ABSTRACT

Augmented Reality (AR) in education is the right choice to make the learning process more interesting and interactive. In this final project, an AR Aquarium application system is developed to help students understand about marine life. This application is designed using AR technology by using markers to bring up 3D objects of marine life. The application system consists of three main components, namely marker recognition, presentation of marine biota information, and quiz features.

In doing this final project, we have done some important steps. First, we understand the basic concepts of Augmented Reality and how it works, Analyzing user needs by collecting data and information about the interests, desires of students when learning material about marine life, Designing applications using the right tools and programming languages. Next, we perform simulations and analysis to ensure that the application can run smoothly and efficiently.

The test results show that the system can produce output objects well. In testing the distance of marker recording, the system is able to detect markers in the distance range of 20 - 180 cm with a marker size of 23 x 15 cm, the tracking process becomes optimal. However, when the distance is too close, namely 5 - 15 cm, the tracking process is not optimal because the distance is too close. Likewise, at a distance of 200 cm, the system has difficulty in tracking because the distance is too far. For testing the marker reading angle, optimal results occur in the range of 0˚ to 45˚. Meanwhile, in testing the light intensity, the system is only able to track in bright or dim lighting conditions, while in dark conditions, the system cannot read the marker. This Augmented Reality application runs well on Android smartphones.

Keywords: *Augmented Reality, AR Aquarium, Marker, 3D Object, Marine Biota*