

ABSTRAK

Parno Saputera Berutu, NIM 4213121080 (2026) Pengembangan *E-modul* Berbasis *Project Based Learning* (PjBL) Untuk Meningkatkan Kemampuan Berpikir Kreatif Pada Materi Usaha dan Energi Siswa SMA

Penelitian ini bertujuan untuk mengembangkan *E-Modul Project Based Learning* untuk meningkatkan kreativitas siswa pada materi Usaha Dan Energi yang valid, praktis, dan efektif digunakan dalam pembelajaran fisika di SMA Negeri 1 Sigunung. Model pengembangan yang digunakan adalah ADDIE. Tahap analisis dilakukan untuk mengidentifikasi kebutuhan siswa dan guru. Tahap perancangan dan pengembangan menghasilkan produk *E-Modul* yang divalidasi oleh ahli materi memperoleh rata-rata persentase sebesar 86,53% dengan kategori sangat valid, hasil validasi oleh ahli media memperoleh rata-rata 93,75% dengan kategori sangat valid. Selanjutnya, Hasil uji kepraktisan kelompok kecil memperoleh rata-rata 91,97%, dan kelompok besar memperoleh 92,85%, keduanya termasuk dalam kategori sangat praktis. Selain itu, hasil uji kepraktisan guru memperoleh rata-rata 90,78%, juga dengan kategori sangat praktis. Uji Tingkat keefektifan *e-modul* berbasis proyek pada materi Usaha dan Energi diperoleh rata-rata N-gain dengan skor 0,77% dan masuk dalam kategori tinggi. 25 siswa yang mengikuti tes dan disesuaikan dengan indikator kreativitas mengalami peningkatan antara lain aspek *fluency* 43% menjadi 88,8%, aspek *flexibility* 50,6% menjadi 91,14%, aspek *originality* 30,6% menjadi 89,7%, dan aspek *elaboration* 72% menjadi 98,2%/. Hasil peningkatan kreativitas siswa terbukti dengan skor interval nilai memadai.

Kata Kunci : *E-Modul*, Model *Project Based Learning*, ADDIE, Usaha dan Energi, Berfikir Kreatif

ABSTRACT

Parno Saputera Berutu, NIM 4213121080 (2026) Development of Project Based Learning (PjBL) Based E-modules to Improve High School Students' Creative Thinking Skills on work and Energy Materials

This study aims to develop a Project Based Learning E-Module to improve student creativity on the material of Effort and Energy that is valid, practical, and effective for use in physics learning at SMA Negeri 1 Sigunung. The development model used is ADDIE. The analysis stage was carried out to identify the needs of students and teachers. The design and development stage resulted in an E-Module product that was validated by material experts obtaining an average percentage of 86.53% with a very valid category, the validation results by media experts obtained an average of 93.75% with a very valid category. Furthermore, the results of the small group practicality test obtained an average of 91.97%, and the large group obtained 92.85%, both included in the very practical category. In addition, the results of the teacher practicality test obtained an average of 90.78%, also with a very practical category. The level of effectiveness test of the project-based e-module on the material of Effort and Energy obtained an average N-gain with a score of 0.77% and included in the high category. 25 students who took the test and adjusted for creativity indicators experienced improvements including fluency aspects of 43% to 88.8%, flexibility aspects of 50.6% to 91.14%, originality aspects of 30.6% to 89.7%, and elaboration aspects of 72% to 98.2%. The results of the increase in student creativity are proven by adequate interval value scores.

Keywords: E-Module, Project Based Learning Model, ADDIE, work and Energy, Creative Thinking