PENGEMBANGAN VIDEO ANIMASI BERBASIS STEM UNTUK MENINGKATKAN PEMAHAMAN KONSEP FOTOSINTESIS TUMBUHAN PADA PESERTA DIDIK KELAS IV SD

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Penelitian ini bertujuan untuk mengembangkan media video animasi berbasis *Science, Technology, Engineering, and Mathematics* (STEM) yang valid, praktis, dan efektif untuk meningkatkan pemahaman konsep fotosintesis tumbuhan pada peserta didik kelas IV SD Negeri 1 Tajun. Penelitian ini merupakan penelitian dan pengembangan (*Research and Development*) dengan menggunakan model ADDIE yang meliputi tahap *Analyze, Design, Development, Implementation,* dan *Evaluation*. Subjek penelitian terdiri atas ahli materi, ahli media, ahli desain pembelajaran, guru kelas IV, dan peserta didik kelas IV SD Negeri 1 Tajun. Pengumpulan data dilakukan melalui observasi, wawancara, angket, dan tes pemahaman konsep. Data dianalisis menggunakan analisis deskriptif kualitatif dan kuantitatif. Hasil penelitian menunjukkan bahwa media video animasi berbasis STEM yang dikembangkan memenuhi kriteria valid berdasarkan penilaian ahli materi, ahli media, dan ahli desain. Hasil uji kepraktisan menunjukkan bahwa media memperoleh respons sangat baik dari guru maupun peserta didik sehingga layak digunakan dalam pembelajaran. Hasil uji efektivitas menggunakan *paired sample t-test* menunjukkan nilai signifikansi sebesar 0,000 ($p < 0,05$), yang menunjukkan adanya perbedaan yang signifikan antara nilai *pre-test* dan *post-test*. Dengan demikian, media video animasi berbasis STEM terbukti efektif meningkatkan pemahaman konsep fotosintesis tumbuhan pada peserta didik kelas IV SD Negeri 1 Tajun. Media yang dikembangkan diharapkan dapat menjadi alternatif media pembelajaran yang inovatif untuk mendukung pembelajaran IPAS di sekolah dasar.

Kata kunci: video animasi, STEM, pemahaman konsep, fotosintesis, IPAS, ADDIE.

DEVELOPMENT OF STEM-BASED ANIMATED VIDEO TO IMPROVE UNDERSTANDING OF THE PHOTOSYNTHESIS CONCEPT AMONG FOURTH-GRADE ELEMENTARY SCHOOL STUDENTS

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This study aimed to develop a Science, Technology, Engineering, and Mathematics (STEM)-based animated video learning media that is valid, practical, and effective in improving fourth-grade elementary school students' understanding of the concept of photosynthesis at SD Negeri 1 Tajun. This study employed a Research and Development (R&D) approach using the ADDIE model, which consists of five stages: Analyze, Design, Development, Implementation, and Evaluation. The research subjects included subject matter experts, media experts, instructional design experts, the fourth-grade classroom teacher, and fourth-grade students of SD Negeri 1 Tajun. Data were collected through observations, interviews, questionnaires, and a concept understanding test. The collected data were analyzed using qualitative descriptive and quantitative descriptive techniques. The results showed that the developed STEM-based animated video met the validity criteria based on evaluations conducted by subject matter experts, media experts, and instructional design experts. The practicality test indicated that the learning media received very positive responses from both teachers and students, demonstrating that it was feasible for classroom implementation. Furthermore, the effectiveness test using a paired-samples *t*-test revealed a significance value of 0.000 ($p < 0.05$), indicating a statistically significant difference between the pre-test and post-test scores. Therefore, the STEM-based animated video was proven to be effective in improving students' understanding of the concept of photosynthesis. The developed learning media is expected to serve as an innovative instructional resource to support science learning in elementary schools.

Keywords: animated video, STEM, conceptual understanding, photosynthesis, science learning, ADDIE.