

ABSTRAK

Ramdhani, Ibnu Afan. 2026. Implementasi *Augmented Reality* Sebagai Media Pembelajaran Sekolah Dasar Pada Materi Tata Surya Tugas Akhir. Program Sarjana. Program Studi Teknik Informatika. Universitas Muhammadiyah Jember.

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Pembelajaran materi tata surya di kelas 6 sekolah dasar masih menghadapi kendala dalam memvisualisasikan konsep yang bersifat abstrak, seperti bentuk, ukuran, dan pergerakan planet. Penggunaan media pembelajaran berupa buku teks dan gambar dua dimensi menyebabkan siswa mengalami kesulitan dalam memahami materi secara konkret dan interaktif. Penelitian ini bertujuan untuk merancang dan mengimplementasikan media pembelajaran berbasis *Augmented Reality* (AR) pada materi tata surya untuk siswa kelas 6 MI Darul Arifin Wringin Bondowoso serta mengetahui kelayakan dan efektivitas penggunaannya dalam meningkatkan pemahaman siswa. Pengembangan aplikasi menggunakan metode *Multimedia Development Life Cycle* (MDLC) yang terdiri dari enam tahapan, yaitu *concept*, *design*, *material collecting*, *assembly*, *testing*, dan *distribution*. Aplikasi dikembangkan menggunakan *Blender 3D*, *Unity 3D*, dan *Vuforia SDK* dengan metode *marker based* serta menghasilkan aplikasi berbasis Android yang menampilkan objek tiga dimensi tata surya dan simulasi Gerhana Matahari serta Gerhana Bulan. Pengujian dilakukan melalui *black-box testing*, *USE Questionnaire*, serta *pretest* dan *posttest* terhadap 12 siswa kelas 6. Hasil *black-box testing* terhadap 20 fungsi utama menunjukkan tingkat keberhasilan sebesar 100%. Hasil *USE Questionnaire* dari 3 guru memperoleh persentase kelayakan sebesar 93,33% dengan kategori sangat layak. Hasil pengujian efektivitas menunjukkan rata-rata nilai *pretest* sebesar 68,7 meningkat menjadi 82,4 pada *posttest*. Uji-t berpasangan menghasilkan nilai t hitung sebesar 4,151 dengan signifikansi $0,0016 < 0,05$, sedangkan nilai N-Gain sebesar 0,44 berada pada kategori sedang. Berdasarkan hasil tersebut, aplikasi *Augmented Reality* yang dikembangkan dinyatakan layak secara *funksional* dan *usability* serta cukup efektif dalam meningkatkan pemahaman siswa terhadap materi tata surya.

Kata kunci: *Augmented Reality*, tata surya, media pembelajaran, MDLC, *marker based*, sekolah dasar.

ABSTRACT

Ramdhani Ibnu Afan. 2026. *Implementation of Augmented Reality as a Learning Medium for Elementary School Education on Solar System Material*. Undergraduate Thesis. Undergraduate Program, Informatics Engineering Study Program, University of Muhammadiyah Jember.

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Learning about the solar system in sixth-grade elementary school still faces challenges in visualizing abstract concepts, such as the shape, size, and movement of planets. The use of learning media in the form of textbooks and two-dimensional images makes it difficult for students to understand the material concretely and interactively. This study aims to design and implement an Augmented Reality (AR)-based learning media for solar system material for sixth-grade students at MI Darul Arifin Wringin Bondowoso and to determine its feasibility and effectiveness in improving students' understanding. The application was developed using the Multimedia Development Life Cycle (MDLC) method, which consists of six stages: concept, design, material collecting, assembly, testing, and distribution. The application was developed using Blender 3D, Unity 3D, and Vuforia SDK with a marker-based method, producing an Android-based application that displays three-dimensional solar system objects and simulations of solar and lunar eclipses. Testing was conducted through black-box testing, the USE Questionnaire, and pretest and posttest assessments involving 12 sixth-grade students. The black-box testing of 20 main functions achieved a 100% success rate. The results of the USE Questionnaire completed by three teachers showed a feasibility percentage of 93.33%, categorized as very feasible. The effectiveness test showed that the students' average score increased from 68.7 in the pretest to 82.4 in the posttest. The paired sample t-test resulted in a t-value of 4.151 with a significance value of $0.0016 < 0.05$, while the average N-Gain score was 0.44, categorized as moderate. Based on these results, the developed Augmented Reality application is functionally and usability-wise feasible and moderately effective in improving students' understanding of solar system material.

Keywords: *Augmented Reality, solar system, learning media, MDLC, marker-based, elementary school.*