

**PENGARUH MODEL *PROBLEM BASED LEARNING* BERBANTUAN
PHET SIMULATION TERHADAP KEMAMPUAN BERPIKIR KRITIS
SISWA KELAS VIII SMPN 3 SINGARAJA**

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ABSTRAK

Penelitian ini bertujuan untuk menguji pengaruh model pembelajaran berbasis masalah (*Problem Based Learning*) berbantuan Simulasi Interaktif PhET terhadap kemampuan berpikir kritis siswa kelas VIII di SMP Negeri 3 Singaraja. Jenis penelitian ini merupakan kuasi eksperimen dengan desain kelompok pretest-posttest. Sampel penelitian diperoleh melalui teknik *cluster random sampling*, sehingga terpilih dua kelas dari 7 kelas paralel, yaitu kelas VIII A sebagai kelas eksperimen dan kelas VIII B sebagai kelas kontrol. Alasan penggunaan teknik *cluster random sampling* karena peneliti merandom dari jumlah populasi yang besar, sehingga populasi dipilih berdasarkan kelas. Teknik pengumpulan data yang digunakan adalah tes berupa instrumen kemampuan berpikir kritis dengan menerapkan indikator kemampuan berpikir kritis Ennis. Uji coba instrumen yang digunakan adalah uji validitas dan uji reliabilitas. Analisis data dilakukan melalui uji normalitas, uji homogenitas, dan uji hipotesis menggunakan *independent sample t-test* pada taraf signifikansi 5%. Hasil analisis menunjukkan nilai signifikansi sebesar 0,007 ($p < 0,05$) pada kolom *significance (2-tailed)* dan baris *equal variances assumed*, yang berarti H_0 ditolak dan H_a diterima. Dengan demikian, dapat disimpulkan bahwa terdapat perbedaan yang signifikan pada skor *N-Gain* kemampuan berpikir kritis antara siswa yang dibelajarkan menggunakan model PBL berbantuan Simulasi PhET dan siswa yang dibelajarkan menggunakan model PBL tanpa bantuan Simulasi PhET.

Kata-kata kunci *Problem Based Learning*, simulasi PhET, berpikir kritis

***THE EFFECT OF PROBLEM-BASED LEARNING MODEL ASSISTED BY
PHET SIMULATION ON THE CRITICAL THINKING SKILLS OF VIIIth
STUDENTS AT SMPN 3 SINGARAJA***

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ABSTRACT

This study aims to examine the effect of problem-based learning (PBL) assisted by PhET Interactive Simulations on the critical thinking skills of eighth-grade students at SMP Negeri 3 Singaraja. This study is a quasi-experimental study with a pretest-posttest group design. The research sample was obtained through cluster random sampling, resulting in the selection of two classes from seven parallel classes, namely Class VIII A as the experimental class and Class VIII B as the control class. The reason for using cluster random sampling was that the researcher randomly selected from a large population, so the population was selected based on class. The data collection technique used was a test in the form of a critical thinking ability instrument applying Ennis' critical thinking ability indicators. The instrument validation and reliability tests were conducted. Data analysis was performed through normality tests, homogeneity tests, and hypothesis testing using an independent sample t-test at a significance level of 5%. The analysis results showed a significance value of 0.007 ($p < 0.05$) in the significance column (2-tailed) and the equal variances assumed row, meaning that H_0 was rejected and H_a was accepted. Thus, it can be concluded that there is a significant difference in N-Gain critical thinking scores between students taught using the PBL model assisted by PhET simulation and students taught using the PBL model without simulation assistance.

Keywords: Problem-based learning, PhET simulations, critical thinking