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Development of Ethnomathematics-Based Digital Teaching Materials Through Problem-Based Learning: Effects on Mathematical Literacy and Self-Regulated Learning Across Academic Resilience Levels

Abstract

Mathematical literacy and students' self-regulated learning still need to be improved in mathematics learning. In addition, the teaching materials commonly used have not fully integrated digital technology, local culture, and problem-based learning in a comprehensive manner. Although numerous studies have examined Problem-Based Learning, ethnomathematics, and digital teaching materials, research integrating these three aspects and investigating their effects on mathematical literacy and self-regulated learning in terms of students' academic resilience remains limited. This study aimed to analyze the effect of ethnomathematics-based digital teaching materials implemented through the Problem-Based Learning model on students' mathematical literacy and self-regulated learning viewed from their academic resilience. This study employed a mixed-method approach using an Embedded Design and was conducted through Research and Development (R&D) with the ADDIE model. The participants consisted of 72 eighth-grade students from a junior high school in Bandung City. Data were collected through tests, questionnaires, observations, interviews, and documentation. Quantitative data were analyzed using two-way ANOVA and Spearman correlation, while qualitative data were analyzed through triangulation. The results indicated that the developed teaching materials met the criteria of being highly feasible. There were no significant differences in mathematical literacy and self-regulated learning between students who used the developed teaching materials and those who received conventional instruction. Furthermore, academic resilience and the correlation between mathematical literacy and self-regulated learning did not show significant results.

Keywords: *ethnomathematics; digital teaching materials; Problem-Based Learning; mathematical literacy; self-regulated learning.*

INTRODUCTION

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METHOD

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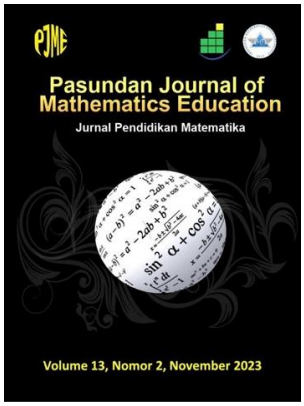

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RESULTS AND DISCUSSION

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In Introduction, Authors should state the objectives of the work at the end of the introduction section. Before the objective, Authors should provide an adequate background, and very short literature survey in order to record the existing solutions/method, to show which is the best of previous research, to show the main limitation of the previous research, to show what do you hope to achieve (to solve the limitation), and to show the scientific merit or novelties of the paper. Avoid a detailed literature survey or a summary of the results.

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