

PENGEMBANGAN *E-BOOK* INTERAKTIF BERMUATAN *EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)* UNTUK MEMFASILITASI LITERASI SAINS DAN *SUSTAINABILITY AWARENESS* SISWA SMP PADA MATERI ISU-ISU LINGKUNGAN

TESIS

Diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar
Magister Pendidikan IPA



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FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM
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LEMBAR PENGESAHAN TESIS
PENGEMBANGAN *E-BOOK* INTERAKTIF BERMUATAN *EDUCATION*
***FOR SUSTAINABLE DEVELOPMENT (ESD)* UNTUK MEMFASILITASI**
LITERASI SAINS DAN *SUSTAINABILITY AWARENESS* SISWA SMP
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PENGEMBANGAN *E-BOOK* INTERAKTIF BERMUATAN *EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)* UNTUK MEMFASILITASI LITERASI SAINS DAN *SUSTAINABILITY AWARENESS* SISWA SMP PADA MATERI ISU-ISU LINGKUNGAN

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PERNYATAAN

Dengan ini saya menyatakan bahwa tesis dengan judul “Pengembangan *E-book* Interaktif Bermuatan *Education for Sustainable Development* (ESD) Untuk Memfasilitasi Literasi Sains dan *Sustainability Awareness* Siswa SMP Pada Materi Isu-Isu Lingkungan” ini serta seluruh isinya adalah benar-benar karya saya sendiri. Saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidak sesuai dengan etika ilmu yang berlaku dalam masyarakat keilmuan. Atas pernyataan ini, saya siap menanggung resiko/sanksi apabila di kemudian hari ditemukan adanya pelanggaran etika keilmuan atau ada klaim dari pihak lain terhadap keaslian karya saya ini.

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Tesis ini disusun untuk memenuhi salah satu syarat dalam memperoleh gelar Magister Pendidikan pada Program Studi Pendidikan IPA Universitas Pendidikan Indonesia.

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PENGEMBANGAN *E-BOOK* INTERAKTIF BERMUATAN *EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)* UNTUK MEMFASILITASI LITERASI SAINS DAN *SUSTAINABILITY AWARENESS* SISWA SMP PADA MATERI ISU-ISU LINGKUNGAN

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ABSTRAK

Isu-isu lingkungan seperti pencemaran air, udara, dan tanah, yang diakibatkan oleh aktivitas manusia dan faktor alam, semakin menjadi perhatian global. Dampak negatif pencemaran terhadap ekosistem dan kehidupan manusia memerlukan upaya bersama untuk menjaga kelestarian lingkungan. Dalam upaya meningkatkan kesadaran menjaga lingkungan, pengembangan *E-book* interaktif bermuatan ESD ini dibutuhkan untuk memfasilitasi literasi sains dan *sustainability awareness* pada materi isu-isu lingkungan. Penelitian ini bertujuan untuk mendeskripsikan karakteristik *E-book* interaktif bermuatan ESD yang dikembangkan dengan metode *Four Steps Teaching Material Development* (4STMD), menilai kelayakan *E-book* berdasarkan penilaian lima validator, dan mengukur tingkat keterpahaman dari 62 siswa kelas IX di salah satu SMP Negeri di Kota Bandung pada materi isu-isu lingkungan yang dikembangkan dalam *E-book*. Penelitian ini menggunakan pendekatan penelitian pengembangan (*Design Development Research*) yang meliputi tahapan *Design*, *Development*, dan *Evaluation*. Proses pengembangan *E-book* interaktif menggunakan metode 4STMD, yang terdiri dari empat tahap: seleksi, strukturisasi, karakterisasi, dan reduksi didaktik. Instrumen yang digunakan dalam pengumpulan data antara lain lembar review, lembar uji kelayakan, dan lembar uji keterpahaman. Hasil penelitian menunjukkan bahwa karakteristik *E-book* interaktif yang dikembangkan memiliki fitur-fitur interaktif yang mendukung beragam gaya belajar dan tipe kecerdasan siswa, serta efektif dalam memfasilitasi literasi sains dan *sustainability awareness*. Berdasarkan analisis, kelayakan *E-book* interaktif ini mencapai 99.6% (sangat layak), sementara tingkat keterpahaman siswa terhadap materi mencapai 94.9% (kategori tinggi). Dengan demikian, dapat disimpulkan bahwa *E-book* interaktif bermuatan ESD ini sangat layak digunakan untuk memfasilitasi literasi sains dan *sustainability awareness* siswa dalam konteks isu-isu lingkungan.

Kata Kunci: *E-book*, Interaktif, ESD, Literasi Sains, *Sustainability Awareness*

**THE DEVELOPMENT OF AN INTERACTIVE E-BOOK FOCUSED ON
EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD) TO
FACILITATE SCIENTIFIC LITERACY AND SUSTAINABILITY
AWARENESS IN JUNIOR HIGH SCHOOL STUDENTS ON
ENVIRONMENTAL ISSUES**

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ABSTRACT

Environmental issues such as water, air, and soil pollution, caused by human activities and natural factors, are increasingly becoming a global concern. The negative impacts of pollution on ecosystems and human life require joint efforts to preserve the environment. In an effort to raise awareness about environmental protection, the development of an interactive E-book focused on ESD content is essential for facilitating scientific literacy and sustainability awareness on environmental issues. This study aims to describe the characteristics of the interactive E-book developed using the Four Steps Teaching Material Development (4STMD) method, assess the feasibility of the E-book based on evaluations from five validators, and measure the level of comprehension of 62 ninth-grade students from a public junior high school in Bandung City on environmental issues covered in the E-book. This research employs a design development research (DDR) approach, which includes the stages of Design, Development, and Evaluation. The development process of the interactive E-book uses the 4STMD method, consisting of four stages: selection, structuring, characterization, and didactic reduction. The instruments used for data collection include review sheets, feasibility test sheets, and comprehension test sheets. The results of the study indicate that the characteristics of the developed interactive E-book feature interactive elements that support various learning styles and types of intelligence, and are effective in fostering science literacy and sustainability awareness. Based on the analysis, the feasibility of the interactive E-book reached 99.6% (very feasible), while the students' comprehension of the material reached 94.9% (high category). Therefore, it can be concluded that this interactive E-book focused on ESD content is highly suitable for facilitating scientific literacy and sustainability awareness among students in the context of environmental issues.

Keywords: E-book, Interactive, ESD, Scientific Literacy, Sustainability Awareness

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