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PROBLEM-BASED LEARNING IN THE UbD FRAMEWORK TO IMPROVE LISTENING AND CRITICAL THINKING: A CLASSROOM ACTION RESEARCH

Zuhriyatun Nur Qudsiyah[1], Ika Hidayanti[2*], Widyana Putri Santoso[3]
[1,2] Universitas Islam Malang, Indonesia
[3] SMPN 13 Malang, Indonesia

Abstract

The aim of this study is to improve students' listening comprehension and critical thinking skills by implementing the Problem-Based Learning (PBL) model within the Understanding by Design (UbD) framework in an eighth-grade EFL class at SMPN 13 Malang. The study was motivated by students' low listening comprehension and underdeveloped critical thinking skills. A Classroom Action Research (CAR) design was used, consisting of two cycles, each involving the stages of planning, action, observation, and reflection. Data were collected through listening tests, classroom observations, critical thinking rubric, and student interviews, and analyzed using descriptive quantitative and qualitative methods. The results showed a significant improvement in students' listening performance, with the class average increasing from 67 in the diagnostic pretest to 82 in the final task of Cycle 2. Critical thinking scores also improved across all indicators, particularly in interpretation and explanation, as students engaged in structured group work with cognitive role assignments, which also contributed to a more student-centered learning environment. The study concludes that the integration of PBL within the UbD framework effectively enhanced both listening and critical thinking skills in the EFL context. These findings suggest that structured, problem-based instruction can support competency-based goals in a junior high school English classroom.

Keywords: Classroom Action Research; Critical Thinking; EFL; Listening; Problem-Based Learning; Understanding by Design (UbD)

* Correspondence Address:	ikahidayanti@unisma.ac.id

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INTRODUCTION | مقدمة

The role of English education has evolved significantly. It is no longer confined to teaching grammar and vocabulary, but has expanded to include higher-order thinking skills (HOTS) that help students function in real-world contexts (Fisher, 1999; Zohar & Schwartzer, 2005). In response to this shift, global and national education systems have adopted competency-based standards such as the Common European Framework of Reference for Languages (CEFR), which promotes the development of integrated language skills. In the Indonesian context, Kurikulum Merdeka refers to this framework to set a B1 proficiency target for junior high school students in Phase D (Damayanti et al., 2022). This level of English demands not only linguistic knowledge but also the ability to comprehend spoken texts and think independently.

However, this expectation is not easily met in many Indonesian classrooms. Based on the researcher's pre-service teaching experience at SMPN 13 Malang, most students demonstrated difficulties with listening comprehension and were not accustomed to expressing ideas or

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analyzing information. A diagnostic pretest confirmed that the class's overall performance was still below the national target. Students often appeared hesitant to respond, lacked vocabulary support, and struggled with processing audio input. These observations suggest that a more reflective and learner-oriented instructional approach is needed to help them meet the expected outcomes.

This need is especially evident in two skill areas that remain underdeveloped in many EFL classrooms: listening and critical thinking. Listening tasks are often designed only to check literal understanding, such as identifying keywords or factual details, with limited opportunities for inference, evaluation, or interpretation (Brown, 2006). In parallel, critical thinking is also not yet a consistent feature of everyday classroom instruction. As shown by Musliha, Sudana, and Wirza (2021), many English teachers in Indonesia still rely heavily on lower-order thinking questions in their assessments, suggesting that the actual implementation of HOTS remains minimal. Rasyid, Aini, and Varghesse (2023) similarly found that learners often lack an awareness of critical thinking and require explicit scaffolding to develop it. Furthermore, Ho and To (2022) argue that without effective questioning strategies, students are unlikely to engage in analytical or reflective thinking.

The questioning-based strategies have actually been explored by these studies. Musliha et al. (2021) emphasize the importance of designing test questions that reflect higher-order thinking levels, such as analyzing, evaluating, and creating. They argue that incorporating such questions, whether open-ended or well-constructed multiple-choice, can guide students toward inquiry-based learning, leading to deeper engagement with classroom content. Rasyid et al. (2023) expand on this by showing how structured questioning cycles, in which students both respond to and formulate their own HOTS-based questions, can improve learners' critical thinking over time. Likewise, Ho and To (2022) support the use of scaffolded questioning and divergent prompts that gradually lead students from basic comprehension to more complex reasoning and problem-solving. These studies show that critical thinking can be developed through strategies like inquiry-based questioning, reflective listening tasks, and repeated formative assessment. Nevertheless, a more structured and goal-oriented instructional design may be necessary to translate these strategies into consistent classroom practice. The current study takes this further by integrating two instructional models: Understanding by Design (UbD) and Problem-Based Learning (PBL).

UbD, developed by Wiggins and McTighe (2005), focuses on setting clear learning goals and aligning learning activities and assessments to meaningful outcomes. Several studies have shown how UbD can support students' higher-order thinking, especially in science education. Zhang et al. (2023), for instance, applied UbD in a Chinese high school biology class through a coastal flooding project. Students worked on real-world environmental issues, analyzing the causes of flooding and proposing solutions from different disciplinary perspectives. The lessons were structured using UbD's WHERETO principles, and students were assessed through open-ended questions, video documentation, and expressive tasks, all designed to promote critical thinking and inquiry. Similarly, Tshering (2022) used the UbD framework in a chemistry class in Bhutan and found that students taught with UbD outperformed those in traditional classrooms. The study emphasized backward design in planning, where hands-on experiments, academic prompts, and reflection tasks helped students move beyond memorizing facts toward an understanding of concepts. While these findings highlight UbD's potential to improve student engagement and cognitive skills, its use in English as a Foreign Language (EFL) classrooms particularly in relation to listening and critical thinking remains underexplored. To respond to this

gap, the current study combines UbD with another learner-centered approach: Problem-Based Learning (PBL).

PBL is a strategy that encourages students to investigate real-world problems in groups and communicate their findings. In EFL classrooms, PBL has been linked to improvements in listening, vocabulary acquisition, and student engagement (Cosgun & Atay, 2021). A recent meta-analysis by Orhan (2024) further confirms that PBL has a measurable impact on academic achievement in English learning. In the Indonesian school context, Pangaribuan (2022) found that PBL activities helped students better understand textual structure and language function. These benefits suggest that combining PBL with UbD could offer a well-rounded instructional framework that supports both skill development and cognitive growth.

Despite these promising findings, few studies have examined how UbD and PBL might work together to improve listening and critical thinking in junior high school EFL classrooms. This classroom action research was conducted to explore that integration and observe its effect on learners' performance over two teaching cycles. The study also incorporates *Six Thinking Hats* (De Bono, 1985), a structured thinking strategy that encourages learners to explore issues from six distinct perspectives: logical, emotional, creative, critical, optimistic, and process-oriented. This method has shown potential in developing critical thinking and decision-making skills across disciplines. For instance, Elbilgahy and Alanazi (2023) found that applying Six Thinking Hats in a nursing education course significantly improved students' critical thinking abilities, collaboration, and reflective engagement. By embedding this strategy within a UbD framework and problem-based tasks, the current study aims to provide structured scaffolding that supports both listening comprehension and higher-order thinking. The study is guided by the following questions: 1) How can the implementation of PBL in the UbD framework progressively improve students' listening skills through cycles of instructional improvement?2) How does the use of PBL in the UbD framework enhance students' critical thinking skills through repeated teaching interventions?

METHOD | منهج

Research Design

This study employed a Classroom Action Research (CAR) design, based on the cyclical model proposed by Kemmis and McTaggart (1988). Each cycle involved four key stages: planning, acting, observing, and reflecting. The action research approach was chosen for its practical value in helping educators systematically improve instructional practices and student outcomes within an authentic classroom setting. The research was conducted over two cycles, each spanning two to three 80-minute meetings. After the completion of each cycle, reflections on student performance and classroom observations informed instructional modifications for the subsequent cycle.

Participants

The participants were 32 eighth-grade students from Class 8D at SMPN 13 Malang, Indonesia. The class was selected based on the researcher's experience during a pre-service teacher training program, where it was identified as needing targeted support in listening and critical thinking.

Instructional Framework and Learning Procedures

The instructional design was structured using the Understanding by Design (UbD) framework (Wiggins & McTighe, 2005), which emphasizes planning from desired learning

outcomes toward appropriate learning experiences. Each cycle followed the principles of Problem-Based Learning (PBL), which includes the following syntax: (1) orienting students to the problem, (2) organizing learning tasks, (3) guiding inquiry and investigation, (4) developing and presenting solutions, and (5) analyzing and evaluating the problem-solving process (Sari et al., 2001).

Each cycle was initiated with a listening-based activity that introduced the problem context and built vocabulary knowledge. In Cycle 1, students listened to a video on environmental issues and answered multiple-choice questions to identify key details. This activity was followed by the use of contextual images and short descriptions depicting common environmental behaviors (e.g., using plastic bags, conserving electricity, littering). Students worked in groups to categorize these behaviors as helpful or harmful and then presented their group perspectives. In Cycle 2, the task complexity increased. Students first listened to an audio recording and viewed supporting images related to natural disasters, then completed a gap-fill exercise to reinforce key vocabulary. The main task involved analyzing a recent flooding event in Malang using thinking cap strategy, an adaptation of De Bono's Six Thinking Hats (De Bono, 1985). Each group adopted a specific perspective, such as identifying causes, expressing empathy, assigning responsibility, or proposing solutions, and then presented their analysis to the class.

Instruments and Data Collection

This study used a combination of qualitative and quantitative data sources to capture the development of students' listening and critical thinking skills throughout the two instructional cycles. Listening comprehension progress was assessed through a series of formative listening tasks, administered before and during the intervention. These included a diagnostic listening activity to identify students' initial performance levels, tasks in Cycle 1 focusing on environmental themes, and tasks in Cycle 2 related to the "Sungai Lestari" listening narrative. Student performance across these tasks was tracked and averaged to evaluate improvement over time. In addition to the listening scores, classroom observations were conducted during each cycle to document the learning process. A presentation rubric adapted from Facione's (1990) model was used to assess critical thinking indicators such as interpretation, analysis, evaluation, and explanation during group presentations. Content validity of the rubric was reviewed by a teacher advisor and a subject matter expert to ensure alignment with instructional goals. After Cycle 2, five randomly selected students participated in semi-structured interviews to gather their reflections on the learning experience and the PBL approach. The interviews were transcribed verbatim and analyzed thematically. Coding was done manually to identify recurring patterns related to student engagement, challenges, and perceived learning outcomes.

Minor Limitations

While the rubric was theoretically grounded in Facione's model, no formal statistical test of reliability was conducted. Similarly, the interview data were analyzed qualitatively, and inter-coder reliability was not assessed. These limitations are acknowledged and suggest areas for improvement in future research.

Ethical Considerations

This study was conducted with formal approval from the school principal and consent from the English teacher supervisor. Students were informed of the study's purpose, and their participation was voluntary. All personal data were anonymized to protect student privacy.

RESULT | نتائج

Listening Comprehension

The results addressing RQ1 are summarized in Table 1. Students' listening comprehension was measured through a diagnostic pretest and three subsequent listening tasks administered across two research cycles.

Table 1. Summary of Listening Comprehension Scores (Pretest – Cycle 2)

Assessment Task	Average Score	Notes/Observation
Diagnostic Listening (Pre-Cycle)	67	Students showed basic literal comprehension. Most were hesitant, with limited vocabulary and poor inference-making. Listening habits were underdeveloped.
Cycle 1 Listening Task	68	Slight improvement, but still below the target score of 80. Some students relied heavily on Google Translate/Google Lens, raising concerns about result validity.
Cycle 2 Listening Task 1	62	Lower average due to task complexity and restriction on phone use. However, students began applying prediction strategies and using contextual clues.
Cycle 2 Listening Task 2	82	Marked improvement. With phones restricted, students used word banks effectively and showed better focus and comprehension through repeated audio exposure.

Table 1 presents the progression of students' listening comprehension scores across the two research cycles. The diagnostic pretest yielded an average score of 67, indicating a basic level of literal comprehension. In Cycle 1, the average rose slightly to 68; however, many students relied on digital translation tools, raising concerns about the validity of the result. After removing phone access and providing word banks in Cycle 2, the average score initially dropped to 62 in the first listening task due to increased complexity and lack of external aids. Nonetheless, by the second task in Cycle 2, the average increased significantly to 82. Specifically, 27 out of 32 students (84.38%) achieved the school's minimum passing criterion (KKM) or above in this task. This final result reflects improved strategy use in listening comprehension.

Critical Thinking Skills

To address RQ2, students' critical thinking performance was measured using a rubric adapted from Facione (1990), assessing five indicators: Interpretation, Analysis, Evaluation, Inference, and Explanation.

Table 2. Critical Thinking Performance Based on Facione (1990) Rubric

Indicator	Cycle 1 Avg (1-4)	Cycle 2 Avg (1-4)	Key Improvement Area
Interpretation	2.8	3.5	Students linked evidence to context more effectively through the use of structured roles (Thinking Caps).
Analysis	2.6	3.4	The task encouraged students to explore causes and effects more thoroughly, including multiple viewpoints.
Evaluation	2.4	3.1	Engagement with real-world issues helped students assess impacts and consider different stakeholder perspectives.
Inference	2.4	3.0	Analyzing from specific roles improved students' ability to draw logical conclusions and make recommendations.
Explanation	2.4	3.2	The scaffolding (presentation template) improved the clarity and organization of students' group presentations.

Table 2 summarizes the average performance of students in five core critical thinking indicators, based on Facione's (1990) rubric. Scores were based on a 4-point scale, with 4 indicating strong performance. Across the two cycles, there was a noticeable increase in average scores for each indicator. Interpretation showed the highest gain (from 2.8 to 3.5), followed by improvements in Analysis (2.6 to 3.4), Evaluation (2.4 to 3.1), Inference (2.4 to 3.0), and

Explanation (2.4 to 3.2). These improvements suggest that the revised instructional design in Cycle 2, particularly the integration of structured scaffolding and role-based group work, appeared to enhance students' engagement and performance in critical thinking tasks.

It should be noted that although the group numbers remained consistent (Group 1 to Group 5), group membership changed between cycles based on student preferences. Therefore, the improvements presented in Table 2 reflect an overall trend of growth across the class, rather than progress of fixed teams. Nonetheless, the pattern indicates a positive shift in collective student performance in critical thinking.

Student Perceptions

In addition to test scores and classroom observations, student interviews provided qualitative insights into learners' perceptions of the intervention. Five students were interviewed after Cycle 2 to gather reflections on the learning experience and the PBL approach. Most students found the listening tasks engaging yet challenging, particularly due to audio clarity and pacing. Several mentioned that repeated playback and slowed audio helped them follow the content more effectively. Topics related to environmental issues were widely regarded as relatable, which enhanced interest and participation. During group work, students appreciated having open discussion to reach consensus. A few learners noted increased confidence in understanding English audio and thinking more clearly about cause-effect relationships, although some still expressed difficulty when instructions or recordings lacked clarity.

DISCUSSION | مناقشة

This study explored how integrating Problem-Based Learning (PBL) within the Understanding by Design (UbD) framework could enhance listening comprehension and critical thinking among junior high school EFL learners in Indonesia. The findings demonstrate clear progress in both skill domains, particularly following the instructional redesign implemented in Cycle 2.

Rather than being driven solely by repeated exposure, the improvement in listening comprehension appears to result from targeted cognitive scaffolding. Pre-listening vocabulary previews, prediction tasks, and guided listening protocols allowed students to engage more purposefully with audio materials. Observation data revealed a gradual shift: learners began identifying verb forms through structural cues and showed reduced reliance on translation tools. This aligns with Safa and Motaghi's (2021) argument that metacognitive support fosters listening autonomy by helping learners regulate their own strategies.

A notable adjustment in Cycle 2 was the removal of mobile phone access (originally used for translation purposes) and the introduction of a structured word bank. This shift helped redirect students' attention from decoding to meaning-making. These findings support Orhan's (2024) conclusion that a well-structured PBL environment can promote deeper information processing and greater independence in language use.

Critical thinking improved more in Cycle 2, particularly after introducing the Six Thinking Hats (STH) strategy. By structuring students' reasoning, STH increased engagement in real-world problems and turned passive students into active participants. Consequently, group presentations were better organized and more evidence-based than in Cycle 1.

These patterns mirror findings from Mansurova (2024), who reported gains in problem-solving and reasoning among B2-level EFL learners using STH. Similarly, Gürsoy and Özcan (2022)

found that parallel thinking roles fostered cognitive flexibility during intercultural discussions. In the current study, assigning structured cognitive tasks appeared to help students navigate complex ideas collaboratively, suggesting that role-based scaffolding may serve as a powerful entry point to higher-order thinking.

Nonetheless, not all students benefited equally. In Cycle 1, Group 5 exhibited minimal interaction, and although participation improved in Cycle 2, some disengagement persisted. Additionally, reshuffling group members between cycles introduced inconsistencies, complicating longitudinal comparisons. These challenges underscore the need for differentiated scaffolding and consistent group structures, echoing Guo et al.'s (2024) emphasis on balancing collaborative learning with individual accountability. Their study highlights how structured reflection and social interaction must be integrated for critical thinking to flourish equitably across learners.

Among the five indicators assessed, the strongest gains were seen in interpretation and explanation. Students became more adept at identifying main ideas, organizing their thoughts, and citing relevant details during presentations. However, their performance in evaluation and inference remained limited. Many responses remained descriptive, lacking justification, alternative viewpoints, or well-supported conclusions. This suggests that while students began to move beyond surface-level processing, further cognitive scaffolding, such as guided questioning and modeling, is needed to cultivate evaluative reasoning.

These findings align with Rasyid et al. (2023) and Ho and To (2022) in the introduction, both of whom emphasize the importance of structured questioning cycles and teacher modeling to develop critical thought in EFL contexts. Their studies show that students benefit from regular, supported practice before they can confidently engage in analytical and evaluative thinking. This underscores the importance of intentional instructional design that gradually builds complexity over time.

The integration of UbD and PBL in this study provided a coherent instructional framework. Backward design (UbD) ensured alignment between goals, tasks, and assessments, while PBL introduced authentic, contextually relevant problems that made learning purposeful. The Six Thinking Hats strategy further enriched this framework by promoting structured perspective-taking and reflective dialogue. Together, these elements created an environment where language was used not only for comprehension but also for inquiry and reasoning.

Student interviews complemented these findings by shedding light on learner perceptions. While several students initially struggled with unclear pronunciation and fast-paced audio, they noted that repeated playback and teacher support made the tasks more manageable. Others shared that group discussions helped them express ideas more confidently and consider different perspectives. These insights point to growing cognitive ownership, an encouraging sign of increased self-awareness in learning.

Although the outcomes of this study are promising, they should be interpreted with caution. The research was limited to a single class over two cycles, and factors such as varying group compositions, inconsistent attendance, differing motivation levels, prior knowledge, and resource access may have influenced the results. Future research should involve longer implementations with stable groups and reflective journals to better gauge the internalization of thinking strategies. It could also explore how tools like the Six Thinking Hats impact other language skills, such as writing or reading comprehension.

CONCLUSSION | خاتمة

This study explored how integrating Problem-Based Learning (PBL) into the Understanding by Design (UbD) framework could enhance listening comprehension and critical thinking in an Indonesian junior high school EFL context. The findings suggest that structured collaboration, supported by cognitive scaffolding strategies, such as vocabulary previews and the Six Thinking Hats, shows potential to improve student engagement, reasoning clarity, and listening autonomy.

Student reflections echoed these results, pointing to better comprehension and increased participation in group discussions. Together, these insights highlight the value of combining backward design with role-based problem-solving to address both language and thinking skills simultaneously. While the study was limited in scope, it offers practical implications for EFL instructional design at the junior secondary level. The integration of UbD and PBL, along with structured cognitive roles, may be considered for inclusion in teacher training programs or future iterations of Kurikulum Merdeka modules, particularly those emphasizing interdisciplinary learning. Future research could extend these findings through longer-term studies, consistent group structures, and applications to other language domains such as writing or reading comprehension.

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