

**PENGEMBANGAN *E-LOW CARBON MEDIA* TERPADU PADA
UNIVERSAL DESIGN FOR LEARNING (UDL) DI SEKOLAH INKLUSI
UNTUK MENINGKATKAN LITERASI LINGKUNGAN SISWA**

DISERTASI

**Diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Doktor
Pendidikan Ilmu Pengetahuan Alam**



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**Pengembangan *E-Low Carbon Media* Terpadu pada
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Meningkatkan Literasi
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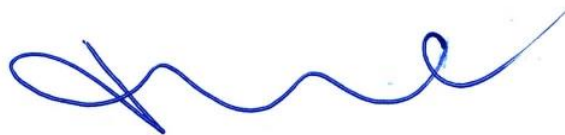
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ABSTRAK

Lingkungan yang semakin buruk karena tingkat penggunaan karbon yang sangat tinggi, menyebabkan perlunya peningkatan kesadaran masyarakat mengenai konsep *low carbon*. Salah satu cara yang dapat dilakukan adalah melalui pendidikan (*low carbon education*). Dalam bidang Pendidikan, pengenalan perilaku rendah karbon dapat dilakukan menggunakan media pembelajaran berbasis teknologi. Penelitian ini bertujuan untuk mengembangkan *integrated e-low carbon media* terpadu pada pembelajaran *Universal Design for Learning* (UDL) untuk meningkatkan literasi lingkungan siswa di sekolah dasar. Literasi lingkungan yang diteliti dalam penelitian ini terdiri atas dimensi kompetensi lingkungan dan pengetahuan lingkungan. Desain penelitian yang digunakan dalam penelitian ini adalah *mixed methods* jenis *exploratory design*. Desain ini menggabungkan prosedur penelitian kualitatif dan kuantitatif yang dilakukan secara bersama-sama dengan riset pengembangan dalam menjawab masalah penelitian (*research question/RQ*). Penelitian dilakukan dengan beberapa analisis (metode bibliometric dan konten analisis), melakukan survei terhadap guru sekolah dasar inklusi di Kota Malang dan Kota Surabaya, mendesain media terkait topik *low carbon* dan melakukan uji coba ke pengguna dan sekolah untuk mengukur literasi lingkungan siswa. Hasil penelitian ini menunjukkan kondisi terkini pembelajaran *low carbon* saat ini masih bisa dikembangkan lagi dan konten *low carbon* bisa diterapkan dalam buku teks sekolah dasar dengan menggunakan media teknologi berbasis *online*; karakteristik *e-low carbon media* berbasis UDL yang memenuhi kriteria pembelajaran di level pendidikan dasar inklusi diantaranya adalah berbasis web, memuat konten visual, audio, audio visual dan animasi; penggunaan *e-low carbon media* berdampak positif berdasarkan UEQ guru dan siswa; dan penerapan *e-low carbon media* dapat diterapkan dengan moda pembelajaran *blended*. Penerapan media dalam pembelajaran berdampak signifikan terhadap peningkatan literasi lingkungan siswa sekolah dasar dengan dimensi kompetensi lingkungan dan pengetahuan lingkungan.

Kata Kunci: *low carbon education*; literasi lingkungan; *Universal Design for Learning* (UDL); *web-based learning*.

ABSTRACT

The environment is getting worse due to the very high level of carbon use, causing the need to increase public awareness regarding the concept of low carbon. One of the ways is through education (low carbon education). In the education sector, the introduction of low-carbon behavior can be carried out using technology-based learning media. This study aims to develop integrated e-low carbon media in Universal Design for Learning (UDL) learning to increase students' environmental literacy in elementary schools. The environmental literacy examined in this study consists of the dimensions of environmental competence and environmental knowledge. The research design used in this study is a mixed-methods exploratory design. The design combines qualitative and quantitative research procedures which are carried out jointly with development research in answering the research question (RQ). The research was conducted using several analyzes (bibliometric methods and content analysis), including conducting surveys of inclusive elementary school teachers in Malang and Surabaya, designing media related to low carbon topics, and conducting trials on users and schools to measure students' environmental literacy. The results of this study indicate that current conditions of low carbon learning can still be developed any further and the low carbon content can be applied in elementary school textbooks using online-based technology media; the characteristics of UDL-based e-low carbon media that meet the learning criteria at the inclusive basic education level include web-based, containing visual, audio, audio-visual and animated content; the use of e-low carbon media has a positive impact based on the UEQ of teachers and students; and the e-low carbon media can be implemented with a blended learning mode. The implementation of media in learning has a significant impact on increasing the environmental literacy of elementary school students with the dimensions of environmental competence and environmental knowledge.

Keywords: low carbon education; environmental literacy; Universal Design for Learning (UDL); web-based learning.

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