

Teaching English for Specific Purposes through Content-Based Instruction in Food Security Terminology: Effects on Indonesian EFL Students' Writing

Syafrizal,^{1,*} Nurhaedah Gailea⁽²⁾, John Pahamzah⁽³⁾, Andri Kurniawan⁽⁴⁾.,

^{1,2,3}Department of English Education, Faculty of Teacher Training and Education, Universitas Sultan Ageng Tirtayasa, Banten, Indonesia

*Corresponding e-mail: syafrizal@untirta.ac.id⁽¹⁾, nurhaedahgailea@untirta.ac.id⁽²⁾, John Pahamzah@untirta.ac.id⁽³⁾, andri.kurniawan@unis.ac.id⁽⁴⁾.

Received: date month year

Accepted: date month year

Online Published: date month year

Abstract: Teaching English for Specific Purposes through Content-Based Instruction in Food Security Terminology: Effects on Indonesian EFL Students' Writing. Objectives: This study examined the effects of content-based instruction (CBI) using food-security terminology and learner creativity on university EFL writing. Methods: A quasi-experimental 2×2 factorial design involved 80 students selected by cluster random sampling. One class received CBI and the other problem-based learning (PBL). Writing and creativity data were analyzed using descriptive statistics, assumption tests, two-way ANOVA, and Tukey comparisons. Findings: CBI produced a higher overall mean than PBL (70.98 vs. 67.40), and highly creative students outperformed students with lower creativity (75.75 vs. 67.50). Cell means showed an interaction: CBI-high = 77.10, PBL-high = 64.50, CBI-low = 64.80, and PBL-low = 70.30. Conclusion: Authentic food-security content can strengthen ESP writing, but differentiated scaffolding is needed because the relative effectiveness of CBI and PBL varies across creativity levels.

Keywords: content-based instruction; English for specific purposes; food security; EFL writing; learner creativity

Abstrak: Teaching English for Specific Purposes through Content-Based Instruction in Food Security Terminology: Effects on Indonesian EFL Students' Writing. Tujuan: Penelitian ini menguji pengaruh pembelajaran berbasis konten (content-based instruction/CBI) dengan terminologi ketahanan pangan dan kreativitas terhadap kemampuan menulis mahasiswa EFL. Metode: Penelitian kuasi-eksperimental menggunakan desain faktorial 2×2 dengan 80 mahasiswa yang dipilih melalui cluster random sampling. Satu kelas memperoleh CBI dan kelas lain memperoleh problem-based learning (PBL). Data menulis dan kreativitas dianalisis dengan statistik deskriptif, uji prasyarat, ANOVA dua arah, dan uji Tukey. Temuan: Rata-rata CBI lebih tinggi daripada PBL (70,98 berbanding 67,40), sedangkan mahasiswa berkegiatan tinggi mengungguli mahasiswa berkegiatan rendah (75,75 berbanding 67,50). Rata-rata sel menunjukkan interaksi: CBI-tinggi = 77,10; PBL-tinggi = 64,50; CBI-rendah = 64,80; dan PBL-rendah = 70,30. Kesimpulan: Konten autentik ketahanan pangan dapat memperkuat pembelajaran menulis ESP, tetapi diferensiasi dukungan diperlukan karena efektivitas relatif CBI dan PBL berbeda menurut tingkat kreativitas.

Kata kunci: pembelajaran berbasis konten; bahasa Inggris untuk tujuan khusus; ketahanan pangan; menulis EFL; kreativitas peserta didik

To cite this article:

Syafrizal, S. (Year). Teaching English for Specific Purposes through Content-Based Instruction in Food Security Terminology: Effects on Indonesian EFL Students' Writing. *Jurnal Pendidikan Progresif*, Vol(No), page–page. <https://doi.org/10.23960/jpp.v?.i?.year??>

■ INTRODUCTION

English for Specific Purposes (ESP) is designed around learners' need to use English within a particular academic, occupational, or professional domain. In university EFL settings, ESP instruction is therefore expected to develop language competence while simultaneously enabling students to engage with disciplinary knowledge. Food security is a relevant content domain because it connects language learning with current concerns involving climate variability, population growth, environmental degradation, poverty, conflict, and economic disruption. Studies of university populations have shown that food insecurity is not only a social and nutritional issue but also an educational concern that can affect students' participation and academic experience (Eche & Hernández-Herrera, 2018). Forecasting and communicating food-security risks are also essential for timely and informed action (Westerveld et al., 2021).

The integration of food-security terminology into English instruction gives students access to vocabulary, concepts, and communicative practices that are socially meaningful. Instead of learning isolated words or decontextualized grammatical forms, students can read, discuss, and write about topics such as food availability, access, utilization, sustainability, and vulnerability. This orientation is consistent with content-based instruction (CBI), an approach in which target-language development occurs through sustained engagement with meaningful subject matter. CBI positions language as a medium for learning and communication rather than as the sole object of instruction (Nurjannah et al., 2020).

CBI supports contextualized learning because linguistic forms are encountered within coherent discourse. Learners are expected to establish connections between prior knowledge, new content, and the language required to communicate that content. Authentic or adapted materials can stimulate interest and encourage participation when they correspond to students' proficiency and learning needs. Research has also shown that technology-enhanced and thematically organized CBI can strengthen engagement in EFL writing because students work with information that is purposeful and relevant (Sariani et al., 2022). In addition, CBI encourages active learning through peer interaction, negotiation of meaning, questioning, and collaborative construction of knowledge (Jaelani, 2017).

Problem-based learning (PBL) offers a related but distinct instructional orientation. It begins with a problem that learners investigate collaboratively, with the teacher acting as a facilitator. PBL may foster autonomy, problem solving, and professional learning, particularly when students are prepared to assume responsibility for group inquiry (Al-Busaidi, 2021). However, its effectiveness may depend on learners' readiness, prior knowledge, and capacity to generate and organize ideas. Creativity is consequently important in writing instruction because writing requires learners to select, develop, and structure ideas rather than merely reproduce linguistic forms. Learners with different levels of creativity may respond differently to highly structured content support and open-ended problem solving.

Previous studies have discussed CBI in EFL writing and PBL in teacher education, yet limited attention has been given to the use of food-security terminology as ESP content and to the moderating role of learner creativity in an Indonesian university context. This study addresses that gap by comparing CBI and PBL within a 2 × 2 factorial design. It examines the effect of teaching method on writing achievement, the effect of creativity level, and the interaction between teaching method and creativity. The study therefore asks whether CBI produces stronger writing outcomes than PBL,

whether highly creative learners outperform learners with lower creativity, and whether the effectiveness of each method changes across creativity levels.

■ METHOD

Research Design

The study employed a quasi-experimental factorial design with two instructional methods and two creativity levels. Teaching method consisted of content-based instruction (A_1) and problem-based learning (A_2), while learner creativity consisted of high creativity (B_1) and low creativity (B_2). The dependent variable was EFL writing achievement. The design enabled the study to test the main effect of teaching method, the main effect of creativity, and the interaction between the two independent variables.

Figure 1. The 2×2 factorial design used in the study

The Design of 2×2 ANOVA

Teaching Methods Creativity	Content-Based Instruction A_1	Problem-Based Learning A_2
High Creativity (B_1)	First group EFL Learners (A_1B_1)	Second group EFL Learners ($A_2 B_1$)
Low Creativity (B_2)	Third group EFL Learners ($A_1 B_2$)	Fourth group EFL Learners ($A_2 B_2$)

Participants and Sampling

The population comprised 120 university EFL students distributed across three intact classes (A, B, and C), with 40 students in each class. Cluster random sampling was used to select two classes, resulting in a sample of 80 students. The selected classes were randomly assigned to the instructional conditions: one class received content-based instruction and the other received problem-based learning. Each instructional group contained students categorized as having high or low creativity for the factorial analysis.

Instructional Treatments

The CBI treatment introduced food-security terminology through authentic or adapted texts. Instruction began with the activation of background knowledge and explicit attention to key vocabulary. Students then examined how food-security concepts were expressed in connected texts, discussed the information, and completed guided and independent writing tasks. The sequence moved from exposure and comprehension to language practice and written production so that students could use the terminology in meaningful contexts.

The comparison class was taught through PBL. Students worked with food-security-related problems, identified information needed to understand the problem, discussed possible explanations, and developed written responses. The teacher facilitated the inquiry process and supported language use when necessary. Both groups addressed comparable content and completed writing activities, but the organization of learning differed: CBI foregrounded systematic content and language scaffolding, whereas PBL foregrounded collaborative problem solving.

Instruments and Data Collection

Writing achievement was measured through a writing task administered after the instructional treatments. Students were given a topic and time to develop and present a

written text. Performance was evaluated in relation to vocabulary, sentence structure, organization, and contextual relevance. The clarity of task directions was checked before administration so that students could understand the expected response. Intelligibility was treated as the degree to which a reader could understand the intended message and follow the organization of the text (Derwing, 2018).

Learner creativity was measured using a printed 30-item instrument organized around six indicators, with five response options for each item. The instrument was piloted with 40 students outside the research sample to examine whether the directions and items were sufficiently comprehensible. The writing task and creativity instrument were administered to both classes using the same procedures, although the administration schedule differed between groups.

Data Analysis

The data were summarized using score ranges, means, and standard deviations. Before hypothesis testing, the distributions were examined using the Lilliefors normality test and a homogeneity test. The source analysis reported that the obtained L values were lower than the critical L value at $\alpha = .05$ and that the observed chi-square value (4.00) was lower than the critical value (7.81), supporting the assumptions required for factorial analysis. The hypotheses were then tested using two-way analysis of variance (ANOVA), followed by Tukey comparisons to examine differences among the factorial cells.

■ RESULT AND DISCUSSION

Descriptive Results

Table 1 summarizes the writing scores for each main-effect group and factorial cell. The CBI group achieved a higher overall mean than the PBL group (70.98 compared with 67.40). Students categorized as highly creative also achieved a higher mean than those categorized as having lower creativity (75.75 compared with 67.50). These descriptive differences are consistent with the reported ANOVA result that teaching method and creativity significantly influenced writing achievement.

Table 1. Descriptive statistics of EFL writing achievement

Group	Score Range	Mean	Standard Deviation
A ₁ (CBI)	53–83	70.98	8.798
A ₂ (PBL)	55–80	67.40	7.712
B ₁ (High creativity)	55–83	75.75	8.605
B ₂ (Low creativity)	53–80	67.50	7.511
A ₁ B ₁	65–83	77.10	5.236
A ₂ B ₁	55–78	64.50	6.786
A ₁ B ₂	53–75	64.80	6.973
A ₂ B ₂	58–80	70.30	7.159

Effect of Teaching Method

The overall mean difference favors CBI, indicating that systematic engagement with food-security content supported students' writing. CBI provided a coherent knowledge base and a recurring set of terms that students could draw on when generating and organizing ideas. This support is especially important in ESP writing because learners must manage both disciplinary meaning and linguistic form. When

authentic materials are selected at an appropriate level, they provide models of vocabulary use, information structure, and disciplinary discourse. The result aligns with the view that meaningful, thematically organized content can stimulate participation and strengthen EFL writing (Nurjannah et al., 2020; Sariyani et al., 2022).

The instructional sequence also appears to have reduced the burden of searching for ideas. Students first encountered relevant terminology and information, then used that content in discussion and written production. Such scaffolding enables language learning to occur within connected discourse rather than through isolated exercises. It also gives learners a reason to read and write because the language is tied to a recognizable social problem. In this respect, food security functioned not merely as a list of technical terms but as a conceptual framework for meaningful communication.

Effect of Learner Creativity

Students with high creativity achieved a substantially higher overall mean than students with low creativity. Writing requires the generation, selection, connection, and elaboration of ideas; therefore, learners who are more willing to explore alternatives and persist with challenging tasks may be better positioned to transform content knowledge into an organized text. Creativity may also support flexible vocabulary use and the ability to view a problem from multiple perspectives. These characteristics are particularly valuable when students are asked to explain causes, consequences, and possible responses to food-security issues.

Nevertheless, creativity should not be interpreted as a fixed personal advantage. Instructional design can provide external support for learners who have difficulty initiating or developing ideas. Clear models, structured prompts, vocabulary banks, collaborative planning, and staged drafting can help lower-creativity learners participate more successfully. The role of the teacher is therefore not only to identify individual differences but also to adapt task structure and scaffolding so that all students can engage with the content.

Interaction between Teaching Method and Creativity

The factorial cell means reveal an important crossover interaction. Highly creative students performed best under CBI ($M = 77.10$), whereas highly creative students in PBL obtained a lower mean ($M = 64.50$). In contrast, students with lower creativity performed better in PBL ($M = 70.30$) than in CBI ($M = 64.80$). The reported two-way ANOVA and Tukey analysis identified the interaction as significant. Consequently, the main effect favoring CBI should not be interpreted as evidence that one method is equally effective for every learner.

For highly creative learners, CBI may offer rich disciplinary input that can be expanded, reorganized, and expressed in original ways. The availability of authentic information may stimulate their curiosity without restricting the direction of their ideas. For learners with lower creativity, however, the problem structure and collaborative inquiry of PBL may provide a clearer external purpose for writing and more immediate peer support. A concrete problem can narrow the range of possible responses, making it easier to identify relevant information and organize a solution. This interpretation supports differentiated instruction rather than a uniform choice of method.

The interaction also clarifies why instructional comparisons should include learner characteristics. A method may produce a favorable overall mean while functioning differently across subgroups. Teachers can therefore combine the strengths of CBI and PBL: introduce a well-scaffolded body of food-security content, then use carefully designed problems and collaborative tasks to help students apply that content.

Such a hybrid sequence may preserve the conceptual depth of CBI while providing the task structure and social support associated with PBL.

Pedagogical Implications and Limitations

For ESP courses, food-security content can be organized into progressive units that move from terminology and reading comprehension to discussion, problem analysis, and written communication. Teachers should select authentic materials that are accurate but linguistically accessible, pre-teach essential concepts, model disciplinary text organization, and use formative feedback during drafting. Assessment should evaluate both language quality and the accurate communication of content. Because the results indicate an interaction with creativity, teachers should also vary the degree of task openness, provide optional planning supports, and use collaborative work strategically.

The findings should be interpreted within the boundaries of the study. The sample involved two intact classes from one instructional context, and the available report does not provide detailed reliability coefficients for the instruments or complete ANOVA statistics. The study also focused on post-instruction writing achievement rather than long-term retention or transfer to other ESP topics. Further research should replicate the design with larger and more diverse samples, report complete effect sizes and instrument evidence, and examine whether combined CBI–PBL sequences produce more consistent benefits across creativity levels.

■ CONCLUSION

The study demonstrates that teaching method and learner creativity jointly shape EFL writing achievement in an ESP context. Content-based instruction using food-security terminology produced a higher overall mean than problem-based learning, and highly creative students achieved stronger results than students with lower creativity. However, the crossover pattern among the factorial cells shows that instructional effectiveness depended on learner characteristics: CBI was particularly advantageous for highly creative students, while PBL appeared more supportive for students with lower creativity. The principal contribution of the study is therefore not simply the selection of one superior method, but the recognition that authentic disciplinary content should be combined with differentiated scaffolding. ESP teachers can use food-security materials to develop both language competence and social awareness while adjusting task structure, collaboration, and support to the creativity profiles of their learners.

■ ACKNOWLEDGEMENT

The author expresses appreciation to the institution, lecturers, and students who supported the implementation of the study and contributed to the completion of the research process.

■ REFERENCES

- Al-Busaidi, S. (2021). Project-based learning as a tool for student-teachers' professional development: A study in an Omani EFL teacher education program. *International Journal of Learning, Teaching and Educational Research*, 20(4), 116–136. <https://doi.org/10.26803/ijlter.20.4.7>
- Derwing, T. M. (2018). Comprehensibility. In J. I. Liontas (Ed.), *The TESOL encyclopedia of English language teaching* (pp. 1–6). Wiley.
- Eche, D., & Hernández-Herrera, M. (2018). Studying food security among students: A comparative case study between public and private universities in Quito-Ecuador. *Nutrición Hospitalaria*, 35(6), 1372–1378.

- Jaelani, S. R. (2017). Treating of content-based instruction to teach writing viewed from EFL learners' creativity. *English Language Teaching*, 10(11), 156–161. <https://doi.org/10.5539/elt.v10n11p156>
- Muraraneza, C., Mtshali, N. G., & Mukamana, D. (2018). Issues and challenges of curriculum reform to competency-based curricula in Africa: A meta-synthesis. *Nursing & Health Sciences*, 19(1), 5–12. <https://doi.org/10.1111/nhs.12316>
- Nurjannah, S., Erniati, E., & Jusmaniar, N. (2020). The use of content-based instruction in English language teaching. *DIKDAS MATAPPA: Jurnal Ilmu Pendidikan Dasar*, 3(2), 359–363. <https://doi.org/10.31100/dikdas.v3i2.809>
- Sariani, S., Yaningsih, Y., & Rozi, F. (2022). Implementing content-based instruction (CBI) on EFL students' writing through technology-enhanced language teaching. *Education Quarterly Reviews*, 5(1), 174–184. <https://doi.org/10.31014/aior.1993.05.01.429>
- Wati, D. R. (2018). Improving the students' descriptive text writing ability through the implementation of clustering technique at the tenth grade of MAN 1 Metro. *English Education: Jurnal Tadris Bahasa Inggris*, 11(1), 129–146.
- Westerveld, J. J. L., van den Homberg, M. J. C., Nobre, G. G., van den Berg, D. L. J., Teklesadik, A. D., & Stuit, S. M. (2021). Forecasting transitions in the state of food security with machine learning using transferable features. *Science of the Total Environment*, 786, 147366. <https://doi.org/10.1016/j.scitotenv.2021.147366>