AUGMENTED REALITY-BASED HUMAN ANATOMY APPLICATION

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ABSTRACT

The development of information technology, particularly in the field of Augmented Reality (AR), has provided new opportunities in education. One potential application is in human anatomy learning at the elementary school level. Conventional learning, which still relies on textbooks and two-dimensional images, is often ineffective in providing a spatial understanding of the structure of body organs. This study aims to develop an Augmented Reality-based human anatomy learning application as an interactive medium that can help students understand the parts of the human body visually and in-depth. The research method used is Research and Development (R&D), which includes the stages of needs analysis, system design, implementation, testing, and evaluation. The application was developed using Unity 3D, Blender, and the Vuforia Engine software and implemented on an Android device. The learning materials cover three main anatomical systems: the digestive system, the respiratory system, and the skeletal system, visualized as interactive 3D objects. The results showed that the application ran well on smartphones and successfully visualized body anatomy realistically through markers. Functional testing using the black-box method on three Android devices (Realme Note 70, Samsung 16, and Realme 5 Pro) proved all features operated optimally. Marker testing demonstrated successful detection at tilt angles of 30°–90°, a distance of 10–40 cm, and adequate to bright lighting conditions. A 90° angle refers to the camera position perpendicular to the marker, while a 30° angle indicates a camera tilt of 30° from the vertical, with optimal test results within this range. This application is expected to be used as an alternative learning medium in the digital era.

Keywords: Augmented Reality, human anatomy, learning media, Android, interactive.