

## ABSTRAK

SADAM MAULANA. 2026. **PENGARUH PJBL TERINTEGRASI STEM EDP (*ENGINEERING DESIGN PROCESS*) TERHADAP KOMPETENSI SAINS SISWA PADA MATERI KEANEKARAGAMAN HAYATI (Studi Eksperimen Kelas X SMA Negeri 1 Cihaurbeuti Tahun Ajaran 2025/2026).** Jurusan Pendidikan Biologi, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Siliwangi, Tasikmalaya.

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Kompetensi sains merupakan kemampuan yang perlu dimiliki oleh siswa seperti menjawab pertanyaan ilmiah, pemecahan masalah, dan pengambilan keputusan. Penelitian ini bertujuan untuk mengetahui pengaruh model PJBL terintegrasi STEM EDP (*Engineering Design Process*) terhadap kompetensi sains siswa pada materi keanekaragaman hayati di kelas X SMA Negeri 1 Cihaurbeuti. Penelitian ini dilaksanakan pada bulan November 2025 dan Januari 2026. Penelitian ini menggunakan metode kuasi eksperimen dengan *pretest-posttest non-equivalent control group design*. Populasi penelitian adalah seluruh kelas X SMA Negeri 1 Cihaurbeuti sebanyak 8 kelas. Sampel diambil dengan teknik *purposive sampling*, kelas X-E2 sebagai kelas eksperimen dan kelas X-E5 sebagai kelas kontrol. Instrumen yang digunakan berupa tes kompetensi sains tipe esai yang telah diuji validitas dan reliabilitasnya. Analisis data menggunakan uji *independent t-test* dengan taraf signifikansi  $\alpha \leq 0,05$ . Hasil uji statistik menunjukkan nilai signifikansi (*2-tailed*) sebesar  $0,032 < 0,05$ . Dengan demikian dapat disimpulkan bahwa terdapat pengaruh PjBL terintegrasi STEM EDP (*Engineering Design Process*) terhadap kompetensi sains siswa pada materi keanekaragaman hayati di kelas X SMA Negeri 1 Cihaurbeuti. Penerapan model PjBL terintegrasi STEM EDP (*Engineering Design Process*) secara efektif dapat meningkatkan kompetensi sains siswa pada materi keanekaragaman hayati. Hal ini didukung tahapan pada proses pembelajaran STEM EDP (*Engineering Design Process*) yang melatih siswa berpikir rekayasa dalam memecahkan masalah keanekaragaman hayati.

**Kata Kunci :** Kompetensi Sains, PjBL, STEM EDP (*Engineering Design Process*).

## **ABSTRACT**

SADAM MAULANA. 2026. ***THE EFFECT OF PJBL INTEGRATED STEM EDP (ENGINEERING DESIGN PROCESS) ON STUDENTS' SCIENCE COMPETENCY ON THE TOPIC OF BIODIVERSITY (An Experimental Study of Grade X Students at SMA Negeri 1 Cihaurbeuti Academic Year 2025/2026).***  
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*Science competence is a skill that students need to have, such as answering scientific questions, problem solving, and decision making. This study aims to determine the effect of the integrated STEM EDP (Engineering Design Process) PjBL model on students' science competency on the topic of biodiversity in class X at SMA Negeri 1 Cihaurbeuti. This study was conducted in November 2025 and January 2026. This study used a quasi-experimental method with a pretest-posttest non-equivalent control group design. The research population consisted of all 10th grade students at SMA Negeri 1 Cihaurbeuti, totaling 8 classes. The sample was taken using purposive sampling, with class X-E2 as the experimental class and class X-E5 as the control class. Then used was an essay-type science competency test that had been tested for validity and reliability. Data analysis used an independent t-test with a significance level of  $\alpha \leq 0.05$ . The results of the analysis results indicated a significance value of  $0.032 < 0.05$ . Thus, it can be concluded that there is an effect of integrated STEM EDP (Engineering Design Process) PjBL on students' science competency on the topic of biodiversity in class X at SMA Negeri 1 Cihaurbeuti. The effective implementation of the PjBL model integrated with STEM EDP (Engineering Design Process) can improve students' science competencies on topic of the biodiversity. This is supported by the STEM EDP (Engineering Design Process) learning process, which trains students to think like engineers when solving biodiversity problems.*

***Keywords : PjBL, Science Competency, STEM EDP (Engineering Design Process)***