

**PENGARUH MODEL PROBLEM BASED LEARNING BERBASIS
TPACK TERHADAP KETERAMPILAN BERPIKIR KRITIS SISWA
DALAM PEMBELAJARAN FISIKA SMA**

Oleh

Ni Made Meriantari, NIM 2213021003

Jurusan Fisika dan Pengajaran IPA

Program Studi Pendidikan Fisika

ABSTRAK

Penelitian ini bertujuan untuk menganalisis perbedaan keterampilan berpikir kritis antara siswa yang belajar menggunakan model PBL berbasis TPACK dan model PBL. Penelitian ini merupakan penelitian *quasi* eksperimen dengan rancangan *one-way non-equivalent pretest-posttest control group design*. Populasi penelitian ini berjumlah 177 siswa yang terdiri atas 5 kelas. Sampel penelitian berjumlah 69 siswa yang dipilih menggunakan teknik *simple random sampling* terhadap kelas. Hasil pengundian menetapkan dua kelas sebagai sampel penelitian yang terdiri atas 35 siswa pada kelas eksperimen dan 34 siswa dari kelas kontrol. Instrumen penelitian yang digunakan untuk mengukur keterampilan berpikir kritis berupa tes esai sebanyak 10 soal yang telah memenuhi uji validitas dan memiliki koefisien reliabilitas sebesar 0,693. Hasil *pretest* dan *posttest* dianalisis menggunakan statistik deskriptif, uji prasyarat dan uji hipotesis ANAKOVA dengan taraf signifikansi $\alpha = 0,05$. Uji ANAKOVA menunjukkan bahwa terdapat perbedaan yang signifikan pada keterampilan berpikir kritis antara siswa yang belajar menggunakan model PBL berbasis TPACK. Uji ANAKOVA memperoleh nilai statistik pada model dengan $F = 35,813$ dengan signifikansi = 0,001 yang berarti $< \alpha (0,05)$. Berdasarkan hasil *Estimated Marginal Mean*, rata-rata *posttest* setelah dilakukan pengontrolan variabel kovariat pada kelas PBL diperoleh sebesar 65,201 (SD = 11,002) dan kelas PBL berbasis TPACK diperoleh 81,019 (SD = 13,054). Hal ini mengindikasikan bahwa setelah mengontrol keterampilan berpikir kritis awal siswa, rata-rata keterampilan berpikir kritis siswa yang belajar menggunakan model PBL berbasis TPACK lebih tinggi dibandingkan siswa yang belajar menggunakan model PBL. Hasil uji tersebut mengindikasikan bahwa H_0 ditolak dan H_a diterima dengan keputusan yaitu terdapat perbedaan keterampilan berpikir kritis antara siswa yang belajar dengan model PBL berbasis TPACK dan siswa yang belajar dengan model PBL.

Kata kunci: Berpikir Kritis; Fisika; PBL; TPACK

THE EFFECT OF A TPACK-BASED PROBLEM-BASED LEARNING MODEL ON STUDENTS' CRITICAL THINKING SKILLS IN HIGH SCHOOL PHYSICS CLASSES

By

Ni Made Meriantari, NIM 2213021003

Physics and Science Education Department

Physics Education Program

ABSTRACT

This study aims to analyze the differences in critical thinking skills between students who learn using the TPACK-based PBL model and those who learn using the standard PBL model. This study is a quasi-experimental study with a one-way non-equivalent pretest-posttest control group design. The study population consisted of 177 students from 5 classes. The research sample consisted of 69 students selected using simple random sampling from the classes. The random selection process designated two classes as the research sample, comprising 35 students in the experimental class and 34 students in the control class. The research instrument used to measure critical thinking skills was an essay test consisting of 10 questions that had passed validity testing and had a reliability coefficient of 0.693. The pretest and posttest results were analyzed using descriptive statistics, prerequisite tests, and an ANOVA hypothesis test with a significance level of $\alpha = 0.05$. The ANOVA test showed that there was a significant difference in critical thinking skills between students who learned using the TPACK-based PBL model. The ANOVA test yielded a statistical value for the model of $F = 35.813$ with a significance level of 0.001, which is less than α (0.05). Based on the Estimated Marginal Mean results, the posttest mean after controlling for covariates in the PBL class was 65.201 ($SD = 11.002$), while that in the TPACK-based PBL class was 81.019 ($SD = 13.054$). This indicates that, after controlling for students' initial critical thinking skills, the average critical thinking skills of students who learned using the TPACK-based PBL model were higher than those of students who learned using the PBL model. The test results indicate that H_0 is rejected and H_1 is accepted, leading to the conclusion that there is a difference in critical thinking skills between students who learned using the TPACK-based PBL model and those who learned using the PBL model.

Keywords: Critical Thinking; Physics; PBL; TPACK