ABSTRAK

Nurul Fidiah. NIM 4191111023 (2023). Pengembangan Media Interaktif pada Pembelajaran Matematika Berbantuan *Geogebra* dengan Pendekatan STEM untuk Meningkatkan Pemahaman Konsep Matematis Siswa SMP Negeri 1 Binjai Langkat.

Penelitian ini bertujuan untuk mengetahui validitas, kepraktisan, keefektifan media interaktif pada pembelajaran matematika berbantuan *Geogebra* dengan pendekatan STEM serta untuk mengetahui peningkatan kemampuan pemahaman konsep matematis siswa melalui media interaktif pada pembelajaran matematika berbantuan Geogebra dengan pendekatan STEM. Penelitian dan pengembangan ini di desain dengan mengacu pada tahapan model pengembangan ADDIE (*Analysis, Design, Development, Implementation and Evaluation*). Adapun pendekatan pembelajaran yang digunakan dalam penelitian ini yaitu pendekatan STEM (*Science, Technology, Enginering, and Mathematic*). Produk yang dikembangkan berupa media interaktif berbantuan geogebra pada materi lingkaran, subjek uji coba dalam penelitian ini adalah siswa kelas VIII-C SMP Negeri 1 Binjai Langkat. Hasil penelitian menunjukkan: (1) Kevalidan media berdasarkan penilaian dosen ahli ditinjau berdasarkan isi media mendapatkan rata-rata persentase sebesar 93,05% dengan kriteria "sangat valid". Kemudian ditinjau berdasarkan konstruk media mendapatkan rata-rata presentase sebesar 95,83% dengan kriteria "sangat valid". (2) Kepraktisan media pembelajaran berdasarkan respon siswa pada uji kelompok kecil mendapat persentase 89,13% dan uji lapangan mendapat presentase sebesar 89,24%, kemudian berdasarkan respon guru setelah menggunakan media mendapatkan rata-rata persentase sebesar 92,50% yang termasuk kriteria "sangat praktis". (3) Keefektifan media berdasarkan hasil ketuntasan belajar siswa setelah menggunakan media pembelajaran matematika interaktif sebesar 87,50%, presentase ketercapaian tujuan pembelajaran sebesar 82,60%, presentase respon positif siswa sebesar 88,89% dikategorikan sangat positif, dan ketercepaian waktu yang dibutuhkan sama dengan pembelajaran seperti biasa dilakukan. (4) Peningkatan kemampuan pemahaman konsep dilihat berdasarkan hasil rata-rata pretest siswa sebesar 56,09 menjadi rata-rata posttest sebesar 81,72. Kemudian didukung oleh hasil perolehan analisis N-Gain yaitu 0,61 yang berada pada interval $0.3 \leq <g> < 0.7$ tergolong "sedang". Berdasarkan hasil penelitian, kemampuan pemahaman konsep matematis siswa meningkat maka penggunaan media interaktif pada pembelajaran matematika berbantuan geogebra dengan pendekatan STEM dapat dikatakan layak dengan kategori valid, praktis dan efektif.

Kata Kunci: Media Interaktif, Geogebra, Pendekatan STEM, Pemahaman Konsep, Pengembangan

ABSTRACT

Nurul Fidiah. NIM 4191111023 (2023). Development of Interactive Media in Geogebra Assisted Mathematics Learning with STEM Approach to Improve Understanding of Mathematical Concepts for Students of SMP Negeri 1 Binjai Langkat.

This research aims to determine the validity, practicality and effectiveness of interactive media in Geogebra-assisted mathematics learning with a STEM approach and to determine the increase in students' ability to understand mathematical concepts through interactive media in Geogebra-assisted mathematics learning with a STEM approach. This research and development was designed by referring to the stages of the ADDIE development model (Analysis, Design, Development, Implementation and Evaluation). The learning approach used in this research is the STEM approach (Science, Technology, Engineering, and Mathematics). The product developed is geogebra-assisted interactive media on circle material. The test subjects in this research were class VIII-C students at SMP Negeri 1 Binjai Langkat. The research results show: (1) The validity of the media based on the assessment of expert lecturers is reviewed based on the media content, getting an average percentage of 93.05% with the criteria "very valid". Then it was reviewed based on the media construct, getting an average percentage of 95.83% with the criteria "very valid". (2) The practicality of learning media based on student responses in the small group test got a percentage of 89.13% and the field test got a percentage of 89.24%, then based on the teacher's response after using the media the average percentage was 92.50% which is included in the criteria. "very practical". (3) The effectiveness of the media based on the results of student learning completion after using interactive mathematics learning media was 87.50%, the percentage of achievement of learning objectives was 82.60%, the percentage of positive student responses was 88.89% categorized as very positive, and the time required was achieved the same as learning as usual. (4) The increase in the ability to understand concepts can be seen based on the students' average pretest results of 56.09 to a posttest average of 81.72. Then it is supported by the results of the N-Gain analysis, namely 0.61 which is in the interval $0.3 \leq <g> < 0.7$ which is classified as "medium". Based on the research results, students' ability to understand mathematical concepts increases, so the use of interactive media in geogebra-assisted mathematics learning with a STEM approach can be said to be feasible in the valid, practical and effective categories.

Keywords: Interactive Media, Geogebra, STEM Approach, Concept Understanding, Development.