PENGEMBANGAN AUGMENTED REALITY KOMPONEN EKOSISTEM DAN INTERAKSI PADA BIOGEOKIMIA DI KELAS X SMA NEGERI 1 BANJAR

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ABSTRAK

Materi Biologi pada pokok bahasan komponen ekosistem dan interaksi pada biogeokimia merupakan materi yang bersifat abstrak karena melibatkan proses alam yang sulit diamati secara langsung oleh murid. Pembelajaran di sekolah masih didominasi metode konvensional dengan media statis seperti buku teks dan presentasi, sehingga visualisasi konsep belum optimal dan berdampak pada rendahnya keterlibatan serta pemahaman siswa. Penelitian ini bertujuan mengembangkan media pembelajaran berbasis Augmented Reality pada materi komponen ekosistem dan interaksi biogeokimia kelas X SMA Negeri 1 Banjar serta mengetahui respon murid dan guru. Penelitian menggunakan metode Research and Development dengan model ADDIE yang meliputi tahap Analysis, Design, Development, Implementation, dan Evaluation. Media dikembangkan dalam bentuk web based agar mudah diakses melalui smartphone kapan saja dan di mana saja. Hasil penelitian menunjukkan media pembelajaran berbasis Augmented Reality dinyatakan sangat valid dengan koefisien validitas ahli isi dan ahli media sebesar 1,00. Hasil uji coba menunjukkan media berada pada kategori sangat baik. Uji respon murid dan guru menunjukkan kategori sangat positif. Media ini mampu membantu visualisasi konsep abstrak, meningkatkan keterlibatan aktif, motivasi belajar, serta mendukung pembelajaran Biologi yang interaktif, kontekstual, dan sesuai dengan kebutuhan pembelajaran abad dua puluh satu di tingkat sekolah menengah atas pada lingkungan pendidikan formal Indonesia modern.

Kata kunci : Augmented Reality, Media Pembelajaran, Biologi, Komponen Ekosistem, Biogeokimia, Model ADDIE

Development of Augmented Reality–Based Learning Media on Ecosystem Components and Interactions in Biogeochemical Cycles for Grade X Students at SMA Negeri 1 Banjar.

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ABSTRAK

Biology learning materials on the topic of ecosystem components and interactions in biogeochemical cycles are considered abstract because they involve natural processes that are difficult for students to observe directly. Learning in schools is still dominated by conventional methods using static media such as textbooks and presentations; therefore, concept visualization is not yet optimal and has an impact on students' low levels of engagement and understanding. This study aims to develop Augmented Reality–based learning media on ecosystem components and biogeochemical interactions for Grade X students at SMA Negeri 1 Banjar and to identify the responses of students and teachers.

This research employed a Research and Development method using the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation. The media were developed in a web-based format to allow easy access via smartphones anytime and anywhere. The results of the study indicate that the Augmented Reality–based learning media were categorized as very valid, with a validity coefficient of 1.00 from both content experts and media experts. The trial results show that the media were in the very good category. The student and teacher response tests indicate a very positive category. This media is able to assist in visualizing abstract concepts, increase active engagement and learning motivation, and support interactive and contextual Biology learning that is in accordance with the needs of twenty-first-century learning at the senior high school level within the modern formal education environment in Indonesia.

Keywords: Augmented Reality, Learning Media, Biology, Ecosystem Components, Biogeochemistry, ADDIE Model