

ABSTRAK

Desi: Pengembangan Trainer Lemari Pendingin Sebagai Media Pembelajaran Siswa Kelas XI Teknik Pendingin dan Tata Udara SMK Negeri 1 Percut Sei Tuan.

Penelitian ini bertujuan untuk mengembangkan media pembelajaran berupa trainer lemari pendingin yang dilengkapi dengan jobsheet sebagai pendukung kegiatan praktik siswa kelas XI Teknik Pendingin dan Tata Udara SMK Negeri 1 Percut Sei Tuan. Latar belakang penelitian ini didasari oleh keterbatasan media praktik yang tersedia di sekolah, di mana trainer yang ada masih sederhana dan belum dilengkapi sistem refrigerasi lengkap, sehingga siswa kesulitan memahami prinsip kerja sistem pendinginan secara menyeluruh. Penelitian ini menggunakan metode Research and Development (R&D) dengan model pengembangan ADDIE yang meliputi tahapan Analysis, Design, Development, Implementation, dan Evaluation. Subjek uji coba adalah 23 siswa kelas XI TPTU, dengan teknik pengumpulan data melalui angket validasi ahli media dan ahli materi serta tes pretest–posttest untuk mengukur efektivitas produk. Hasil validasi ahli media memperoleh skor rata-rata 92,39% dengan kategori “sangat layak”, sedangkan validasi ahli materi mencapai skor rata-rata 93,46% dengan kategori “sangat layak”. Hasil uji efektivitas menunjukkan peningkatan hasil belajar siswa dengan nilai rata-rata pretest sebesar 57,82 dan posttest sebesar 83,65. Perhitungan skor N-Gain sebesar 0,76 yang termasuk dalam kategori “tinggi”, menunjukkan bahwa penggunaan trainer memberikan dampak signifikan terhadap peningkatan hasil belajar siswa. Produk akhir berupa trainer dilengkapi komponen pendingin lengkap (kompresor, kondensor, evaporator, pipa kapiler, sistem kelistrikan), sistem kontrol suhu digital, serta jobsheet yang sistematis dan aplikatif. Penggunaan trainer ini terbukti dapat meningkatkan pemahaman konsep, keterampilan praktik, dan motivasi belajar siswa. Dengan demikian, trainer lemari pendingin yang dikembangkan layak dan efektif digunakan sebagai media pembelajaran praktik pada mata pelajaran sistem instalasi refrigerasi di SMK.

Kata kunci: Pengembangan media, trainer lemari pendingin, Teknik Pendingin.

ABSTRACT

Desi: Development of a Refrigerator Trainer as a Learning Medium for Grade XI Refrigeration and Air Conditioning Students at SMK Negeri 1 Percut Sei Tuan.

This study aims to develop a learning medium in the form of a refrigerator trainer equipped with a jobsheet to support the practical activities of Grade XI Refrigeration and Air Conditioning students at SMK Negeri 1 Percut Sei Tuan. The background of this research is based on the limited availability of practical learning media at the school, where the existing trainer is still simple and not equipped with a complete refrigeration system, making it difficult for students to fully understand the principles of refrigeration. This research employed the Research and Development (R&D) method using the ADDIE development model, which consists of the stages of Analysis, Design, Development, Implementation, and Evaluation. The research subjects were 23 students from Grade XI TPTU. Data were collected through validation questionnaires by media and material experts as well as pretest–posttest to measure product effectiveness. The media expert validation obtained an average score of 92.39%, while the material expert validation reached 93.46%, both categorized as “very feasible.” The effectiveness test showed an increase in student learning outcomes, with the average pretest score of 57.82 rising to 83.65 in the posttest. The N-Gain score of 0.76 (high category) indicates that the use of the trainer had a significant impact on improving student learning outcomes. The final product consists of a trainer equipped with complete refrigeration components, a digital temperature control system, and a systematic and applicable jobsheet. The use of this trainer has proven to enhance students’ conceptual understanding, practical skills, and learning motivation. Therefore, the developed refrigerator trainer is feasible and effective as a practical learning medium for refrigeration system installation subjects in vocational schools.

Keywords: *Learning media development, refrigerator trainer, refrigeration engineering.*