

# Development of a Web-Based Interactive Multimedia Problem-Based Learning Approach on Algorithms and Programming Material

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**Submission date:** 30-Jun-2024 05:55PM (UTC+0500)

**Submission ID:** 2410572403

**File name:** 13.\_Turnitin\_LAYOUT\_Ajeng\_Zanna\_Tirahna.doc (3.83M)

**Word count:** 5986

**Character count:** 36740

# Development of a Web-Based Interactive Multimedia Problem-Based Learning Approach on Algorithms and Programming Material

DOI: <https://doi.org/10.47175/rielsj.v1ix.xx>

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## ABSTRACT

This research and development aims to produce interactive multimedia based on problem-based learning (PBL) using the Web to improve student learning outcomes in algorithms and programming material that is feasible, practical, and effective. This type of development research uses the ADDIE model. This research was carried out at SMK Negeri 6 Mukomuko, the material on algorithms and programming in the informatics class X Phase E. The results of the research show: (1) Expert validation test on product material in the very feasible category, namely 88.14%. (2) The Instructional Design Expert validation test is in the very feasible category, namely 95.56%. (3) The Media Expert validation test is in the very feasible category, namely 91.46%. (4) Individual trials in the very good category, namely 87.55%. (5) The small group trial was in the very feasible category, namely 89.65%. And (6) field trials in the very feasible category, namely 89.15%. The practicality test was very practical, namely 96.67%, while the practicality test results for students were 95.59% in the very practical category. The results of the experiment using PBL-based interactive multimedia in the experimental class gave an average learning outcome of 84, while students who were taught without using PBL-based interactive multimedia got an average score of 60.9. Hypothesis testing uses an independent t-test with significant results. (2-tailed) of 0.00, where the result is <0.05, it is concluded that there is a significant difference between classes taught using PBL-based interactive multimedia and classes taught without using PBL-based interactive multimedia

## KEYWORDS

Interactive Multimedia; Problem Based Learning; Web; Algorithm

## INTRODUCTION

Technological developments in the digital era have transformed many industries, including education. The integration of technology in learning has caused significant changes in the way education is delivered and experienced by both teachers and students. One key aspect of this transformation is the digitalization of learning organizations, which involves the integration of digital technologies into various aspects of educational institutions, such as teaching, learning, and administration (Ifenthaler et al., 2021). This digital transformation has made education more accessible, allowing students to learn from anywhere and at any time, overcoming obstacles such as illness or full-time work (Raja and Nagasubramani 2018,).

This transformation certainly has an impact on education in Indonesia, where the quality of education is an essential factor in determining the quality of human resources in a

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