ABSTRAK

Tujuan penelitian ini untuk mengetahui bagaimana peningkatan pemahaman konsep siswa pada materi energi mekanik melalui penerapan model pembelajaran *Problem Based Learning (PBL)* dan simulasi *PhET* di SMA Negeri 3 Bireuen. Penelitian ini menggunakan *kuasi eksperimen* dengan desain penelitian *Nonequivalent Control Group Design* dengan jumlah responden sebanyak 52 orang. Instrumen pengumpulan data pemahaman konsep adalah tes. Data dianalisis dengan statistik parametris, yaitu uji-t dengan teknik *independent sample t-test*. Berdasarkan hasil penelitian dan pembahasan, dapat disimpulkan bahwa terdapat pengaruh model pembelajaran *Problem Based Learning* (PBL) melalui simulasi *PhET* terhadap peningkatan pemahaman konsep siswa pada materi energi mekanik di kelas XI SMA Negeri 3 Bireuen. Dan dapat dilihat dari hasil *uji independent sample t-test* dengan nilai Sig (2-tailed) yaitu 0,002, artinya nilai Sig (2-tailed) 0,002<0,05, maka sebagaimana dasar pengambilan keputusan dalam *uji independent sample t-test* dapat disimpulkan bahwa Ho ditolak dan Ha diterima. Dengan rata-rata *postest* kelas eksperimen diatas KKM (Kriteria Ketuntasan Minimal).

Kata Kunci: ***Problem Based Learning (PBL), simulasi PhET, Pemahaman konsep siswa.***

ABSTRACT

The purpose of this study was to find out how to increase students' understanding of concepts in mechanical energy material through the application of Problem Based Learning (PBL) learning models and PhET simulations in SMA N 3 Bireuen. This study used a quasi-experimental research design with Nonequivalent Control Group Design with 52 respondents. The instrument for understanding data collection concepts is a test. Data were analyzed with parametric statistics, namely t-test with independent sample t-test techniques. Based on the results of research and discussion, it can be concluded that there is an influence of the Problem Based Learning (PBL) learning model through PhET simulations on improving students' understanding of the concept of mechanical energy in class XI of SMA Negeri 3 Bireuen. And it can be seen from the results of the independent sample t-test with the Sig (2-tailed) value that is 0.002, meaning that the Sig (2-tailed) value is 0.002 <0.05, then as the basis for decision making in the independent sample t-test can be concluded that Ho was rejected and Ha was accepted. With an average post-grade experimental above KKM (Minimum completeness criteria).

Keywords: ***Problem Based Learning (PBL), PhET Simulations , students' understanding of concepts***