

PENGARUH MODEL PEMBELAJARAN *PROBLEM BASED LEARNING* BERBANTUAN SIMULASI PHET TERHADAP KETERAMPILAN BERPIKIR KRITIS SISWA SMA

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ABSTRAK

Penelitian bertujuan untuk mengkaji pengaruh model pembelajaran *problem based learning* berbantuan simulasi PhET terhadap keterampilan berpikir kritis siswa SMA. Penelitian dilaksanakan dengan metode *quasi experiment* dengan desain *one way pre-test post-test non-equivalent control group design*. Populasi dalam penelitian ini siswa kelas XI SMA Negeri 7 Denpasar sebanyak 372 siswa. Pada penelitian ini menggunakan teknik *random assignment* dengan empat kelas digunakan sebagai sampel penelitian dengan total sampel yaitu 169. Data keterampilan berpikir kritis diukur dengan instrumen keterampilan berpikir kritis dengan pokok bahasan gelombang bunyi berupa tes esai sebanyak 10 soal yang memiliki reliabilitas 0,867 dan konsistensi internal butir berada pada rentang 0,61-0,77. Data dianalisis dengan uji deskriptif dan uji varians ANAKOVA satu jalur dan uji lanjut LSD dengan taraf signifikansi 0,05. Hasil uji menunjukkan bahwa H_0 ditolak dan H_1 diterima berdasarkan nilai signifikansi pada variabel model pembelajaran ($p = 0,000$) yang lebih kecil dari taraf signifikan. Hasil penelitian menunjukkan bahwa terdapat perbedaan secara signifikan keterampilan berpikir kritis antara model *problem based learning* berbantuan simulasi PhET dan model pembelajaran konvensional terhadap keterampilan berpikir kritis siswa. Hasil analisis uji hipotesis menggunakan ANAKOVA menunjukkan bahwa ($F = 2997,457$; $p < 0,01$) dan nilai $R^2 = 0,949$. Penelitian ini dapat disimpulkan bahwa terdapat pengaruh secara signifikan model *problem based learning* berbantuan simulasi PhET terhadap keterampilan berpikir kritis siswa. Konsekuensinya model *problem based learning* berbantuan simulasi PhET dapat digunakan dalam meningkatkan keterampilan berpikir kritis siswa.

Kata kunci: model *problem based learning* berbantuan PhET, model pembelajaran konvensional, keterampilan berpikir kritis.

THE EFFECT OF THE PROBLEM-BASED LEARNING MODEL ASSISTED BY PHET SIMULATION ON SENIOR HIGH SCHOOL STUDENTS' CRITICAL THINKING SKILLS

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ABSTRACT

This study aims to examine the effect of the problem-based learning (PBL) model assisted by PhET simulations on the critical thinking skills of senior high school students. The research employed a quasi-experimental method using a one-way pre-test post-test non-equivalent control group design. The population consisted of 372 eleventh-grade students at SMA Negeri 7 Denpasar. The sample, totaling 169 students, was selected through random assignment across four classes. Critical thinking skills were measured using an essay test comprising 10 questions on the topic of sound waves, with a reliability coefficient of 0.867 and item internal consistency ranging from 0.61 to 0.77. Data were analyzed using descriptive statistics, one-way ANACOVA, and LSD post-hoc test at a significance level of 0.05. The analysis results showed that the null hypothesis (H_0) was rejected and the alternative hypothesis (H_1) was accepted, based on the significance value of the learning model variable ($p = 0.000$), which was lower than the threshold. The findings indicate a significant difference in critical thinking skills between students taught using the PBL model with PhET simulations and those taught using conventional methods. The hypothesis testing through ANACOVA revealed ($F = 2997.457$; $p < 0.01$) and an R square value of 0.949. It can be concluded that the PBL model assisted by PhET simulations has a significant positive effect on students' critical thinking skills. Consequently, this model can be effectively used to enhance critical thinking skills in students.

Keyword: *problem-based learning model assisted by PhET, conventional learning model, critical thinking skills.*