

**PENGARUH MODEL INKUIRI TERBIMBING BERBANTUAN MEDIA
INTERAKTIF SIMULASI *PhET* TERHADAP PEMAHAMAN KONSEP
FISIKA SISWA**

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ABSTRAK

Penelitian ini bertujuan untuk mendeskripsikan perbedaan pemahaman konsep fisika antara siswa yang belajar menggunakan model Inkuiri Terbimbing berbantuan media interaktif simulasi *PhET* dan siswa yang belajar menggunakan model *Direct Instruction*. Penelitian ini merupakan penelitian *quasi experiment* dengan desain *one way pretest-posttest non-equivalent control group design*. Populasi penelitian adalah seluruh siswa kelas XI yang mengambil mata pelajaran Fisika di SMA Negeri 3 Singaraja tahun ajaran 2025/2026 yang berjumlah 127 siswa. Sampel penelitian dipilih menggunakan teknik *simple random sampling* yang terdiri atas dua kelas dengan total 62 siswa. Data dikumpulkan menggunakan tes *essay* dengan koefisien reliabilitas sebesar 0,848 dan konsistensi internal butir berada pada rentang 0,371–0,823. Data dianalisis secara deskriptif, analisis kovarian (ANAKOVA), dan uji lanjut LSD. Hasil analisis deskriptif menunjukkan bahwa rata-rata nilai posttest siswa pada kelompok eksperimen sebesar 80 (kategori baik) dengan standar deviasi 9, sedangkan pada kelompok kontrol sebesar 68 (kategori cukup) dengan standar deviasi 7. Hasil uji ANAKOVA menunjukkan bahwa terdapat perbedaan pemahaman konsep fisika antara siswa yang belajar menggunakan model Inkuiri Terbimbing berbantuan media interaktif simulasi *PhET* dan siswa yang belajar menggunakan model *Direct Instruction* dengan nilai F^* sebesar 41,771 dan nilai signifikansi sebesar 0,000. Hasil uji lanjut LSD menunjukkan bahwa perbedaan rata-rata terestimasi antarkelompok sebesar 9,252 dengan *standard error* 1,431 dan nilai signifikansi 0,000. Simpulan penelitian ini adalah terdapat perbedaan pemahaman konsep fisika antara siswa yang belajar menggunakan model Inkuiri Terbimbing berbantuan media interaktif simulasi *PhET* dan siswa yang belajar menggunakan model *Direct Instruction* pada siswa kelas XI SMA Negeri 3 Singaraja.

Kata kunci: inkuiri terbimbing, *direct instruction*, *PhET*, pemahaman konsep, fisika.

**THE EFFECT OF THE GUIDED INQUIRY MODEL ASSISTED BY PHET
INTERACTIVE SIMULATION MEDIA ON STUDENTS' PHYSICS
CONCEPTUAL UNDERSTANDING**

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ABSTRACT

This study aimed to examine the differences in physics conceptual understanding between students who learned through the Guided Inquiry model assisted by PhET interactive simulation media and those who learned through the Direct Instruction model. This study employed a quasi-experimental method using a one-way pretest-posttest non-equivalent control group design. The population consisted of all eleventh-grade students enrolled in Physics at SMA Negeri 3 Singaraja during the 2025/2026 academic year, totaling 127 students. The sample was selected using simple random sampling and consisted of two classes with a total of 62 students. Data were collected using an essay test with a reliability coefficient of 0.848 and item internal consistency ranging from 0.371 to 0.823. The data were analyzed using descriptive statistics, analysis of covariance (ANCOVA), and the Least Significant Difference (LSD) post hoc test. The descriptive analysis showed that the experimental group achieved a mean posttest score of 80 (good category) with a standard deviation of 9, while the control group obtained a mean score of 68 (fair category) with a standard deviation of 7. The ANCOVA results indicated a difference in students' physics conceptual understanding between those who learned through the Guided Inquiry model assisted by PhET interactive simulation media and those who learned through the Direct Instruction model, with an F value of 41.771 and a significance value of 0.000. The LSD post hoc test showed an estimated mean difference of 9.252 between the two groups, with a standard error of 1.431 and a significance value of 0.000. It can be concluded that there was a difference in physics conceptual understanding between students who learned through the Guided Inquiry model assisted by PhET interactive simulation media and those who learned through the Direct Instruction model among eleventh-grade students at SMA Negeri 3 Singaraja.

Keywords: *Guided Inquiry, Direct Instruction, PhET, conceptual understanding, physics.*