

PENGARUH MODEL *PROBLEM BASED LEARNING* BERBANTUAN PHET TERHADAP KETERAMPILAN BERPIKIR KRITIS PESERTA DIDIK PADA MATERI GETARAN DAN GELOMBANG KELAS VIII SMP NEGERI 4 SINGARAJA

Oleh

Anita Nur Izzati NIM 2213071016

Jurusan Fisika dan Pengajaran IPA

ABSTRAK

Rendahnya keterampilan berpikir kritis peserta didik pada pembelajaran IPA menjadi permasalahan di SMP Negeri 4 Singaraja. Pembelajaran yang masih berpusat pada guru serta minimnya penggunaan media pembelajaran menyebabkan peserta didik mengalami kesulitan dalam memahami materi abstrak, khususnya getaran dan gelombang. Penelitian ini bertujuan untuk menganalisis perbedaan keterampilan berpikir kritis antara peserta didik yang dibelajarkan menggunakan model *Problem Based Learning* (PBL) berbantuan PhET dan peserta didik yang dibelajarkan model *Problem Based Learning* (PBL) tanpa bantuan PhET. Penelitian ini menggunakan metode *quasi-experiment* dengan rancangan *Pretest-Posttest Non-Equivalent Control Group Design*. Sampel penelitian terdiri atas kelas eksperimen sebanyak 38 peserta didik dan kelas kontrol sebanyak 37 peserta didik yang dipilih menggunakan teknik *cluster random sampling*. Instrumen penelitian berupa tes keterampilan berpikir kritis berbentuk soal uraian. Data dianalisis menggunakan uji ANCOVA dengan *pretest* sebagai kovariat. Hasil penelitian menunjukkan adanya perbedaan keterampilan berpikir kritis peserta didik antara kelas eksperimen dan kelas kontrol dengan nilai signifikansi $0,02 < 0,05$ dan nilai F sebesar 5,34. Nilai *adjusted mean* kelas eksperimen lebih tinggi dibandingkan kelas kontrol. Dengan demikian, penggunaan model *Problem Based Learning* berbantuan PhET memberikan pengaruh yang lebih besar terhadap keterampilan berpikir kritis peserta didik dibandingkan dengan penggunaan model *Problem Based Learning* tanpa berbantuan PhET.

Kata Kunci: model *Problem Based Learning*, PhET, keterampilan berpikir kritis, getaran dan gelombang

**THE EFFECT OF PROBLEM BASED LEARNING MODEL
ASSISTED BY PhET ON STUDENTS' CRITICAL THINKING
SKILLS IN VIBRATION AND WAVE MATERIAL FOR CLASS
VIII SMP NEGERI 4 SINGARAJA**

By

Anita Nur Izzati NIM 2213071016

Department of Physics and Science Education

Abstract

The low level of students' critical thinking skills in science learning has become a problem at SMP Negeri 4 Singaraja. Learning activities that are still teacher-centered and the limited use of instructional media cause students to experience difficulties in understanding abstract concepts, particularly vibrations and waves. This study aimed to analyze the differences in critical thinking skills between students who were taught using the Problem Based Learning (PBL) model assisted by PhET and those who were taught without PhET assistance. This study employed a quasi-experimental method with a Pretest-Posttest Non-Equivalent Control Group Design. The research sampel consisted of an experimental class with 38 students and a control class with 37 students selected using the cluster random sampling technique. The research instrument was a critical thinking skills test in the form of essay questions. The data were analyzed using ANCOVA with the pretest as a covariate. The results showed a significant difference between the experimental class and the control class with a significance value of $0.02 < 0.05$ and an F value of 5.34. The adjusted mean score of the experimental class was higher than that of the control class. Therefore, the Problem Based Learning model assisted by PhET was more effective in improving students' critical thinking skills on vibrations and waves material.

Keywords: Problem Based Learning model, PhET, critical thinking skills, vibrations and waves