

## ABSTRAK

### PENGEMBANGAN *e*-LKPD BERBASIS MASALAH TERINTEGRASI STEM UNTUK MELATIHKAN KETERAMPILAN BERPIKIR KRITIS DAN KETERAMPILAN KOMUNIKASI PESERTA DIDIK

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*e*-LKPD berbasis masalah terintegrasi *STEM* menjadi solusi perkembangan era digital. Penelitian ini bertujuan untuk melihat kemampuan berpikir kritis dan komunikasi peserta didik. Metode penelitian ini adalah *research and development* (R&D). Desain pengembangan menggunakan model *ADDIE* yang terdiri dari lima tahapan yaitu *analyze, design, development, implementation, dan evaluation*. Instrumen pengumpulan data yang digunakan meliputi angket analisis kebutuhan, angket uji validitas, angket uji keterlaksanaan, instrumen soal berpikir kritis, instrumen komunikasi, serta respon peserta didik terhadap keefektifan *e*-LKPD berbasis masalah terintegrasi *STEM*. Pada uji kevalidan yang telah dilakukan, *e*-LKPD dinyatakan valid dengan hasil validasi konstruk rata-rata persentase 87% dan validasi isi rata-rata persentase 88%. Hasil uji kepraktisan yang ditunjukkan rata-rata persentase keterbacaan 90% dengan kriteria sangat baik, dan kemudahan penggunaan yaitu sebesar 85% dengan kriteria sangat baik dan respon positif peserta didik. Keefektifan yang ditunjukkan oleh hasil uji *paired t-test* dan uji *n-gain*. Hasil uji *paired sample t-test* menunjukkan nilai *sig 2-tailed* 0,000 (< 0,005) menunjukkan adanya perbedaan yang signifikan antara nilai hasil *pretest* dan *posttes* pada keterampilan berpikir kritis dan keterampilan komunikasi peserta didik, sehingga dapat dinyatakan bahwa *e*-LKPD berbasis masalah terintegrasi *STEM* yang dikembangkan efektif.

**Kata Kunci:** *e*-LKPD , Keterampilan Berpikir Kritis, Keterampilan Komunikasi, *Problem Based Learning, STEM*.

**ABSTRACT**

**DEVELOPMENT STUDENT WORKSHEET OF PROBLEM BASED  
LEARNING STEM INTEGRATED TO IMPROVE STUDENTS'  
CRITICAL THINKING AND COMMUNICATION SKILLS**

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Problem-based STEM integrated e-worksheet is a solution for the digital era development. This research aims to examine the critical thinking and communication skills of students. The research method used in this study is research and development (R&D). The development design refers to the ADDIE instructional development model which consists of five stages, namely analyze, design, development, implementation, and evaluation. The data collection instruments used in this study include a needs analysis questionnaire, a validity test questionnaire, a feasibility test questionnaire, critical thinking questionnaires, communication instruments, and student responses to the effectiveness of problem-based STEM integrated e-worksheet. The results of this research show that the problem-based STEM integrated e-worksheet is valid, practical, and effective in the learning process. In the validity test that has been conducted, the e-worksheet is declared valid with a construct validation of 87% and a percentage of content validation of 88%. The students' response with score of 85%. The analysis of the critical thinking and communication skills trained obtained a score of 85% with a highly trained category. The effectiveness by the results of the paired sample t-test *sig 2-tailed* 0,000 ( $< 0.005$ ), indicating a significant difference between the pretest and posttest scores in critical thinking skills and communication skills of the students. Therefore, it can be concluded that the problem-based STEM-integrated e-LKPD (Learning and Teaching Materials) developed is effective.

**Keywords:** *e-worksheet*, Critical Thinking Skills, Communication Skills, Problem-Based Learning, STEM.