

ABSTRACT

Indonesia is one of the countries with a high risk of earthquake disasters due to its geographic location along the Pacific Ring of Fire, where several active tectonic plates converge. Earthquake disaster mitigation education in Indonesia has traditionally relied on conventional methods such as brochures, posters, and short face-to-face training sessions. However, these methods are often considered less effective in providing a deep understanding and have limited capability to deliver realistic and interactive learning experiences for the public. With the advancement of digital technology, particularly Virtual Reality (VR), new opportunities have emerged to simulate disaster scenarios in a more immersive and risk-free manner. This study presents the development of an educational application named SIGAP (Earthquake Simulation in an Educational Application), which utilizes Virtual Reality technology combined with 360-degree video and realistic visual effects to simulate earthquake scenarios. The application is designed to allow users to experience earthquake events in a safe virtual environment while receiving clear, interactive guidance on the correct mitigation steps. The development process involved literature review, user needs analysis, interface design, implementation using Unity, and comprehensive testing of functionality and user comfort. The results of the testing indicate that SIGAP is effective in improving users' understanding of earthquake safety procedures and provides an engaging and memorable learning experience. The application also demonstrated high user involvement, especially among younger individuals who are generally more receptive to technology. With the introduction of SIGAP, it is hoped that the Indonesian public can become more prepared and responsive when facing the real threat of earthquakes in the future.

Keywords: *Disaster Mitigation, Earthquake, Virtual Reality, 360 Video, Educational Application.*