

ABSTRAK

Bayu Pratama: Pengembangan Multimedia Interaktif Berbasis *Problem Based Learning* Pada Mata Pelajaran CNC Bubut Kelas XI Program Keahlian Teknik Pemesinan Di SMK Negeri 2 Medan. Skripsi. Fakultas Teknik Universitas Negeri Medan. 2024.

Penelitian pengembangan ini bertujuan untuk mengetahui kelayakan multimedia interaktif berbasis *android* menggunakan aplikasi SAC pada pembelajaran CNC bubut kelas XI program keahlian teknik pemesinan di SMK Negeri 2 Medan bubut. Penelitian ini dilaksanakan di SMK Negeri 2 Medan. Penelitian ini menggunakan metode penelitian dan pengembangan atau lebih sering disebut *Research and Development* (R&D) dengan model ADDIE (*Analysis, Design, Development, Implementation, and Evaluation*). Media dikembangkan dengan aplikasi *Smart Apps Creator*. Tahap pengumpulan data meliputi: (1) Uji kevalidan (a) ahli materi, (b) ahli media, dan (c) ahli desain pembelajaran, (2) Uji Kepraktisan (a) penilaian guru dan (b) penilaian siswa (perorangan, kelompok kecil, dan kelompok besar), (2) Uji Efektifitas yaitu *Pre-test* dan *Post-test*. Hasil penelitian ini dimana media pembelajaran interaktif berbasis *Problem Based Learning* dinilai sangat valid dengan hasil validasi dari ahli materi sebesar 95%, ahli media 98,15%, dan ahli desain pembelajaran 92,50%, serta validasi dari siswa dalam uji coba perorangan, kelompok kecil, dan kelompok besar berturut-turut sebesar 93,06%, 92,88%, dan 93,23%. Rata-rata hasil validasi menunjukkan kategori "Validitas Sangat Tinggi," sehingga media ini layak digunakan dalam pembelajaran. Kepraktisan media ini terbukti sangat tinggi dengan rata-rata skor penilaian guru sebesar 3,74 dan penilaian siswa dalam uji coba perorangan, kelompok kecil, dan kelompok besar berturut-turut sebesar 3,68, 3,71, dan 3,73. Rata-rata skor keseluruhan 3,73 menunjukkan kualifikasi "Sangat Praktis," menegaskan bahwa media ini praktis digunakan dalam pembelajaran. Efektivitas media ini terbukti dengan peningkatan nilai rata-rata siswa dari pre-test 55 menjadi post-test 87,5, atau peningkatan sebesar 59,09%. Perhitungan N-Gain sebesar 0,72 menandakan "Efektivitas Tinggi," sehingga media ini efektif dalam meningkatkan hasil belajar siswa dan mencapai tujuan pembelajaran.

Kata Kunci: Pengembangan Multimedia Interaktif, *Problem-Based Learning*, *Android*, *Smart Apps Creator*, ADDIE, CNC Bubut, Teknik Pemesinan.

ABSTRACT

Bayu Pratama: Development of Interactive Multimedia Based on Problem-Based Learning for CNC Turning Subject in Grade XI of the Machining Engineering Program at SMK Negeri 2 Medan. Thesis. Faculty of Engineering, Universitas Negeri Medan. 2024.

This development research aims to evaluate the feasibility of interactive multimedia based on Problem-Based Learning, supported by Android using the SAC application, for CNC Turning lessons in Grade XI of the Machining Engineering Program at SMK Negeri 2 Medan. The study was conducted at SMK Negeri 2 Medan using the Research and Development (R&D) method with the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The multimedia was developed using the Smart Apps Creator application. Data collection included: (1) Validation tests involving (a) subject matter experts, (b) media experts, and (c) instructional design experts; (2) Practicality tests through evaluations by (a) teachers and (b) students in individual, small group, and large group trials; and (3) Effectiveness tests using pre-test and post-test methods. The results showed that the interactive multimedia based on Problem-Based Learning was highly valid, with validation scores of 95% from subject matter experts, 98.15% from media experts, and 92.50% from instructional design experts. Validation from student trials—individual, small group, and large group—yielded scores of 93.06%, 92.88%, and 93.23%, respectively. The average validation results were categorized as "Very High Validity," confirming the feasibility of the media for instructional use. The practicality of the media was also rated very high, with an average teacher evaluation score of 3.74 and student evaluations in individual, small group, and large group trials at 3.68, 3.71, and 3.73, respectively. The overall average score of 3.73 indicated a "Very Practical" qualification, demonstrating the ease of use of the media in teaching. The media's effectiveness was evidenced by a significant improvement in students' average scores, from 55 in the pre-test to 87.5 in the post-test, representing a 59.09% increase. An N-Gain calculation of 0.72 categorized the media as having "High Effectiveness," proving it effective in improving student learning outcomes and achieving instructional goals.

Keywords: Interactive multimedia development, Problem-Based Learning, Android, Smart Apps Creator, ADDIE, CNC Turning, machining technique.