ABSTRAK

PENGEMBANGAN *E-LEARNING* BERBASIS *MOODLE* DENGAN PENDEKATAN STEM SEBAGAI UPAYA MENGATASI *LEARNING LOSS* UNTUK MENSTIMULUS HOTS PADA MATERI SUHU, PEMUAIAN DAN KALOR

Oleh

MIDA AYU RESTANTI

Penelitian ini bertujuan untuk mengembangkan *e-learning* berbasis *moodle* dengan pendekatan STEM yang valid, praktis, dan efektif sebagai upaya mengatasi *learning loss* untuk menstimulus HOTS. Model penelitian pengembangan yang digunakan adalah model ADDIE *(Analyze, Design, Development, Implement, Evaluation).* Subjek penelitian uji coba lapangan dipilih secara *cluster random sampling* yang terdiri dari kelas eksperimen dan kelas kontrol. Pembelajaran pada kelas eksperimen menggunakan produk *e-learning* berbasis *moodle* yang dikembangkan, sedangkan kelas kontrol menggunakan pembelajaran konvensional.

Hasil penelitian menujukkan bahwa: 1) validitas produk pengembangan *e-learning* berbasis *moodle* dengan pendekatan STEM sebagai upaya meminimalisir *learning loss* untuk menstimulus HOTS memenuhi kriteria valid ditinjau dari aspek kesesuaian media dan materi; 2) keefektifan produk pengembangan pada kelas eksperimen untuk mentimulus HOTS ditinjau dari *n-Gain* berkategori "sedang" sebesar 0,62 dan *effect size* berkategori "sedang" sebesar 0,43; 3) kepraktisan produk pengembangan ditinjau dari penilaian keterlaksanaan pembelajaran melalui angket respon siswa berkategori "sangat tinggi" yaitu sebesar 89,30%.

Kata Kunci: *Moodle*, STEM, HOTS, *Learning loss*

ABSTRACT

THE DEVELOPMENT OF MOODLE-BASED E-LEARNING USING THE STEM APPROACH AS AN ENDEAVOUR TO OVERCOME LEARNING LOSS TO STIMULATE HOTS ON THE MATERIAL OF TEMPERATURE, EXPANSION AND HEAT

By

MIDA AYU RESTANTI

This study aimed to develop moodle-based e-learning with a valid, practical, and effective STEM approach to overcome learning loss and stimulate HOTS. The research methodology employed for development purposes was the ADDIE model, which consists of five distinct phases: Analysis, Design, Development, Implementation, and Evaluation. The selection of research subjects for the field trial was conducted through cluster random sampling, whereby experimental and control classes were selected. The experimental class employed a Moodle-based e-learning solution for instructional purposes; on the other hand, the control class adhered to traditional learning methods.

The findings indicated that: 1) the validity of moodle-based e-learning development products with a STEM approach as an endeavour to mitigate learning loss and promote higher-order thinking skills (HOTS) satisfied the valid criteria for appropriateness of media and materials; 2) the effectiveness of the developmental product in the experimental group for enhancing higher-order thinking skills (HOTS) was assessed using the n-Gain metric, which yielded a score of 0.62, indicating a moderate level of improvement. Additionally, the effect size, which was determined to be 0.43, fell into the medium category, further highlighting the substantial impact of the developmental product on stimulating HOTS; 3) the practicality of these development products, as assessed through student response questionnaires, was rated as "very high" with a percentage of 89.30%.

Keywords: *Moodle, STEM, HOTS, Learning Loss*