



SIPAMANDAQ: Journal of Physics Education Research and Innovation

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Paper's title should be the fewest possible words that accurately describe the content of the paper (Center, Bold, 14pt)

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ABSTRACT (11 PT)

The abstract should provide a concise and comprehensive summary of the study, including the background, objective, methods, main findings, and conclusion. Where appropriate, authors may briefly describe the practical or theoretical implications of the findings. The abstract should enable readers to understand the purpose, methodology, and significance of the research without referring to the full manuscript. The abstract should be written in one paragraph, consisting of 150–200 words, without citations, figures, tables, equations, or undefined abbreviations (9 pt). The abstract should provide a concise and comprehensive summary of the study, including the background, objective, methods, main findings, and conclusion. Where appropriate, authors may briefly describe the practical or theoretical implications of the findings. The abstract should enable readers to understand the purpose, methodology, and significance of the research without referring to the full manuscript. The abstract should be written in one paragraph, consisting of 150–200 words, without citations, figures, tables, equations, or undefined abbreviations (9 pt). The abstract should provide a concise and comprehensive summary of the study, including the background, objective, methods, main findings, and conclusion. Where appropriate, authors may briefly describe the practical or theoretical implications of the findings (9 pt).

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1. INTRODUCTION (12 PT)

The manuscript should be prepared on A4 paper using Times New Roman, 12 pt font, single line spacing, and justified alignment. All page margins should be 2 cm, with the first line of each paragraph indented by 1 cm. The manuscript should be written in Microsoft Word and organized according to the journal template. Authors are encouraged to present their work clearly, concisely, and consistently throughout the manuscript.

The Introduction should provide the background of the study, identify the research problem and gap, review relevant literature, state the research objectives, and explain the significance and novelty of the study. References should follow the American Psychological Association (APA) 7th edition style. The manuscript should generally follow the IMRaD structure, Introduction, Methods, Results and Discussion, and Conclusion. If necessary, an additional section presenting the

theoretical framework or proposed model may be included before the Method Section. The literature review should demonstrate how the study contributes to the advancement of research and practice in physics education.

2. METHODS (12 PT)

The Methods section should describe the research design, participants or subjects, instruments, data collection procedures, and data analysis techniques in sufficient detail to allow the study to be replicated. If applicable, authors should also describe the development or validation of research instruments, ethical considerations, and statistical or qualitative analysis methods. Appropriate references should be provided when established methods or procedures are adopted or adapted.

Figures, tables, and equations should be clearly numbered in consecutive order and cited in the text before they appear. Figure captions should be placed below the figures, while table titles should be placed above the tables. All figures and tables should be of high quality, centered on the page, and relevant to the discussion.

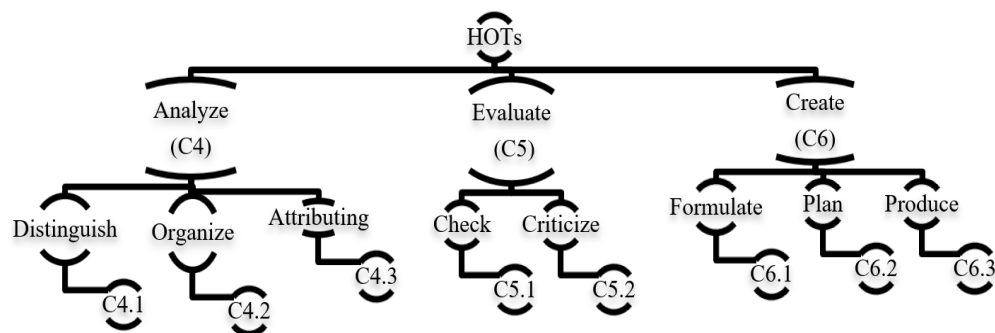


Figure 1. Research procedure

Table 1. Internal consistency reliability of physics test

SN	Indicator	Value
1	Number of Item	60
2	Kuder Richardson (KR-20)	0.620
3	Cronbach's Alpha Based on Standardized Items	0.617
4	Mean Item Difficulty	0.56
5	Mean Item Difficulty	0.4

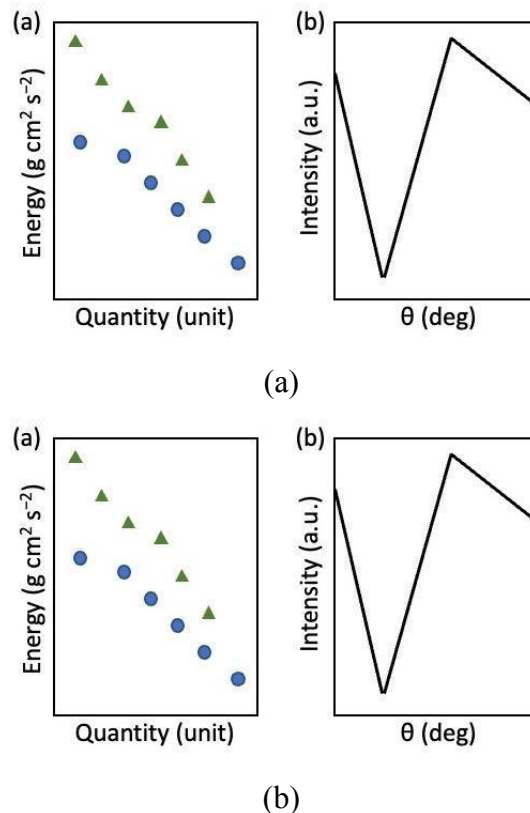


Figure 2. Pretest, posttest, and N-gain for (a) physics representation ability students and (b) reasoning ability students

3. RESULTS (12 PT)

The Results section should present the findings of the study clearly, objectively, and systematically without extensive interpretation. Results may be presented using text, tables, figures, graphs, or equations where appropriate. All tables, figures, and equations should be numbered consecutively, cited in the text before they appear, and accompanied by clear and informative titles or captions. Equations should be created using the Microsoft Equation Editor or MathType, centered on the page, and numbered consecutively with equation numbers aligned to the right. All symbols and variables used in equations should be clearly defined immediately after the equation.

3.1. Sub section 1

Equations should be placed at the center of the line and provided consecutively with equation numbers in parentheses flushed to the right margin, as in (1). The use of Microsoft Equation Editor or MathType is preferred.

$$E_v - E = \frac{h}{2.m} (k_x^2 + k_y^2) \quad (1)$$

All symbols that have been used in the equations should be defined in the following text.

3.2. Sub section 2

XXXX

4. DISCUSSION (12 PT)

The Discussion section should interpret and explain the research findings by relating them to the research objectives, relevant theories, and previous studies. Authors should highlight the significance, implications, and originality of the findings, explain possible reasons for the results, and discuss any limitations of the study where appropriate. The discussion should provide meaningful insights into the contribution of the research to the advancement of physics education and may include recommendations for future research.

5. CONCLUSION (12 PT)

The Conclusion should summarize the main findings of the study in relation to the research objectives without repeating the results in detail. It should clearly state the contribution and significance of the study, highlight its implications for research and practice in physics education, and may include recommendations for future research. No citations, figures, or tables should be included in this section.

ACKNOWLEDGMENTS (*if applicable*) (12 PT)

The Acknowledgments section is optional. Authors may acknowledge individuals, institutions, or organizations that provided technical, academic, or administrative support but did not meet the criteria for authorship. Financial support should be reported in the Funding Information section.

REFERENCES (12 PT)

References should follow the **American Psychological Association (APA) 7th edition** citation style and be arranged alphabetically by the first author's surname. Ensure that every in-text citation appears in the reference list and that all references listed are cited in the text. Authors are encouraged to use reference management software such as **Mendeley, Zotero, or EndNote** to ensure consistency and accuracy.

Authors should cite relevant and up-to-date literature, with a preference for peer-reviewed journal articles. It is recommended that at least **80% of the references** are journal articles and that the majority have been published within the **last 10 years**, except for seminal works that are essential to the study. Whenever available, include the **DOI** or persistent URL for each reference.

Examples of references:

Journal article

- Aldazharova, S., Issayeva, G., Maxutov, S., & Balta, N. (2024). Assessing AI's problem solving in physics: Analyzing reasoning, false positives and negatives through the force concept inventory. *Contemporary Educational Technology*, 16, ep538. <https://doi.org/10.30935/cedtech/15592>
- Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>
- Arruda, H., Silva, E. R., Lessa, M., Proença, D. J., & Bartholo, R. (2022). VOSviewer and Bibliometrix. *Journal of the Medical Library Association: JMLA*, 110(3), 392–395. <https://doi.org/10.5195/jmla.2022.1434>

Baker, H. K., Kumar, S., & Pandey, N. (2021). Forty years of the journal of futures markets: A bibliometric overview. *Journal of Futures Markets*, 41(7), 1027–1054. <https://doi.org/https://doi.org/10.1002/fut.22211>

Book

Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.

Book chapter

Bybee, R. W. (2013). The case for STEM education. In R. W. Bybee (Ed.), *The case for STEM education: Challenges and opportunities* (pp. 1–12). NSTA Press.

Conference proceedings

Kurniawan, D., & Setiawan, A. (2024). Development of an AI-assisted physics learning module to improve conceptual understanding. In *Proceedings of the 2024 International Conference on Physics Education* (pp. 85–92). Atlantis Press. <https://doi.org/10.xxxx/xxxxx>

Government or institutional report

Organisation for Economic Co-operation and Development. (2023). *PISA 2022 results (Volume I): The state of learning and equity in education*. OECD Publishing. <https://doi.org/10.1787/53f23881-en>

Website

Ministry of Education, Culture, Research, and Technology. (2024). *Merdeka Curriculum*. <https://kurikulum.kemdikbud.go.id/>

Thesis or dissertation

Rahmawati, D. (2024). *Development of a STEM-based physics learning module to improve students' scientific literacy* (Master's thesis, Universitas Negeri Yogyakarta). Institutional Repository.

Dataset (optional)

Nurlina, N. (2026). *Dataset of scientific literacy among preservice physics teachers* [Data set]. Zenodo. <https://doi.org/10.xxxx/zenodo.xxxxx>

APPENDIX (*Optional*) (12 PT)

Authors may include supplementary materials, questionnaire items, interview protocols, coding schemes, or additional statistical results when necessary.