ABSTRAK

Nur Hafizhah Husna. NIM 4191111006 (2024). Pengembangan *E-Modul* Berbantuan *Geogebra* Pada Model *Discovery Learning* Untuk Meningkatkan Kemampuan Pemahaman Konsep Matematis Siswa SMPN 4 Tebing Tinggi.

Penelitian ini bertujuan untuk mengetahui kevalidan, kepraktisan, dan keefektifan bahan ajar (*e-modul*) berbantuan *geogebra* pada model *discovery learning* serta untuk mengetahui peningkatan kemampuan pemahaman konsep matematis siswa melalui bahan ajar (*e-modul*) berbantuan *geogebra* pada model *discovery learning* pada materi sistem koordinat kartesius. Jenis penelitian yang digunakan adalah penelitian pengembangan atau *Research and Development* (R&D). Penelitian ini menggunakan model pengembangan ADDIE yang mana terdiri dari lima tahap yaitu: *Analysis*, D*esign*, *Development*, *Implementation*, dan *Evaluation*. Adapun model pembelajaran yang digunakan dalam penelitian ini ialah model *discovery learning* yang terdiri dari *stimulation, problem statement, data collection, data processing, verification, generalization*. Produk yang dikembangkan berupa bahan ajar (*e-modul*) berbantuan *geogebra* pada materi sistem koordinat kartesius, subjek uji coba dalam penelitian ini adalah siswa kelas VIII-5 SMP Negeri 4 Tebing Tinggi. Instrumen yang digunakan dalam penelitian ini adalah lembar RPP, lembar validasi ahli, angket respon siswa, angket respon guru, lembar wawancara, dan tes hasil belajar berupa tes pemahaman konsep. Hasil penelitian menunjukkan: (1) Kevalidan bahan ajar berdasarkan penilaian dosen ahli ditinjau berdasarkan isi media mendapatkan rata-rata nilai sebesar 3,75 dengan kriteria "valid". Kemudian ditinjau berdasarkan konstruk media mendapatkan rata-rata presentase sebesar 3,75 dengan kriteria "valid". (2) Kepraktisan bahan ajar berdasarkan respon siswa pada uji kelompok kecil mendapat persentase 83,25% dan uji lapangan mendapat presentase sebesar 89,72%, kemudian berdasarkan respon guru setelah menggunakan media mendapatkan rata-rata persentase sebesar 90% yang termasuk kriteria "sangat praktis". (3) Keefektifan bahan ajar berdasarkan hasil ketuntasan belajar siswa setelah menggunakan bahan ajar (*e-modul*) sebesar 88,1%, presentase total ketercapaian ketuntasan belajar berdasarkan indikator pemahaman konsep mendapatkan persentase sebesar 83%, dan ketercepaian waktu yang dibutuhkan sama dengan pembelajaran seperti biasa dilakukan. (4) Peningkatan kemampuan pemahaman konsep dilihat berdasarkan hasil rata-rata pretest siswa sebesar 55,95 menjadi rata-rata posttest sebesar 82,85. Kemudian didukung oleh hasil perolehan analisis N-Gain yaitu 0,62 yang berada pada interval $0.3 \leq <g> < 0.7$ tergolong "sedang". Berdasarkan hasil penelitian, kemampuan pemahaman konsep matematis siswa meningkat maka penggunaan bahan ajar (*e-modul*) berbantuan *geogebra* pada model *discovery learning* dapat dikatakan layak dengan kategori valid, praktis dan efektif.

Kata kunci: Bahan ajar (*e-modul*), *Discovery Learning, Geogebra,* Kemampuan Pemahaman Konsep.

ABSTRACT

Nur Hafizhah Husna. NIM 4191111006 (2024). Development of Geogebra-assisted e-modules on the discovery learning model to improve the ability to understand mathematical concepts for Students of SMPN 4 Tebing Tinggi.

This study aims to determine the validity, practicality, and effectiveness of geogebra-assisted teaching materials (e-modules) in the discovery learning model and to determine the increase in students' ability to understand mathematical concepts through geogebra-assisted teaching materials (e-modules) in the discovery learning model in cartesian coordinate system mathematics. The type of research used is research development or Research and Development (R&D). This research uses the ADDIE development model which consists of five stages, namely: Analysis, Design, Development, Implementation, and Evaluation. The learning model used in this study is a discovery learning model consisting of stimulation, problem statements, data collection, data processing, verification, generalization. The product developed in the form of teaching materials (e-modules) assisted by geogebra on cartesian coordinate system mathematics, the test subjects in this study were grade VIII-5 students of SMP Negeri 4 Tebing Tinggi. The instruments used in this study were RPP sheets, expert validation sheets, student response questionnaires, teacher response questionnaires, interview sheets, and learning outcomes tests in the form of concept understanding tests. The results showed: (1) The validity of teaching materials based on the assessment of expert lecturers reviewed based on media content received an average score of 3.75 with the criteria of "valid". Then reviewed based on media constructs get an average percentage of 3.75 with the criteria of "valid". (2) The practicality of teaching materials based on student responses in small group tests gets a percentage of 83.25% and field tests gets a percentage of 89.72%, then based on teacher responses after using the media gets an average percentage of 90% which includes the criteria of "very practical". (3) The effectiveness of teaching materials based on the results of student learning completeness after using teaching materials (e-modules) is 88.1%, the total prevalence of learning completeness based on the indicator of understanding concepts gets a percentage of 83%, and the time needed is the same as learning as usual. (4) Increased ability to understand concepts based on students' average pretest results of 55.95 to a posttest average of 82.85. Then supported by the results of the N-Gain analysis, which is 0.62 which is at an interval of $0.3 \leq \langle g \rangle < 0.7$ classified as "medium". Based on the results of the study, the ability to understand students' mathematical concepts increases, so the use of teaching materials (e-modules) assisted by geogebra in the discovery learning model can be said to be feasible with valid, practical and effective categories.

Keywords: Teaching materials (e-module), Geogebra, Discovery Learning, Concept Understanding Ability.