

ABSTRAK

Afsya Meylaningsih. 242620005. Pengembangan E-Modul Interaktif Berbasis Etnomatematika Untuk Meningkatkan Kemampuan Numerasi Pada Siswa Berkebutuhan Khusus. **Tesis. Program Studi Magister Pendidikan Matematika 2026.**

Penelitian ini bertujuan untuk mengembangkan e-modul interaktif berbasis etnomatematika yang memenuhi kriteria valid, praktis, dan efektif. Subjek penelitian ini adalah siswa berkebutuhan khusus kategori tunagrahita fase D di MTs Plus Nurul Ihsan. Penelitian difokuskan pada pengembangan bahan ajar elektronik sebagai upaya mengatasi kesulitan belajar matematika yang dialami siswa tunagrahita, khususnya dalam kemampuan numerasi. Melalui pengembangan e-modul tersebut diharapkan tersedia bahan ajar yang sesuai dengan karakteristik dan kebutuhan belajar siswa tunagrahita sehingga dapat membantu meningkatkan kemampuan numerasi mereka.

Metode dalam penelitian menggunakan model ADDIE, yang meliputi tahap *Analyze, Design, Development, Implementation, dan Evaluation*. Produk yang dihasilkan berupa e-modul interaktif berbasis etnomatematika pada materi bilangan bulat untuk meningkatkan kemampuan numerasi siswa tunagrahita fase D. Subjek penelitian terdiri atas siswa berkebutuhan khusus kategori tunagrahita fase D di MTs Plus Nurul Ihsan, dengan uji coba kelompok kecil melibatkan 3 siswa dan uji coba kelompok besar melibatkan 9 siswa yang dipilih menggunakan teknik purposive sampling. Pengumpulan data dilakukan melalui observasi, wawancara, angket, serta tes kemampuan numerasi (*pretest* dan *post-test*). Data yang diperoleh dianalisis untuk menentukan tingkat kevalidan, kepraktisan, dan keefektifan e-modul, dengan analisis keefektifan menggunakan desain *one-group pretest-posttest* dan perhitungan N-Gain untuk mengukur peningkatan kemampuan numerasi siswa setelah menggunakan e-modul yang dikembangkan.

Hasil penelitian menunjukkan bahwa e-modul interaktif berbasis etnomatematika yang dikembangkan memenuhi kriteria valid, praktis, dan efektif. Hasil validasi oleh ahli materi memperoleh rata-rata skor 3,45 dengan kriteria valid, sedangkan validasi oleh ahli media memperoleh rata-rata skor 3,82 dengan kriteria valid. Kepraktisan e-modul ditunjukkan oleh respons guru yang memperoleh persentase 86,11% dengan kategori sangat positif, hasil observasi aktivitas siswa dalam pembelajaran terlaksana dengan sangat baik. Keefektifan e-modul ditunjukkan oleh peningkatan kemampuan numerasi siswa tunagrahita setelah menggunakan e-modul, dengan nilai rata-rata *pretest* sebesar 37,40 meningkat menjadi 61,52 pada *post-test* dan memperoleh nilai N-Gain sebesar 0,40 yang berada pada kategori sedang. Hasil tersebut menunjukkan bahwa e-modul interaktif berbasis etnomatematika yang dikembangkan layak digunakan dan efektif dalam meningkatkan kemampuan numerasi siswa tunagrahita fase D di MTs Plus Nurul Ihsan.

Kata kunci: e-modul interaktif; etnomatematika, numerasi, tunagrahita

ABSTRACT

Afsya Meylaningsih. 242620005. Development of an Interactive E-Module Based on Ethnomathematics to Improve Numeracy Skills in Students with Special Needs. **Thesis. Master's Program in Mathematics Education 2026.**

This study aims to develop an interactive e-module based on ethnomathematics that meets the criteria of validity, practicality, and effectiveness. The subjects of this study were students with special needs in the intellectual disability category (phase D) at MTs Plus Nurul Ihsan. The research focused on the development of electronic teaching materials as an effort to address the difficulties in learning mathematics experienced by students with intellectual disabilities, particularly in numeracy skills. Through the development of these e-modules, it is hoped that teaching materials will be available that are tailored to the characteristics and learning needs of students with intellectual disabilities, thereby helping to improve their numeracy skills.

The research method employed the ADDIE model, which includes the Analyze, Design, Development, Implementation, and Evaluation phases. The resulting product is an interactive e-module based on ethnomathematics on the topic of integers to improve the numeracy skills of students with intellectual disabilities in phase D. The research subjects consisted of students with special needs in the intellectual disability category, phase D, at MTs Plus Nurul Ihsan, with a small-group pilot test involving 3 students and a large-group pilot test involving 9 students selected using purposive sampling. Data collection was conducted through observation, interviews, questionnaires, and numeracy ability tests (pretest and posttest). The data obtained were analyzed to determine the validity, practicality, and effectiveness of the e-module. The effectiveness analysis used a one-group pretest-posttest design and N-Gain calculations to measure the improvement in students' numeracy skills after using the developed e-module.

The research results show that the interactive e-module based on ethnomathematics that was developed meets the criteria of validity, practicality, and effectiveness. Validation by subject matter experts yielded an average score of 3.45, meeting the validity criteria, while validation by media experts yielded an average score of 3.82, also meeting the validity criteria. The practicality of the e-module was demonstrated by teachers' responses, 86.11% of which were rated "very positive," and observations showed that student activities during learning were carried out very well. The effectiveness of the e-module was demonstrated by the improvement in the numeracy skills of students with intellectual disabilities after using the e-module; the average pretest score of 37.40 increased to 61.52 on the posttest, resulting in an N-Gain of 0.40, which falls into the moderate category. These results indicate that the interactive, ethnomathematics-based e-module developed is suitable for use and sufficiently effective in improving the numeracy skills of students with intellectual disabilities in Phase D at MTsS Plus Nurul Ihsan.

Keywords: *Ethnomathematics, intellectual disabilities, interactive e-modules, numeracy*