

ABSTRAK

PENGARUH MODEL *PROBLEM BASED LEARNING* TERINTEGRASI STEM BERBANTUAN *E-BOOKLET* TERHADAP KEMAMPUAN PEMECAHAN MASALAH DAN KOLABORASI PESERTA DIDIK

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Penelitian ini bertujuan untuk mengetahui pengaruh model *Problem Based Learning* (PBL) terintegrasi STEM berbantuan *E-booklet* terhadap kemampuan pemecahan masalah dan keterampilan kolaborasi peserta didik pada materi perubahan iklim. Metode yang digunakan adalah quasi eksperimen dengan desain *pretest-posttest nonequivalent control group*, melibatkan peserta didik kelas X di MAN 2 Bandar Lampung. Instrumen penelitian mencakup tes uraian untuk kemampuan pemecahan masalah, lembar observasi kolaborasi, dan angket tanggapan peserta didik. Hasil penelitian menunjukkan bahwa model PBL terintegrasi STEM berbantuan *E-booklet* memberikan pengaruh signifikan terhadap peningkatan kemampuan pemecahan masalah, dengan nilai *N-Gain* sebesar 0,69 (kategori sedang) pada kelompok perlakuan dan 0,39 (kategori rendah) pada kelompok pembandingan. Uji-t menunjukkan perbedaan yang signifikan dengan nilai Sig. (2-tailed) sebesar $0,01 < 0,05$, ditinjau dari indikator memahami masalah, merumuskan masalah, melaksanakan strategi, dan mengecek kembali. Keterampilan kolaborasi juga meningkat secara lebih baik pada kelompok yang menggunakan model pembelajaran tersebut, ditinjau dari indikator partisipasi aktif, tanggung jawab, fleksibilitas, produktivitas, dan sikap saling menghargai. Hasil angket menunjukkan peserta didik memberikan tanggapan sangat positif terhadap pembelajaran yang diterapkan. Dengan demikian, penerapan model PBL terintegrasi STEM berbantuan *E-booklet* terbukti efektif dalam meningkatkan kemampuan pemecahan masalah dan kolaborasi peserta didik.

Kata kunci: *problem based learning*, STEM, *e-booklet*, pemecahan masalah, kolaborasi

ABSTRACT**THE EFFECT OF THE E-BOOKLET ASSISTED STEM-INTEGRATED
PROBLEM-BASED LEARNING MODEL ON PROBLEM-SOLVING
AND COLLABORATION SKILLS LEARNERS**

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This study aims to determine the influence of the Problem Based Learning (PBL) model of STEM integrated with the help of E-booklets on the problem-solving ability and collaboration skills of students on climate change materials. The method used was a quasi-experiment with a pretest-posttest nonequivalent control group design, involving class X students at MAN 2 Bandar Lampung. The research instruments include a description test for problem-solving skills, a collaborative observation sheet, and a student response questionnaire. The results showed that the E-booklet-assisted STEM integrated PBL model had a significant influence on improving problem-solving ability, with an N-Gain value of 0.69 (medium category) in the treatment group and 0.39 (low category) in the comparison group. The t-test showed a significant difference with the Sig. (2-tailed) value of $0.01 < 0.05$, reviewed from the indicators of understanding the problem, formulating the problem, implementing the strategy, and checking back. Collaboration skills also improved better in groups that used the learning model, judging from indicators of active participation, responsibility, flexibility, productivity, and mutual respect. The results of the questionnaire showed that students gave very positive responses to the learning applied. Thus, the application of the E-booklet-assisted STEM integrated PBL model has proven to be effective in improving students' problem-solving and collaboration skills.

Keywords: problem based learning, STEM, e-booklet, problem solving, collaboration