

ABSTRACT

THE EFFECT OF USING A PROBLEM BASED LEARNING MODEL ASSISTED BY VIRTUAL LABORATORY MEDIA ON STUDENTS' PROBLEM SOLVING ABILITY

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This study aims to determine the effect of implementing a problem-based learning model assisted by a virtual laboratory on students' problem-solving skills. The study employed a quasi-experimental research design with a non-equivalent control group format. The research sample consisted of class XI 5 as the control group, which used the discovery learning model, and class XI 7 as the experimental group, which used the problem-based learning model assisted by a virtual laboratory at SMA Negeri 1 Natar. The test instrument used consisted of two essay questions with ten sub-questions covering the topic of impulse and momentum. This instrument was aligned with indicators of students' problem-solving skills. The effect size test showed that the implementation of the problem-based learning model assisted by a virtual laboratory had a large effect size of 0.84. The average normalized gain (n-gain) in students' problem-solving skills was 0.65 in the experimental group and 0.39 in the control group, both categorized as medium. The results of the independent sample t-test showed a significance value (2-tailed) of 0.00, indicating a significant difference in the average problem-solving skills between the experimental and control groups. Based on these results, it can be concluded that the implementation of the problem-based learning model assisted by a virtual laboratory had a positive effect on students' problem-solving skills in the experimental class, with a higher improvement compared to the control class, which used the discovery learning model.

Keywords: *Problem Based Learning Model, Problem Solving Abilities, Virtual Laboratory Media.*

ABSTRAK

PENGARUH PENGGUNAAN MODEL *PROBLEM BASED LEARNING* BERBANTUAN MEDIA *VIRTUAL LABORATORY* TERHADAP KEMAMPUAN *PROBLEM SOLVING* SISWA

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Penelitian ini bertujuan untuk mengetahui pengaruh penerapan model *problem based learning* berbantuan *virtual laboratory* terhadap kemampuan *problem solving* siswa. Penelitian ini menggunakan desain penelitian *quasi experimental* dengan bentuk *non-equivalent control group*. Sampel penelitian kelas XI 5 sebagai kelas kontrol menggunakan pembelajaran model *discovery learning* dan XI 7 sebagai kelas eksperimen menggunakan pembelajaran model *problem based learning* berbantuan media *virtual laboratory* di SMA Negeri 1 Natar. Instrumen tes yang digunakan terdiri dari 2 soal uraian dengan turunan soal berjumlah 10 soal materi impuls dan momentum. Instrumen ini sudah disesuaikan dengan indikator kemampuan *problem solving* siswa. Besar pengaruh pembelajaran model *problem based learning* berbantuan media *virtual laboratory* terhadap kemampuan *problem solving* siswa berdasarkan uji *effect size* sebesar 0,84 dengan kategori besar. Rata-rata *n-gain* kemampuan *problem solving* siswa kelas eksperimen sebesar 0,65 dan kelas kontrol sebesar 0,39 dengan kategori sedang pada kedua kelas. Hasil uji *independent sample t-test* diperoleh nilai *sig.(2-tailed)* sebesar 0,00 menunjukkan bahwa terdapat perbedaan rata-rata kemampuan *problem solving* pada kelas eksperimen dan kelas kontrol. Berdasarkan hasil tersebut dapat diketahui bahwa terdapat pengaruh penerapan model *problem based learning* berbantuan media *virtual laboratory* terhadap kemampuan *problem solving* siswa pada kelas eksperimen, dengan peningkatan yang lebih tinggi dibanding kelas kontrol yang menggunakan model pembelajaran *discovery learning*.

Kata Kunci: Kemampuan *Problem Solving*, Model *Problem Based Learning*, *Virtual Laboratory*.