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Enhancing Critical Thinking in Speaking through Problem-Based Learning: A Classroom Action Research

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ABSTRACT

This Classroom Action Research (CAR) investigated the effectiveness of Problem-Based Learning (PBL) in enhancing critical thinking skills within English speaking activities at Global Madani Senior High School. This study was conducted over two iterative cycles within a CAR framework. It employed a mixed-methods approach with 21 eleventh-grade students. Quantitative data, obtained from pre- and post-tests and analyzed using a paired sample t-test, demonstrated a statistically significant improvement in the students' critical speaking skills. Their average score increased from 50.71 to 81.90, a gain that was statistically significant ($p < .001$). Qualitative data from observations, recordings, and student journals illustrated a clear developmental trajectory: initial engagement in Cycle 1 exposed deficits in argument structure and logical reasoning, prompting the introduction of targeted scaffolds—including explicit argumentation frameworks and peer feedback protocols—in Cycle 2. The convergence of quantitative and qualitative data indicates that the effectiveness of PBL is significantly enhanced when integrated with responsive, reflective CAR cycles and structured linguistic-cognitive supports. The study concludes that embedding PBL within an adaptive CAR process fosters a synergistic environment where authentic problem-solving motivates communication, and deliberate scaffolding transforms engagement into disciplined, critical spoken discourse, offering a replicable model for enhancing higher-order thinking in EFL contexts.

Keywords: classroom action research; critical thinking; problem-based learning

INTRODUCTION

In the contemporary educational landscape, the cultivation of critical thinking and communication skills has emerged as a central priority (Utama & Imansyah, 2022). Modern pedagogy recognizes that education's core mission extends beyond content delivery to fostering students' holistic intellectual, emotional, and social development, equipping them to become discerning and articulate citizens in a complex world (Rahmawati et al., 2021). This shift is a direct response to the demands of a global knowledge-based economy, where success increasingly depends on competencies in logical analysis, evidence-based reasoning, and persuasive expression across diverse contexts.

Despite this consensus, a significant pedagogical gap persists in many educational settings, including Indonesia. Traditional, teacher-centered instructional models, which often prioritize rote memorization and standardized testing, continue to dominate classrooms (Al-Shehri & Alaudan, 2024). These approaches inherently limit student agency and opportunities

for authentic intellectual engagement, thereby stifling the development of the very higher-order cognitive and communicative skills required for the 21st century (Kivunja, 2014).

In response, innovative and student-centered pedagogies like Problem-Based Learning (hereafter PBL) have gained substantial empirical support. PBL is an instructional methodology that actively engages learners in solving complex, real-world (or simulated) problems, typically within collaborative groups (Savery, 2015). This framework positions learning as an active process of inquiry, requiring students to critically analyze information, synthesize knowledge, and collaboratively construct solutions, thereby naturally fostering deep cognitive engagement and collaborative skills (Hmelo-Silver, 2014).

Within the specific domain of English as a Foreign Language (hereafter EFL) education, PBL offers a transformative potential for speaking instruction. Conventional EFL classrooms frequently emphasize grammatical accuracy and scripted dialogues, which can inadvertently inhibit communicative fluency and confidence (Richards, 2017). PBL, by contrast, creates a genuine, context-driven need for communication. Students use English as a tool to define problems, negotiate meaning, and justify solutions, thereby developing speaking competence through purposeful and meaningful discourse that enhances both linguistic resources and communicative strategic competence (Ansarian & Teoh, 2018).

English speaking is essential in English language learning, especially learning EFL context like Indonesia (Oktavia, 2025). Due to the central role of speaking skill and its escalating demands of instruction in various levels of education in Indonesia, a myriad of teaching approaches and strategies have been applied to equip learners with the competences enabling the development of this skill (Syarifudin 2019). It enables learners to express their ideas, thoughts, and opinions clearly and effectively in real-life communication. Despite its importance, speaking English is challenging for students, so they keep trying to master it well. Most of senior high school students have problems with confidence, fluency, pronunciation, and vocabulary when expressing themselves in English.

The local context for this study is Global Madani Senior High School, where a significant gap has been observed between students' analytical knowledge of English and their ability to deploy it critically in authentic discourse—such as constructing reasoned arguments, evaluating perspectives, and solving problems through dialogue. This disconnects between declarative linguistic knowledge and procedural critical use underpins the institutional need to enhance both critical thinking and speaking proficiency in an integrated manner (Hidayatullah & Magdalena Sidabalok, 2024). Current instructional practices, while effective in building foundational knowledge, often reflect a more conventional approach that can separate linguistic form from communicative function (Setyarini & Ling, 2019). Consequently, students may possess grammatical knowledge but demonstrate hesitancy or underdeveloped skills in unstructured, critical spoken discourse, highlighting a gap between language knowledge and language use for critical purposes (Hung, 2016).

While international literature robustly supports PBL's efficacy in fostering critical thinking (Paçaci, 2022), and regional studies in Indonesia affirm its positive impact on general learning outcomes (Saputro et al., 2020), its targeted application and measurable impact within the Indonesian senior high school EFL *speaking* classroom remain relatively underexplored. The unique sociocultural and educational dynamics of this context necessitate localized investigation to understand the specific mechanisms and adaptations required for successful implementation (Thị & Phụng, 2020).

To conduct this localized investigation, the study adopts a CAR framework. CAR is characterized by its iterative, reflective cycles of Planning, Acting, Observing, and Reflecting (Kemmis et al., 2014). This methodology is particularly suitable as it empowers the practitioner-researcher to implement PBL interventions directly within their classroom, observe immediate effects on student learning and interaction, and make responsive, data-

informed refinements in subsequent cycles, ensuring the approach is contextually sensitive and pedagogically sustainable (Delisle, 2018).

The CAR process will unfold over multiple, systematic cycles. The planning phase for each cycle involves designing authentic, engaging problem scenarios aligned with the curriculum and student interests. During the action phase, students collaboratively engage in problem analysis, research, discussion, and solution presentation in English. Meticulous observation, using tools like observation checklists, field notes, and audio recordings, will focus on manifestations of critical thinking (e.g., posing probing questions, evaluating sources, constructing logical arguments) within students' spoken interactions. The subsequent reflective phase will critically analyze this data to inform the planning of the next, refined intervention cyclem (Emaliana, 2017).

The findings of this CAR study are anticipated to yield dual contributions. Theoretically, it will enrich the nascent body of literature on innovative, student-centered learning models within the Indonesian secondary EFL context, providing a nuanced, empirical account of integrating PBL to bridge critical thinking and speaking skills (Siregar et al., 2025). Practically, it will offer EFL educators a reflective, tested model and actionable strategies for designing speaking activities that synergistically develop cognitive and communicative competencies, moving beyond traditional, form-focused drills.

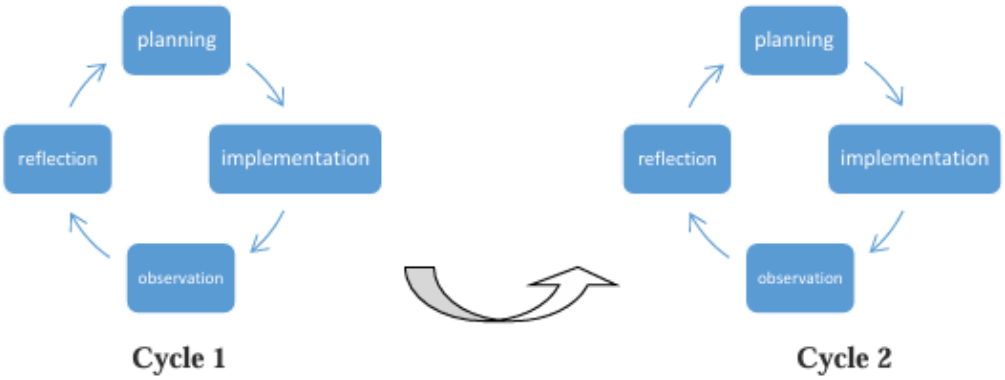
In conclusion, this CAR project aims to empirically investigate how a purposefully integrated PBL approach can enhance critical thinking manifested in speaking among students at Global Madani Senior High School. By embedding meaningful language use within the authentic cognitive and social process of collaborative problem-solving, the study seeks to transform EFL instruction into a more dynamic, reflective, and student-empowering experience. The ultimate goal is to foster learners who are not only more proficient English speakers but also agile, critical thinkers prepared for future academic and professional discourse.

METHODOLOGY

This study was conducted over two iterative cycles following the classical CAR model, which comprises planning, action, observation, and reflection (Magdalena et al., 2017). This methodology was selected for its alignment with the study's goal: not merely to measure an outcome, but to understand, adapt, and optimize the implementation of PBL to enhance students' critical thinking in speaking within a specific local setting.

The research was conducted at Global Madani Senior High School in Bandar Lampung during the 2024/2025 academic year. The population consisted of all eleventh-grade students, two classes: XI-1 (21 students) and XI-2 (18 students), totaling 39 students. Following the purposive sampling principle common in CAR, Class XI-1 was selected as the research sample. This decision was made collaboratively with the class's English teacher based on several criteria: (1) the class represented an average academic profile within the grade level, avoiding extreme high or low performers, which increases the practical relevance of the findings; (2) preliminary observations and teacher discussions identified a pronounced need for improvement in both English oral fluency and structured critical discourse; and (3) the class size and dynamics were deemed conducive to group-based PBL activities. This focused, in-depth engagement with a single class is a hallmark of CAR, prioritizing depth of understanding and contextual responsiveness over broad generalizability (Thị & Phụng, 2020).

FIGURE 1. Classroom Action Research cycles



The CAR was executed over two complete cycles, each comprising four interconnected stages as illustrated in Figure 1. Prior to Cycle 1, preliminary study was conducted, involving classroom observation and a diagnostic speaking assessment (pre-test) to establish a baseline of students' critical thinking abilities in spoken English.

CYCLE 1

Planning: Based on the preliminary data, the researcher designed a PBL module centered on a real-world, age-appropriate problem. Detailed lesson plans were created, incorporating group work stages (problem identification, research, solution formulation, presentation). Assessment tools, including an analytic rubric for critical thinking in speaking and observation sheets, were developed.

Action: The PBL module was implemented over two 90-minute sessions. The researcher, acting as the teacher-facilitator, introduced the problem, guided group discussions, and provided linguistic support while minimizing direct intervention in the problem-solving process.

Observation: Data were collected using the observation sheets (noting participation levels, interaction patterns, and use of critical thinking indicators).

Reflection: A critical analysis of the collected data revealed key successes and challenges. While some students engaged actively, major issues were identified: uneven group participation, reliance on superficial arguments, and difficulty in structuring logical spoken discourse. These insights directly informed the planning of Cycle 2.

CYCLE 2

Planning: To address the shortcomings from Cycle 1, the intervention was refined with enhanced scaffolding strategies. These included: (a) introducing explicit "thinking frameworks" (e.g., "What is your claim? What is your evidence? What is your reasoning?") as guided worksheets; (b) implementing structured peer feedback sessions using the assessment rubric; and (c) incorporating mini-lessons on logical connectors for argumentation.

Action: The revised PBL module (on a new but thematically linked problem) was implemented over another two sessions, with the teacher-facilitator more actively modeling questioning techniques and monitoring the use of scaffolding tools.

Observation & Reflection: Data collection methods remained consistent, with added focus on tracking the use of scaffolds and the quality of peer feedback. The reflection at the end of Cycle 2 focused on evaluating the effectiveness of the refinements and synthesizing overall learning from the two cycles. A post-test was administered to gauge development.

DATA COLLECTION TECHNIQUES AND INSTRUMENTS

A triangulation of data sources was employed to ensure validity and a comprehensive understanding of the intervention's impact.

1. Tests: A pre-test and post-test were administered. These tests required students to deliver a short, impromptu spoken argument in response to a prompt. Performances were scored using the validated analytic rubric focusing on critical thinking components.
2. Observation: Structured observation sheets were used by the researcher and a colleague to record quantitative data (e.g., frequency of student questions, use of evidence).
3. Recording: Audio-visual recordings of group work and presentations provided a rich, verbatim record for in-depth analysis of spoken discourse and interaction patterns.
4. Documentation: Student artifacts, including group notes, mind maps, and presentation slides, were collected. Additionally, student reflective journals provided insight into students' metacognitive awareness of their own thinking and speaking processes.

DATA ANALYSIS

Data analysis was conducted through a quantitative analysis. Scores from the pre-test and post-test were analyzed statistically using IBM SPSS Statistics 25. A paired-sample t-test was conducted to determine whether there was a statistically significant difference in the mean critical thinking scores before and after the two-cycle PBL intervention. This analysis provided objective evidence of the intervention's outcome on student performance. By integrating this robust, iterative CAR design with systematic data collection, the study not only assesses the effect of PBL on critical thinking in speaking but, more importantly, provides a detailed, contextualized account of the process the challenges, adaptations, and practical insights crucial for replicating and refining the approach in similar EFL environments.

Data from observations, journals, recordings, and researcher reflections were analyzed thematically. The process involved transcribing, coding, and categorizing data to identify emerging themes related to challenges, student responses, and the effectiveness of specific PBL and scaffolding strategies (Aspers & Corte, 2019). This analysis provided the narrative of the pedagogical journey.

RESULT AND DISCUSSION

This study was conducted over two iterative cycles of CAR, following the plan-act-observe-reflect model with 21 eleventh-one grade students, to investigate the integration of PBL with targeted scaffolds to enhance critical speaking.

CYCLE 1

1. Planning: The initial plan was designed to introduce a PBL framework. The objective was to create an authentic, collaborative need for communication, moving students beyond rote speaking into more meaningful discourse.
2. Action/Implementation: The PBL method was implemented. Students worked in small groups to tackle real-world issues, resulting in high engagement and energetic classroom discussions.
3. Observation: Data from speaking assessments, presentations, and student journals were collected. The observations revealed a key gap: while engagement was high, the students' speaking outputs were often unstructured. Their presentations resembled lists of ideas rather

than coherent arguments, and they struggled to build logical, evidence-based reasoning. The initial average speaking score was 50.71.

4. Reflection: Analysis of Cycle I data indicated that the PBL framework successfully created motivation and a need to communicate. However, it was insufficient on its own. Students lacked the explicit, structured support ("the how") to translate collaborative brainstorming into cogent, critical individual speech. This reflection informed the revised plan for Cycle 2.

CYCLE 2

1. Planning: Based on the reflection from Cycle 1, the plan was refined to integrate specific linguistic-cognitive scaffolds within the PBL structure. Key interventions included: (a) "Claim-Evidence-Reasoning" (CER) graphic organizers, (b) teacher "think-aloud" modeling of argument construction, and (c) structured peer feedback sessions guided by the speaking rubric.
2. Action/Implementation: The redesigned lessons were implemented. Students used the CER templates to prepare their arguments, observed teacher modeling, and participated in structured peer review.
3. Observation: In this cycle, observation noted a qualitative shift in classroom discourse. Students began using meta-cognitive language (e.g., "What is your claim?" "Can you provide evidence?"). Their final presentations demonstrated improved organization, clearer claims, and more deliberate use of evidence. Quantitatively, the post-test average speaking score rose significantly to 81.90.
4. Reflection: The triangulation of data—significant score gains, improved observational notes, and positive student feedback—confirmed that the integration of PBL with targeted scaffolds was effective. The combination provided the engaging context ("the why") and the necessary procedural support ("the how"). One student's reflection, *"Before, I just talked. Now, I think about how to build my talk so people will really believe my idea,"* encapsulated this development of a more critical and structured voice.

TABLE 1. Independent sample T Test pretest

Group Statistics

	Class	N	Mean	Std. Deviation	Std. Error Mean
Pretest	1	21	50.7143	11.75646	2.56547
	2	18	56.6667	10.28992	2.42536

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Pretest	Equal variances assumed	.815	.373	-1.668	37	.104	-5.95238	3.56757	-13.18096	1.27619
	Equal variances not assumed			-1.686	36.977	.100	-5.95238	3.53044	-13.10588	1.20112

TABLE 2. Independent sample T Test posttest

Group Statistics

	Class	N	Mean	Std. Deviation	Std. Error Mean
Posttest	1	21	81.9048	26.00366	5.67446
	2	18	71.7647	29.20516	7.08329

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Posttest	Equal variances assumed	.045	.833	1.131	36	.265	10.14006	8.96310	-8.03795	28.31806
	Equal variances not assumed			1.117	32.438	.272	10.14006	9.07593	-8.33722	28.61733

TABLE 3. Paired sample T-Test control class

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Posttest	72.2222	18	28.39958	6.69384
	Pretest	56.6667	18	10.28992	2.42536

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Control Class Post - Control Class Pre	15.55556	27.05598	6.37716	2.10093	29.01018	2.439	17	.026

TABLE 4. Paired Sample T-Test Experimental Class

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Posttest	81.9048	21	26.00366	5.67446
	Pretest	50.7143	21	11.75646	2.56547

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Experimental Study Post - Experimental Study Pre	31.19048	25.83141	5.63688	19.43216	42.94879	5.533	20	.000

TABLE 5. Difference

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Difference	1	18	15.5555	27.055	6.337
	2	21	31.1904	25.831	5.636

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Difference	Equal variances assumed	21.247	.000	-3.861	37	.000	-15.635	6.537	-38.483	-11.993
	Equal variances not assumed			-4.090	26.918	.000	-15.635	6.171	-37.902	-12.574

The discussion of these findings highlights how the iterative nature of CAR allowed for continuous refinement of teaching strategies, making PBL more accessible and effective for students. The increase in scores corresponds with observed growth in students' confidence, logical reasoning, and ability to articulate complex ideas in English. This suggests that PBL,

when implemented through a reflective and adaptive CAR framework, can effectively enhance both critical thinking and speaking competence in an EFL context.

CYCLE 1

PLANNING

In the initial planning phase for Cycle 1, the researchers, in collaboration with the classroom teacher, designed a PBL module aimed at enhancing critical thinking in speaking. This involved selecting authentic, real-world problems relevant to the students' curriculum, preparing discussion guides, and creating assessment rubrics focused on critical discourse indicators such as argument clarity, reasoning, relevance, and use of evidence. The goal was to structure a learning environment that moved beyond traditional recitation toward analytical dialogue.

IMPLEMENTATION

The PBL module was implemented over several class sessions. Students worked in small groups to analyze the given problems, discuss possible solutions, and prepare spoken presentations of their conclusions. The teacher acted primarily as a facilitator, guiding the discussion with open-ended questions and encouraging peer-to-peer interaction rather than delivering direct instruction.

OBSERVATION

During the implementation, observational data were collected through field notes and audio recordings of group discussions. It was noted that while students were engaged by the problem scenarios, many struggled to articulate logical arguments or use English persuasively. Participation was uneven, with more confident students dominating conversations. The pre-test administered prior to the cycle yielded an average score of 50.71, quantitatively supporting the observed need for intervention in structured critical speaking.

REFLECTION

Reflecting on Cycle 1, the researcher identified key areas for improvement. Students required more scaffolding to connect critical thinking with spoken expression—particularly in organizing ideas, building vocabulary for argumentation, and engaging in balanced group discourse. The reflection concluded that while PBL provided a promising framework, its effectiveness in this context depended on greater instructional support and structured practice in constructing and delivering arguments.

CYCLE 2

PLANNING

Informed by the reflections from Cycle 1, the planning for Cycle 2 incorporated targeted scaffolds to address observed difficulties. The revised plan included explicit modeling of argument structures, the introduction of sentence stems for academic discussion, structured peer feedback protocols, and mini-lessons on persuasive vocabulary. Problem scenarios were also refined to increase personal relevance and stimulate deeper emotional and cognitive engagement.

IMPLEMENTATION

Cycle 2 was executed with these enhanced supports in place. The teacher began sessions with short modeling demonstrations, after which students practiced constructing arguments using guided frameworks. Peer feedback sessions were formally integrated, allowing students to critique and refine each other's reasoning and delivery. The facilitator's role evolved to include more proactive prompting for evidence and reasoning during discussions.

OBSERVATION

Observations during Cycle 2 revealed marked improvements. Students demonstrated greater confidence and participation equity within groups. Their spoken arguments were more coherent, better supported with reasons, and used a wider range of linking and evaluative language. The post-test average of 81.90 provided strong quantitative evidence of growth, and observational notes corroborated this with accounts of more nuanced and critical classroom dialogue.

REFLECTION

The final reflection confirmed that the iterative, responsive nature of the action research process was crucial to achieving the outcomes. The adjustments made between cycles—particularly in scaffolding argumentation and formalizing peer feedback—directly addressed the initial barriers to critical speaking. The researcher concluded that PBL, when deliberately adapted through classroom-based reflection and refinement, can significantly enhance both the quality of critical thinking and the fluency of spoken expression in EFL learners.

CONCLUSION AND RECOMMENDATION

This journey in the classroom began with a practical question from dedicated teachers: How do we help our students not just speak English, but think critically as they speak? The two cycles of action research with my 21 students provided a powerful answer. We discovered that the true magic doesn't lie solely in the engaging problems of PBL or in the careful reflection of CAR, but in their intentional union. PBL ignited my students' motivation, giving them a real 'why' to communicate. The CAR process, however, gave us, the teachers, the 'how' a reflective compass to listen, diagnose their specific struggles with structuring arguments, and responsively provide tools like reasoning templates and peer feedback. This synergy transformed our classroom. We moved from simply implementing a method to co-creating a learning environment where each cycle of teaching was informed by the evidence from the last. The significant leap in their speaking scores is a testament not just to a technique, but to this adaptive, student-centered process. For fellow educators, our experience offers a hopeful blueprint: sustainable improvement in complex skills like critical speaking is achievable through this integrated, reflective approach. It empowers teachers to be inquirers in their own classrooms, systematically tailoring instruction to student needs. Looking ahead, we are curious to see if the structured voice our students found persists over time and transfers to other subjects. We encourage other teacher-researchers to adapt this CAR-PBL model in different contexts, to continue exploring how we can best equip every student with the confidence and clarity to build their ideas into powerful speech.

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