DESAIN DIDAKTIS BERORIENTASI *GREEN CHEMISTRY* PADA TOPIK PRODUKSI BIOETANOL UNTUK MENGUATKAN *SUSTAINABILITY LITERACY* DAN SIKAP PEDULI LINGKUNGAN

TESIS

Diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Magister Pendidikan Kimia

oleh

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PROGRAM STUDI MAGISTER PENDIDIKAN KIMIA
FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM
UNIVERSITAS PENDIDIKAN INDONESIA
2023

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Sebuah tesis yang diajukan untuk memenuhi salah satu syarat memperoleh
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ABSTRAK

Penelitian ini bertujuan untuk menghasilkan desain didaktis berorientasi *green chemistry* dan perangkat pembelajaran yang tervalidasi dan teruji pada topik produksi bioetanol dari tandan kosong kelapa sawit untuk menguatkan *sustainability literacy* dan sikap peduli lingkungan. Metode yang digunakan adalah *mixed method* dengan desain *the exploratory sequential design*. Kerangka teknis dalam penelitian *mixed method* ini menggunakan *Didactical Design Research* (DDR) yang terdiri dari tiga tahap, yaitu: (1) Analisis situasi didaktis sebelum pembelajaran, (2) Analisis situasi didaktis saat pembelajaran, dan (3) Analisis situasi didaktis setelah pembelajaran. Partisipan dalam penelitian ini adalah mahasiswa pendidikan kimia di salah satu Universitas Negeri di Kota Bandung yang mengambil mata kuliah konservasi energi pada semester VI. Instrumen dalam penelitian ini adalah soal prakonsepsi yang digunakan untuk mengetahui konsepsi awal mahasiswa terkait topik bioetanol dari tandan kosong kelapa sawit, lembar validasi untuk desain didaktis yang dirancang, tes tertulis berupa soal *sustainability literacy,* dan angket sikap peduli lingkungan. Berdasarkan hasil analisis prakonsepsi, menunjukkan sebagian besar mahasiswa belum mengetahui secara mendalam tentang topik produksi bioetanol dari tandan kosong kelapa sawit. Selain itu, hasil validasi dan analisis saat implementasi desain didaktis menunjukkan perlu adanya perbaikan untuk lebih menyempurnakan desain didaktis yang dirancang. Sedangkan, kemampuan *sustainability literacy* mahasiswa setelah diterapkannya desain didaktis berorientasi *green chemistry*, menunjukkan hasil rata-rata skor pencapaian sebesar 70% dan sikap peduli lingkungan mahasiswa rata-rata 85%. Dengan demikian, dapat disimpulkan bahwa desain didaktis berorientasi *green chemistry* yang telah dirancang dapat digunakan dalam pembelajaran untuk menguatkan *sustainability literacy* dan sikap peduli lingkungan mahasiswa.

Kata Kunci: Desain Didaktis, *Green Chemistry*, Bioetanol, Tandan Kosong Kelapa Sawit, *Sustainability Literacy*, Sikap Peduli Lingkungan

ABSTRACT

This study aims to produce a didactic design oriented towards green chemistry and validated and tested learning tools on the topic of bioethanol production from empty oil palm bunches to strengthen sustainability literacy and environmental care attitudes. The method used is a mixed method with an exploratory sequential design. The technical framework in this mixed method research uses Didactical Design Research (DDR) which consists of three stages, namely: (1) Didactic situation analysis before learning, (2) Didactic situation analysis during learning, and (3) Didactic situation analysis after learning. The participants in this study were chemistry education students at one of the State Universities in Bandung City who took energy conservation courses in semester VI. The instruments in this study are preconception questions used to determine students' initial conceptions related to the topic of bioethanol from empty oil palm bunches, validation sheets for designed didactic designs, written tests in the form of sustainability literacy questions, and environmental care attitude questionnaires. Based on the results of preconception analysis, it shows that most students do not know in depth about the topic of bioethanol production from empty oil palm bunches. In addition, the results of validation and analysis during the implementation of the didactic design indicate the need for improvement to further refine the didactic design designed. Meanwhile, students' sustainability literacy ability after the implementation of green chemistry-oriented didactic design, showed an average achievement score of 70% and an average student environmental care attitude of 85%. Thus, it can be concluded that the green chemistry-oriented didactic design that has been designed can be used in learning to strengthen students' sustainability literacy and environmental care attitudes.

Keywords: Didactic Design, Green Chemistry, Bioethanol, Empty Oil Palm Bunches, Sustainability Literacy, Environmental Care Attitude

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