

ABSTRAK

Tia Damayanti (NIM : 8216176005). Pengembangan Bahan Ajar Fisika Berbasis STEM (*Science, Technology, Engineering and Mathematics*) Untuk Meningkatkan Keterampilan 4C Siswa. Tesis. Medan : Program Studi Pendidikan Fisika, Pascasarjana Universitas Negeri Medan, 2023.

Penelitian ini bertujuan untuk menganalisis kelayakan, kepraktisan, keefektifan dan pengaruh pengembangan bahan ajar fisika berbasis STEM terhadap keterampilan 4C siswa. Populasi dalam penelitian ini adalah seluruh siswa kelas XI semester 2 jurusan MIPA di SMA Negeri 1 Stabat. Jenis penelitian yang digunakan adalah *Research & Development (R&D)*, yaitu metode penelitian yang menghasilkan sebuah produk dalam bidang keahlian tertentu. Tahapan perancangan pembelajaran dengan menggunakan pendekatan ADDIE dimulai dengan Analisis (*Analysis*), Desain (*Design*), Pengembangan (*Development*), Pelaksanaan (*Implementation*), dan Evaluasi (*Evaluation*). Penelitian menggunakan pendekatan dengan analisis secara kualitatif dan kuantitatif. Pengambilan data dilakukan melalui observasi, survei, wawancara, tes dan dokumentasi. Instrumen tes yang dikembangkan terdiri dari 10 butir tes pilihan berganda. Instrumen non tes yang dikembangkan terdiri dari lembar observasi siswa, lembar survei dan wawancara. Berdasarkan hasil analisis data diperoleh kesimpulan bahwa uji kelayakan bahan ajar oleh validator memperoleh nilai rata-rata persentase sebesar 91,17%, persentase uji kepraktisan bahan ajar oleh validator sebesar 90% dengan kategori sangat praktis, persentase uji keefektifan bahan ajar oleh guru dan siswa sebesar 88,75% dengan kategori sangat efektif dan pengembangan bahan ajar berbasis STEM berpengaruh pada peningkatan keterampilan 4C siswa.

Kata Kunci: *Pengembangan, Bahan Ajar, STEM, Critical Thinking, Creativity Thinking, Communication, Collaboration.*



ABSTRACT

Tia Damayanti (NIM : 8216176005). Development of STEM (Science, Technology, Engineering and Mathematics) Based Physics Teaching Materials to Improve Students' 4C Skills. Thesis. Medan: Physics Education Study Program, Postgraduate Program, State University of Medan, 2023.

This study aims to analyze the feasibility, practicality, effectiveness and influence of developing STEM-based physics teaching materials on students' 4C skills. The population in this study were all students of class XI semester 2 majoring in MIPA at SMA Negeri 1 Stabat. The type of research used is Research & Development (R&D), which is a research method that produces a product in a particular field of expertise. The stages of learning design using the ADDIE approach begin with Analysis, Design, Development, Implementation, and Evaluation. This research uses an approach with qualitative and quantitative analysis. Data collection was carried out through observation, surveys, interviews, tests and documentation. The developed test instrument consists of 10 multiple choice test items. The developed non-test instruments consist of student observation sheets, survey sheets and interviews. Based on the results of data analysis, it was concluded that the feasibility test of teaching materials by the validator obtained an average percentage value of 91.17%, the percentage of the practicality test of teaching materials by the validator was 90% in the very practical category, the percentage of the effectiveness test of teaching materials by teachers and students was 88.75% in the very effective category and the development of STEM-based teaching materials has an effect on improving students' 4C skills.

Keywords: *Development, Teaching Materials, STEM, Critical Thinking, Creativity Thinking, Communication, Collaboration.*

