

Development of Education for Sustainable Development E-module for STEM Class Students' Disaster Awareness in the Philippines

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By

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Development of Education for Sustainable Development E-module for STEM Class Students' Disaster Awareness in the Philippines

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Sebuah Tesis yang diajukan untuk memenuhi salah satu syarat memperoleh gelar
Magister Pendidikan (M.Pd.) pada Fakultas Pendidikan Ilmu Pengetahuan Social

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DECLARATION

I hereby declare that this manuscript entitled “**Development of Education for Sustainable Development E-module for STEM Class Students’ Disaster Awareness in the Philippines**” and all its contents are completely my own work. I do not plagiarize or cite in ways that are not in accordance with scientific ethics in the scientific community.

For this statement, I am willing to take the risk or sanction if it is discovered in the future that there is a breach of scientific ethics.

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DEDICATION

The family and friends who have provided me with unshakable support and encouragement during my thesis journey are the ones to whom I dedicate this study. To my friends, who have supported me through many late hours and difficult times with tolerance and compassion, and to my advisers and mentors, whose counsel and insight have been crucial in forming my work. Also, I dedicate this study to the Meranaw community and I hope this initiative will be a fruitful contribution to my community. Realizations I had both before and during my academic journey in this University have motivated me to work hard and challenge myself pursuing this study.

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ABSTRACT

Development of Education for Sustainable Development E-module for STEM Class Students' Disaster Awareness in the Philippines

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This study examines the integration of Education for Sustainable Development (ESD) into the creation of a computerized low-fidelity prototype e-module. The focus is on enhancing disaster awareness among students. The research aims to assess the level of disaster awareness through pre- and post-implementation surveys, and also to evaluate the impact of the developed e-module on students' awareness. The study uses Design-Based Research, employing the ADDIE model and Rapid Prototyping Design Cycle. It also utilizes a one-group pretest-posttest design and quasi-experimental approach. Preliminary findings indicate that students have a moderately low level of disaster awareness, which led to the creation of the e-module prototype. In addition, the results from the post-survey show significant improvement on the level of awareness of the students with respects to their knowledge, attitude and behavior, demonstrating the effectiveness of the intervention. This suggests that the developed e-module design prototype could serve as a foundation for a high-fidelity ESD-based e-module that could enhance students' understanding of disaster and disaster risk. The study recommends that educational institutions should adopt ESD-oriented e-modules as valuable learning resources. The prototype was tested on 39 senior high school students; however, the researcher encourages future studies to implement the e-module on a larger scale in order to gain a deeper understanding of its impact. Furthermore, the study advises stakeholders to develop a fully functional application using the instructional design strategy outlined in this research, aligned with the ESD elements. It is important to note that the current e-module is only a designed e-module prototype.

Keywords: Education for Sustainable Development, E-module, Disaster Awareness, ADDIE Model, Rapid Prototyping

ABSTRAK

Pengembangan E-modul Education for Sustainable Development untuk Siswa Kelas STEM tentang Kesadaran Bencana di Filipina

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Studi ini meneliti integrasi Pendidikan untuk Pembangunan Berkelanjutan (ESD) ke dalam pembuatan prototipe e-modul low-fidelity terkomputerisasi. Fokusnya adalah pada peningkatan kesadaran bencana di kalangan siswa. Penelitian ini bertujuan untuk menilai tingkat kesadaran bencana melalui survei pra- dan pasca-implementasi, dan juga untuk mengevaluasi dampak e-modul yang dikembangkan terhadap kesadaran siswa. Studi ini menggunakan Penelitian Berbasis Desain, menggunakan model ADDIE dan Siklus Desain Prototipe Cepat. Studi ini juga menggunakan desain pra-tes-pasca-tes satu kelompok dan pendekatan kuasi-eksperimental. Temuan awal menunjukkan bahwa siswa memiliki tingkat kesadaran bencana yang cukup rendah, yang menyebabkan terciptanya prototipe e-modul. Selain itu, hasil dari survei pasca-menunjukkan peningkatan yang signifikan pada tingkat kesadaran siswa sehubungan dengan pengetahuan, sikap dan perilaku mereka, yang menunjukkan efektivitas intervensi. Hal ini menunjukkan bahwa prototipe desain e-modul yang dikembangkan dapat berfungsi sebagai landasan bagi e-modul berbasis ESD dengan ketelitian tinggi yang dapat meningkatkan pemahaman siswa tentang bencana dan risiko bencana. Studi ini merekomendasikan bahwa lembaga pendidikan harus mengadopsi e-modul berorientasi ESD sebagai sumber belajar yang berharga. Prototipe tersebut diuji pada 39 siswa sekolah menengah atas; namun, peneliti mendorong penelitian di masa mendatang untuk mengimplementasikan e-modul dalam skala yang lebih besar untuk mendapatkan pemahaman yang lebih dalam tentang dampaknya. Lebih jauh, studi ini menyarankan para pemangku kepentingan untuk mengembangkan aplikasi yang berfungsi penuh menggunakan strategi desain instruksional yang diuraikan dalam penelitian ini, yang selaras dengan elemen ESD. Penting untuk dicatat bahwa e-modul saat ini hanyalah prototipe e-modul yang dirancang.

Kata kunci: Pendidikan untuk Pembangunan Berkelanjutan, E-modul, Sadar Bencana, Model ADDIE, Rapid Prototyping

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