

ABSTRAK

PENGEMBANGAN BUKU TEKS PERADABAN PESAWAT SEDERHANA BERBASIS PjBL UNTUK MENUMBUHKAN KARAKTER OPTIMIS ANAK

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Karakter optimis merupakan sikap mental esensial yang mendukung ketangguhan, kepercayaan diri, serta kemampuan anak dalam menghadapi tantangan dan kegagalan. Fenomena penurunan motivasi, rasa percaya diri, serta ketahanan emosional pada anak semakin nyata akibat tekanan akademik dan sosial yang kompleks, sehingga penguatan karakter optimis menjadi kebutuhan mendesak dalam pendidikan dasar. Penelitian ini bertujuan mengembangkan buku teks peradaban pesawat sederhana berbasis PjBL untuk menumbuhkan karakter optimis anak. Penelitian ini menggunakan metode *Research and Development* (R&D) dengan model ADDIE (*Analyze, Design, Develop, Implement, Evaluate*) serta desain *quasi-eksperimental*. Subjek meliputi sepuluh guru bersertifikasi untuk analisis kebutuhan, sepuluh validator ahli untuk *expert judgement*, anak kelas IV pada salah satu SD Negeri di Yogyakarta (kelas IV B sebagai kelompok kontrol, IV A sebagai kelompok eksperimen), serta orang tua anak sebagai responden kuesioner karakter optimis

Hasil penelitian menunjukkan, 1) pengembangan buku teks peradaban pesawat sederhana berbasis PjBL untuk menumbuhkan karakter optimis dikembangkan mengikuti tahapan ADDIE. 2) kualitas buku teks tergolong kualifikasi “sangat baik” dengan skor 3,97 (skala 1-4) direkomendasikan “tidak perlu revisi”. 3) penerapan buku teks menunjukkan pengaruh positif dan signifikan terhadap karakter optimis anak ($p < 0,05$) dikategorikan efek “besar” ($r = 0,622$) setara 38,60%, efektivitas *n-gain* kelompok kontrol “menengah” (53,68) dan kelompok eksperimen “tinggi” (83,09), konsistensi penilaian *Interrater Reliability* dikategorikan “sangat tinggi” ($a = 0,936$), serta analisis *z-score* per indikator kelompok kontrol dominan negatif (-1,83 hingga 0,7) dan hampir seluruh kelompok eksperimen positif (-0,51 hingga 0,67). Berdasarkan hasil penelitian, pengembangan buku teks peradaban pesawat sederhana berbasis PjBL efektif meningkatkan karakter optimis secara signifikan, sehingga buku teks ini layak direkomendasikan sebagai bahan pembelajaran yang berkelanjutan untuk memperkuat pengembangan karakter anak.

Kata kunci: Peradaban Pesawat Sederhana, *Project Based Learning*, Optimis, Pendidikan Karakter

ABSTRACT**DEVELOPMENT OF A SIMPLE MACHINES CIVILIZATION TEXTBOOK
BASED ON PjBL TO FOSTER CHILDREN'S OPTIMISTIC CHARACTER**

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Optimistic character is an essential mental attitude that supports children's resilience, self-confidence, and ability to face challenges and failures. The phenomenon of declining motivation, self-confidence, and emotional resilience among children has become increasingly evident due to complex academic and social pressures, making the strengthening of optimistic character an urgent need in elementary education. This study aims to develop a "Simple Machines Civilization" textbook based on Project Based Learning (PjBL) to foster children's optimistic character. The research employed a Research and Development (R&D) approach using the ADDIE model (Analyze, Design, Develop, Implement, Evaluate) combined with a quasi-experimental design. The subjects included ten certified teachers for needs analysis, ten expert validators for expert judgment, fourth-grade students at a public elementary school in Yogyakarta (Class IV B as the control group and Class IV A as the experimental group), and parents as respondents to the optimistic character questionnaire.

The results of the study show that: 1) the development of the PjBL-based Simple Machines Civilization textbook to foster optimistic character followed the ADDIE stages; 2) the quality of the textbook was classified as "very good," with a score of 3.97 (on a 1–4 scale) and was recommended as "no revision needed"; and 3) the implementation of the textbook showed a positive and significant effect on children's optimistic character ($p < 0.05$), categorized as a "large" effect ($r = 0.622$), equivalent to 38.60%. The effectiveness based on N-gain was "moderate" for the control group (53.68) and "high" for the experimental group (83.09). Interrater reliability demonstrated "very high" consistency ($\alpha = 0.936$), and the z-score analysis per indicator showed predominantly negative values in the control group (-1.83 to 0.7) and mostly positive values in the experimental group (-0.51 to 0.67). Based on the research results, the development of the PjBL based Simple Machines Civilization textbook is effective in significantly improving optimistic character; therefore, this textbook is recommended as a sustainable learning resource to strengthen children's character development.

Keywords: Simple Machines Civilization, Project based learning, Optimism, Character Education