THE DEVELOPMENT OF ANDROID MOBILE LEARNING APPLICATION IN MITIGATION OF EARTHQUAKE FOR JUNIOR HIGH SCHOOL STUDENTS

RESEARCH PAPER

Submitted as Requirement to Obtain Degree of *Sarjana Pendidikan* in International Program on Science Education (IPSE) Study Program

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THE DEVELOPMENT OF ANDROID MOBILE LEARNING APPLICATION IN MITIGATION OF EARTHQUAKE FOR JUNIOR HIGH SCHOOL STUDENTS

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Skripsi yang diajukan untuk memenuhi salah satu syarat memperoleh gelar
Sarjana Pendidikan pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan
Alam

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APPROVAL SHEET

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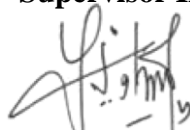
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DECLARATION

I do hereby declare that every aspect was written in this research paper entitled "The Development of Android Mobile Learning Application in Mitigation of Earthquake for Junior High School Students" genuinely results of my original idea, effort, and works. The theories, findings of experts, opinions, and others contained in this paper have been quoted or referenced based on scientific code from UPI and in accordance with scientific ethics that applies in scholarly society. This declaration is created truthfully and consciously. When an infringement towards scientific ethics subsequently is found or if there is a claim of any others towards the authenticity of this research paper, hence I am willing to responsible and accept academicals sanctions correspond to the rules.

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ABSTRACT

Indonesia is situated in a geologically unstable area called the Pacific Ring of Fire which faces the risk of powerful earthquakes with potentially devastating effects. The most effective measure to be taken against earthquake and other natural disasters is knowing what to do when it happens. This issue intended the researcher to build a mobile learning application for earthquake mitigation using game-engine software called Unity 2D. Generally, the process of developing the mobile learning application consist of several steps: (1) preparation stage which consist of problem identification and formulating objectives, literature review, and constructing the instrument; (2) development stage started with developing the flowchart, storyboard, software necessity analysis, hardware necessity analysis, and coding. The method used in this research was descriptive. The subject was 30 students of Junior High School in Bandung and one science teacher. The result showed that the application for earthquake mitigation is received adequately with good evaluation. The experts on content, language and artwork were evaluated the mobile learning application. The result of the experts' judgment content reached 83.33%, 87.5% on the language content and reached 93.75% on artwork (IT) aspect.

Keywords: Earthquake. Mitigation of earthquake. Pacific Ring of Fire. Mobile learning.

PENGEMBANGAN APLIKASI ANDROID *MOBILE LEARNING* DALAM MITIGASI GEMPA BUMI UNTUK SISWA SEKOLAH MENENGAH PERTAMA

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ABSTRAK

Indonesia terletak di daerah geologis yang tidak stabil yang disebut *Ring of Fire,* yang artinya Indonesia menghadapi risiko gempa bumi dengan efek yang berpotensi menghancurkan. Langkah paling efektif yang dapat diambil dalam menghadapi gempa bumi dan bencana alam lainnya adalah mengetahui apa yang harus dilakukan ketika itu terjadi. Dari masalah ini, peneliti bertujuan untuk merancang aplikasi sebagai media pembelajaran untuk mitigasi gempa menggunakan *software* yang disebut Unity 2D. Secara umum, proses pengembangan aplikasi pembelajaran mobile terdiri dari beberapa langkah: (1) tahap persiapan yang terdiri dari identifikasi masalah dan merumuskan tujuan, tinjauan literatur, dan membangun instrumen; (2) tahap pengembangan terdiri dari pembuatan flowchart, storyboard, analisis kebutuhan perangkat lunak, analisis kebutuhan perangkat keras, dan pengkodingan. Metode yang digunakan dalam penelitian ini adalah deskriptif. Subjek penelitian terdiri dari 30 siswa SMP Laboratorium di Bandung dan satu guru IPA. Hasil penelitian menunjukan bahwa aplikasi untuk mitigasi gempa diterima secara memadai dengan evaluasi yang baik. Para ahli tentang konten, bahasa dan *artwork* mengevaluasi aplikasi ini. Hasil konten penilaian para ahli mencapai 83,33%, 87,5% pada konten bahasa dan mencapai 93,75% pada aspek *artwork*.

Kata kunci: Gempa Bumi. Mitigasi Gempa Bumi. *Ring of Fire. Mobile learning.*

PREFACE

All praise belongs to Allah SWT because of His Mercy and Grace, the author could finish the research paper entitled "The Development of Android Mobile Learning Application in Mitigation of Earthquake for Junior High School Students". *Salawat* and Salaam might be sent upon the prophet Muhammad, the last of His Messengers and Prophet, his family, companions, and all those who follow his steps till the end of the time.

The research had been conducted to develop the Android mobile learning application of earthquake mitigation for Junior High School students. This research paper is the requirement to fulfill the Bachelor Degree of International Program on Science Education.

The perfection belongs to Allah. The author realizes that there are many weakness or limitations that need to be fixed and improved. Thus, suggestions, comments, and recommendations are openly welcomed for the better quality of mobile learning application in the future. Hopefully, this research might bring benefits for science education, technical aspect, and better learning and teaching implementation.

Bandung, August 2019

Declarant,

Author

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The author praises the highest gratitude to Allah SWT for His mercy, so the author can complete this research paper. In this occasion, the author would like to express the sincere gratitude and appreciation to the following parties:

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Bandung, August 2019

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