

ABSTRAK

Muhammad Choiri Afandi Nasution: Pengembangan Simulator Penerangan Sepeda Motor Menggunakan Model ADDIE Pada Mata Pelajaran Pemeliharaan Kelistrikan Sepeda Motor Siswa Kelas XI Teknik Sepeda Motor SMK Swasta Mandiri Percut Sei Tuan

Penelitian ini dilatarbelakangi oleh keterbatasan sarana praktik pada mata pelajaran pemeliharaan kelistrikan sepeda motor, khususnya materi sistem penerangan sepeda motor. Pembelajaran yang masih berpusat pada guru dan minimnya alat bantu praktik menyebabkan siswa kurang aktif serta kesulitan memahami konsep kelistrikan. Penelitian ini bertujuan untuk: (1) mengembangkan simulator penerangan sepeda motor menggunakan model *ADDIE* pada mata pelajaran pemeliharaan kelistrikan sepeda motor siswa kelas XI teknik sepeda motor SMK Swasta Mandiri Percut Sei Tuan; (2) menganalisis tingkat kelayakan simulator penerangan sepeda motor menggunakan model *ADDIE* pada mata pelajaran pemeliharaan kelistrikan sepeda motor siswa kelas XI teknik sepeda motor SMK Swasta Mandiri Percut Sei Tuan; serta (3) menganalisis keefektifan simulator penerangan sepeda motor menggunakan model *ADDIE* pada mata pelajaran pemeliharaan kelistrikan sepeda motor siswa kelas XI teknik sepeda motor SMK Swasta Mandiri Percut Sei Tuan. Metode penelitian menggunakan model pengembangan *ADDIE* (*Analysis, Design, Development, Implementation and Evaluation*). Produk yang dihasilkan berupa simulator sistem penerangan sepeda motor yang menyerupai sistem penerangan yang sebenarnya pada sepeda motor, meliputi komponen *head light, tail light, turn signal light, hazard light, back light, brake light, indicator light* dan rangkaian kabel sesuai dengan standar industri. Hasil validasi menunjukkan penilaian ahli desain sebesar 91,66%, ahli materi sebesar 100%, dan ahli media sebesar 100%, seluruhnya berkategori “Sangat Layak”. Uji coba perorangan menunjukkan penilaian sebesar 91,66%, kelompok kecil sebesar 90,58%, dan kelompok besar sebesar 91,74% seluruhnya berkategori “Sangat Layak”. Uji efektifitas menunjukkan hasil skor N-Gain sebesar 0,69 atau 68,60% yang tergolong “Cukup Efektif”. Dengan demikian, simulator penerangan sepeda motor yang dikembangkan terbukti sangat layak dan cukup efektif digunakan sebagai media pembelajaran praktik sistem penerangan sepeda motor, karena mampu meningkatkan pemahaman siswa terhadap konsep sistem penerangan secara lebih interaktif dan kontekstual.

Kata Kunci: Pengembangan, Simulator, Media Pembelajaran, Kelistrikan, Penerangan, Sepeda Motor, *ADDIE*, Kelayakan, Efektifitas

ABSTRACT

Muhammad Choiri Afandi Nasution: Development of a Motorcycle Lighting Simulator Using the ADDIE Model in the Motorcycle Electrical Maintenance Subject for Class XI Motorcycle Engineering Students at SMK Swasta Mandiri Percut Sei Tuan

This research is motivated by the limited practical facilities in the motorcycle electrical maintenance subject, particularly for the material on motorcycle lighting systems. Teacher-centered learning and the lack of practical aids lead to students being less active and having difficulty understanding electrical concepts. This research aims to: (1) develop a motorcycle lighting simulator using the ADDIE model for motorcycle electrical maintenance subjects for 11th-grade students in motorcycle engineering at SMK Swasta Mandiri Percut Sei Tuan; (2) analyze the feasibility level of the motorcycle lighting simulator using the ADDIE model for motorcycle electrical maintenance subjects for 11th-grade students in motorcycle engineering at SMK Swasta Mandiri Percut Sei Tuan; and (3) analyze the effectiveness of the motorcycle lighting simulator using the ADDIE model for motorcycle electrical maintenance subjects for 11th-grade students in motorcycle engineering at SMK Swasta Mandiri Percut Sei Tuan. The research method uses the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). The product produced is a motorcycle lighting system simulator that resembles the actual lighting system on a motorcycle, including components such as the headlight, taillight, turn signal lights, hazard lights, backlight, brake light, indicator lights, and wiring harness according to industry standards. The validation results showed design expert assessment at 91.66%, content expert at 100%, and media expert at 100%, all categorized as "Highly Feasible." Individual trials showed an assessment of 91.66%, small group at 90.58%, and large group at 91.74%, all categorized as "Highly Feasible." The effectiveness test showed an N-Gain score of 0.69 or 68.60%, which is considered "Moderately Effective." Thus, the developed motorcycle lighting simulator proved to be highly feasible and quite effective for use as a practical learning medium for motorcycle lighting systems, as it was able to improve students' understanding of lighting system concepts in a more interactive and contextual manner.

Keywords: Development, Simulator, Learning Media, Electricity, Lighting, Motorcycle, ADDIE, Feasibility, Effectiveness