ABSTRAK

Lola Pratiwi. Pengembangan E-Modul Berbasis Model *Problem Solving* Untuk Meningkatkan *Higher Order Thinking* (HOT) Fisika Materi Termodiamika Di SMA. Tesis. Pendidikan Fisika. Program Pascasarjana Universitas Negeri Medan, 2024.

Penggunaan e-modul berbasis *problem solving* merupakan salah satu cara untuk meningkatkan *Higher Order Thinking* (HOT). E-modul berbasis *problem solving* ini diharapkan dapat menjadi sumber belajar keaktifan proses pembelajaran pada materi termodinamika di SMA. Tujuan dari penelitian ini untuk mengevaluasi tingkat kelayakan, keefektifan, kepraktisan. Jenis penelitian yang digunakan *Research and Development* (R&D) melalui model ADDIE (*Analysis, Design, Development, Implementation, Evaluation*) dengan tahapan kegiatan sebgai berikut : (1) *Analysis*, mengumpulkan informasi; (2) *Design*, mendesain e-modul berbasis *problem solving* dan instrument penilaian; (3) *Development*, memvalidasi desain e-modul, perbaikan desain e-modul dan uji coba e-modul; (4) *Implementation*, uji e-modul; (5) *Evaluation*, revisi terhadap produk yang telah didesain. Hasil penelitian menunjukkan bahwa pada uji kelayakan ahli materi sebesar 89% dan pada ahli media sebesar 91% yang artinya e-modul berada pada kategori sangat layak. Pada hasil uji kepraktisan siswa dan guru diperoleh skor rata-rata masing-masing sebesar 85% dan 86% yang menunjukkan tingkat kategori sangat praktis. Hasil uji keefektifan diperoleh berdasarkan rata-rata peningkatan *N-Gain* dan peningkatan ketuntasan klasikal hasil belajar masing-masing sebesar 0,47 dengan kriteria sedang dan 80,58% pembuatan e-modul berbasis *problem solving* dalam kategori sangat efektif. Hal ini berarti bahwa e-modul berbasis *problem solving* telah memenuhi kriteria layak, praktis dan efektif.

Kata Kunci : E-Modul, *Problem Solving*, *Higher Order Thinking* (HOT), Termodinamika

ABSTRACT

Lola Pratiwi. Development of E-Modules Based on Problem Solving Model to Improve Higher Order Thinking (HOT) Physics Thermodynamics Material in High School. Thesis, Physics Education. Postgraduate Program State University of Medan, 2024.

The use of e-modules based on problem solving is one way to improve Higher Order Thinking (HOT). This problem solving-based e-module is expected to be a learning resource for the learning process on thermodynamic material in high school. The purpose of this research is to evaluate the level of feasibility, effectiveness, practicality. The type of research used is Research and Development (R&D) through the ADDIE model (Analysis, Design, Development, Implementation, Evaluation) with the following stages of activity: (1) Analysis, collecting information; (2) Design, designing problem solving-based e-modules and assessment instruments; (3) Development, validating e-module designs, improving e-module designs and e-module trials; (4) Implementation, testing e-modules; (5) Evaluation, revision of products that have been designed. The results showed that the material expert feasibility test was 89% and the media expert was 91%, which means that the e-module is in the very feasible category. The results of the student and teacher practicality test obtained an average score of 85% and 86%, respectively, which showed a very practical category level. The effectiveness test results were obtained based on the average increase in N-Gain and the increase in classical completeness of learning outcomes of 0.47 with moderate criteria and 80.58% of making problem solving-based e-modules in the highly effective category. This indicates that the problem solving-based e-module has met the criteria of feasible, practical and effective.

Keywords **:** E-Module, Problem Solving, Higher Order Thinking (HOT), Thermodynamics