

ABSTRAK

Sudana, I N. M. (2022) Pengembangan Laboratorium Maya Interaktif Terintegrasi LMS Platform MOODLE Pada Pembelajaran Fisika SMA. Tesis, Pendidikan IPA, Program Pascasarjana, Universitas Pendidikan Ganesha.

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Kata-kata kunci: Laboratorium maya, MOODLE, Pembelajaran fisika

Penelitian ini bertujuan menghasilkan produk laboratorium maya terintegrasi LMS MOODLE pada pembelajaran fisika yang valid, praktis, dan efektif untuk meningkatkan hasil belajar fisika siswa kelas XI SMA. Jenis penelitian ini adalah penelitian pengembangan (*Research and Development*) dengan menggunakan model pengembangan Luther, meliputi tahap 1) *concept*, 2) *design*, 3) *material collecting*, 4) *assembly*, 5) *testing*, dan 6) *distribution*. Data pada penelitian ini dikumpulkan dengan teknik pemberian angket validasi, angket kepraktisan dan tes hasil belajar fisika. Uji efektivitas produk menggunakan rancangan *One Group Pretest-Posttest Design*. Data hasil penelitian di analisis dengan analisis validasi Gregory, *N-gain score* ternormalisasi dan analisis skor rata-rata. Hasil uji validitas produk menunjukkan bahwa (1) validitas materi laboratorium maya berdasarkan *Koefisien Validitas Gregory* ($KVG = 0,88$) dengan kualifikasi sangat baik, (2) validitas media laboratorium maya ($\bar{x} = 96,12$) dengan kualifikasi sangat valid dan (3) validitas bahasa pada media laboratorium maya ($\bar{x} = 97,67$) dengan kualifikasi sangat valid. Hasil uji kepraktisan menunjukkan bahwa (1) laboratorium maya sangat praktis dari praktisi guru ($\bar{x} = 97,57$) dan (2) laboratorium maya sangat praktis dari praktisi siswa dalam uji coba perorangan ($\bar{x} = 95,37$) dan kelompok ($\bar{x} = 91,22$). Hasil uji efektivitas produk menunjukkan bahwa (1) peningkatan hasil belajar fisika siswa memperoleh kriteria sedang ($\langle g \rangle = 0,66$). Berdasarkan hasil penelitian, dapat disimpulkan bahwa (1) Rancang bangun laboratorium maya memiliki karakteristik sesuai dengan pendekatan konstruktivis dan terintegrasi fitur LMS MOODLE, (2) laboratorium maya telah memperoleh penilaian yang valid, (3) laboratorium maya telah memperoleh penilaian yang praktis, dan (4) laboratorium maya efektif meningkatkan hasil belajar fisika siswa.

ABSTRACT

Sudana, I N. M. (2022) Development of Integrated Interactive Virtual Laboratory Based LMS MOODLE Platform for Senior High School Physics Learning. Thesis, Science Education, Postgraduate Program, Ganesha University of Education.

This thesis has been approved and checked by the Supervisor I: Prof. Dr. Ketut Suma, M.S. and Supervisor II: Prof. Drs. I Wayan Subagia, M.App.Sc., Ph.D.

Keywords: MOODLE, Physics learning, Virtual laboratory

This study aimed to produce an integrated virtual laboratory product LMS MOODLE in physics learning that is valid, practical, and effective to improve physics learning outcomes for class XI Senior high school. This type of research is research and development using the Luther development model, including stages 1) concept, 2) design, 3) collecting material, 4) assembly, 5) testing, and 6) distribution. The data in this study were collected by giving validation questionnaires, practicality questionnaires and physics learning outcomes tests. Product effectiveness test using One Group Pretest-Posttest Design. The research data were analyzed using Gregory validation analysis, normalized N-gain score and average score analysis. The results of the product validity test show that (1) the validity of the virtual laboratory material is based on the Gregory Validity Coefficient ($KVG = 0.88$) with very good qualifications, (2) the validity of the virtual laboratory media ($\bar{x} = 96,12$) with very valid qualifications and (3) the validity of the virtual laboratory language ($\bar{x} = 97,67$) with very valid qualifications. The results of the practicality test show that (1) virtual laboratories are very practical for teacher practitioners ($\bar{x} = 97,57$) and (2) virtual laboratories are very practical for student practitioners in individual trials ($\bar{x} = 95,37$) and groups ($\bar{x} = 91,22$). The results of the product effectiveness test showed that (1) the increase in students' physics learning outcomes obtained moderate criteria ($\langle g \rangle = 0.66$). Based on the results of the study, it can be concluded that (1) the virtual laboratory design has characteristics in accordance with the constructivist approach and integrated MOODLE LMS features, (2) the virtual laboratory has obtained a valid assessment, (3) the virtual laboratory has obtained a practical assessment, and (4) virtual laboratories are effective in improving student physics learning outcomes.