ABSTRAK

PENGEMBANGAN MODUL AJAR ENERGI LISTRIK ALTERNATIF BERBASIS *PROJECT* PEMANFAATAN AMPAS KELAPA UNTUK MENINGKATKAN *CREATIVE PROBLEM SOLVING*

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Pembelajaran energi listrik alternatif di sekolah masih didominasi pendekatan teoretis dan belum optimal dalam megintegrasikan konteks lingkungan lokal serta pengembangan keterampilan abad ke-21. Salah satu potensi lokal yang belum dimanfaatkan secara maksimal dalam pembelajaran adalah ampas kelapa, yang memiliki kandungan elektrolit alami dan berpotensi digunakan sebagai sumber energi alternatif sederhana. Tujuan penelitian ini untuk mengembangkan modul ajar energi listrik alternatif berbasis project pemanfaatan ampas kelapa untuk meningkatkan *Creative Problem Solving* peserta didik. Penelitian ini menggunakan metode *Research and Development* (R&D) dengan model ADDIE yang meliputi tahap analisis, desain, pengembangan, implementasi, dan evaluasi. Pengembangan modul ajar dikembangkan dengan pendekatan STEM–Project Based Learning (STEM-PjBL) dan diwujudkan dalam bentuk modul ajar dan Lembar Kerja Peserta Didik (LKPD). Subjek penelitian melibatkan peserta didik SMA pada kelas eksperimen dan kelas kontrol. Instrumen penelitian meliputi angket validasi ahli, angket kepraktisan, serta tes *pretest* dan *posttest* untuk mengukur peningkatan *Creative Problem Solving* . Hasil penelitian menunjukkan bahwa pengembangan modul ajar berada pada kategori sangat valid sebesar 89,85% berdasarkan validator ahli dan praktisi dan sangat praktis sebesar 81,33% berdasarkan respon peserta didik. Uji efektivitas diperoleh N-Gain 0,62 untuk *Creative Problem Solving*. Hal ini menunjukkan modul ajar energi listrik alternatif berbasis *project* pemanfaatan ampas kelapa terbukti efektif mampu memberikan stimulasi yang optimal terhadap peningkatan *Creative Problem Solving* peserta didik.

Kata Kunci: Energi Listrik Alternatif, STEM-Pjbl, Ampas Kelapa, *Creative Problem Solving, .*

ABSTRACT

DEVELOPMENT OF ALTERNATIVE ELECTRICITY LEARNING MODULES BASED ON PROJECTS COCONUT MEAT WASTE TO IMPROVE CREATIVE PROBLEM SOLVING

By

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Alternative electrical energy education in schools is still dominated by a theoretical approach and has not been optimized in integrating the local environmental context and developing 21st-century skills. One local resource that has not been fully utilized in education is coconut waste, which contains natural electrolytes and has the potential to be used as a simple alternative energy source. The purpose of this study is to develop an alternative electrical energy teaching module based on a project utilizing coconut husks to improve students' creative problem solving. This study uses the Research and Development (R&D) method with the ADDIE model, which includes the stages of analysis, design, development, implementation, and evaluation. The teaching module was developed using a STEM–Project Based Learning (STEM-PjBL) approach and was realized in the form of a teaching module and Student Worksheets (LKPD). The research subjects involved high school students in the experimental and control classes. The research instruments included expert validation questionnaires, practicality questionnaires, and pretest and posttest tests to measure the improvement in Creative Problem Solving. The results showed that the teaching module development was highly valid at 89.85% based on expert and practitioner validators and highly practical at 81.33% based on student responses. The effectiveness test obtained an N-Gain of 0.62 for Creative Problem Solving. This shows that the alternative electrical energy teaching module based on coconut husk utilization projects is proven to be effective in providing optimal stimulation for improving students' Creative Problem Solving.

Keywords: Alternative Electrical Energy, STEM-Pjbl, Coconut Husk, Creative Problem Solving.