



## Effects of Problem-Based Learning (PBL) as a Learning Strategy on Students' Oral Comprehension

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### Abstract

*This study examined the impact of Problem-Based Learning (PBL) as an innovative learning strategy on students' oral comprehension, a key component of speaking skills. The participants were BNSS students enrolled in the 2022 ECC academic year. A quasi-experimental pre-test–post-test design was employed, involving two intact classes selected through multi-stage sampling. The treatment group (48 students) was taught using PBL, while the comparison group (49 students) received traditional instruction. A modified speaking rubric was used to assess students' oral comprehension before and after the intervention. Descriptive statistics were conducted to verify parametric assumptions, followed by an independent samples t-test to compare the two groups. Effect size was calculated to determine the magnitude of the treatment effect, and interrater reliability was established using Cohen's Kappa. In addition, students' perceptions of PBL implementation and its benefits were explored through interviews. The findings revealed that PBL significantly improved students' oral comprehension compared to traditional teaching methods. The results suggest that PBL is an effective and innovative strategy for enhancing speaking skills, particularly oral comprehension, among EFL learners. Therefore, teachers and curriculum developers are encouraged to integrate PBL into speaking instruction.*

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## INTRODUCTION

In modern pedagogy, Problem-Based Learning (PBL) is taken as a student-centered instructional model where students work collaboratively to solve authentic, open-ended problems, thereby cultivating analytical and inquiry-based competencies (Tarigan et al., 2025). Originally developed in medical education, PBL has evolved into a versatile pedagogical approach applicable across disciplines, including language education (Hatipoglu & Semerci, 2023). Its core principle involves using realistic scenarios to drive student inquiry and self-directed learning.

Contemporary educational literature characterizes PBL as a dynamic framework that engages learners in complex, real-world challenges. As an active educational model, Problem-Based Learning diverts attention from instructor-led instruction to learner-centered exploration, making it particularly suitable for skills-based learning such as language acquisition (Wahyuningsih & Afandi, 2020). For this study, PBL is conceptualized as a structured instructional strategy that systematically integrates problem-solving with language learning objectives. For EFL learners in diverse contexts, developing oral communication skills—particularly

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comprehension—remains a persistent challenge (Husamaddin, 2025). Students often measure their language progress through perceived improvements in conversational understanding and participation. Theoretical foundations of PBL align closely with communicative language teaching principles, as both emphasize authentic interaction and meaning negotiation. Rooted in socio-cultural learning theories, PBL treats knowledge construction as a socially mediated process where scaffolding and collaborative dialogue play crucial roles (Vygotsky, 1978).

The constructivist alignment of PBL facilitates its integration into language instruction. Contemporary research confirms that language acquisition thrives in environments where learners actively engage with meaningful, contextualized tasks (Nguyen & Tran, 2023). PBL provides such an environment by creating scenarios that require authentic communication, thereby bridging theoretical knowledge with practical application. Through iterative problem-solving stages, learners construct both linguistic and content knowledge, reflecting global pedagogical shifts toward experiential, learner-centered approaches (Antoninis et al, 2023).

Oral comprehension is particularly vital within this framework, as it underpins successful interaction and mutual understanding. This research responds to documented deficiencies in Ethiopian secondary students' oral comprehension skills, which hinder communicative competence (Daba et al, 2024). The researcher's teaching experience corroborates these observations, noting consistent struggles with listening comprehension and interactive understanding. This study sought to investigate PBL as a Learning Strategy Use (LSU) to improve Biftu Nekemte Secondary School's grade 11 students' oral comprehension, along with its implementation and inherent benefits.

### **Statement of the Problem**

In a broader sense, Problem-Based Learning is an instructional strategy grounded in experiential learning principles, where knowledge develops through engagement with authentic challenges

*Sci. Technol. Arts Res. J., Oct. –Dec, 2025, 14(4), 177-186* (Kok & Duman, 2023). As a student-centered pedagogy, it aims to develop critical thinking, foster collaborative skills, and promote autonomous learning habits. This methodology encourages interdisciplinary integration, helping learners build a comprehensive understanding through practical application. Modern educational research positions PBL as particularly relevant for developing twenty-first-century skills, including communicative competence in additional languages.

Contemporary characterizations of PBL emphasize its role in preparing learners for complex real-world communication scenarios (Orhan, 2025). By working through carefully designed problems, students develop both language skills and cognitive strategies for effective communication. This dual focus makes PBL particularly promising for EFL contexts where traditional methods often prioritize grammatical accuracy over functional use.

While international research on PBL in language education exists, its specific application to oral comprehension development in secondary EFL settings remains underexplored, particularly in African contexts. Recent studies have examined PBL's effects on various language skills, but few focus specifically on oral comprehension as a component of speaking proficiency. Theoretical discussions of PBL in language teaching (Uzma et al., 2025) have been complemented by empirical investigations demonstrating positive outcomes for learner engagement and autonomy (Alghamdy, 2023).

Recent investigations into PBL's efficacy in EFL settings have produced promising results. Studies across Asian contexts show that PBL implementation fosters interactive, participatory classroom environments while enhancing communicative confidence (Ningsih et al., 2025). However, these studies primarily address listening comprehension or general language acquisition rather than focused oral comprehension within speaking skills. This creates a research gap regarding PBL's specific effects on the comprehension component of oral communication.

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Notable researchers, [Nurhidayati et al. \(2021\)](#), examined the effectiveness of the Problem-Based Learning model to improve listening skills in foreign language courses. The study was conducted at the University of Malang, Indonesia. The researchers employed observation, documentation, interviews, and questionnaires. This study differs substantially from the current study in terms of data collection tools and setting.

Similarly, recent research by [Nguyen \(2023\)](#) examined PBL for listening skills with Vietnamese undergraduates, reporting enhanced engagement and comprehension. While methodologically rigorous, this study again addresses listening rather than oral comprehension within interactive speaking contexts, and involves higher education participants rather than secondary students.

African research on PBL in language education remains limited. A 2023 study by [Mang'eni et al. \(2023\)](#) in Kenya investigated PBL for the attainment of Critical thinking skills, but focused on learners' higher-order thinking rather than oral comprehension. Their findings suggest PBL improves learners' critical thinking skills; however, it did not address oral comprehension as one aspect of speaking skills. This highlights a continental research gap regarding PBL's effects on oral comprehension in EFL contexts.

The aforementioned studies differ from the present research in several crucial aspects: population (university vs. secondary students), geographical context (Asian vs. Ethiopian), and skill focus (listening or speaking production vs. oral comprehension within speaking). Furthermore, these studies don't comprehensively address theoretical models, implementation procedures, or contextual adaptations of PBL for oral comprehension development.

To the best of the researcher's knowledge, no Ethiopian studies have really looked at how PBL affects oral comprehension as a speaking skill. This indicates a substantial void in both practical pedagogy and local research. As a result, the following research hypotheses are addressed in this work.

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## **Research Hypotheses**

H<sub>1</sub>: Students' oral comprehension mean scores are different between treatment and comparison groups due to the intervention of Problem-Based Learning as Learning Strategy Use.

H<sub>0</sub>: Students' oral comprehension mean scores are not different between treatment and comparison groups due to the intervention of Problem-Based Learning as Learning Strategy Use.

## **Research Questions**

The following research question served as the basis for this investigation, based on the mentioned problem and hypotheses:

1. What impact does using PBL at LSU have on Ethiopian Grade 11 EFL students' oral comprehension abilities?
2. What are the opinions of students towards the implementation of PBL as LSU in improving their oral comprehension?
3. What are the beliefs of students towards the benefits of applying PBL as LSU in teaching oral comprehension?

## **MATERIALS AND METHODS**

### **Research Design**

In educational contexts where random assignment is not feasible, this study used a quasi-experimental design with non-randomized pretest-posttest comparison groups. The design allowed comparison between intact classes receiving different instructional treatments while controlling for initial differences through pre-test measures. For the qualitative data, interviews were employed to get data on the opinions of learners on the implementation and benefits of PBL as LSU in improving students' oral comprehension.

### **Sampling Techniques and Frames**

Subjects of the study were elected from BNSS, who enrolled in the 2022 E.C academic year. Based on contextual relevance and accessibility, multi-stage purposive sampling was used. From eight existing Grade 11 sections, four Social Science Stream sections taught by the same instructor were identified. Two sections were randomly selected

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from these four using lottery methods, then randomly assigned as treatment (n=48) and comparison (n=49) groups. One incomplete response was excluded, resulting in equal group sizes for analysis. For the interview data, four respondents were selected from the experimental group participants.

### **Experimental Research Groups**

Instructional materials were developed from the prescribed textbook, adapted according to PBL principles based on contemporary literature. The treatment group received explicit training in PBL methodology for oral comprehension development, including assessment criteria. The intervention emphasized a pedagogical approach rather than content coverage. The comparison group continued with conventional instruction focusing on similar content but without PBL methodology.

### **Intervention**

The 12-week intervention was implemented by a trained classroom teacher serving as facilitator. Prior to implementation, a pre-test established baseline oral comprehension levels. PBL sessions followed a structured sequence: problem presentation, collaborative inquiry, solution development, and reflection ([Simamora et al, 2017](#)). Each 40-minute session addressed specific oral comprehension components through progressively complex scenarios. The researcher provided two days of facilitator training on PBL implementation and assessment procedures. Independent raters conducted all assessments to minimize bias.

### **Pre-tests and Post-tests**

Assessment instruments were adapted from [Syahidad \(2021\)](#) 's speaking rubric, modified to focus specifically on oral comprehension indicators. The tests evaluated comprehension through scenario-based responses and interactive tasks. While originally designed for speaking assessment, the adapted version prioritized comprehension elements within communicative contexts, functioning as both achievement and performance measures.

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### **Interview Questions**

The researcher employed an interview as an additional data collection tool to obtain students' opinions on the implementation of Problem-Based Learning as Learning Strategy Use in improving students' oral comprehension and its inherent benefits in the EFL classroom. Though the very objective of the study was examining the effect of PBL as LSU, the researcher believed that knowing learners' opinions in terms of implementation and benefits of PBL as LSU would also be useful. Accordingly, the data via interview was collected from four respondents who participated in the intervention group.

### **Methods of Data Analysis**

Quantitative analysis was employed using SPSS version 25. Descriptive statistics established data distribution characteristics and parametric test assumptions. Independent samples t-tests compared group means at pre-test and post-test stages. Effect sizes were calculated using Cohen's d, with interpretations following contemporary guidelines ([Lakens, 2022](#)). Inter-rater reliability was assessed via Cohen's Kappa with modern interpretation benchmarks. All analyses used an  $\alpha=.05$  significance threshold. In addition, thematic analysis was used to analyse data obtained via interviews, which comprised basic research questions 2 and 3.

### **Validity and Reliability**

Content validity was established through expert review by two applied linguistics specialists with PhD qualifications. Construct validity was supported by alignment with theoretical frameworks and previous research instruments. Reliability was ensured through inter-rater consistency measures, with coefficients indicating acceptable agreement levels for educational research ([Taber, 2024](#)). [Table 1](#) indicates that both treatment and comparison groups' inter-rater reliability was found to be consistent and acceptable.

**Table 1**

*Inter-reliability measure of Treatment and Comparison groups in Pre-test and Post-test (merged)*

No.	Group	Test	Value	Justification
1.	Treatment	Pre-test	.789	Substantial agreement
		Post-test	.413	Moderate agreement
2.	Comparison	Pre-test	.723	Substantial agreement
		Post-test	.648	Substantial agreement

**RESULTS AND DISCUSSIONS**

**Results**

**Normality of Data**

Distribution normality was assessed through skewness and kurtosis analyses, with z-scores below  $\pm 1.96$  indicating normal distribution. All pre-test and post-test distributions met normality assumptions, permitting parametric analyses. Table 2 reveals that the treatment group's pre-test score in oral speech comprehension was evenly distributed. Indeed, the normality of the distribution was shown by the computed skewness and kurtosis z-scores (1.04 (.356/.343) and -0.77 (-.518/.674), respectively, within the  $\pm 1.96$  range). The treatment group's post-test oral comprehension data

distribution is evenly distributed since the skewness and kurtosis z-scores of -1.77 (-.608/.343) and -0.54 (-.367/.674), respectively, similar to the pre-test. Equally important, the comparison group's skewness and kurtosis z-scores are 1.04 (.356/.343) and -0.77 (-.518/.674), respectively, proving a normal distribution of the data. Furthermore, the comparison group's post-test oral comprehension data distribution is also found to be normal, with specific skewness and kurtosis z-scores of 1.26 (.434/.343) and 1.52 (1.026/.674), respectively. Accordingly, parametric tests could be used since the pre- and post-test data for both groups had a normal distribution.

**Table 2**

*Treatment and Comparison Groups' Pre-tests' and Post-tests' Descriptive Statistics in Oral Comprehension Skills*

Oral comprehension	Skewedness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Pre-test score of the Treatment group	.356	.343	-.518	.674
Post-test score of the Treatment group	-.608	.343	-.367	.674
Pre-test score of the comparison group	.356	.343	-.518	.674
Post-test score of the comparison group	.434	.343	1.026	.674

**Treatment and Comparison Groups Pre-test Results**

The unmatched tests of sample findings for the treatment and comparison groups' oral comprehension pre-test scores before the PBL intervention are shown in the following tables. In

order to determine group resemblance, pre-test data were essential.

Table 3 shows that the oral comprehension pre-test results of both groups were similar before running the intervention. As evidence, the p-value (.664) was greater than 0.05, and the treatment

group mean (M=1.9688) was comparable to the comparison group mean (M=1.9063). Both treatment and comparison groups were, as a result,

equal at baseline. Due to the nature of the design of the study, a pre-test was not used to assign the groups.

**Table 3**

*Treatment and Comparison Groups: Unmatched samples of pre-test results*

Item	Group	N	Mean	df	Sig.(2-tailed)	Mean Difference
Oral Comprehension Pre-test results	Treatment	48	1.9688	94	.664	.06250
	Comparison	48	1.9063			

The post-test results revealed a substantial difference between the treatment and comparison groups in terms of oral comprehension (Table 4). The treatment group obtained a mean score of 3.29 (SD = 0.61), whereas the comparison group achieved a mean score of 2.04 (SD = 0.72). The calculated effect size (Cohen's d = 1.9) indicates a

very large effect according to Lakens' (2022) criteria. This finding suggests that the implementation of Problem-Based Learning (PBL) had a strong and meaningful impact on students' oral comprehension performance compared to traditional teaching methods.

**Table 4**

*Effect sizes of post-tests*

Construct	Research Group	Mean(X)	Standard Deviation (SD)	Cohen's D	Justification
Oral comprehension	Treatment	3.2917	.60874	1.9	Large
	Comparison	2.0417	.72077		

Table 5 shows that there was a considerable difference after the intervention between the treatment and comparison groups. In order to

ascertain if this mean difference was statistically significant, an unpaired (independent) t-test was computed.

**Table 5**

*Treatment and Comparison Groups' Oral Comprehension Descriptive Statistics of Post-test Results*

Research Groups	N	Mean(X)	Standard Deviation	Variance
Treatment	48	3.2917	.60874	0.8786
Comparison	48	2.0417	.72077	1.0403

Table 5 shows that there was a considerable difference after the intervention between the treatment and comparison groups. In order to

ascertain if this mean difference was statistically significant, an unpaired (independent) t-test was computed.

**Table 6**

*Oral Comprehension's Unmatched(Independent ) T-Test for both Groups in the Post-Test*

Item	F	Sig.	t	Sig(2-tailed)
Equal variances assumed	.157	.693	9.179	0.000
Equal variances not assumed.			9.179	

Table 6 illustrates that the p-value is less than 0.05 and the computed t-value (9.179) is more than the critical threshold. Most importantly, this offers enough proof to disprove the null hypothesis. The treatment group outperformed the comparison group with a substantial effect size ( $d=1.9$ ), confirming a significant difference between the groups and a beneficial effect (impact) of Problem-Based Learning as Learning Strategy Use on oral comprehension as one aspect of speaking performance.

### Interview Data

In addition to quantitative data on the effects of PBL as LSU on students' oral comprehension, the current researcher collected qualitative data on the opinions of the students towards its implementation and the benefits of PBL as LSU in EFL classes.

Accordingly, qualitative data analyses have been interpreted as follows.

**Question 1:** What do you think the implementation of PBL as LSU to improve your oral comprehension?

The current researcher understood that the interview respondents' opinion towards the implementation of PBL as LSU in improving their oral comprehension was found to be positive.

For example, S1 favoured that

*I think PBL as LSU can be implemented. Maybe it requires some time to adapt oneself to such a strategy. Otherwise, in my opinion, learning oral comprehension with PBL is possible....*

In support of S1, S2 argued:

*Alright. In my opinion, problem-based learning is fun and very interesting. Thus, it is quite*

*possible to learning speaking skills as well as general and oral comprehension in particular. For this matter, it can be applied...*

Furthermore, the S3 forwarded :

*In my view, Problem-Based Learning as a learning strategy would be applied. Indeed, it might require much time to practice. Yet, it is something practical. Thus, with implementation, it could help learners to boost their oral comprehension performance....*

Finally, the S4 also argues for that.

*In my view, it is possible to implement PBL as LSU in EFL class to enhance students' oral comprehension performance. My doubt is whether it requires considerable time.*

**Question 2:** What do you think of the benefits of PBL as LSU in speaking class, especially, in addition to improving your speaking skills?

For this question, like the first question, almost all the respondents think that PBL as LSU has had a number of benefits.

For instance, S1 forwarded as:

*I think the strategy is new and attractive for us and totally different from the class we had before. PBL could motivate my learning. We had learned not only English, but also the skills of speaking properly. It improved our oral comprehension ability, and we are more confident now.*

Similarly, S2 added that

*In my view, strategy was new and participatory for us. It is quite different from the class we had before. It could facilitate our learning. It improved our oral comprehension performance as we talked to each other. It also boosted confidence in speaking with a better understanding.*

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*Furthermore, S3 reflected that*

*In my view, strategy is interesting for us. It is quite different from the class we had before. It could facilitate our learning. It enhanced our listening performance as we had talked a lot to each other with a better understanding.*

Crucially, S4 said:

*I think the strategy is useful for us. It is a little bit different from the learning method we had before. It could facilitate our learning. It enhanced our oral comprehension performance as we talked a lot to each other.*

Thus, from the interview respondents, it is possible to know that Problem-Based Learning as Learning Strategy Use can be implemented to improve grade 11 students' oral comprehension. Furthermore, it was found that PBL as LSU in EFL classes has had a number of benefits.

## **Discussion**

Results show that using PBL as a teaching method greatly improves oral comprehension in Ethiopian secondary EFL students. PBL's effectiveness is substantially supported by statistical data, including a significant mean difference, a large effect size, and high significance. These results align with contemporary socio-constructivist perspectives on language acquisition, particularly regarding scaffolded learning in zone of proximal development (ZPD) contexts (Yildiz, 2020). The treatment group's improvement suggests that PBL's structured problem-solving creates optimal conditions for developing oral comprehension through authentic interaction and collaborative meaning-making. This supports recent research emphasizing the importance of interactive, context-rich environments for developing receptive oral skills (Makhsetovna, 2022). The large effect size is particularly noteworthy, exceeding typical educational intervention effects (Hattie, 2023), suggesting PBL's particular potency for oral comprehension development. On the other hand, the findings from interview respondents reflected that PBL at LSU can be implemented with caution. Yet, it was found that PBL at LSU has a number of

*Sci. Technol. Arts Res. J., Oct. –Dec, 2025, 14(4), 177-186* benefits. It was found to be attractive, participatory, interesting, and useful.

These findings contribute to emerging literature on innovative pedagogies in African EFL contexts, addressing previously identified gaps in local research. The study demonstrates that PBL, when appropriately adapted, can effectively address specific language learning challenges in resource-constrained educational settings. This has important implications for curriculum development and teacher training in similar contexts across the Global South.

## **CONCLUSIONS**

This study provides robust evidence that Problem-Based Learning significantly enhances oral comprehension among Ethiopian secondary EFL students. Findings validate PBL's applicability to specific language skill development while contributing to localized understanding of effective pedagogies in African educational contexts, along with inherent learners' opinions towards implementation and benefits of PBL as LSU in EFL class. By demonstrating substantial improvements through PBL implementation, this research offers both theoretical insights and practical guidance for EFL instruction in similar settings.

## **Recommendations**

Based on the conclusions, the following points are recommended to be done :

1. Ethiopian Curriculum Developers: Integrate PBL principles into secondary English language curricula, particularly for oral skill development components.
2. EFL Teacher Educators: Incorporate PBL methodology in all levels of training.
3. Classroom Practitioners: Adapt PBL strategies for diverse classroom contexts, focusing on authentic problem scenarios relevant to students' experiences.
4. Educational Researchers: Conduct longitudinal studies on PBL's sustained effects and investigate adaptations for various learner populations and resource contexts.



## CRediT Authorship Contribution Statement

**Fekadu Adam:** Data Collection, Conceptualization, Analysis & Writing Original Draft. **Zelege Teshome,** : Data Analysis & Model Validation, Review & Editing. **Jira Jabessa:** Formal analysis, Investigation, Resources

## Declaration of Competing Interest

The authors declare no conflict of interest.

## Ethical approval

Ethical approval for this study was obtained from Biftu Nekemte Secondary School (BNSS), before data collection commenced. Participation was entirely voluntary, and informed consent was obtained from all participants.

## Data Availability

The data generated and interpreted during this research are accessible from the authors upon a convincing request.

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