



Development of E-LKM Multicultural Education Based on Case Method as a Student Learning Resource

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Received: October 09, 2025

Revised: November 16, 2025

Accepted: December 29, 2025

Published: December 31, 2025

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DOI: [10.29303/jppipa.v11i12.13078](https://doi.org/10.29303/jppipa.v11i12.13078)

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Abstract: This study aimed to develop an electronic student worksheet (e-LKM) based on the case study method for the Multicultural Education course, focusing on multicultural education issues in Indonesia. The study was conducted due to students' difficulties in understanding the material caused by limited interactive and accessible learning resources. This research employed a Research and Development (R&D) method using the 4D development model, consisting of define, design, develop, and disseminate stages. The developed e-LKM includes instructional materials, contextual case studies, videos, supporting articles, and higher-order thinking skills (HOTS) questions at the C4 and C5 levels. Canva and Flip PDF Professional were used to support interactivity and visual appeal. The feasibility of the e-LKM was evaluated through validation by subject-matter experts and media experts, assessments by the course lecturer, and student responses. The validation results indicated that the case study-based e-LKM was categorized as highly feasible in terms of content quality, language, visual design, and interactivity. Student responses also showed positive perceptions of accessibility, visual attractiveness, and the effectiveness of the e-LKM in enhancing understanding and learning engagement. Therefore, the case study-based e-LKM is suitable for use as an alternative learning resource in Multicultural Education.

Keywords: 4D development model; Case Study; Electronic learning material; E-LKM; Multicultural education

Introduction

Multicultural education is aimed at fostering respect for diversity, social justice, and equality within educational contexts (Agustian, 2019; Wulandari, 2020; Karman et al., 2022). In Indonesia, multicultural education is increasingly important due to sociocultural plurality and the potential emergence of conflict based on ethnic, religious, and cultural differences (Hanafy, 2015; Indrapangastuti, 2014; Wulandari, 2020). Higher education institutions therefore play a strategic role in preparing prospective teachers to understand and respond to multicultural issues through reflective and contextual learning experiences (Aswan et al., 2022; Karman et al., 2022).

Several studies report that multicultural education learning often remains theoretical, resulting in students' limited ability to analyze real social problems (Wicaksana & Aswan, 2023; Indasari & Aswan, 2024). This condition indicates the need for learning approaches that actively involve students in analyzing authentic cases and proposing solutions. The case study method is considered suitable because it presents real-life problems, encourages discussion, and facilitates critical, creative, and collaborative thinking skills (Andayani et al., 2022; Fauzi et al., 2022; Hodijah et al., 2022; Arum, 2014; Widi et al., 2014).

To support the implementation of the case method, appropriate learning resources are required. Electronic student worksheets (e-LKM) have been shown to

How to Cite:

Latiffah, N. R., Wicaksana, E. J., & Aswan, D. M. (2025). Development of E-LKM Multicultural Education Based on Case Method as a Student Learning Resource. *Jurnal Penelitian Pendidikan IPA*, 11(12), 450–454. <https://doi.org/10.29303/jppipa.v11i12.13078>

enhance learning engagement, independence, and conceptual understanding (Febriani, 2016; Aldresti et al., 2021; Bare et al., 2021; Wirda et al., 2018). Previous studies also confirm that integrating case-based learning into digital teaching materials improves higher-order thinking skills and contextual understanding (Natalia & Wicaksana, 2023; Wicaksana & Natalia, 2023; Amalia et al., 2025; Harlis & Aswan, 2024).

Method

This study employed a Research and Development (R&D) approach to produce and evaluate a case study-based electronic student worksheet (e-LKM) (Ainin, 2013; Khudriyah, 2021). The development process followed the 4D model, consisting of define, design, develop, and disseminate stages, which is widely used in the development of educational products due to its systematic structure (Thiagarajan et al., 1974; Akbar & Hartono, 2017; Akbar, 2013).

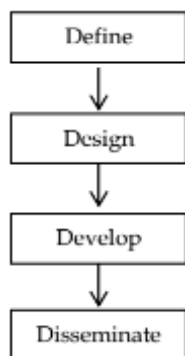


Figure 1. Stages of the 4D development model

The define stage involved needs analysis through observation, interviews, and questionnaires to identify students' learning difficulties and characteristics (Natalia & Wicaksana, 2023; Indasari & Aswan, 2024). The design stage focused on determining learning objectives, selecting media formats, and designing case-based activities aligned with learning outcomes (Amin & Sumendap, 2022; Dewi, 2018). The develop stage included expert validation and limited trials, following standard procedures for evaluating learning media feasibility (Ernawati, 2017; Samitra & Harmoko, 2021). Finally, the disseminate stage involved limited distribution of the validated product through online platforms (Winarni, 2023).

Data collection instruments consisted of validation sheets and student response questionnaires developed according to principles of educational measurement and data presentation (Wahab et al., 2021; Wardani, 2022). Quantitative data were analyzed using Likert scale calculations, while qualitative data were analyzed descriptively to support interpretation of the results.

Result and Discussion

The development of the case study-based e-LKM on the topic of Multicultural Education Problems in Indonesia was carried out through four stages of the 4D development model, namely Define, Design, Develop, and Disseminate, which provides a systematic framework for developing instructional materials aligned with learning needs and objectives (Thiagarajan et al., 1974; Akbar & Hartono, 2017; Akbar, 2013).



Figure 2. Instructions for using the case study-based e-LKM

Validation was conducted by two expert validators, consisting of a material expert and a media expert, following standard procedures for evaluating the feasibility of learning media (Ernawati, 2017; Samitra & Harmoko, 2021). The validation results showed that the material expert gave an average score of 92.5%, categorized as Very Appropriate, covering aspects of content relevance, alignment with learning objectives, material accuracy, and the suitability of the cases presented. Meanwhile, the media expert provided an average score of 91.7%, categorized as Very Appropriate, encompassing display quality, ease of navigation, text readability, visual attractiveness, and interactivity. Suggestions from the validators were used as the basis for minor revisions, including layout adjustments, editorial refinements, and image quality improvements, which is consistent with recommendations in previous studies on digital learning

media development (Fitriyah & Ghofur, 2021; Susilawati et al., 2023; Wardani & Romadon, 2023).

Product trials were conducted in two stages, namely small-group and large-group trials, to assess practicality and user responses. The small-group trial involving six students obtained a response score of 94.3%, categorized as Very Good. Students indicated that the e-LKM was easy to access, helpful in understanding the material, and visually appealing. The large-group trial involving 15 students yielded a response score of 93.6%, also categorized as Very Good. Most students stated that the e-LKM effectively supported learning, motivated independent learning, and facilitated case analysis. These findings are consistent with previous studies showing that electronic worksheets improve student engagement, learning independence, and conceptual understanding (Febriani, 2016; Bare et al., 2021; Wirda et al., 2018).

Further analysis of the student response questionnaire revealed that 95.2% of students found the e-LKM easy to operate on various devices, 94.1% appreciated the visual design, colors, and layout, and 96.4% stated that the e-LKM helped them understand concepts and complete case analyses. Similar results have been reported in studies emphasizing the role of interactive and visually attractive digital materials in enhancing learning motivation and accessibility (Hidayati & Khasanah, 2020; Winarni, 2023; Harlis & Aswan, 2024).

The final e-LKM product was disseminated to lecturers and students through an online link and utilized as an additional learning resource. Overall, the findings indicate that the case study-based e-LKM was rated Very Feasible by expert validators and received Very Good responses from students. These results suggest that the developed e-LKM meets both pedagogical and technical criteria as an innovative teaching material for Multicultural Education courses, in line with findings from previous case-based learning material development studies (Natalia & Wicaksana, 2023; Wicaksana & Natalia, 2023; Amalia et al., 2025).

The development of the e-LKM using the 4D model is supported by constructivist learning theory, which emphasizes that meaningful learning occurs when students actively construct knowledge through engagement with real and contextual problems (Dewi, 2018; Amin & Sumendap, 2022). The integration of the case study method in the e-LKM encourages students to analyze authentic multicultural issues, identify problems, and propose solutions, which is essential in multicultural education learning contexts (Hanafy, 2015; Indrapangastuti, 2014; Aswan et al., 2022).

The validation results and product trials further demonstrate that the inclusion of multimedia elements, such as videos and supporting articles, enhances the

clarity and attractiveness of learning materials, thereby increasing student engagement. Positive student responses indicate that the e-LKM facilitates independent learning and improves accessibility to learning resources. Practically, this e-LKM provides lecturers with a flexible instructional tool that supports student-centered learning, while helping students develop critical thinking skills essential for understanding multicultural education issues (Andayani et al., 2022; Fauzi et al., 2022; Hodijah et al., 2022). However, reliance on digital devices and internet access remains a limitation that should be considered in future implementations.

Conclusion

This study concludes that the case study-based electronic student worksheet (e-LKM) developed for the Multicultural Education course is highly feasible and suitable as an alternative learning resource. High validation results from material and media experts, as well as positive evaluations from the course lecturer, indicate that the e-LKM meets academic and pedagogical standards in terms of content quality, language, visual design, and interactivity. Student responses also show positive perceptions regarding accessibility, visual appeal, and effectiveness in supporting understanding of multicultural education issues. These findings suggest that integrating the case study method into electronic worksheets can enhance student-centered learning and learning engagement. More broadly, the developed e-LKM has the potential to be applied in other courses that require contextual learning and critical analysis. Practically, this e-LKM provides lecturers with a flexible instructional resource and supports students in developing higher-order thinking skills.

Acknowledgments

Thank you to LPPM Jambi University for providing funding for this research. And thank you to FKIP Jambi University for providing research facilities and infrastructure.

Author Contributions

Conceptualization, E.J.W, N.R.L and D.M.A.; methodology, N.R.L, E.J.W, and D.M.A.; software, N.R.L; validation, E.J.W, and D.M.A.; formal analysis, N.R.L; investigation, N.R.L; resources, N.R.L; data curation, N.L; writing—original draft preparation, N.R.L; writing—review and editing, N.R.L.; visualization, N.R.L; supervision, D.M.A.; project administration, N.R.L. All authors have read and agreed to the published version of the manuscript.

Funding

This research was funded by the Institute for Research and Community Service (LPPM), University of Jambi.

Conflicts of Interest

The authors declare no conflict of interest.

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