

## ABSTRAK

**Elvayana Br Silitonga, NIM 4192451013 (2023). Pengaruh Model *Problem Based Learning* Berbantuan LKPD *PhET Simulation* Terhadap Kemampuan Berpikir Kritis Siswa Pada Materi Getaran, Gelombang dan Bunyi Di Kelas VIII SMP.**

Penelitian ini bertujuan untuk mengetahui pengaruh kemampuan berpikir kritis peserta didik menggunakan model *problem based learning* berbantuan LKPD *PhET Simulation* pada materi getaran, gelombang dan bunyi.

Jenis penelitian yang digunakan yaitu *quasi eksperiment* dengan desain *control group pretes postes design*. Populasi penelitian seluruh peserta didik kelas VIII SMP Negeri 2 Sunggal ada 10 kelas T.A 2022/2023 dengan jumlah peserta didik 300 orang. Teknik pengambilan sampel menggunakan *cluster random sampling* yaitu kelas eksperimen VIII-4 dan kelas kontrol VIII-5 yang masing-masing jumlah peserta didik 30 orang. Instrumen yang digunakan berupa test essay 10 soal yang sudah divalidasi. Untuk menguji hipotesis menggunakan uji t dan untuk melihat pengaruh menggunakan *effect size*.

Dari hasil penelitian diperoleh nilai rata-rata pretes kelas eksperimen 49,00 dan kelas kontrol 45,42. Pengujian hipotesis dilakukan dengan menggunakan uji t dua pihak dengan taraf signifikan  $\alpha = 0,05$  diperoleh  $t_{hitung} < t_{tabel}$  ( $0,0312 < 0,0314$ ) yang menyatakan bahwa kemampuan awal kedua kelas sama. Hasil nilai rata-rata untuk postes kelas eksperimen diperoleh nilai rata-rata 85,00 dan kelas kontrol 45,42. Data hasil uji t satu pihak dengan taraf signifikan  $\alpha = 0,05$  diperoleh  $t_{hitung} > t_{tabel}$  ( $0,2080 > 0,0314$ ) yang menyatakan adanya perbedaan nilai rata-rata dari kedua kelas. Berdasarkan hasil analisis LKPD diperoleh adanya peningkatan setiap pertemuan yaitu dari pertemuan pertama sebesar 59,00, pertemuan kedua sebesar 83,00 dan pertemuan ketiga sebesar 90,00. Pengujian *effect size* diperoleh hasil 0,85 dengan kategori sangat besar, maka dapat disimpulkan bahwa penerapan model pembelajaran *problem based learning* berbantuan LKPD *PhET Simulation* mempunyai pengaruh yang signifikan terhadap kemampuan berpikir kritis siswa SMP Negeri 2 Sunggal pada materi getaran, gelombang dan bunyi.

**Kata kunci:** *Problem Based Learning, Kemampuan Berpikir Kritis, LKPD PhET Simulation*

## ABSTRACT

***Elvayana Br Silitonga, NIM 4192451013 (2023). The Effect of Problem Based Learning Model Assisted by PhET Simulation Worksheets on Students' Critical Thinking Abilities in the Material of Vibrations, Waves, and Sound in Grade VIII of Junior High School.***

*This study aims to determine the effect of students' critical thinking skills using the problem-based learning model assisted by LKPD PhET Simulation on vibration, wave and sound material.*

*The type of research used is quasi-experiment with control group pretest posttest design. The research population was all VIII grade students of SMP Negeri 2 Sunggal there were 10 classes T.A 2022/2023 with a total of 300 students. The sampling technique used cluster random sampling, namely the experimental eight-fourth grade and control eight-fifth grade, each of which had 30 students. The instrument used is a 10 question essay test that has been validated. To test the hypothesis using the t test and to see the effect using effect size.*

*From the research results, the average value of the experimental class pretest was 49.00 and the control class was 45.42. Hypothesis testing was carried out using a two-party t test with a significant level  $\alpha = 0.05$  obtained  $t_{count} < t_{table}$  ( $0.0312 < 0.0314$ ) which states that the initial ability of the two classes is the same. The results of the average value for the post-test of the experimental class obtained an average value of 85.00 and the control class 45.42. Data from one-party t test results with a significant level  $\alpha = 0.05$  obtained  $t_{count} > t_{table}$  ( $0.2080 > 0.0314$ ) which states that there is a difference in the average value of the two classes. Based on the results of the LKPD analysis, there was an increase in each meeting, namely from the first meeting of 59.00, the second meeting of 83.00 and the third meeting of 90.00. Effect size testing obtained results of 0.85 with a very large category, it can be concluded that the application of problem-based learning model assisted by LKPD PhET Simulation has a significant influence on the critical thinking skills of students of SMP Negeri 2 Sunggal on vibration, wave and sound material.*

***Keywords:*** *Problem Based Learning, Critical Thinking Ability, LKPD PhET Simulation*