

ABSTRAK

This study aims to determine the increase in students' cognitive learning outcomes after using e-handout based problems based learning on the material of rotational dynamics and rigid body balance, and to determine student responses to the e-handout. This is due to the ineffectiveness of learning in the pandemic that resulted in poor learning outcomes of students. This research method is the Research and Development (R&D) ADDIE model which consists of five stages, namely the analysis stage, the design stage, the development stage, the implementation stage, and the evaluation stage. This study used a pretest-posttest control group design. The results of the assessment based on material validation experts for problems based learning-based e-handouts obtained an average percentage for all aspects of 92.3% with a very very good/decent category, media experts on problems based learning-based e-handouts obtained an average value by 90% with a very decent category, and the response students get an average score of 89% with the category "very good". The results of the analysis of the experimental class N-gain score of 71.02% with the "high" category. While in the control class the score was 56.56% with the "medium" category. Based on the hypothesis test data using the independent sample t-test. The value of sig (2-tailed) is 0.000. From the hypothesis, it can be concluded that e-handout based on problems based learning is feasible to use and can improve students' cognitive learning outcomes.

Keywords : *E-handout, problems based learning, cognitive learning outcomes.*

ABSTRAK

Penelitian ini bertujuan untuk mengetahui adanya peningkatan hasil belajar kognitif peserta didik setelah menggunakan *E-Handout* berbasis *Problems Based Learning* Pada Materi Dinamika Rotasi dan Keseimbangan Benda Tegar, serta mengetahui respon peserta didik terhadap *e-handout* tersebut. Hal tersebut dikarenakan ketidakefektifan pembelajaran di masa pandemi yang mengakibatkan rendahnya hasil belajar peserta didik. Metode penelitian ini adalah *Research and Development* (R&D) model ADDIE yang terdiri dari lima tahapan, yaitu tahap analisis (*analysis*), tahap desain (*design*), tahap pengembangan (*development*), tahap implementasi (*implementation*), dan tahap evaluasi (*evaluation*). Penelitian ini menggunakan rancangan penelitian *Pretest-Posttest control group design*. Hasil penilaian berdasarkan ahli validasi materi terhadap *e-handout* berbasis *problems based learning* diperoleh persentase rata-rata untuk seluruh aspek sebesar 92,3% dengan kategori sangat sangat baik/layak, ahli media terhadap *e-handout* berbasis *problems based learning* memperoleh nilai rata-rata sebesar 90% dengan kategori sangat layak, dan respon peserta didik memperoleh nilai rata-rata sebesar 89% dengan kategori "sangat baik. Hasil analisis skor N-gain kelas eksperimen sebesar 71,02 % dengan kategori "tinggi". Sedangkan pada kelas control skor sebesar 56,56% dengan kategori "sedang". Berdasarkan data uji hipotesis dengan menggunakan *uji independent sample t-test*. Diperoleh nilai sig (2-tailed) sebesar 0,000. Dari hipotesis yang dilakukan, dapat disimpulkan bahwa *e-handout* berbasis *problems based learning* layak digunakan dan dapat meningkatkan hasil belajar kognitif peserta didik.

Kata kunci: *E-handout , problems based learning, hasil belajar kognitif.*