

**THE EFFECT OF IMPLEMENTING THE PROBLEM-BASED LEARNING
(PBL) MODEL ON ENHANCING STUDENTS' ACTIVE PARTICIPATION
AND CRITICAL THINKING SKILLS**

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ABSTRACT

This study investigates the implementation of Problem-Based Learning (PBL) to enhance the micro-cognitive critical thinking processes of vocational students during the pre-writing and drafting phases of English for Specific Purposes (ESP) instruction. Conventional language instruction often isolates learning from authentic vocational contexts, triggering severe difficulties in translating technical ideas into structured texts. Addressing this empirical gap, a qualitative case study was conducted with tenth-grade students in the Agribusiness of Agricultural Product Processing (APHP) program at SMKN 1 Kotaraja. Data gathered through classroom observations, writing artifacts, and retrospective interviews from 32 participants, including six focal students, were analyzed using an interactive qualitative framework. The findings demonstrate that authentic agribusiness problem scenarios embedded within the PBL syntax effectively stimulate Facione's core critical thinking indicators—interpretation, analysis, evaluation, and inference. Students successfully deconstructed complex agricultural issues, managed cognitive loads collaboratively, and produced coherent argumentative texts. Theoretically and practically, this study proves that integrating PBL into ESP instruction bridges the gap between vocational problem-solving and professional language proficiency, offering a validated pedagogical blueprint for modern vocational education.

Keywords: Agricultural Product Processing, Critical Thinking, English for Specific Purposes (ESP), Problem-Based Learning (PBL), Vocational Education

ABSTRAK

Penelitian ini menginvestigasi penerapan model *Problem-Based Learning* (PBL) untuk meningkatkan proses berpikir kritis mikro-kognitif siswa vokasi selama fase pra-penulisan dan penyusunan draf dalam pembelajaran *English for Specific Purposes* (ESP). Pembelajaran bahasa konvensional sering kali mengisolasi pembelajaran dari konteks vokasi yang otentik, memicu kesulitan besar dalam menerjemahkan gagasan teknis ke dalam teks yang terstruktur. Untuk mengatasi kesenjangan empiris ini, studi kasus kualitatif dilakukan pada siswa kelas X program keahlian Agribisnis Pengolahan Hasil Pertanian (APHP) di SMKN 1 Kotaraja. Data yang dikumpulkan melalui observasi kelas, artefak tulisan, dan wawancara retrospektif dari 32 partisipan, termasuk enam siswa fokus, dianalisis menggunakan kerangka kualitatif interaktif. Temuan menunjukkan bahwa skenario masalah agribisnis otentik yang disematkan dalam sintaks PBL secara efektif menstimulasi indikator inti berpikir kritis Facione—interpretasi, analisis, evaluasi, dan inferensi. Siswa berhasil mendekonstruksi isu-isu pertanian yang kompleks, mengelola beban kognitif secara kolaboratif, dan menghasilkan teks argumentatif yang koheren. Secara teoretis dan praktis, penelitian ini membuktikan bahwa pengintegrasian PBL ke dalam pembelajaran ESP menjembatani kesenjangan antara pemecahan masalah vokasi dan kemahiran bahasa profesional, sekaligus menawarkan cetak biru pedagogis yang valid untuk pendidikan vokasi modern.

Kata Kunci: Agribisnis Pengolahan Hasil Pertanian, Berpikir Kritis, English for Specific Purposes (ESP), Pendidikan Vokasi, Problem-Based Learning (PBL)

A. INTRODUCTION

In the modern educational landscape, mastering English writing skills and critical thinking is an absolute prerequisite for navigating the challenges of 21st-century global communication. Writing is not merely

the mechanical act of transcribing linguistic forms, but rather a complex cognitive problem-solving process that involves organizing and synthesizing ideas logically. Within the context of vocational education, particularly for tenth-grade students of the Agribusiness of Agricultural Product

Processing (APHP) program, this skill adapts crucially into English for Specific Purposes (ESP). Students are no longer merely expected to write basic narrative texts; instead, they are challenged to accurately formulate and articulate specific vocational issues—such as food safety standards, biochemical post-harvest deterioration, and agribusiness supply chain efficiency—in English.

Despite the high urgency for vocational literacy, conventional language classroom instruction often isolates learning from meaningful contexts, forcing students to merely memorize generic text patterns without engaging their reasoning capacities. This phenomenon leads to low metacognitive awareness, triggering severe difficulties during the translation of ideas into structured sentences, particularly within the pre-writing and drafting phases. Consequently, the produced texts frequently lack logical coherence and fail to integrate empirical vocational evidence. A review of previous literature indicates that prior research remains heavily focused on general news texts, macro-level vocational subjects, or university students. There

is a substantial empirical gap regarding how micro-level cognitive mechanisms operate when vocational high school students are confronted with authentic agribusiness dilemmas during English text production.

To address this pedagogical stagnation and research gap, there is a compelling urgency to implement a dynamic, problem-centered framework: Problem-Based Learning (PBL). Practically, PBL serves a crucial function in alleviating writing anxiety by shifting the individual cognitive load toward collaborative investigation. Through exposure to authentic agribusiness problems, students are systematically facilitated to map technical ESP vocabulary and resolve real-world dilemmas before drafting. Scientifically, the syntax of PBL inherently compels students to manifest core critical thinking indicators—namely interpretation, analysis, evaluation, and inference—as they construct written argumentation. This integration transforms the classroom from an arena of passive information transmission into a process of active inquiry that stimulates students' intellectual capacities.

Building upon this theoretical foundation and empirical phenomenon, this qualitative research specifically pursues two primary objectives. First, the study aims to explore how the Problem-Based Learning (PBL) model is implemented to guide the critical thinking skills of tenth-grade APHP students at SMKN 1 Kotaraja, specifically during the pre-writing and drafting phases of English text production. Second, this research seeks to identify which specific critical thinking indicators are concretely manifested within the students' English written works as they respond to and resolve authentic agribusiness problems.

Through the achievement of these objectives, this article is expected to provide a measurable contribution to the advancement of knowledge, particularly in enriching the literature on English pedagogy and English for Specific Purposes (ESP). Theoretically, the findings of this study demonstrate a strong cognitive correlation between contextual problem-solving processes and the enhancement of analytical writing skills in a vocational setting. Practically, this research provides

empirical guidelines for language educators to design writing tasks that intellectually stimulate students' vocational competencies, while simultaneously reinforcing the vision of vocational high schools as Centers of Excellence that produce globally communicative and critical graduates.

B. METHODS

This study adopted a qualitative case study research design to examine the micro-cognitive processes of critical thinking during the pre-writing and drafting phases of English for Specific Purposes (ESP) instruction under a Problem-Based Learning (PBL) framework. A qualitative case study approach was selected because it enables an in-depth, contextual investigation of complex cognitive maneuvers, linguistic behaviors, and problem-solving strategies within a natural vocational classroom setting (Creswell & Creswell, 2018).

The research was conducted at SMKN 1 Kotaraja during the 2025/2026 academic year. The target population comprised tenth-grade students enrolled in the Agribusiness of Agricultural Product Processing (APHP) major. Using purposive

sampling, one intact class of 32 students was selected based on their enrollment in the core ESP module and exposure to authentic agribusiness problem scenarios. To capture nuanced cognitive variations, six focal students representing high, medium, and low writing achievement levels were selected for close qualitative tracking during task execution.

Data were collected using three complementary qualitative instruments: observation protocols, student writing artifacts, and semi-structured retrospective interviews. Classroom observations were conducted across PBL cycles to document collaborative problem-solving and reasoning behaviors. Writing artifacts—specifically initial pre-writing outlines and first complete drafts—were gathered to trace cognitive progression. These artifacts were evaluated using an analytical rubric synthesizing Facione's (1990) critical thinking indicators (interpretation, analysis, evaluation, and inference) and Brown's (2004) ESP writing components. Retrospective interviews were administered immediately after

drafting sessions to uncover students' underlying decision-making processes and language translation challenges. Data trustworthiness was established through method and source triangulation, peer debriefing, and member checking (Miles et al., 2014).

Data analysis followed the interactive qualitative model of Miles, Huberman, and Saldaña (2014), comprising data condensation, data display, and conclusion drawing/verification. Qualitative data from observation transcripts, writing samples, and interview records were systematically categorized using a deductive-inductive coding scheme. The deductive framework was anchored in Facione's (1990) four critical thinking dimensions, while inductive codes captured emerging themes related to writing anxiety and ESP lexical acquisition. Data patterns were synthesized to illustrate how students translated agribusiness problem analyses into coherent written English arguments.

C. RESULTS AND DISCUSSION

Results

The analysis of classroom observations, student writing artifacts, and retrospective data revealed how the Problem-Based Learning (PBL) syntax maneuvered the cognitive dimensions of the tenth-grade Agribusiness of Agricultural Product Processing (APHP) students during the ESP writing process. The findings are categorized based on the manifestation of Facione's (1990) critical thinking indicators during the pre-writing and drafting phases.

First, during the problem orientation phase, the qualitative data indicated a significant shift in students' cognitive engagement. When presented with authentic agribusiness anomalies involving post-harvest biochemical degradation and food preservation failures, the focal students demonstrated the ability to systematically deconstruct the problem. Writing artifacts from the pre-writing phase showed that all six focal students successfully mapped the causal relationships of the food spoilage issue using appropriate ESP technical vocabulary and structured conceptual outlines.

Second, during the collaborative drafting phase, students successfully transitioned from problem analysis to the formulation of argumentative texts. The retrospective analysis highlighted that collaborative group dynamics acted as a robust cognitive scaffold. As students translated their mapped ideas into English sentences, they actively evaluated the logical flow, syntactic coherence, and lexical precision of their writing. Rather than relying on literal translation, the final drafts exhibited a structured progression from factual premises regarding agricultural processing parameters to logical conclusions, indicating the successful execution of inferential reasoning within a foreign language context.

Discussion

The findings substantiate the premise that producing ESP texts in a vocational setting extends beyond mechanical translation; it operates as a complex, dialectical problem-solving activity. The manifestation of critical thinking indicators aligns with Facione's (1990) theoretical framework, confirming that PBL initiates an

active reasoning process. By positioning the language as a tool to resolve authentic agribusiness dilemmas, students were compelled to employ interpretation and analysis logically before structuring their linguistic output.

Furthermore, these results corroborate and extend the findings of prior studies (e.g., Nguyen & Hsia, 2024; Fitriyah et al., 2024). While previous literature emphasized the role of PBL in reducing writing anxiety and structuring general narrative texts, the current study situates this phenomenon within a highly specific vocational context. The empirical evidence demonstrates that the cognitive load inherent in ESP writing—particularly the translation phase identified as a major barrier by Krisna et al. (2024)—is effectively mitigated through group investigation and structured evaluation in PBL. The authentic context of agricultural product processing transformed abstract grammatical exercises into meaningful professional communication.

Theoretical and Practical Contributions

Theoretically, this study bridges the empirical void in ESP pedagogy by explicitly mapping microscopic cognitive mechanisms (interpretation, analysis, evaluation, and inference) onto the pre-writing and drafting phases. Practically, the findings offer a validated instructional blueprint for vocational educators, suggesting that integrating authentic, major-specific problems into language instruction not only accelerates lexical acquisition but also cultivates the enduring professional reasoning required in the modern agribusiness industry.

D. CONCLUSION

This study concludes that integrating Problem-Based Learning (PBL) into English for Specific Purposes (ESP) instruction significantly enhances the micro-cognitive processes of vocational students within the Agribusiness of Agricultural Product Processing (APHP) program. The findings demonstrate that authentic agribusiness problem scenarios effectively stimulate critical thinking indicators—specifically interpretation, analysis, evaluation, and inference—

during the crucial pre-writing and drafting phases. Rather than treating language acquisition as a mechanical translation task, the structured PBL syntax empowers students to deconstruct complex technical issues, manage cognitive loads collaboratively, and produce structured argumentative texts.

The implications of these findings extend to both educational theory and vocational practice. Theoretically, this research reinforces the alignment between cognitive problem-solving frameworks and second language acquisition, proving that critical thinking is an integral mechanism of vocational literacy. Practically, the study provides educators with a robust instructional blueprint, demonstrating

REFERENCES

- Abidin, Z., & Sulaiman, S. (2024). Transforming problem-solving into long-lasting cognitive habits through problem-based learning. *Journal of Vocational and Technical Education*, 12(2), 145–158.
- Barrows, H. S. (1996). Problem-based learning in medicine and beyond: A brief overview. *New Directions for Teaching and Learning*, 1996(68), 3–12.
- Facione, P. A. (1990). *Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction*. The California Academic Press.
- Fitriyah, I. M., & Ghofur, M. A. (2024). Instructional design of problem-based learning to enhance critical thinking skills in text production. *Journal of Education and Learning*, 15(3), 230–245.
- Latifah, A., Rahayu, S., & Pratama, M. (2025). Integrating problem-based learning in vocational education: Bridging the classroom and work readiness. *Vocational Education Research Journal*, 18(1), 89–104.
- Albiladi, W. S. (2023). The effect of problem-based learning on EFL students' critical thinking and writing skills. *Journal of Language Teaching and Research*, 14(2), 345–353.
- Astuti, S. D., & Widiati, U. (2023). Problem-based learning in vocational English classrooms: Fostering critical thinking and writing performance. *Indonesian Journal of Applied Linguistics*, 13(1), 88–99.

- Fitriyah, L., et al. (2024). Integrating problem-based learning in vocational writing instruction: Cognitive impacts and student engagement. *Journal of Vocational Language Teaching*, 12(2), 112–125.
- Flowerdew, J., & Malmkjær, K. (Eds.). (2022). *The Routledge handbook of English for academic and specific purposes*. Routledge.
- Krisna, A., et al. (2024). Addressing translation barriers in ESP writing among agricultural vocational students. *Asian Journal of English Language Pedagogy*, 15(1), 45–60.
- Nation, I. S. P., & Macalister, J. (2021). *Language curriculum design* (2nd ed.). Routledge.
- Nguyen, T. H., & Hsia, Y. C. (2024). Scaffolding cognitive load in project- and problem-based language learning environments. *System*, 120, Article 103214.
- Wang, Y., & Chen, X. (2022). Enhancing critical thinking in ESP writing through problem-based learning frameworks. *English for Specific Purposes*, 68, 45–58.
- Zhu, W., & Flaitz, J. (2021). Using problem-based learning to teach professional writing in vocational contexts. *Journal of Vocational Education & Training*, 73(3), 412–435.