ABSTRAK

Hafizhah, NIM 4173311049 (2024). Pengembangan Soal Setara TIMSS untuk Mengukur Kemampuan Penalaran Matematika Siswa dalam Konten Geometri.

Penelitian ini bertujuan untuk menghasilkan pengembangan soal setara TIMSS untuk mengukur kemampuan penalaran matematika siswa dalam konten geometri yang valid, praktis, dan efektif serta mendeskripsikan kemampuan penalaran matematika siswa dalam menyelesaikan soal setara TIMSS yang dikembangkan dalam konten geometri. Penelitian ini adalah riset pengembangan atau *development research* tipe *formative evaluation* dengan dua tahap yaitu tahap *preliminary* (tahap persiapan) dan tahap *prototyping* menggunakan alur *formative evaluation* terdiri dari *self evaluation, protoyping* (*expert riviews*, *one-to-one* dan *small group*), dan *field test*. Instrumen yang digunakan adalah tes uraian sebanyak 7 butir soal, angket respon siswa, guru dan dosen. Hasil penelitian ini menunjukkan bahwa telah berhasil dikembangkan soal setara TIMSS untuk mengukur kemampuan penalaran matematika siswa dalam konten geometri berkualitas dilihat dari: (1) Validasi oleh para ahli dinyatakan valid karena ketiga validator menyatakan "Soal dapat digunakan dengan revisi" dan perhitungan validitas butir tes menggunakan *Microsoft Excel* telah dihitung diperoleh t hitung ≥ t tabel dan hasilnya dinyatakan bahwa soal yang dikembangkan "valid" serta dengan reliabilitas 0,63; (2) Kepraktisan soal setara TIMSS yang dikembangkan dalam konten geometri dikategorikan cukup dan rata-rata respon positif siswa 89,2% dan skala *Likert* dengan rata-rata 3,58 maka dinyatakan "Praktis"; (3) Efektifitas pengembangan soal setara TIMSS untuk mengukur kemampuan penalaran matematika siswa dalam konten geometri dinilai "efektif" dengan hasil belajar klasikal sebesar 83,33% dan perhitungan angket rata-rata 82,33%; (4) Kemampuan penalaran matematika siswa kelas VIII SMP Negeri 11 Medan pada pengembangan soal setara TIMSS diperoleh 12 siswa kurang, 16 siswa cukup, 8 siswa baik dan 0 siswa sangat baik dengan berkategori cukup.

Kata Kunci: Penalaran Matematika, Soal Setara TIMSS, *Formative Evaluation,* Geometri

ABSTRACT

Hafizhah, NIM 4173311049 (2024). Development of TIMSS Equivalent Questions to Measure Students' Mathematical Reasoning Ability in Geometry Content.

This research aims to produce the development of TIMSS equivalent questions to measure students' mathematical reasoning abilities in geometry content that are valid, practical and effective and to describe students' mathematical reasoning abilities in solving TIMSS equivalent questions developed in geometry content. This research is a formative evaluation type of development research with two stages, namely the preliminary stage (preparation stage) and the prototyping stage using a formative evaluation flow consisting of self evaluation, prototyping (expert reviews, one-to-one and small group), and field test. The instruments used were a description test with 7 questions, a response questionnaire from students, teachers and lecturers. The results of this research indicate that TIMSS-equivalent questions have been successfully developed to measure students' mathematical reasoning abilities in quality geometry content as seen from: (1) Validation by experts was declared valid because the three validators stated "The questions can be used with revisions" and the validity of the test items was calculated using Microsoft Excel has been calculated to obtain t count $\geq$ t table and the results state that the questions developed are "valid" and with a reliability of 0.63; (2) The practicality of the TIMSS equivalent questions developed in geometry content was categorized as sufficient and the average positive response from students was 89.2% and the Likert scale with an average of 3.58 was declared "Practical"; (3) The effectiveness of developing TIMSS equivalent questions to measure students' mathematical reasoning abilities in geometry content was assessed as "effective" with classical learning results of 83.33% and an average questionnaire calculation of 82.33%; (4) The mathematical reasoning ability of class VIII students at SMP Negeri 11 Medan in developing TIMSS equivalent questions was obtained by 12 students being poor, 16 students being adequate, 8 students being good and 0 students being very good in the sufficient category.

Keywords: Mathematical Reasoning, TIMSS Equivalent Questions, Formative Evaluation, Geometry