PENGEMBANGAN *E-BOOK* BERBASIS PENDEKATAN STEAM PADA MATA PELAJARAN IPAS KELAS IV SD MATERI TRANSFORMASI ENERGI

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ABSTRAK

Penelitian ini bertujuan untuk mengetahui (1) desain dan pengembangan media pembelajaran *e-book* berbasis pendekatan STEAM (Sains, Teknologi, Rekayasa, Seni, dan Matematika) untuk mata pelajaran IPA pada topik transformasi energi bagi siswa kelas 4 SD, (2) kevalidan media pembelajaran *e-book* berbasis pendekatan STEAM menurut pakar konten, pakar desain pembelajaran, dan pakar media pembelajaran, (3) kepraktisan media pembelajaran *e-book* berbasis pendekatan STEAM berdasarkan tanggapan guru dan siswa, dan (4) efektivitas media pembelajaran *e-book* berbasis pendekatan STEAM dalam meningkatkan hasil belajar IPA siswa kelas 4 SD pada topik transformasi energi. Penelitian ini merupakan penelitian pengembangan yang menggunakan model ADDIE. Metode pengumpulan data yang digunakan adalah kuesioner dan tes objektif pilihan ganda. Statistik inferensial dan analisis deskriptif kuantitatif adalah metode analisis data yang digunakan. Menurut temuan penelitian, (1) desain bahan ajar *e-book* berbasis STEAM mendapat penilaian memuaskan dengan skor rata-rata 3,65. (2) Ahli materi memberikan skor rata-rata 3,79 pada uji validitas, ahli desain instruksional memberikan skor rata-rata 3,8, dan ahli media pembelajaran memberikan skor rata-rata 3,75, menunjukkan kualifikasi sangat baik; (3) uji kepraktisan berdasarkan tanggapan guru menunjukkan 92,5% dan siswa 93,47%, menunjukkan kualifikasi sangat praktis; dan (4) media pembelajaran *e-book* berbasis STEAM diterapkan pada mata pelajaran IPAS tentang transformasi energi, dengan hasil menunjukkan t_hitung > t_tabel (7,18 > 2,120). Sebagai hasilnya, H_1 disetujui dan H_0 ditolak. Ini menunjukkan bahwa hasil belajar siswa sebelum dan sesudah menggunakan media *e-book* berbasis STEAM berbeda secara signifikan, dan media e-book berbasis STEAM berguna untuk digunakan pada topik IPAS untuk kelas IV di SD Negeri 1 Peringsari.

Kata kunci: Hasil Belajar Kognitif, Transformasi Energi, STEAM, *E-book*

ABSTRACT

This study aims to find out (1) the design and development of e-book learning media based on the STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach for science subjects on the topic of energy transformation for 4th grade elementary school students, (2) the validity of the STEAM-based e-book learning media according to content experts, learning design experts, and learning media experts, (3) the practicality of the STEAM-based e-book learning media based on the responses of teachers and students, and (4) the effectiveness of the STEAM-based e-book learning media in improving 4th grade students' science learning outcomes on the topic of energy transformation. This research is a development study that uses the ADDIE model. The data collection methods used were questionnaires and multiple-choice objective tests. Inferential statistics and quantitative descriptive analysis were the data analysis methods used. According to the research findings, (1) the design of the STEAM-based e-book learning materials received a satisfactory rating with an average score of 3.65. (2) Content experts gave an average validity test score of 3.79, instructional design experts gave an average score of 3.8, and learning media experts gave an average score of 3.75, indicating very good qualifications; (3) a practicality test based on teacher responses showed 92.5% and students 93.47%, indicating very practical qualifications; and (4) the STEAM-based e-book learning media was applied in the IPS science subject on energy transformation, with results showing t_calculated > t_table (7.18 > 2.120). As a result, H_1 was accepted and H_0 was rejected. This shows that students' learning outcomes before and after using STEAM-based e-book media are significantly different, and the STEAM-based e-book media is useful for use in science topics for fourth-grade students at SD Negeri 1 Peringsari.

Keywords: Cognitive Learning Outcomes, Energy Transformation, STEAM, E-book