

**PENGARUH MODEL *PROJECT BASED LEARNING* BERBANTUAN  
*GEOGEBRA* TERHADAP KEMAMPUAN BERPIKIR KRITIS  
MATEMATIS PESERTA DIDIK KELAS XI SMA PADA MATERI  
TRANSFORMASI GEOMETRI**

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**ABSTRAK**

Rendahnya kemampuan peserta didik dalam berpikir kritis matematis menjadi latar belakang utama penelitian ini. Penelitian ini bertujuan untuk mengetahui apakah kemampuan berpikir kritis matematis peserta didik yang dibelajarkan dengan model *Project Based Learning* berbantuan *GeoGebra* lebih tinggi dibandingkan dengan kemampuan berpikir kritis matematis peserta didik yang dibelajarkan dengan model pembelajaran konvensional. Jenis penelitian ini adalah kuasi eksperimen dengan desain *post-test only control group design*. Populasi penelitian meliputi peserta didik kelas XI SMA Negeri 4 Singaraja pada semester genap tahun ajaran 2025/2026 yang terdiri enam kelas dengan jumlah peserta didik 194. Pengambilan sampel dilakukan melalui *cluster random sampling*. Berdasarkan hasil pengacakan kelas, diperoleh kelas XI I sebanyak 37 peserta didik sebagai kelas eksperimen dan XI K sebanyak 36 peserta didik sebagai kelas kontrol. Instrumen penelitian yang digunakan berupa lima soal uraian untuk mengukur kemampuan berpikir kritis matematis yang sudah valid dan reliabel dengan  $r = 0,856$ . Data dianalisis menggunakan uji-t (*independent samples t-test*) satu ekor (*one-tailed test*) dengan taraf signifikansi 5%. Hasil analisis menunjukkan bahwa nilai Sig. (*p-value*)  $p = 0,001$  ( $p < 0,05$ ), sehingga  $H_0$  dinyatakan ditolak dan  $H_1$  diterima. Nilai rata-rata *post-test* kelas eksperimen sebesar 85,46, sedangkan kelas kontrol sebesar 79,11. Hasil tersebut menunjukkan bahwa kemampuan berpikir kritis matematis peserta didik yang dibelajarkan dengan model *Project Based Learning* berbantuan *GeoGebra* lebih tinggi dibandingkan kemampuan berpikir kritis matematis peserta didik yang dibelajarkan menggunakan model pembelajaran konvensional. Dengan demikian, dapat disimpulkan bahwa model *Project Based Learning* berbantuan *GeoGebra* memberikan pengaruh yang signifikan terhadap kemampuan berpikir kritis matematis peserta didik.

**Kata Kunci:** *GeoGebra*, Kemampuan Berpikir Kritis Matematis, Model *Project Based Learning*.

**THE EFFECT OF A GEOGEBRA-ASSISTED PROJECT-BASED  
LEARNING MODEL ON THE MATHEMATICAL CRITICAL THINKING  
SKILLS OF ELEVENTH-GRADE HIGH SCHOOL STUDENTS IN THE  
TOPIC OF GEOMETRIC TRANSFORMATIONS**

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**ABSTRAK**

*The low level of students' mathematical critical thinking skills serves as the primary rationale for this study. This study aims to determine whether the mathematical critical thinking skills of students taught using the Project-Based Learning model assisted by GeoGebra are higher than those of students taught using conventional learning models. This study is a quasi-experimental study using a post-test only control group design. The study population consists of 11th-grade students at State High School 4 Singaraja during the second semester of the 2025/2026 academic year, comprising six classes with a total of 194 students. Sampling was conducted using cluster random sampling. Based on the results of the class randomization, Class XI I, with 37 students, was selected as the experimental class, and Class XI K, with 36 students, was selected as the control class. The research instrument used consisted of five essay questions to measure mathematical critical thinking skills, which were validated and found to be reliable with a correlation coefficient of  $r = 0.856$ . The data were analyzed using a one-tailed independent samples t-test with a significance level of 5%. The results of the analysis showed that the Sig. ( $p$ -value) was  $p = 0.001$  ( $p < 0.05$ ), so  $H_0$  was rejected and  $H_1$  was accepted. The mean posttest score for the experimental class was 85.46, while that for the control class was 79.11. These results indicate that the mathematical critical thinking skills of students taught using the Project-Based Learning model assisted by GeoGebra are higher than those of students taught using the conventional learning model. Thus, it can be concluded that the Project-Based Learning model assisted by GeoGebra has a significant effect on students' mathematical critical thinking skills.*

**Keywords:** *GeoGebra, Mathematical Critical Thinking Skills, Project-Based Learning Model*