Mesibov, Vermette P, & Smith, 2012).

Educational researchers should consider incorporating new teaching methods as a supplementary solution to address the aforementioned challenges. Through the implementation of innovative teaching models, students can be provided with ample opportunities and time to engage in autonomous learning. This approach allows them the necessary space to take ownership of their learning process. At the same time, they can show their learning achievements to improve their self-confidence and sense of achievement (Lu, 2018). The novel teaching method is project-based learning (PBL). Project-based learning is an effective method that contributes to learners' development of speaking skills as it aims to develop learners' skills through meaningful activities based on the project (Rochmahwati, 2015). PBL is a student-centered learning method. The social and cultural learning theory, theory believes that students will learn well in learning. Those who work on projects show increased motivation and engagement in their studies (Kavlu, 2017). Group cooperation and constructivism learning theory believe that students can build new knowledge by themselves with the support of teachers. Constructivism considers that knowledge is acquired by learners in a particular context, like social and cultural background (Schrader, 2015). Project-based learning (PBL) is a teaching method applicable to improve speaking skill (Zare-Behtash & Sarlak, 2017). In PBL class, students allocate to a group for cooperative learning. To arrive at the optimal solution, it is advisable for groups consisting of 5-6 students to engage in collaborative discussions. This group setting enables members to contribute diverse perspectives, share information, and leverage their language skills, leading to a comprehensive and profound understanding of the problem at hand. By pooling their collective knowledge and insights, the group members can collectively arrive at the most effective solution. Students' ideas can develop through listening, interaction and communication, and oral communication with others in the group (Abbas, 2016). Students are the center of the whole teaching process (Kovalyova, Soboleva & Kerimkulov， 2016). Research results showed that project-based learning has positive effects on students' English learning performance and skills (Wahyudin, 2017).

The implementation of the PBL method in oral English teaching can effectively cultivate students' enthusiasm and aptitude for learning by creating engaging scenarios and fostering collaborative problem-solving within classroom groups. By incorporating the PBL approach, students are actively involved in projects, allowing them to actively learn and focus on practical application and practice. This addresses the shortcomings of traditional English learning methods, which often neglect sufficient emphasis on oral English proficiency. Let each student speak English spontaneously, enhance the students' comprehensive practical application of English, improve oral knowledge and skills, and cultivate the awareness of cross-cultural communication (Zhang, 2012).

Presently, there is a considerable body of research focusing on the impact of project-based learning (PBL) on English language acquisition, particularly among college-level students. However, there is a noticeable scarcity of studies examining the influence of the PBL teaching mode on English learning among senior high school students. Therefore, this study aims to investigate the effects of the PBL model on senior high school students' oral English proficiency within the context of English language instruction. Furthermore, the study aims to explore the role of project-based learning in enhancing oral English teaching methodologies.

2. Objectives of the study

1. To explore the effect of project-based learning method on enhancing Chinese Grade 10 students' English-speaking abilities.

2. To investigate the satisfaction of Chinese Grade 10 students with the project-based oral English learning method.

3. Materials and methods

Research Design

This study employed a quasi-experimental design, wherein the experimental group underwent a pretest prior to the commencement of the course. The project-based learning courses spanned eight weeks, with the researcher conducting classes twice a week. In the first week, a pretest was administered, and a total of 16 lessons were delivered throughout the study. In the eighth week, a post-test was conducted to assess the extent to which project-based teaching had enhanced students' oral English skills. Additionally, students were required to complete a satisfaction questionnaire specifically tailored to project-based learning. The research design followed the following process:

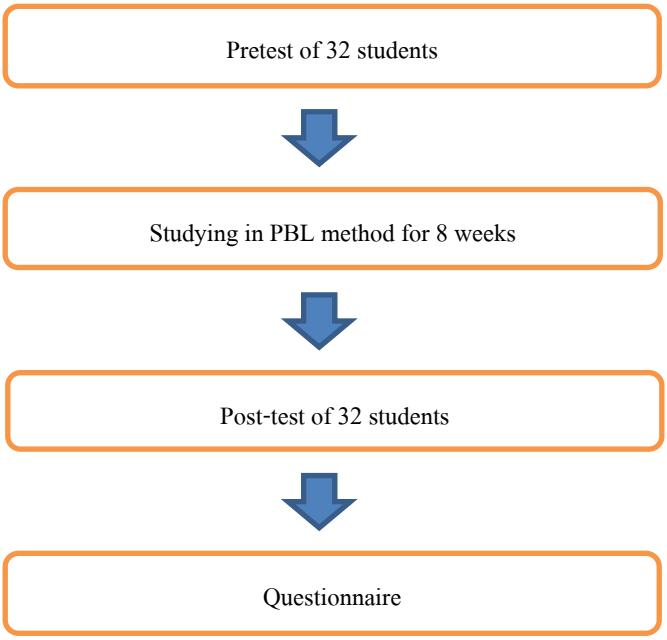

Figure 1 Research Design

Students were divided into 5-6 groups and assigned a project centered around wildlife protection. Through discussions and information research, students selected mineral water as the project medium. Their task involved designing the packaging of the water bottle, incorporating a visual representation depicting the harmonious

coexistence of humans, animals, and nature. The bottled mineral water, featuring these designs, would be distributed free of charge in school supermarkets and community squares, with financial support provided by the school. The packaging would also display slogans advocating for nature and wildlife conservation, aiming to raise awareness among the general public and discourage the consumption of wild animals. The project sought to encourage public involvement in wildlife protection and reduce instances of illegal wildlife hunting.

This study consisted of two variables: independent and dependent variables. The independent variable is Chinese Grade 10 students' English study, and the dependent variable is the students' speaking abilities and satisfaction of the PBL. In the PBL method (project-based learning method), teachers make learning come alive for students. Students work on a project over an extended period of time for eight weeks, that engages them in solving a real-world problem. They demonstrate their knowledge and skills by creating a public product for a real audience. As a result, students develop deep content knowledge as well as critical thinking, collaboration, creativity, and communication skills. Project-based learning unleashes a contagious, creative energy among students and teachers. The figure below shows the conceptual framework.

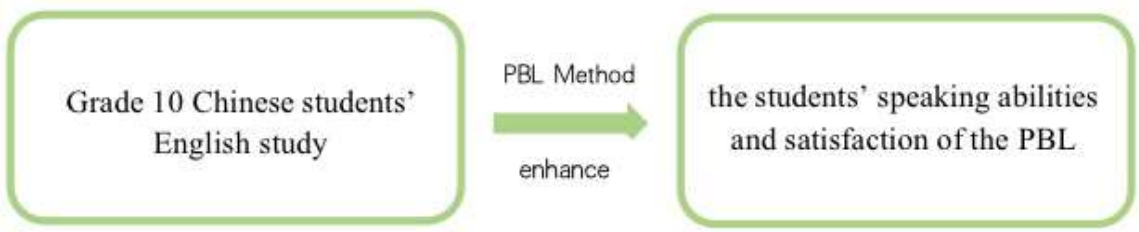

Figure 2 Conceptual Framework

Population and sample

Population: Totally 566 students divided into 14 classes of Grade 10 in the second semester of the academic year 2022 at Shanghai No.1 High School.

Sample: A class of 32 students in Grade 10 (Class 7, Grade 10) was selected as a sample for the study.

The researcher employed a cluster sampling method, selecting a sample of 32 students from Class 7, Grade 10, at Shanghai No. 1 High School during the first semester of 2022. The study aimed to compare the performance of these 32 students before and after the implementation of project-based learning.

Research instruments

The research utilized multiple instruments, including pre-post tests, questionnaires, and lesson plans. These instruments were employed to gather data and assess the effectiveness of the project-based teaching approach.

Validity and reliability

The index of Item Objective Congruence was used in test development to evaluate content validity at the item development stage (Rovinelli & Hambleton, 1977). In this study, the validity of the research instruments were assessed through expert validation. Three experts from Rangsit University in Thailand were involved in the validation process. The experts evaluated the appropriateness of the measurement content and its alignment with the measurement objectives by selecting one of three choices. The scoring scale ranged from -1 to 1.

+1: The experts are sure that the items match the learning objectives.

0: The experts are uncertain whether the item can match the learning objectives.

-1: The experts consider that the items are not matching the learning objectives.

Total points for each item must have a consistency value equal to or above 0.67 to +1 (Rovinelli & Hambleton, 1977).

In order to ensure the practicability of the questionnaire, the researchers conducted a questionnaire survey from a trial group which students were not in this study sample group. The researcher used Cronbach's alpha (α) formula to ensure the reliability of the 32 questionnaires.

Cronbach's alpha (α) formula: $$\alpha = \frac{N\bar{c}}{\bar{v}+(N-1)\bar{c}}$$

According to this evaluation index, the Cronbach's coefficient alpha value is set at least $\geq$0.7, the questionnaire with score value $\geq$0.7 include in the effective questionnaire of this study, and the questionnaire with score value $\leq$0.5 is eliminated as an invalid questionnaire to ensure the reliability of the research questionnaire.

Date collection

To ensure ethical compliance, the researcher obtained approval from the Ethical Review Board of Rangsit University (RSU ERB) prior to data collection. The students' initial scores were recorded through pretest conducted before the commencement of the project. The project-based teaching approach spanned a duration of eight weeks. Throughout the study, the researcher evaluated the students' tests across five dimensions: content, grammar, vocabulary, structure and organization, utilizing a designated scale for measurement. Upon completion of the study, the researcher administered a questionnaire to gather feedback from the students. The questionnaire focused on assessing their satisfaction with project-based learning and its impact on their English-speaking abilities.

Data analysis

Descriptive statistics were employed to analyze the pretest and post-test data, allowing for a comprehensive understanding of the characteristics of the data. The statistical software SPSS was utilized to conduct a *t*-test, which provided a reliable measure to determine the confidence level of the data. It enabled an accurate assessment to verify the effectiveness of project-based teaching in enhancing students' English speaking abilities.

The data collected from the questionnaire was subjected to statistical analysis. The level of satisfaction among students was assessed using a 5-point Likert scale, which ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). The Likert scale was employed to gauge students' satisfaction with project-based teaching.

4. Results

Analysis of Pretest and Post-test data

To assess the efficacy of project-based learning in English teaching, two sets of data were gathered: one before and one after the implementation of project-based learning. The pretest and post-test consisted of 13 questions each. Both tests were administered to a group of 32 Grade 10 Chinese students. These tests evaluated the students' oral English proficiency across three sections. The scoring system utilized the IELTS oral English scoring standard, with scores ranging from 0 to 9. Figure 1 illustrates the variations in scores between the pretest and post-test.

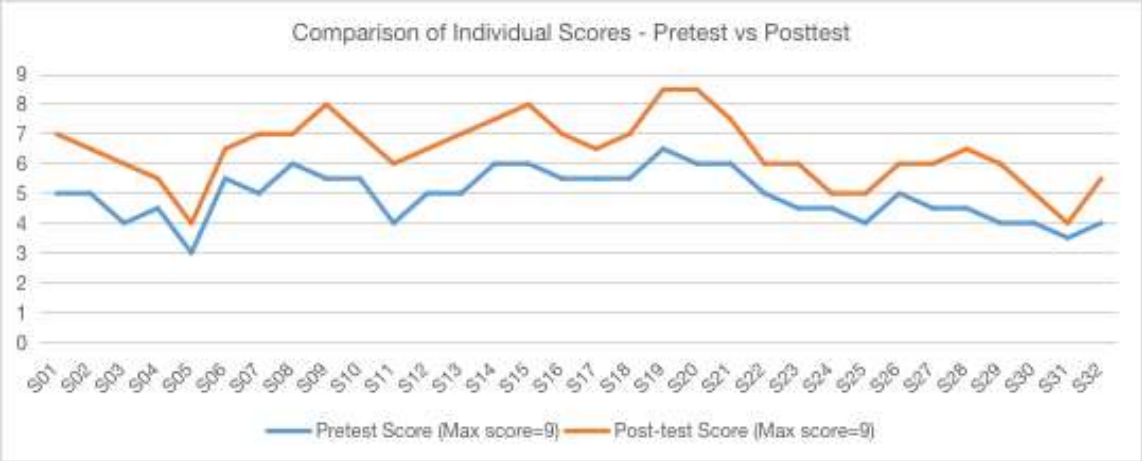

Figure 3 Pretest Scores and Post-test Scores

Based on the analysis of descriptive statistics presented in Table 1, it is evident that the average score for the pretest was 4.92, whereas the average score for the post-test was 6.42. The difference between the average scores of the two tests amounted to 1.5 points, which is statistically significant. Notably, compared to the pretest, the post-test exhibited a higher standard deviation and variance, indicating a greater variability in students' scores. These findings preliminarily suggest that project-based learning can effectively enhance students' English-speaking abilities.

Table 1 Descriptive Statistics of Pretest and Post-test

	N	Range	Mean	Std. Deviation	Variance
Pretest Score	32	3.50	4.92	0.84	0.71
Post-test Score	32	4.50	6.42	1.12	1.26

Based on the data presented in Table 2, the calculated t-value of -16.21 reveals a substantial disparity between the two groups. The degrees of freedom (df), calculated by subtracting one from the number of pairs, amounted to 31. Furthermore, the significance level (sig.) was recorded as 0.001, indicating that the difference observed between the two groups was statistically significant at the 0.05 level.

Table 2 Paired Samples *t*-test of Pretest and Post-test

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	Sig. (2-tailed)
Pair Pretest Post test Score	-1.5	0.52	0.09	Lower	Upper	-16.21	.001
				-1.69	-1.31		
df=31 Sig = 0.000							

*Significant at 5% level

Hence, a notable distinction was observed between the pretest and post-test scores. The negative *t*-value signifies that the mean score of the first group was lower than that of the second group. Moreover, with a significantly low significance level, it can be inferred that the difference between the two groups was not a result of random chance or sampling error.

Analysis of questionnaire data

To assess the satisfaction of Chinese Grade 10 students regarding the project-based learning method, a questionnaire survey was administered to 32 students from Class 7, Grade 10, at Shanghai No. 1 High School. The results of the questionnaire, comprising 10 scale questions, are presented in the table below. Each question was rated on a Likert scale ranging from 1 to 5, with the following scoring standards: 1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, and 5-Strongly Agree. Table 3 presents the mean, standard deviation, and standard error of the mean for each of the 10 scale questions, as reported by the 32 participating students in the survey.

Table 3 One-Sample Statistics of Questionnaire

	N	Mean	Std. Deviation	Std. Error Mean
Q1	32	4.78	0.42	0.07
Q2	32	4.84	0.37	0.07
Q3	32	4.69	0.47	0.08
Q4	32	4.81	0.40	0.07
Q5	32	4.81	0.47	0.08

	N	Mean	Std. Deviation	Std. Error Mean
Q6	32	4.78	0.42	0.07
Q7	32	4.81	0.40	0.07
Q8	32	4.81	0.40	0.07
Q9	32	4.78	0.42	0.07
Q10	32	4.94	0.25	0.04

When evaluating satisfaction using a five-level scale, a score greater than 3 is generally considered indicative of a good level of satisfaction. Examining Table 3, we observe that the average scores of the 32 samples for all 10 questions were above 3. Therefore, we can conclude that Chinese Grade 10 students are satisfied with the project-based learning method. To draw more precise conclusions, a one-sample *t*-test was conducted using Table 4 to determine the statistical significance of the research sample.

Table 4 One-Sample *t*-test of Questionnaire

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Q1	23.99	31	.000	1.78	1.63	1.93
Q2	28.27	31	.000	1.84	1.71	1.98
Q3	20.27	31	.000	1.69	1.52	1.86
Q4	25.86	31	.000	1.81	1.67	1.96
Q5	21.77	31	.000	1.83	1.64	1.98
Q6	23.99	31	.000	1.78	1.63	1.93
Q7	25.86	31	.000	1.81	1.67	1.96
Q8	25.855	31	.000	1.81	1.67	1.96
Q9	23.990	31	.000	1.78	1.63	1.93
Q10	44.57	31	.000	1.94	1.85	2.03
Test Value = 3 Sig = 0.000						

*Significant at 5% level

According to the findings presented in Table 4, the significance level (P value) was calculated to be .000, which is less than the predefined threshold of 0.05. This indicates a significant difference between the sample mean and the overall mean. Therefore, it can be concluded that Chinese Grade 10 students were highly satisfied with the implementation of the project-based learning method.

5. Discussion and conclusion

Discussion

The test results revealed a significant improvement in the student's grades in Grade 10 Class 7 before and after the experiment. The research findings indicated a noteworthy enhancement in the student's English-speaking abilities following the implementation of the project-based learning approach. Subsequently, the researcher conducted a post-project questionnaire survey to gather feedback on the oral English project-based learning. The results of the survey demonstrated a strong inclination among 32 students towards selecting 4-Agree or 5-Strongly Agree options. Moreover, the average score for each question surpassed 4, and the significance value (P-value) was found to be less than 0.0001, highlighting a high level of statistical significance. These findings indicate a high level of satisfaction among the students regarding the project-based learning methodology. The researcher identified the following reasons to support these research findings:

Firstly, the more authentic the language communication environment, the better the students' willingness to communicate. Project-based learning supports the opportunities for students to study in groups, discuss their work, create their projects, and present their work (Nunez, 2018). After being taught by project-based learning, students have better abilities to solve problems (Boss, 2012). Project-based learning using presentation showed that such communicative activities as presentation tasks and integrative skill practice were beneficial for students' speaking skills (Sirisrimangkorn, 2021).

Secondly, through group cooperation, students can jointly explore, ask questions, set goals, plan, explore practical ways and methods to solve problems, and constantly reflect and adjust to complete the project (May, 2018). Project-based learning is an effective method that contributes to learners' development of speaking skills as it aims to develop learners' skills through meaningful activities based on the project (Rochmahwati, 2016).

Thirdly, Riswandi (2018) pointed out that implementing PBL in the classroom can help students improve their speaking skills and motivation. Research results showed that project-based learning has positive effects on students' English learning performance and skills (Wathyudin, 2017). It helps students build their confidence, self-awareness, and language-learning skill improvement (Bell, 2010). Martín et al. (2021) According to this study, project-based blended learning in science facilitates the development of scientific skills and provides a more enjoyable and active approach to learning. So the students are satisfied with using project-based learning method in the classroom.

Conclusion

Based on the main findings of the research, the following conclusions can be drawn:

1) The implementation of the project-based learning method positively contributes to the improvement of English-speaking abilities among Chinese Grade 10 students.

2) Chinese students in Grade 10 exhibit a high level of satisfaction with the project-based learning method for oral English instruction.

3) The results obtained from various research tools, including tests, questionnaires, and data analyses, support the effectiveness of project-based learning in enhancing students' interest, confidence, and oral expression skills in English.

4) The integration of social hot topics and relevant subjects into project-based learning activities, along with continuous communication and practice opportunities, has proven to be beneficial for students' English learning and oral proficiency.

5) The oral test scores serve as indicators of students' oral English expression abilities, albeit with some limitations, such as fixed test questions and a lack of real-life situational challenges.

In conclusion, the research findings highlight the positive impact of project-based learning in fostering students' oral English skills, although further improvements can be made to enhance the authenticity and complexity of assessment methods.

The students participating in the PBL project were required to present their project outcomes in front of the entire class using oral English. This provided them with a valuable opportunity to practice English pronunciation, focusing on factors such as loudness, clarity of articulation, and intonation. The use of vibrant colors added expressiveness to their presentations, contributing to improvements in their pronunciation performance. Furthermore, noticeable progress was observed in areas such as fluency, coherence, grammatical diversity and accuracy, as well as vocabulary usage. These findings indicate that the PBL teaching approach effectively enhances students' overall English-speaking proficiency.

The implementation of the eight-week instructional design in Grade 10 demonstrated the feasibility and practicality of integrating the PBL model into oral English classroom learning. Over the course of the project, students not only developed their listening and speaking skills, but also acquired a range of implicit skills and abilities, including cooperation, independent learning, research skills, and critical thinking. It is important to note that this experiment was limited in duration, and as a result, there are still unanswered questions that warrant further investigation.

Recommendations for Future Research

This study offers some recommendations for future research. Firstly, considering the limitations of time and space, it is suggested that future research experiments should have a longer and more consistent duration, ideally spanning an entire academic year. This extended time frame would provide a more comprehensive understanding of

students' motivation and learning strategies within the context of project-based learning. Furthermore, conducting long-term experimental studies would allow for a deeper exploration of the sustained effects of project-based learning on students' oral English abilities.

Secondly, to assess whether project-based learning (PBL) is more advantageous for high school students compared to traditional oral English teaching, this experiment was limited to 32 students in Class 7, Grade 10 at Shanghai No. 1 High School. Future researchers are encouraged to conduct further experimental studies involving students with varying oral proficiency levels to determine the generalizability of the findings from this study across a wider range of contexts. Moreover, it is important to note that this study solely employed pre-post tests and questionnaires. Hence, it is recommended that future research explores the adoption of the PBL teaching approach by more English teachers in China, encompassing different age groups and diverse project types. This would contribute to a more comprehensive understanding of the effectiveness and applicability of the PBL teaching model in English education within China's secondary schools.

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