

**DESAIN PEMBELAJARAN KIMIA MATERIAL BERKELANJUTAN
PADA TOPIK REKAYASA BAMBU SEBAGAI MATERIAL
KONSTRUKSI UNTUK MENUMBUHKAN IDENTITAS SAINS CALON
GURU KIMIA**

TESIS

Diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Magister
Pendidikan Kimia



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**PROGRAM STUDI MAGISTER PENDIDIKAN KIMIA
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UNIVERSITAS PENDIDIKAN INDONESIA
BANDUNG
2024**

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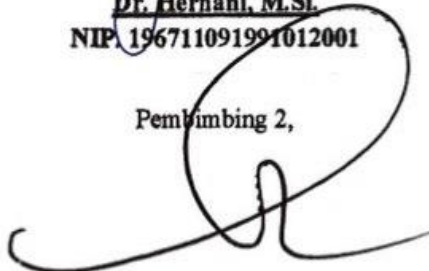
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IDENTITAS SAINS CALON GURU KIMIA**

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Sebuah Tesis yang diajukan untuk memenuhi salah satu syarat memperoleh gelar Magister Pendidikan (M.Pd) pada program Studi Pendidikan Kimia

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Yang Membuat Pernyataan,



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Penulis berharap tesis ini dapat memberikan wawasan dan bermanfaat bagi para pembaca dan semua pihak khususnya dalam bidang kimia. Penulis menyadari bahwa dalam tesis ini masih banyak kekurangan dan keterbatasan. Oleh karena itu, penulis masih membutuhkan kritik dan saran dari semua pihak yang sifatnya membangun untuk perbaikan dan penyempurnaannya.

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ABSTRAK

Penelitian ini bertujuan untuk menghasilkan desain pembelajaran kimia material berkelanjutan pada topik “rekayasa bambu sebagai material konstruksi” untuk menumbuhkan identitas sains calon guru kimia. Penelitian *mixed method* dengan desain penelitian *Exploratory Sequential Design* ini dibuat dengan kerangka *Model of Educational Reconstruction* (MER). Instrumen yang digunakan dalam penelitian adalah lembar analisis literatur, pedoman wawancara, lembar validasi, e-modul, dan *posttest* berupa 27 soal essay. Jumlah responden dalam penelitian ini sebanyak 36 mahasiswa kimia material tingkat 3. Data penelitian yang diperoleh berupa konsepsi ilmuwan; prakonsepsi mahasiswa; rancangan desain tahapan pembelajaran kimia material berkelanjutan; profil identitas sains mahasiswa pada saat implementasi pembelajaran; dan analisis keberhasilan pembelajaran kimia material berkelanjutan dari analisis hasil *posttest*. Konsepsi ilmuwan yang dianalisis dari 38 literatur menghasilkan *Teaching Learning Sequence* (TLS) yang digunakan untuk membuat desain pembelajaran. Data hasil prakonsepsi mahasiswa menunjukkan bahwa pemahaman awal mereka tentang konsep keberlanjutan, cairan ionik, dan bambu sebagai material konstruksi masih rendah. Namun, hasil implementasi pembelajaran menunjukkan profil identitas sains mahasiswa yang baik, dengan dimensi keyakinan epistemik berada pada kategori sedang (69,5%), sementara untuk dimensi modal sains, sikap dan disposisi, serta kesadaran, kepedulian, dan keagenan terhadap lingkungan, hasilnya berada pada kategori tinggi (78,1%; 85,5%; 76,4%). Keberhasilan pembelajaran terlihat dari hasil *posttest* yang menunjukkan peningkatan signifikan di semua dimensi identitas sains, menandakan bahwa desain pembelajaran yang diterapkan efektif dalam memperbaiki prakonsepsi sekaligus menumbuhkan identitas sains mahasiswa.

Kata Kunci: ESD; Kimia Material; Cairan Ionik; Bambu; Identitas Sains

ABSTRACT

This research aims to produce a sustainable materials chemistry learning design on the topic of 'bamboo engineering as a construction material' to foster the science identity of prospective chemistry teachers. This mixed method research with Exploratory Sequential Design research design was made with the Model of Educational Reconstruction (MER) framework. The instruments used in the study were literature analysis sheets, interview guidelines, validation sheets, e-modules, and posttests in the form of 27 essay questions. The number of respondents in this study were 36 students of material chemistry level 3. The research data obtained in the form of scientists' conceptions; student preconceptions; design design of sustainable material chemistry learning stages; student science identity profile at the time of learning implementation; and analysis of the success of sustainable material chemistry learning from the analysis of posttest results. Scientists' conceptions analysed from 38 literatures resulted in Teaching Learning Sequence (TLS) which was used to create learning designs. Students' preconception data showed that their initial understanding of the concepts of sustainability, ionic liquids, and bamboo as a construction material was low. However, the learning implementation results showed a good student science identity profile, with the epistemic belief dimension being in the medium category (69.5%), while for the dimensions of science capital, attitudes and dispositions, as well as awareness, concern, and agency for the environment, the results were in the high category (78.1%; 85.5%; 76.4%). The success of learning can be seen from the posttest results which show a significant increase in all dimensions of scientific identity, indicating that the applied learning design is effective in correcting preconceptions while fostering students' scientific identity.

Keywords: ESD; Material Chemistry; Ionic Liquids; Bamboo; Science Identity

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