PENGEMBANGAN BAHAN AJAR REAKSI REDUKSI DAN OKSIDASI BERBASIS KIMIA HIJAU UNTUK MENINGKATKAN HASIL BELAJAR SISWA

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ABSTRAK

Penelitian ini bertujuan untuk menghasilkan bahan ajar reaksi reduksi dan oksidasi berbasis kimia hijau yang valid, praktis, dan efektif. Jenis penelitian ini adalah penelitian dan pengembangan dengan menggunakan model ADDIE. Instrumen yang disgunakan dalam penelitian ini meliputi angket pendapat guru kimia, lembar validasi, lembar analisis dokumen, lembar keterbacaan, lembar kepraktisan, tes hasil belajar kognitif, dan lembar penilaian afektif serta psikomotorik. Karakteristik bahan ajar yang dikembangkan meliputi 1) adanya integrasi prinsip-prinsip kimia hijau; 2) info kimia yang berisi bahaya, pencegahan, penanganan, serta penggantian bahan kimia berbahaya; 3) bahan ajar juga dilengkapi dengan solusi kimia, latihan soal, kegiatan praktikum kimia hijau, rangkuman, glosarium, dan uji kemampuan. Validasi dari para ahli menghasilkan skor rata-rata dari aspek materi sebesar 3,16, bahasa sebesar 3,11, dan media sebesar 3,48. Hal tersebut menunjukkan bahwa bahan ajar reaksi reduksi dan oksidasi berbasis kimia hijau memenuhi kriteria valid. Hasil uji keterbacaan bahan ajar menunjukkan bahwa bahan ajar sudah dapat dipahami dengan baik oleh siswa. Hasil uji kepraktisan menunjukkan bahwa bahan ajar yang dikembangkan memenuhi kriteria sangat praktis dari guru dan kriteria praktis dari siswa. Keefektifan bahan ajar meliputi (1) hasil uji *n-gain* menunjukkan adanya peningkatan hasil belajar siswa pada ranah kognitif; (2) uji proporsi satu sampel menghasilkan proporsi ketercapaian kriteria ketuntasan minimal klasikal pada ranah kognitif dan psikomotorik lebih dari 85%; dan (3) hasil penilaian afektif telah memenuhi kategori sangat baik.

Kata Kunci: bahan ajar, kimia hijau, reaksi reduksi dan oksidasi.

DEVELOPMENT OF A LEARNING MATERIAL OF GREEN CHEMISTRY- BASED REDUCED REACTION AND OXIDATION TO IMPROVE STUDENT'S LEARNING OUTCOMES

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ABSTRACT

This study aimed to produce a valid, practical and effective green chemistry-based reduced reaction and oxidation learning material. This type of study is research and development using the ADDIE model. The instruments used in this study included a chemistry teacher opinion questionnaire, a validation assessment sheet, a document analysis sheet, a readability assessment sheets, a practicality assessment sheet, a cognitive learning achievement test, as well as an attitude and psychomotor assessment sheet. Characteristics of the learning material being developed included 1) the integration of the principles of green chemistry; 2) chemistry information that contained hazards, prevention, handling, and replacement of hazardous chemicals; 3) the learning material was also equipped with chemistry solutions, exercises, green chemistry practicum activities, summary, glossary, and ability test. Validation from experts resulted in an average score of the material aspects of 3.16, the language of 3.11, and the media of 3.48. This showed that the learning material of green chemistry-based reduction and oxidation reaction fulfilled valid criteria.The results of the readability assessment of learning material showed that the learning material could be well understood by students. The practicality assessment showed that the learning material met the very practical criteria of teachers and the practical criteria of students. The effectiveness of learning material included (1) results of the n-gain test indicated an increase in students learning outcomes in the cognitive domain; (2) one sample proportion test resulted in the proportion of classical minimal mastery criteria in the cognitive and psychomotor domains being more than 85%; and (3) the results of attitude assessment fulfilled the category of very good.

Key Words: learning materials, green chemistry, reduction and oxidation reactions