

ABSTRAK

PENGEMBANGAN INSTRUMEN PENILAIAN BERBASIS MULTI REPRESENTASI BERBANTUAN *THUNKABLE* UNTUK MENGUKUR KETERAMPILAN ARGUMENTASI PADA MATERI FLUIDA STATIS

Oleh

EMI GUSTINA

Penelitian ini dilatarbelakangi oleh kebutuhan akan instrumen penilaian yang mampu mengukur keterampilan argumentasi peserta didik melalui berbagai bentuk representasi dalam pembelajaran fisika, khususnya pada materi fluida statis. Penelitian ini bertujuan mengembangkan instrumen penilaian berbasis multi representasi berbantuan Thunkable yang valid, reliabel, dan praktis untuk mengukur keterampilan argumentasi peserta didik. Penelitian ini merupakan penelitian pengembangan (*Research and Development*) dengan menggunakan model ADDIE yang meliputi tahap analisis, desain, pengembangan, implementasi, dan evaluasi. Instrumen yang dikembangkan berupa tes esai berbasis multi representasi yang mengintegrasikan representasi verbal, matematis, visual, dan grafik, serta dilengkapi dengan rubrik penilaian keterampilan argumentasi berdasarkan pola argumentasi Toulmin. Validitas instrumen dinilai melalui validasi ahli dan uji validitas empiris menggunakan model Rasch dengan bantuan perangkat lunak WINSTEPS, reliabilitas dan kepraktisan turut dianalisis. Hasil analisis menunjukkan bahwa dari 20 butir soal yang dikembangkan, sebanyak 19 butir dinyatakan fit dan valid berdasarkan kriteria *Outfit Mean Square* (MNSQ), *Outfit Z-Standard* (ZSTD), dan *Point Measure Correlation*, sementara 1 butir soal memerlukan revisi. Uji reliabilitas menghasilkan nilai alpha Cronbach sebesar 0,93 dengan nilai *person reliability* sebesar 0,88 dan *item reliability* sebesar 0,82 yang menunjukkan konsistensi instrumen dengan kategori baik. Uji kepraktisan menunjukkan persentase sebesar 95% berdasarkan persepsi guru dan 90% berdasarkan keterbacaan peserta didik, dengan rata-rata keseluruhan 93% yang termasuk kategori sangat praktis. Dengan demikian, instrumen penilaian berbasis multi representasi berbantuan Thunkable yang dikembangkan memenuhi kriteria valid, reliabel, dan praktis, sehingga layak digunakan untuk mengukur keterampilan argumentasi peserta didik pada materi fluida statis.

Kata kunci: Instrumen Penilaian, Multi Representasi, *Thunkable*, Keterampilan Argumentasi, Fluida Statis.

ABSTRACT

DEVELOPMENT OF A MULTI-REPRESENTATION-BASED ASSESSMENT INSTRUMENT ASSISTED BY THUNKABLE TO MEASURE ARGUMENTATION SKILLS IN STATIC FLUIDS

By

EMI GUSTINA

This study was motivated by the need for an assessment instrument capable of measuring students' argumentation skills through various forms of representation in physics learning, particularly in static fluid material. This study aims to develop a valid, reliable, and practical multi-representation-based assessment instrument assisted by Thunkable to measure students' argumentation skills. This study is a research and development study using the ADDIE model, which includes the stages of analysis, design, development, implementation, and evaluation. The instrument developed is a multi-representation-based essay test that integrates verbal, mathematical, visual, and graphic representations, and is equipped with an argumentation skills assessment rubric based on the Toulmin argumentation pattern. The validity of the instrument was assessed through expert validation and empirical validity testing using the Rasch model with the help of WINSTEPS software, while reliability and practicality were also analyzed. The analysis results showed that of the 20 items developed, 19 items were declared fit and valid based on the Outfit Mean Square (MNSQ), Outfit Z-Standard (ZSTD), and Point Measure Correlation criteria, while 1 item required revision. The reliability test produced a Cronbach's alpha value of 0.93 with a person reliability value of 0.88 and an item reliability of 0.82, indicating good consistency of the instrument. The practicality test showed a percentage of 95% based on teachers' perceptions and 90% based on students' readability, with an overall average of 93%, which is classified as very practical. Thus, the Thunkable-assisted multi-representation-based assessment instrument developed meets the criteria of validity, reliability, and practicality, making it suitable for measuring students' argumentation skills in static fluid material.

Keywords: *Assessment Instruments, Multi-Representation, Thunkable, Argumentation Skills, Static Fluids.*