

A MODEL OF PREDICT OBSERVE EXPLAIN WRITING (POEW) LEARNING BY USING E-MODULE IN ARGUMENTATIVE ESSAY WRITING FOR UNIVERSITY STUDENTS

*UM MODELO DE APRENDIZAGEM DO MÉTODO “PREVER, OBSERVAR,
EXPLICAR, ESCREVER” (POEW) ATRAVÉS DO USO DE UM MÓDULO
ELETRÔNICO NA REDAÇÃO DE ENSAIOS ARGUMENTATIVOS PARA
ESTUDANTES UNIVERSITÁRIOS*

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Siti Aminah Hasibuan*

*Faculty of Languages, Arts and Culture, Yogyakarta State University, Yogyakarta, Indonesia

Orcid: <https://orcid.org/0009-0007-9827-768X>
sitiaminahhasibuan04@gmail.com

Endang Nurhayati*

*Faculty of Languages, Arts and Culture, Yogyakarta State University, Yogyakarta, Indonesia

Orcid: <https://orcid.org/0000-0001-9056-4667>
endang_nurhayati@uny.ac.id

Kastam Syamsi*

*Faculty of Languages, Arts and Culture, Yogyakarta State University, Yogyakarta, Indonesia

Orcid: <https://orcid.org/0000-0002-9441-6810>
kastam@uny.ac.id

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Abstract

The development of argumentative essay writing skills remains a major challenge for university students, particularly in organizing arguments, integrating evidence, and maintaining logical coherence. This study aims to develop and evaluate a Predict–Observe–Explain–Writing (POEW) learning model integrated with an e-module to improve argumentative essay writing skills among university students. The study employed a Research and Development (R&D) methodology adapted from Borg and Gall, involving needs analysis, model design, product development, expert validation, limited trials, field testing, and final revision. The participants consisted of 120 undergraduate students enrolled in an academic writing course. Data were collected through writing tests, expert validation sheets, questionnaires, observations, and interviews. Quantitative data were analyzed using descriptive statistics and paired-sample t-tests, while qualitative data were analyzed thematically. The findings indicate that the POEW-based e-module is valid, practical, and effective in significantly improving students' argumentative writing performance. The results suggest that the POEW learning model can serve

Resumo

O desenvolvimento das habilidades de redação de ensaios argumentativos continua sendo um grande desafio para os estudantes universitários, especialmente no que diz respeito à organização de argumentos, à integração de evidências e à manutenção da coerência lógica. Este estudo tem como objetivo desenvolver e avaliar um modelo de aprendizagem “Prever–Observar–Explicar–Escrever” (POEW), integrado a um módulo eletrônico, para aprimorar as habilidades de redação de ensaios argumentativos entre estudantes universitários. O estudo empregou uma metodologia de Pesquisa e Desenvolvimento (P&D) adaptada de Borg e Gall, envolvendo análise de necessidades, concepção do modelo, desenvolvimento do produto, validação por especialistas, testes limitados, testes de campo e revisão final. Os participantes consistiram em 120 estudantes de graduação matriculados em um curso de redação acadêmica. Os dados foram coletados por meio de testes de redação, fichas de validação por especialistas, questionários, observações e entrevistas. Os dados quantitativos foram analisados utilizando estatística descritiva e testes t para amostras emparelhadas, enquanto os dados qualitativos



as an innovative and effective instructional approach in higher education writing courses.

Keywords: POEW Learning Model. E-Module. Argumentative Essay Writing. Research and Development. University Students.

foram analisados tematicamente. Os resultados indicam que o módulo eletrônico baseado no POEW é válido, prático e eficaz para melhorar significativamente o desempenho dos alunos na redação argumentativa. Os resultados sugerem que o modelo de aprendizagem POEW pode servir como uma abordagem instrucional inovadora e eficaz em cursos de redação no ensino superior.

Palavras-chave: Modelo de Aprendizagem POEW. Módulo Eletrônico. Redação de Ensaios Argumentativos. Pesquisa e Desenvolvimento. Estudantes Universitários.

1 INTRODUCTION

Argumentative writing is a core academic skill in higher education, enabling students to articulate ideas, defend positions, and engage critically with scholarly discourse. University students are expected not only to express opinions but also to support their arguments with logical reasoning and credible evidence. Despite its importance, numerous studies report that students struggle with developing clear thesis statements, organizing arguments, and addressing counterarguments effectively.

Traditional writing instruction in many universities still relies heavily on lecture-based approaches and product-oriented assessment. Such approaches often neglect students' cognitive engagement during the writing process. As a result, students tend to produce essays that lack coherence, depth of reasoning, and critical engagement.

Constructivist learning theory emphasizes that knowledge is actively constructed through interaction and reflection. One instructional model rooted in constructivism is the Predict–Observe–Explain (POE) model, which encourages learners to make predictions, observe phenomena, and explain outcomes. However, POE has rarely been applied systematically to writing instruction. To address this gap, this study extends the POE framework by incorporating a Writing stage, resulting in the Predict–Observe–Explain–Writing (POEW) learning model.

Additionally, advances in educational technology have enabled the use of e-modules to support flexible and self-directed learning. Integrating an e-module with the POEW model provides structured guidance, interactive learning materials, and formative

feedback throughout the writing process. This study aims to develop and evaluate a POEW learning model using an e-module for argumentative essay writing among university students.

2 LITERATURE REVIEW

2.1 Argumentative essay writing in higher education

Argumentative essay writing plays a crucial role in higher education as it fosters students' academic literacy, logical reasoning, and critical thinking skills. Unlike other forms of academic writing, argumentative essays require students to take a clear position on an issue, support their claims with evidence, consider opposing viewpoints, and present a coherent conclusion. These demands make argumentative writing an essential component of university-level instruction, particularly in disciplines that emphasize analysis, evaluation, and persuasion.

Several scholars argue that argumentative writing reflects students' ability to engage in higher-order thinking processes, such as analysis, synthesis, and evaluation (Hyland, 2004; Wingate, 2012). As a result, mastery of argumentative essays is often considered a key indicator of academic success in higher education.

2.1.1 Argumentation and critical thinking

A substantial body of research highlights the close relationship between argumentative writing and critical thinking. Critical thinking is commonly manifested in students' ability to construct logical arguments, evaluate evidence, and respond to counterarguments effectively. According to Facione (2015), critical thinking involves interpretation, analysis, evaluation, inference, and explanation—skills that are directly embedded in argumentative essay writing. Empirical studies in higher education contexts reveal that many students struggle to demonstrate critical thinking in their essays. These difficulties include presenting weak claims, relying on insufficient evidence, and failing to address opposing views (Stapleton & Wu, 2015). In English as a Foreign Language

(EFL) contexts, such challenges are often compounded by limited language proficiency, which may restrict students' ability to articulate complex ideas and arguments clearly.

2.1.2 Challenges in writing argumentative essays

Research consistently reports that university students face various challenges in writing argumentative essays. One major difficulty lies in organizing ideas and maintaining a coherent argumentative structure. Students often struggle with formulating a clear thesis statement, developing supporting arguments, and integrating counterarguments and rebuttals effectively (Qin & Karabacak, 2010).

In addition to organizational issues, linguistic problems such as grammatical errors, limited vocabulary, and inappropriate academic style are frequently identified, particularly among EFL learners. These linguistic constraints may hinder students from expressing their arguments persuasively, even when they possess adequate content knowledge (Barkaoui, 2014).

Furthermore, students often lack awareness of the writing process itself. Many tend to focus on the final product rather than engaging in essential stages such as planning, drafting, and revising. This product-oriented approach can negatively affect the quality of their argumentative essays.

2.1.3 Pedagogical approaches to teaching argumentative writing

To address these challenges, researchers have proposed various pedagogical strategies aimed at improving students' argumentative writing skills. Process-based writing instruction, which emphasizes planning, drafting, revising, and feedback, has been shown to enhance students' ability to develop coherent and well-supported arguments (Flower & Hayes, 1981; Hyland, 2003). Collaborative writing and peer feedback are also widely recognized as effective instructional approaches. Through collaboration, students can exchange ideas, negotiate meaning, and refine their arguments, which contributes to improved content development and critical engagement (Storch, 2013).

Additionally, explicit instruction in argument structure—such as teaching claim, evidence, warrant, counterargument, and rebuttal—has been found to significantly improve students' understanding and production of argumentative essays (Toulmin, 2003; Nussbaum & Edwards, 2011).

2.2 Predict–Observe–Explain–Writing (POEW) learning model

The *Predict–Observe–Explain (POE)* instructional strategy originates from constructivist learning theory, which posits that learners build understanding by actively engaging with phenomena and reconciling new experiences with existing mental models. In POE, students first predict the outcome of an event or experiment, then observe what actually happens, and finally explain why the observed result matches or differs from their predictions. This sequence is designed to surface students' prior conceptions and create cognitive conflict that stimulates deeper conceptual change and understanding.

Predict–Observe–Explain–Write (POEW) extends the traditional POE cycle by adding an explicit writing component. This extension emphasizes not only conceptual reasoning but also metacognitive reflection and communication skills: learners articulate their predictions, observations, and explanations in written form, which supports deeper processing and helps teachers assess both content understanding and scientific reasoning practices. A literature review on POE and related models suggests that writing actively engages learners in sense-making and conceptual integration, thereby enriching the learning process beyond immediate observation and explanation.

The POEW model aligns with constructivist and inquiry-based learning frameworks, where learning emerges from questioning, exploring, and explaining. These frameworks hold that learners construct knowledge by actively engaging with phenomena, negotiating meaning, and reflecting on their reasoning processes — both verbally and in writing.

- Writing as a cognitive tool: Writing requires students to organize thoughts, make connections between ideas, and articulate reasoning in logical sequences. Research in science education indicates that integrating writing with inquiry-based tasks enhances conceptual understanding because it forces learners to reflect on predictions and reconcile them with observations.

2.2.1 Structure and stages of POEW

Although detailed empirical frameworks for POEW are still emerging, its structure typically includes the following phases:

1. **Predict:** Before an experiment or demonstration, students formulate hypotheses about outcomes based on prior knowledge.
2. **Observe:** Students actively observe the actual experiment or phenomenon.
3. **Explain:** Students interpret their observations, explaining why they occurred and how they relate to their predictions.
4. **Write:** Students produce written responses that document their prediction, observation, explanation, and (in some cases) reflection on learning and misconceptions.

This added writing phase is intended to deepen thinking, increase accountability for understanding, and serve as a formative assessment tool for instructors.

2.3 E-modules in writing instruction

E-modules — digital instructional units that integrate multimedia elements such as text, audio, images, and interactive activities — have emerged as an innovative tool for enhancing learning in various educational domains. In writing instruction specifically, e-modules serve as self-paced, accessible resources that support learners' development of writing competencies, from basic mechanics to advanced argumentation and composition skills. Research increasingly underscores their potential to transform traditional writing pedagogy by engaging learners, scaffolding cognitive processes, and providing structured, accessible content.

2.3.1 Conceptual and pedagogical foundations of E-modules

E-modules are grounded in principles of multimedia learning, where the combination of words and visuals facilitates deeper processing and better retention than text alone. Research in educational technology suggests that well-designed digital

modules can reduce cognitive load and help learners construct meaning through engaging and interactive formats, thereby promoting active learning and learner autonomy.

In writing classrooms, e-modules often include structured guidance on writing processes, examples of model texts, interactive exercises, and feedback mechanisms that support learners through stages such as idea generation, drafting, revision, and editing. These features align with writing-to-learn pedagogies that emphasize reflection and metacognitive engagement in composing tasks.

2.3.2 E-modules for writing instruction: design and implementation

A key theme in the literature is the design characteristics of effective e-modules for writing instruction:

- Structured instructional sequences that help students understand genre conventions, essay structure, and writing strategies.
- Multimedia elements that make abstract concepts concrete, such as video tutorials on paragraph organization or interactive drag-and-drop activities for sentence improvement.
- Integration of scaffolding features — prompts, checklists, and guided revisions — that support learners at different levels of proficiency.

For example, digital modules designed to support argumentative essay writing provide clear explanations of thesis development, evidence use, and counterargument integration, often with examples and practice exercises that students can complete independently. These structured materials have been shown to enhance learners' ability to organize ideas and develop coherent arguments.

2.3.3 Empirical evidence on the effectiveness of E-modules in writing

Research evidence suggests several positive outcomes associated with the use of e-modules in writing instruction:

a. Improved Writing Performance

Studies involving pretest–posttest designs indicate that students' writing skills improve significantly after using e-modules. For instance, students who used

EPUB-based e-modules for short story writing showed meaningful gains in post-test scores, demonstrating enhanced narrative structure, vocabulary use, and coherence.

b. Student Engagement and Motivation

Interactive features within e-modules — such as embedded quizzes, reflective prompts, and multimedia explanations — can increase student engagement and motivation, particularly when compared to static text-only materials. Students often report that digital modules make learning more enjoyable and accessible.

c. Support for Independent and Autonomous Learning

E-modules allow learners to progress at their own pace and access explanations as needed, thereby fostering autonomous learning. In contexts such as university writing courses, digital modules with clear instructional sequences and examples have helped learners better organize their ideas and engage in revision independently.

3 RESEARCH METHOD

3.1 Research design

This study employed a Research and Development (R&D) approach adapted from Borg and Gall (2003). The development procedure consisted of seven stages:

1. Needs analysis
2. Model design
3. E-module development
4. Expert validation
5. Limited trial
6. Field testing
7. Final product revision

3.2 Participants

The participants were 120 undergraduate students enrolled in an Academic Writing course at Universitas Pembinaan Masyarakat Indonesia and Universitas Prima

Indonesia in Medan. The students were in their second year and selected using purposive sampling.

3.3 Product description

The developed product was a **POEW-based e-module** consisting of:

- Learning objectives
- POEW learning activities
- Sample argumentative essays
- Interactive tasks
- Analytic writing rubric
- Self-assessment and reflection sections

3.4 Instruments

- Argumentative writing test (pre-test and post-test)
- Expert validation sheets (content, language, media)
- Student response questionnaire
- Observation checklist
- Semi-structured interview guide

3.5 Data analysis

Quantitative data were analyzed using descriptive statistics and paired-sample t-tests ($\alpha = 0.05$). Qualitative data from observations and interviews were analyzed thematically.

4 RESULTS

4.1 Needs analysis

The needs analysis revealed that 78% of students experienced difficulties in organizing arguments, and 82% reported limited ability to integrate evidence effectively. Both students and lecturers expressed the need for structured, process-oriented writing instruction supported by digital materials.

4.2 Expert validation results

Table 1

Expert Validation Results

Aspect	Mean Score (Max 5)	Category
Content validity	4.42	Very Valid
Language	4.36	Very Valid
Media design	4.47	Very Valid
Overall	4.42	Very Valid

4.3 Limited trial results

Table 2

The limited trial involving 30 students indicated high practicality.

Indicator	Mean Score	Category
Ease of use	4.31	Very Practical
Instruction clarity	4.28	Very Practical
Student engagement	4.35	Very Practical

4.4 Field testing results (120 students)

Table 3

Writing Test Scores

Test	Mean	SD
Pre-test	67.82	6.45
Post-test	83.91	5.72

Paired-samplet-test:
 $t = 18.64, p = 0.000 (p < 0.05)$

The results indicate a statistically significant improvement in students' argumentative essay writing skills after implementing the POEW-based e-module.

Table 4

Improvement by Writing Indicator

Writing Indicator	Pre-test	Post-test
Thesis clarity	66.4	85.2
Use of evidence	65.9	83.7
Reasoning & counterargument	64.8	82.9
Organization & language	68.2	84.1

5 DISCUSSION

The findings demonstrate that the POEW learning model effectively enhances students' argumentative writing skills. The Predict stage supports idea generation and claim formulation, while the Observe stage helps students analyze evidence critically. The Explain stage strengthens reasoning and argument justification, and the Writing stage facilitates structured composition and revision. The integration of the e-module provides continuous scaffolding, enabling students to engage actively in the writing process. These findings align with constructivist learning theory and previous studies emphasizing process-based writing instruction.

6 IMPLICATIONS

The POEW learning model offers practical implications for writing instruction in higher education. Lecturers can use the model to foster critical thinking, argumentation, and independent learning. The e-module format allows flexible implementation in both face-to-face and blended learning environments.

7 LIMITATIONS AND FUTURE RESEARCH

This study was limited to a single institution and did not involve a control group. Future research may employ experimental designs with larger samples and investigate the long-term effects of POEW-based instruction.

8 CONCLUSION

This study highlights the potential of a Predict–Observe–Explain–Writing (POEW) learning model integrated with e-modules as an effective approach for enhancing argumentative essay writing among university students. By combining the structured inquiry cycle of POEW with the interactive and multimedia capabilities of e-modules, this model addresses multiple dimensions of writing development, including conceptual understanding, argumentation skills, critical thinking, and metacognitive awareness. The findings from existing literature and empirical studies suggest that each phase of the POEW model contributes uniquely to the learning process:

- The Predict phase activates prior knowledge and encourages students to formulate hypotheses about the structure, content, or logical flow of their argumentative essays. This phase promotes critical anticipation and planning, which are crucial for coherent and persuasive writing.
- The Observe phase engages students in analyzing model essays, peer writing, or examples provided within the e-module. This observation allows learners to compare their predictions with actual exemplars, recognize gaps in understanding, and internalize effective argumentation strategies.

- The Explain phase requires students to articulate the reasoning behind observed patterns, identify strengths and weaknesses in their own and others' work, and integrate evidence-based justifications. This reflective process fosters higher-order thinking skills essential for constructing logical and well-supported arguments.
- The Writing phase, strengthened by the e-module platform, enables students to produce formal written outputs, apply feedback iteratively, and refine both content and stylistic elements of their essays. By documenting their predictions, observations, and explanations, students consolidate their cognitive and metacognitive learning, resulting in deeper comprehension and improved writing performance.

The integration of e-modules into this model provides additional advantages. E-modules offer flexible, multimedia-rich, and interactive content that supports self-paced learning, facilitates independent practice, and encourages repeated engagement with key writing principles. Through embedded exercises, illustrative examples, and guided scaffolding, e-modules enhance students' understanding of argumentative structures, logical reasoning, thesis development, evidence integration, and counterargument formulation. Furthermore, the digital format allows instructors to monitor progress, provide timely feedback, and identify areas requiring additional support, creating a more personalized and effective learning environment. Empirical evidence from prior studies supports the effectiveness of combining POEW strategies with e-learning tools. Students participating in POEW-based, e-module-enhanced instruction demonstrate improved writing performance, stronger critical thinking skills, and higher levels of engagement and motivation compared to those using traditional instruction alone. The iterative nature of POEW, reinforced through writing activities, helps students confront misconceptions, evaluate multiple perspectives, and systematically improve their argumentative reasoning, which is particularly important in higher education contexts where independent, evidence-based thinking is essential.

Despite these promising outcomes, successful implementation requires careful consideration of several factors. Effective e-module design should integrate clear instructional sequences, interactive and scaffolded exercises, and opportunities for reflection and feedback. Instructors must be prepared to facilitate the POEW process,

guide students in making meaningful connections between predictions and observations, and support iterative revisions of writing. Additionally, attention must be given to accessibility and digital literacy, ensuring all students can fully benefit from the e-module environment.

In conclusion, the POEW learning model enhanced with e-modules represents a comprehensive, evidence-based strategy for developing university students' argumentative essay writing skills. By combining inquiry-based cognitive engagement with structured reflection and interactive digital resources, this model not only improves writing performance but also fosters critical thinking, metacognition, and self-directed learning. The integration of POEW and e-modules provides a scalable and adaptable framework that can be implemented across disciplines, preparing students to meet the rigorous academic demands of higher education and equipping them with the analytical, reasoning, and communication skills necessary for lifelong learning and professional success. Future research should explore longitudinal impacts, the differential effects of POEW components, and optimization of e-module design to maximize learning outcomes across diverse higher education contexts.

REFERENCES

- Aegustinawati, A., Mulyati, Y., & Kurniawan, K. (2025). Development of news text writing e-module designing the concept of differentiation. *Jurnal Kependidikan*, *11*(1), 270–280. <https://doi.org/10.33394/jk.v11i1.14790>
- Anderson, L. W., & Krathwohl, D. R. (Eds.). (2019). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy*. Pearson.
- Barrot, J. S. (2021). Students' perceptions of e-learning engagement in writing courses. *Journal of Educational Technology & Society*, *24*(3), 118–131.
- Bereiter, C., & Scardamalia, M. (2018). *Surpassing ourselves: An inquiry into the nature and implications of expertise*. Open Court.
- Bruner, J. (2018). *The culture of education*. Harvard University Press.
- Chen, W., & Huang, C. (2023). Technology-supported scaffolding in argumentative writing. *Computers & Education*, *187*, 104620.
- Cumming, A., & Hyland, K. (2021). Academic writing development in higher education. *Journal of English for Academic Purposes*, *51*, Article 100980.

- Damayanti, S., Syefrinando, B., Basuki, F. R., Takiveikata, S. B., & Deporos, S. R. C. (2025). Implementation of module based on Predict Observe Explain (POE) integrated with ethnoscience. *Tekno Pedagogi: Jurnal Teknologi Pendidikan*, 15(1), 27–37. <https://doi.org/10.22437/teknopedagogi.v15i1.42200>
- Flower, L., & Hayes, J. R. (2018). *A cognitive process theory of writing*. Routledge.
- Gikandi, J. W., Morrow, D., & Davis, N. E. (2019). Online formative assessment in higher education writing. *Computers & Education*, 136, 87–98.
- Graham, S., & Perin, D. (2018). A meta-analysis of writing instructional effects. *Review of Educational Research*, 88(4), 745–794.
- Graham, S., Harris, K. R., & Mason, L. (2019). *Handbook of writing research*. Guilford Press.
- Hasibuan, S. A. (2025). A qualitative approach to the use of digital modules in teaching argumentative essay writing to university students. *English Language Teaching Methodology*, 5(3), 228–236. <https://doi.org/10.56983/eltm.v5i3.1927>
- Ho, C. L., & Odlin, T. (2021). Argumentative writing and L2 learners' cognitive processes. *Journal of Second Language Writing*, 53, 100787.
- Hyland, K. (2019). *Teaching and researching writing*. Applied Linguistics.
- Hyland, K. (2020). *Second language writing*. Cambridge University Press.
- Jiang, L., Liang, F., & Wu, D. (2024). Effects of technology-aided teaching mode on the development of critical thinking and English argumentative writing. *Teaching and Teacher Education*, 123, 103865.
- Kellogg, R. T., & Raulerson, B. A. (2018). Improving writing performance with technology tools. *Journal of Educational Psychology*, 110(8), 1239–1259.
- Lee, I., & Deakin, J. (2024). Genre-based instruction and writing performance. *Journal of English for Academic Purposes*, 56, 101142.
- Leki, I. (2021). *Academic writing: Exploring processes and strategies*. Cambridge University Press.
- Li, Y., & Li, M. (2021). Web-based modules and writing fluency in EFL learners. *TESOL Quarterly*, 55(1), 217–239.
- Limpo, T., Alves, R. A., & Castro, S. L. (2021). Effects of metacognitive strategy instruction on writing quality. *Written Communication*, 38(4), 456–487.
- Matsuda, P. K. (2018). *Second language writing research: Perspectives on the process of knowledge construction*. Routledge.

- Mayer, R. E. (2020). *Multimedia learning* (3rd ed.). Cambridge University Press.
- Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K. (2019). *Evaluation of evidence-based practices in online learning*. U.S. Department of Education.
- Noroozi, O., Biemans, H. J. A., & Mulder, M. (2022). Argumentation competence development in online learning environments. *Learning and Instruction*, 78, 101530.
- Ormrod, J. E. (2018). *Educational psychology: Developing learners* (8th ed.). Pearson.
- Ramadani, Y. S., & Nasrudin, H. (2025). The effectiveness of Predict Observe Explain (POE) based e-modules to improve critical thinking skills on chemical equilibrium. *International Journal of Educational Research*, 2(2), 45–52. <https://doi.org/10.62951/ijer.v2i2.293>
- Schmid, R. F., & Petko, D. (2019). Predict–Observe–Explain in science education. *International Journal of Science Education*, 41(5), 629–650.
- Sun, Y., & Yang, X. (2020). Mobile-supported writing instruction. *Journal of Computer Assisted Learning*, 36(6), 892–908.
- Sweller, J., van Merriënboer, J. J., & Paas, F. (2019). *Cognitive load theory*. Springer.
- Toulmin, S. (2003). *The uses of argument* (New ed.). Cambridge University Press.
- Treagust, D. F., & Liew, C. W. (1998). *The effectiveness of Predict Observe Explain tasks in diagnosing students' understanding of science and identifying achievement levels*. ERIC Document.
- Wardani, H. K., Nurhikmah, & Hakim, A. (2021). Interactive e-module development in multimedia learning. *AL ISHLAH: Jurnal Pendidikan*, 13(3), 2293–2300. <https://doi.org/10.35445/alishlah.v13i3.863>
- Wilujeng, I., & Putri, T. S. Y. (2020). Development of SETS e-module integrated with POE model. *Journal of Educational Science and Technology*, 1(1), Article 14735. <https://doi.org/10.26858/est.v1i1.14735>
- Winarto, A. E. (2024). Training of learning strategies in writing essay. *Journal of English Education and Linguistics Studies*, 2(2), 96–105. <https://doi.org/10.30762/jeels.v2i2.96>
- Wingate, U. (2020). *Academic literacy and the writing challenge*. Palgrave Macmillan.
- Yeo, S. (2017). Role of predict and explain in constructivist classrooms. *Asia Pacific Education Researcher*, 26(2), 63–71.

Authors' Contribution

All authors contributed equally to the development of this article.

Data availability

All datasets relevant to this study's findings are fully available within the article.

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