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Research Article

Effects of Applying Problem Based Learning (PBL) Strategy Use on Students' Oral Vocabulary as One Aspect of Speaking Performance

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Abstract

This study's main goal was to investigate how PBL, a learning strategy, might improve students' oral vocabulary, which is one component of their speaking abilities in an EFL class with grade 11 students as the emphasis. The experimental (treatment) and comparative groups were the two research groups. Biftu Nekemte Secondary School was the site of the study (BNSS). The study's population comprised all eleventh grade students enrolled in the academic year of 2014–2022. As a type of quasi-experimental research, the current study used a non-randomized pre-test, post-test comparison group design. The researcher used a multi-phase sampling strategy. 48 students from the experimental group and 49 from the comparison group took part in the study. The pre- and posttest instruments were adapted from the speaking performance rubric by Brown (2004). In fact, the researcher simply applied the rubric's vocabulary part. The study's quantitative portion was calculated using a number of statistical procedures. Calculations were made using descriptive statistics tools for the pretest and posttest groups to determine if the data was parametric or not. Additionally, separate t-tests were conducted. Cohen's D (Effect Size) and Cohen's Kappa (for inter-rater reliability) were also conducted, and they were equally significant. The usage of problem-based learning as a learning approach was found to considerably enhance EFL learners' oral vocabulary skills, which is one facet of speaking abilities. Therefore, it is advised that various stakeholders take into account using PBL as a learning technique in EFL classes, especially for the teaching and acquisition of oral vocabulary.

Keywords

Effects, PBL, Oral Vocabulary, Speaking Performance

1. Introduction

Language is the interchange of ideas through arbitrary signs and symbols. It serves as a communication tool. English is now widely used for communication in homes, schools, and public spaces both locally and internationally.

As a result, English speakers everywhere must be able to communicate in the language properly and fluently. In order to meet economic needs and keep up with the global demand for English language proficiency, it is crucial that English

language instruction and learning be treated seriously, particularly for communication reasons [38].

It is impossible to overstate the value of oral skill in any language, particularly oral vocabulary. Palmer [38] points out that spoken language is the main means of communication for students and is an essential component of their language acquisition process. Sending and receiving understandable information, processing it, and assessing one's own level of understanding are all parts of communication. They acquire more complex language abilities, such as the use of spoken vocabulary, through communication skills. English, being an international language, has grown in importance globally. Every country speaks and learns it. A strong speaking ability in accordance with oral vocabulary is extremely valuable in today's increasingly local and international job, especially in this age of globalization. According Kayi [27] to the majority of English speakers today are located in nations where the language is used as a second or foreign language. It is clear from the ideas presented by the aforementioned authors that one of the most common things people need to learn for their interpersonal communication speaking skills in general and oral vocabulary in particular is how to use English as a second language (ESL) or foreign language (EFL) effectively in oral communication.

Ethiopia, a member of the global community, will not be able to avoid the aforementioned facts. The global English teaching movement has been sparked by the growing need for proficient English communication abilities[43]. It is well known that English is taught in Ethiopia at all educational levels, from primary to postgraduate. It has been used for many years as a teaching tool or as a subject of study. In addition, a variety of teaching and learning approaches have been used in Ethiopian English language instruction. According to the researcher, the majority of them were unable to achieve the desired oral vocabulary performance, or the learners' speaking competence.

Zeleke and Alemthesay [51] state that Ethiopia's standing as a globalized nation has seen a rise in the utilization of English in recent years. While English is widely used in Ethiopian technology, communication, and business, its importance in the nation's educational system cannot be overstated. According to Ethiopia's 1994 Education and Training Policy, English is required to be taught in elementary schools (grades one through eight). In many areas, seventh and eighth grade students are even taught in English. More significantly, in the secondary (grades nine through twelve) and higher (university) education levels, English is used as a medium of instruction (MOI). Thus, it is reasonable to argue that in the Ethiopian educational system, students' proficiency with English determines their likelihood of success in the classroom. Therefore, it is imperative that strong and efficient instructional learning methodologies be used in order to fulfill the demands of the growing relevance of English both locally and globally, particularly with regard to oral vocabulary. Thus, cutting edge teaching techniques like problem-

based learning (henceforth referred to as PBL) may be able to resolve this issue.

From a conceptual standpoint, PBL is a student-centered teaching approach that strengthens research-based learning via collaboratively resolving real-world or poorly organized issues[47]. In 1969, Howard Barrows and associates introduced it to McMaster University's medical school with the primary goals of helping students get a general understanding of the topic and hone their problem-solving abilities [3]. Amazingly, since PBL was first used in medical education, study on the subject has spread to several other educational fields, including English language instruction.

It should come as no surprise that the current researcher has encountered PBL with various academics using various terminology. For example, PBL is a teaching strategy founded on the idea that applying real-world situations as a springboard for the acquisition and integration of new information is described by Barrows and Tamblyn [3]. It is a learner-centered approach to education that seeks to foster cooperative skills, lifelong self-directed learning, and problem-solving abilities. It enables students to gain a comprehensive body of knowledge across several topic areas or disciplines. Because students can comprehend processes from a real-world viewpoint, this strategy may be applied across various disciplines, according to constructivism [5]. However, Duch and Allen [19] saw PBL as a teaching strategy that pushes students to "learn to learn," collaborating in groups to find answers to issues from the real world. These exercises are meant to pique students' interest and start them thinking about the subject. Here, PBL trains students to locate and utilize relevant learning materials as well as to think critically and analytically.

In contrast, PBL is discussed by Boud and Feletti [7] as a curricular structure that entails presenting students with real-world situations as a learning stimulus. PBL, as defined by Still Hmelo-Silver [24], is a development and instructional strategy centered around an unstructured problem that is messy and complicated, necessitates research, information collecting, and reflection, is uncertain and evolving, and lacks a clear-cut, formulaic, "right" answer. However, PBL was further described by Samford [46] as an educational technique that encourages active learning. PBL can serve as the foundation for curriculum, programs, courses, or modules. The present researcher has consented to use the phrase "instructional strategy," as proposed by Stamford [45], since it aligns with the researcher's goals. For many second or foreign language learners, mastering oral vocabulary skills in particular and speaking English in general is crucial. As a result, learners assess both the success of their English course and their own language learning endeavors depending on the degree to which they believe their spoken language skill has increased[44].

In the past, PBL was first introduced into the social sciences and humanities, but it wasn't until a decade later that it spread to other disciplines in Canada[3]. This was largely

brought about by how challenging it is to use PBL in these subjects. Identifying the learning problem was the primary challenge. It is in fact simpler to identify a learning difficulty in the context of diagnosing a patient's condition than it is to identify a problem in the context of language or history instruction. Hung [25] claims that it was much more severe in the case of language instruction since using language as a tool and objective might complicate the learning environment. Thus, language education is among the last subjects to have benefited from PBL among many others. Furthermore, Savery [47] contended that scholars' interest in the impact of PBL on language acquisition only grew around the turn of the twenty-first century.

Because of this, not only is there a dearth of literature on PBL and language learning in the present researcher's review, but the majority of studies do not adhere to the PBL paradigm, which calls for studies that are particularly created for language instruction.

PBL is theoretically associated with several theories. Socio-cultural theory and social constructivist theory are the two most significant theories. According to Duschl et al. [20], modern learning theories, learning is essentially a social activity. Social constructivist theories place a strong emphasis on the value of students actively participating in their own education while working on worthwhile projects. The idea of scaffolding is central to these theories. A large amount of study has been done on the topic of scaffolding learning in contexts that involve problems [14, 23]. In PBL, scaffolding enables students to work on challenging issues that might be above their current capabilities. By altering challenging and complicated activities to make them accessible, manageable, and within a student's zone of proximal development, scaffolding helps pupils learn more tractably [49]. Additionally, from the above author's conceptualization, scaffolding is a fundamental component of cognitive apprenticeship, in which students develop into more skilled problem solvers with structure and direction from mentors who provide coaching, task structuring, and hints without outright providing students with the answers. Supporting students' understanding of both how to do a job and why it should be done that way is a crucial aspect of scaffolding [24].

Mardziah [31] provided a constructive discussion on the potential for incorporating PBL into language instruction from a constructivist standpoint. As a result, students acquire language via participation in social activities that promote dialogue and engagement. When learners are exposed to real-life situations that necessitate interaction, such as real-life difficulties, the negotiation of meaning in language acquisition becomes more significant. It is thought that applying real-world challenges helps close the gap between the theory taught in classrooms and the use of language in everyday contexts. As students go through the PBL learning process, they will eventually build their knowledge and start to form connections that are significant and useful in the real world—that is, the workplace. Larsson [29] provides evidence in favor of this theory by pointing out that PBL has been applied globally for the education of various language skills and sub skills in several researches. PBL is a method where the focus switches from the instructor to the student. This method places the participant—rather than the teacher—at the focus of attention. According to the present researcher, this approach promotes student participation in the learning process and makes it easier for students to acquire language skills overall and speaking skills specifically. According to Jonassen [25], who supports this, using such an approach benefits individuals with low language proficiency and enhances their productive abilities.

2. Statement of the Problem

Gaining the capacity to communicate in English properly and successfully should be the main objective of any English language instruction. However, due to a lack of requisite information, some language learners are still unable to speak effectively and fluently even after years of study [13]. Likewise, spoken language production—that is, mastering the ability to communicate in a language other than one's native tongue—is frequently cited as one of the most challenging components of language acquisition [9].

Speaking is regarded as the most challenging of the four skills when teaching ESL and EFL [10]. Additionally, he makes the argument that learning to speak is undoubtedly more challenging than learning to comprehend spoken language. Those who wish to communicate with others occasionally run into difficulties. He or she is unable to communicate his or her thoughts, disagreements, or emotions. Consequently, greater effort is needed from both instructors and pupils while communicating. For pupils, simply listening to a speech is insufficient.

However, many instructors and learners of second and foreign languages place a high value on oral vocabulary acquisition as a component of English speaking abilities. As a result, they frequently base their assessment of both the quality of their English course and their level of language acquisition on how well they have progressed in using oral vocabulary in spoken language.

According to Dufera [17], in the Ethiopian setting, learner-centered active pedagogy, cooperative learning, and the development of critical thinking and problem-solving abilities are encouraged by Ethiopian educational policies and implementation tactics. However, it is unexpected to see that in the great majority of the classrooms that have been observed, teacher-dominated pedagogy is the norm. In general, and student involvement in particular, the traditional lecture technique rules the educational process.

It is well known that a new syllabus that supports the communicative approach, a student-centered teaching strategy, has replaced the previous one that was centered on the teacher and taught using the talk-and-chalk method[34]. Yet, the present researcher believes that the student-centered ap-

proach of instruction is impractical in EFL classes, which may contribute to students' subpar performance in the language.

In addition to the previously mentioned points, it is evident that before enrolling in a higher education institution in Ethiopia, students must spend a full 12 years learning the English language. Stated differently, English is required from first grade through high school and preparatory courses. The fact that the English language is used as a medium of education beginning in grade nine is one of the primary reasons students study the subject. Furthermore, English language instructors at the tertiary level—that is, universities and colleges—teach English as a major topic. Consequently, English language instructors tasked with instructing students in the language are required to use the English language to properly explain concepts, interact with students, ask insightful questions, and answer to their inquiries[34]. But in real life, pupils' spoken language abilities in particular and their communication skills in general are inadequate. This concept suggests that in an EFL classroom, oral communication between English teachers and their students should be beneficial. In this way, the English language helps students connect with one another in the classroom and improve their oral vocabulary and speaking skills. Despite such broad coverage allotted to English language as subject and medium of instruction in curriculum, the students' proficiency in the language seems not adequate enough to meet the demands of their classroom. In support of this point, Tamane,[48] in his study, depicts the students' performance in English language skills as follows:

Despite the importance of the English language in individual student's life both in and after school and in the country's overall development endeavors, there is one general dissatisfaction that is invariably expressed by English teachers at different levels of the educational system; students' performance in English language skill is generally less than adequate to meet the demands that their class-room level requires of them (P.1).

To be more specific, even though it has been about a long period, since the communicative approach of teaching a language was introduced in Ethiopia, the teaching and learning of oral vocabulary in the country still follows the traditional method of teaching which is teacher-centered. In most cases, it remained to be the teaching of language rules instead of language uses. As a result, the entire teaching activities especially that of oral vocabulary failed to be effective. Thus, learners at all levels of education in the country experience deficiency of oral vocabulary usage. In support of this claim, Tadele and Awol point out that the English language national examinations in Ethiopia focus on the grammar of the language [2, 48], the teachers and students do not focus on developing the productive skills, including oral vocabulary, in using the language for communicative purposes, and so their level of communicative proficiency is found to be poor, and teachers use mostly the traditional lecture method in con-

ducting classes. As a result, when students join university, they go with a poor background in their productive skills, particularly in oral vocabulary skills. This becomes a drawback to their academic progress at the first year level. As they are not trained for the demands of the tertiary level of education, most of the students experience problems in using their oral vocabulary for their academic purpose [2]. Worst of all, Dejene [16] forwarded that the quality of English language teaching (ELT) in Ethiopia needs improvement as it is characterized by traditional teaching methods and poor teacher training, which affects students' oral vocabulary as one aspect of speaking skills and communicative competence at large. In support of Dejene's [16] argument, Zeleke and Alemthehay [51] stressed that although English plays a crucial role in the Ethiopian educational context, it is found to be the weakest part of students and even teachers at all levels of schooling. Indeed, they asserted that learners' knowledge of English words was poor, and teachers could not help them since they themselves were not good at it and situation was not changed even after many years.

Having the aforementioned empirical arguments in mind, the current researcher is motivated to conduct on the effects of PBL as learning strategy use in enhancing grade 11th learners' oral vocabulary skills as one component of speaking performance because of the following reasons. First, speaking skills, including vocabulary usage of the students at all levels is poor, which has been found out by previous researchers. The current researcher has also observed this reality from his 12 years' experience in both private and public schools, including higher institutions. The researcher, as a matter of chance, has taught learners from grade one to university level. In all levels, there have been situations in which students fail to express their ideas using appropriate and acceptable words in speaking skills performance class.

Vocabulary is also important for learning to read, write, listen and speak. In relation to this, Wilkins [50] claimed that while without grammar very little can be conveyed, without vocabulary nothing can be conveyed. Unsurprisingly, Nation [40] added that if students lack vocabulary, their ability to comprehend or express themselves clearly is limited. Therefore, "vocabulary acquisition is central to language acquisition, whether the language is first, second, or foreign." [15]. Though the problem is serious at all levels, the current researcher only focused on secondary school students who are enrolled in grade 11.

According to the researcher, teachers' methods and ways of teaching students may be contributing factors to their low oral vocabulary, which is one aspect of speaking skill. These approaches may even be learning instructional strategies. Thus, some of the causes of students' low oral vocabulary could be related to instructional learning tactics and teaching techniques. Second, despite their seeming student-centeredness, the researcher thinks that the current approaches to teaching and learning are not really student-centered. Accordingly, the researcher would want to concentrate on

PBL as one of the active and learner-based instructional learning strategies, rather than as the sole one, in order to help students improve their oral vocabulary as a component of their speaking skills.

However, the researcher would like to draw attention to the fact that there are additional learner-based learning instructional methodologies, such as project-based learning, role-playing, and cooperative learning. PBL, on the other hand, differs from the previously described learner-based instructional learning methodologies in that it includes an unstructured problem as a fundamental element.

Thus, the researcher would want to concentrate on PBL as one of the active and learner-based instructional learning strategies, rather than as the sole one, in order to help students improve their oral vocabulary as a component of their speaking skills. However, the researcher would like to draw attention to the fact that there are additional learner-based learning instructional methodologies, such as project-based learning, role-playing, and cooperative learning. PBL, on the other hand, differs from the previously described learner-based instructional learning methodologies in that it includes an unstructured problem as a fundamental element.

In the international level, there are a number of studies conducted on the effect of PBL in EFL classes. Apart from non-empirical studies that have discussed the use of PBL in language classes like Mathews-Aydinli[32], there have been researchers who have attempted to examine the effect of PBL on language learning.

To begin studies in Africa, in a study entitled 'Using a Problem-based Learning Approach to Develop Metacognition and Writing Competence of Nigerian Undergraduates. ' Aliyue [1] attempted to solve the writing problems of Nigerian ESL language learners.

His study had two goals: first, it looked into how PBL affected the metacognition of Nigerian ESL students, and second, it looked into how PBL affected the students' writing. Using a convergent parallel design, this mixed-mode study involved 12 weeks of instruction for a class of second-year university ESL students. There were notable gains in the learners' metacognition when comparing the outcomes of the metacognitive questionnaire given before and after the treatment. The participants also had a better comprehension of terminology, organization, topic, language use, and other writing techniques. But since there were no appropriate ill-structured issues, it's unclear whether the study was indeed problem-based.

There are various ways in which the current study and Aliyue's study diverge. First, theoretically, it concentrated on the improvement of Nigerian undergraduates' writing proficiency and metacognition, whereas the current study explores the ways in which PBL improves students' oral vocabulary as one facet of speaking abilities. Second, the current study was conducted in an EFL context, whereas Aliyue's study was conducted in an ESL context. Accordingly, the population of the previous study consisted of undergraduate students, whereas the population of the current study consisted of grade 11 pupils.

Third, and perhaps most importantly, there was no indication in Aliyue's study that the application of PBL had improved students' writing abilities because the PBL technique had not been implemented with an ill-structured problem. Consequently, since Aliyue's has a fault, more research is necessary. Therefore, there isn't any theoretical support for using PBL in EFL classes. The aforementioned gaps are anticipated to be filled by the current investigation.

Bejarano Beltran et al [4] conducted one of the researches that concentrated on a particular aspect of language acquisition in EFL classes through PBL, and they held the opinion that social values ought to be taught in the new context. The researchers believed that knowing how to handle disrespect in social situations was one important lesson. Teaching English vocabulary was the study's secondary goal. Twenty fifth-grade language learners were chosen as participants by the researcher. These participants were asked to offer remedies to situations in which they were being disrespected in real life after being given problem scenarios. Furthermore, the investigators noted that the students' lexical comprehension improved. The researchers concluded that PBL can be utilized as a strategy to improve communication in language classrooms after finding that the participants' social interactions were of higher quality.

Similar to the previous two studies, the Bejarano Beltran et al. [4] study provides an excellent illustration of PBL application in an EFL classroom; in particular, it concentrated on vocabulary. However, the present study's participants will be grade 11 pupils, whereas the Bejarano Beltran study's participants were fifth-graders. PBL is applicable at all levels, although it was especially recommended for usage in colleges and high schools. Consequently, the study's other findings were insufficient to support the use of PBL in EFL classes, especially when it came to improving oral vocabulary as one component of speaking performance.

Apart from variations concerning techniques, environments, and target audiences, none of the previously listed research has examined how implementing PBL can improve students' performance in oral vocabulary. There was no evidence of an improvement in the oral vocabulary of the learners' speaking abilities. Furthermore, no mention was made of PBL's theories, models, processes, or implications. There are therefore glaring theoretical and methodological shortcomings [33]. Accordingly, the majority of the research was carried out outside of Ethiopia. Therefore, the effectiveness of PBL in an EFL class in Ethiopia (with a population gap) cannot be guaranteed.

Studies on the impact of PBL like ILSU on students' oral vocabulary as one component of speaking performance have not been done locally. This further demonstrates the lack of understanding regarding the application of PBL as a learning technique in speaking classes and EFL classes generally. According to the present researcher, there is a significant gap

in the application of PBL as a learning technique in the national curriculum, which includes the teaching of English as a second language. Yes, there are several facets to the difference. The researcher acknowledges that, in addition to the previously described studies, there have been limited attempts to apply PBL with some researchers and practitioners in the legal and health domains.

However, no solid and contextualized PBL framework has been suggested for inclusion in the national curriculum, particularly for teaching English as a second language. As a result, there is a knowledge vacuum (knowledge gap). The knowledge void gap, according to Miles [33], is the lack of requested study on discoveries. The previous paragraphs have already discussed methodological, conceptual, and population shortcomings. This calls for additional research on PBL as an innovative instructional learning technique used in EFL classes generally and oral vocabulary as one component of speaking performance in particular by the present researcher. In light of this enormous, complex, and crucial gap, the present researcher has created the following research hypotheses for the study.

3. Research Hypotheses

H1: There is a statistically significant mean difference between experimental and comparison groups in terms of oral vocabulary due intervention of PBL as *Learning Strategy Use.*

H0: There is no statistically significant mean difference between experimental and comparison groups in terms of oral vocabulary due intervention of PBL as *Learning Strategy Use.*

4. Objective of the Study

To examine the effects of PBL as *Learning Strategy Use* in enhancing the students' oral vocabulary as one aspect speaking performance in EFL class, grade 11 students

5. Research Design and Methodology

5.1. Research Design

The general strategy for tying the conceptual research concerns to the relevant and doable empirical study is known as research design. It is an investigation that offers precise guidance for study processes [12]. This study uses a quasi-experimental research approach in order to accomplish its purpose. An experimental investigation is the theoretical stance that is most frequently connected to a cause-and-effect connection, according to Bogdan and Biklen [6]. Most notably, Dornyei [18] contended that the best way to assess educational innovations and find answers to issues pertaining to teaching and learning languages is through experimentation.

To be more precise, most of these researchers have used

experimental design to assess how well problem-based learning affects students' achievement in learning the English language [36, 37, 52]. Accordingly, the current study used a quasi-experimental research strategy that included a non-randomized pre-test, post-test comparison group design. Thus, full class was utilized rather than examples that were randomly assembled. This is due to the fact that courses are taught in intact groups at schools, and teachers are not permitted to divide up or reorganize classrooms for the sake of study. As a result, two courses (11G&11H) of BNSC students who entered in the second semester of the 2014–2022 academic year were altered by the present researcher.

5.2. Study Population and Participants

The population is the total number of people that are the subject of a study[45]. In BSS, the research was carried out. All eleventh grade students (N = 534, M = 298 and F = 236) enrolled in the 2014–2022 school year made up the study population.

5.3. Sampling Techniques and Frames

The multi-stage purposive sampling approach was utilized by the present researcher. Consequently, BNSS was chosen in the first place after the researcher specifically chose the school based on its proximity and familiarity. Second, because grade 11 students are more mature than grade 9 and grade 10 students, the researcher specifically chose these children. Regarding the sections, in the 2014 academic year there were eight sections of grade 11 pupils (from A-H) at BNSS. Four of these sections belonged to the Social Science Stream. Still, a single instructor was in charge of those four divisions.

Thus, for the experimental and comparison groups, the researcher arbitrarily chose two parts from the four sections. Once more, the groups were assigned as an experimental and comparative group by the researcher using the lottery approach. There were 48 students in the experimental group and 49 students in the comparison group that took part in the study. One participant's score was, however, removed by the raters because they considered it to be insufficient. Therefore, the number of students in both groups was equal.

5.4. Experimental Research Groups

For this investigation, there were two research groups. These groups served as comparison and experimental ones. The group that had treatments and was anticipated to produce the desired outcome was the experimental group. As a result, in this study, oral vocabulary training was imparted to the experimental group via PBL as ILSU. Using PBL as a learning technique, the present researcher created instructional materials based on the concepts and procedures included in the textbook used by the students. The learning material intervention included essential spoken vocabulary

components. The present researcher would like to draw attention to the fact that the intervention put more of an emphasis on methods than substance. However, the present researcher employed a methodical approach. As a result, the comparison group did not get the therapy, which involved PBL learning. The comparison group used traditional ways to acquire oral vocabulary abilities. The current researcher taught EFL instructors in the use of PBL to improve learners' oral vocabulary and rating criteria (two raters were oriented for oral vocabulary skills rating, but only one teacher was orientated for section teaching). The learning materials and training manuals were created using pertinent literature as a guide. In the part that follows, the present researcher provides a brief justification for the study's intervention.

5.5. Intervention

In the course of the study, which took place between February 20 and May 30, 2014, second semester students at Biftu Nekemte Secondary School (BNSS) participated in an experimental teaching program led by a professional teacher who taught both courses. It is crucial to remember that a pretest was administered before to the intervention. The researcher taught speaking skills to the experimental class using a paradigm of problem-based learning (PBL), facilitated by the facilitator. The researcher employed problem-based learning (PBL) to assess the advancement of students' spoken vocabulary abilities. The students were guided through many PBL lessons in a step-by-step manner throughout each forty-minute session. The researcher used PBL as a learning approach by producing ill-structured situations and using the students' textbooks to create spoken vocabulary lessons. Given that vocabulary has a significant influence on interpersonal communication, the researcher gave students useful resources to help them expand their vocabulary. In fact, the researcher spent two days teaching the instructor (facilitator) the fundamentals of effectively using PBL in an EFL class once the course was prepared.

5.6. Data Collection Tools

Experimental tests were employed as data collections tools for quantitative data.

Experimental Tests (Pretests & Posttests)

The primary and most important instruments in this investigation were the pre- and post-experimental tests. Both assessments included comparable oral vocabulary items. The tests used by the present researcher were based on the literature on the notions and structures of speaking abilities. Furthermore, the present investigator took into account oral vocabulary as a manifestation of speaking performance components. Since the study's primary goal is to evaluate PBL as a means, not as an end, the researcher did not evaluate the success of PBL in terms of problem-solving abilities.

Above all, the variable covered by the hypotheses was the

tests. The examination was taken from Brown [8]. In terms of exam kinds seen in literature, the assessments are eclectic in character. For example, the assessments were originally designed to assess pupils' oral vocabulary and speaking abilities. They are therefore a performance test in this sense. However, in order to examine the impact of PBL as a learning technique on students' oral vocabulary as one component of speaking abilities, the researcher partially replicated the speaking performance test from Brown [8]. Thus, it served to verify the intervention's effectiveness. It may also be an accomplishment test along this line of reasoning. As a result, the exams were performance and accomplishment examinations.

5.7. Process of Data Collection and Analyses

In the pretest phase prior to the deployment of PBL as an instructional learning approach, two raters—not the present researcher—evaluated the registered samples of the experimental and comparison groups. The researcher then permitted the samples to be retested by the same raters in posttests following a twelve-week intervention. The most recent SPSS window version 25 was then used to calculate the means of the scores used for the pre- and posttest assessments (normality of the data was tested beforehand). Next, inter-rater reliability (Cohen's Kappa) was calculated to ensure the validity of the rating procedure. Afterwards, series statistical methods were used to analyze the data.

5.8. Methods of Data Analyses

The quantitative portion of the study was computed by the researcher using a number of statistical methods. With the use of descriptive statistical tools, it was possible to determine whether or not the data was parametric by computing the means, standard deviations, and variances for the two groups in the pretest and posttest. Descriptive statistics, on the other hand, are used to visualize the score distribution rather than the effect. It is also limited to the organization, synthesis, and display of data. In order to forecast, estimate, and extrapolate results from samples to the population, the researcher used inferential statistics.

Since the study's design was more akin to a quasi-experiment than a genuine experiment, a t-test was conducted to determine whether the chosen groups were relatively homogenous. Various t-test configurations were employed by the researcher based on the fundamental study concerns. To be more precise, separate t-tests were conducted. Cohen's Kappa, which measures inter-rater reliability, and Cohen's D, which measures effect size, were also conducted. The next sections provided information on each inferential statistics test along with a reason.

5.9. Validity and Reliability

Two PhD holders received the tools and provided appropriate commentary on their validity. According to the researcher, there may not be complete assurance of dependability in the circumstances of the current investigation. Inter-rater reliability was therefore calculated. The two raters' inter-rater reliability for the pre- and posttests is shown in the following.

Table 1. Summary of Kappa Measure of Experimental Group.

NO.	Construct	Kappa Measure			
		Pretest	Interpretation	Posttest	Interpretation
2.	Oral Vocabulary	.495	FAIR	.677	HIGH

In the current researcher's view, the above table shows that inter-rater reliability values are acceptable.

Table 2. Summary of Kappa Measure of Comparison Group.

NO.	Construct	KAPPA MEASURE			
		Pretest	Interpretation	Posttest	Interpretation
2	Oral Vocabulary	.495	FAIR	.551	FAIR

The above two tables indicated that inter-rater reliability values of comparison and experimental groups in are acceptable [11].

6. Results and Discussion

6.1. Results

6.1.1. Data Normality

Numerous methods exist for testing normality, including the Shapiro-Wilk (SW) and Kolmogorov-Smirnov (KS) tests. These are the two most often used methods for determining normalcy The data is assumed to be normal in both tests, H0. It was thus anticipated that the null would not be rejected. According to Park [38], the KS test should be used when the sample size is big, but the SW test should be used with small sample sizes. The SW test is unreliable for sample sizes more than 2000, whereas the KS test can be helpful in such cases. It was also mentioned, nonetheless, that the SW test can be effective when applied to large sample sizes [41]. Furthermore, it was claimed that the KS test is less reliable and useless in real-world situations [22].

Examining the skewedness and kurtosis values of the data is another method of determining if it is normal. There is disagreement on the values that denote normalcy, despite the fact that skewedness and kurtosis values are frequently used in practice. While some argue that kurtosis and skewedness up to an absolute value of 1 may indicate normalcy, others contend that far greater values of kurtosis and skewedness are necessary for normality [42]. However, kurtosis and the standard error of skewedness were also employed to verify normalcy. In other words, z-scores for kurtosis and skewedness were often used. If z-scores of skewedness and kurtosis are smaller than 1.96 (for %5 of type I error rate) the data was considered as normal [28]. Besides, for larger sample sizes it was suggested to increase the z-score from 1.96 up to 3.29 [28].

Thus, the current researcher employed standard error of skewedness and kurtosis of the data for checking normality. Accordingly the z-scores of oral vocabulary as one aspect of speaking performance. Data were calculated and analyses were made in advance in the following table.

Table 3. *The Summary Descriptive Statistics of Students' Oral Vocabulary as One Aspect of Speaking Performance in Pretest.*

	Skewedness		Kurtosis	
	Statistic	**Std. Error**	**Statistic**	**Std. Error**
Experimental group's Oral Vocabulary Score in Pretest	.076	.343	-.829	.674

Therefore, based on the preceding table, it is feasible to determine that the oral vocabulary data distribution, which is one measure of speaking performance in the pretest, was normal. The descriptive statistics, in particular the skewedness and kurtosis, demonstrated that the data is roughly distributed normally as they are located between +1.96 and -1.96 and had respective values of 0.22(.76/.343)

and -1.22(-829/.674).

Similar to the previous table, Table 4 demonstrated a normal data distribution for oral vocabulary as one component of speaking performance in the posttest. The data is, in fact, roughly distributed normally, as indicated by the skewedness and kurtosis values of 0.40(.138/.343) and -1.12(-757/.674), respectively.

Table 4. *The Summary Descriptive Statistics of Students' Oral Vocabulary as One Aspect of Speaking Performance in Posttest.*

	Skewedness		Kurtosis	
	Statistic	**Std. Error**	**Statistic**	**Std. Error**
Grammar Experimental group's Oral Vocabulary Score in Posttest (after Intervention of PBL as LSU)	-.138	.343	-.757	.674

6.1.2. Pretest Result of Experimental and Comparison Groups

The independent sample test of pretest score of oral vocabulary, which measures one part of the experimental and

comparison groups' speaking abilities before PBL is used as a learning approach, is shown in the following table by the researcher. The pretest results were essential for determining how similar the groups were to one another.

Table 5. *Independent Samples Test of Pretest Score of Experimental and Comparison.*

	Group	N	Mean	df	Sig. (2-tailed)	Mean Difference
Pretest Score of Oral Vocabulary	EXP	48	1.615	94	.451	-.0729
	COM	48	11.688			

Table 5 suggests that there was similarity in the pretest scores of oral vocabulary for both the experimental and comparison groups before to the intervention PBL as a learning approach. More specifically, the experimental group's oral vocabulary score (M=1.615, DF=94) is closer to that of the comparison group (M=11.688, DF=94), with a p-value of.710, which is significantly higher. Therefore, before the intervention, the experimental and comparison groups were similar.

Since the study was quasi-experimental in nature and allowed participants to remain in the whole class, the present researcher would like to point out that pretest results were not utilized to categorize the participants. However, it served as the intervention's benchmark.

6.1.3. Posttst Scores of Experimental and Comparison Groups

Before proceeding the analyses of experimental and com-

parison group of the effect size of the posttests was computed, and depicted in following table.

Table 6. Effect size of the posttests.

Variable	Groups	Mean(X)	Standard Deviation(SD)	Cohen's D	Interpretation
Oral Vocabulary	Experimental	2.6458	.89893	0.64	Medium
	Comparison	2.1146	.75258		

Since the mean difference and significance level calculations are insufficient to reject or fail to reject the null hypotheses—which may be subject to type I or type II errors—calculating the effect size is crucial [11].

The stipulated research hypothesis (already stated in separate section)

$H_{0::}$ *There is no statistically significant difference between experimental group and comparison groups of grade 11 students' Oral Vocabulary as one aspect of speaking performance because of applying PBL s learning strategy use ($\alpha \leq 0.05$)*

$H_{a::}$ *There is statistically significant difference between experimental group and comparison groups of grade 11 students' Oral Vocabulary as one aspect of speaking performance because of applying PBL s learning strategy use ($\alpha \leq 0.05$)*

Table 7. Descriptive Statistics of the Results Of Posttests of Experimental and Comparison in Oral Vocabulary.

Group	N	Mean(X)	Standard Deviation (SD)	Variance (V)
Experimental	48	2.458	.89893	.12975
Comparison	48	2.1146	.75258	.10863

The data in the table above illustrates how, following the PBL learning strategy intervention, the groups differed on the oral vocabulary posttest. Consequently, it showed that the experimental group did better than the comparison group. An further independent t-test was performed to determine the significance or meaning of the difference between the means of the experimental group and the comparison group. The computation's outcomes are shown in the table below.

Table 8. Independent T-Test for both Groups in the Post-Test in Oral Vocabulary.

F		Sig.	t	Sig(2-tailed)
Equal variances assumed	2.095	.151	3.139	0.000
Equal variances not assumed			3.139	

Emphasizing the data provided, the calculated independent t-test result is sufficient to reject the null hypothesis because the t-observed (t. = 3.139, DF=94, P>.05) surpassed the t-critical of 1.986. Stated differently, the outcome supported the distinction between the two groups and the beneficial impact of PBL as a teaching technique on students' spoken vocabulary. Additionally, it demonstrated that, with a medium effect size (d=0.64), the experimental group outperformed the comparison group.

6.2. Discussion of the Findings

The pre-test results indicated that the kids' vocabulary for expressing ideas and feelings was restricted. They only used well-known, basic terms in their phrases; in fact, a few of them forgot the basic word out of anxiousness. Through the use of PBL as a teaching technique, students were given the opportunity to expand their vocabulary in order to facilitate effective conversations and advance their topic. Following a

series of exercises utilizing PBL as a learning technique, test scores improved from one assessment to the next. The students' vocabulary success increased as a result of receiving new vocabulary from the teacher's explanations and therapy, as well as becoming more comfortable speaking in English. They also tried to find new vocabulary from their dictionary or asked the teacher.. This is consistent with Lin's [30] research, which showed that PBL significantly increased students' vocabulary when compared to other learning methodologies. Most crucially, Fard and Vakili [21], for instance, investigated how PBL affected Iranian EFL learners' vocabulary development and found that PBL may greatly expand the learners' vocabulary. The results of the current pilot research on the beneficial effects of PBL as a learning technique on students' oral vocabulary as one component of speaking abilities were validated by the two studies mentioned above.. Mufaidah [35] asserts that PBL can improve students' vocabulary, speaking abilities, activity level, and motivation. Furthermore, the PBL exercises increased the learners' understanding of English. The present pilot study's conclusions are supported by the three research findings mentioned above. Thus, the researcher might conclude that using PBL as a learning technique enhances students' oral vocabulary in particular and speaking skills in general.

7. Conclusions and Recommendations

7.1. Conclusions

One component of speaking performance in the pre-test revealed that the pupils' oral vocabulary was inadequate for expressing their ideas and feelings. It was observed that they confined their vocabulary to simple, well-known terms, and that some of them even forgot to use these words due to anxiety. The students were challenged to brag about their varied vocabulary in order to have a productive conversation and advance their discussion by utilizing PBL as a learning technique. Through repeated practice using PBL as a learning technique, test scores improved from one assessment to the next. The students' vocabulary success increased as a result of receiving new vocabulary from the teacher's explanations and therapy, as well as becoming more comfortable speaking in English. They also tried to find new vocabulary from their dictionary or asked the teacher. Thus, the present researcher came to the conclusion that using PBL as a learning technique had a favorable impact on students' oral vocabulary.

7.2. Recommendations

Based on the conclusions of the study, the current researcher has recommended the following points to various stakeholders:

1. It is recommended that national curriculum planners and English course/subject designers take into account the possibility of using PBL as a learning technique in secondary education, particularly when teaching oral vocabulary as a component of speaking performance in grade 11 English.
2. EFL teachers and educators are encouraged to enable their students' practice active learning methodologies, most especially, PBL as active and constructive learning strategy.
3. Students are suggested to accustom themselves with such new and innovative learning strategies.
4. School management is recommended to provide training for the teachers on this strategy by inviting guests or more specialized experts.

Data Availability

The data used to support the findings of this study are available upon request to the corresponding author.

Conflicts of Interest

The authors declare no conflicts of interest.

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