

ABSTRAK

Program sosialisasi literasi keuangan Cinta, Bangga, Paham (CBP) Rupiah oleh Bank Indonesia pada siswa sekolah dasar menghadapi keterbatasan media konvensional. Penelitian ini mengembangkan *Game* edukasi berbasis web "RUPI" menggunakan metode hibrida ADDIE-Scrum dengan mengintegrasikan algoritma *Sentence-BERT* (SBERT) dan *Fuzzy Matching* pada *Non-Player Character* (NPC) Rupi untuk penilaian esai otomatis. *Game* dibangun menggunakan *Construct 3* di *Itch.io*, sedangkan *Back-end* Python *FastAPI* di-host pada Hugging Face Spaces. Uji coba terhadap 19 siswa kelas IV Sekolah Sukma Bangsa Lhokseumawe menunjukkan hasil validasi ahli materi 100% dan ahli media 95,55% ("Sangat Layak"). Intervensi *Game* berhasil meningkatkan rata-rata skor kognitif dari 48,87 (*Pre-test*) menjadi 92,86 (*Post-test*). Hasil uji *Wilcoxon* menunjukkan perbedaan pemahaman yang signifikan ($\text{Sig. } 0,000 < 0,05$) dengan indeks *Normalized Gain* (N-Gain) sebesar 0,86 (kategori "Tinggi"). Pengujian *System Usability Scale* (SUS) memperoleh skor 83,55 (*Excellent*), didukung observasi keterlibatan tinggi siswa yang merasakan interaktivitas NPC cerdas layaknya AI nyata. Kesimpulannya, *Game* RUPI sangat efektif mengakselerasi literasi CBP Rupiah sejak usia dini.

Kata Kunci: *Sentence-BERT*, NPC Interaktif, *Game* Edukasi, CBP Rupiah, ADDIE-Scrum.

ABSTRACT

Bank Indonesia's CBP Rupiah financial literacy program for elementary students faces limitations in conventional media. This study develops the web-based educational Game “RUPI” using a hybrid ADDIE-Scrum model, integrating Sentence-BERT (SBERT) and Fuzzy Matching algorithms into the NPC Rupi for automatic paper-based essay evaluation. The Game utilizes Construct 3 hosted on Itch.io, while its Python FastAPI Back-end is deployed on Hugging Face Spaces. Field testing with 19 fourth-grade students at Sukma Bangsa Lhokseumawe yielded validation scores of 100% from material experts and 95.55% from media experts (“Highly Eligible”). The Game intervention significantly increased average cognitive scores from 48.87 (Pre-test) to 92.86 (Post-test). The Wilcoxon test confirmed a significant difference in understanding (Sig. 0.000 < 0.05) with an average Normalized Gain (N-Gain) index of 0.86 (“High” effectiveness). The System Usability Scale (SUS) score reached 83.55 (Excellent), supported by qualitative observations showing high student engagement with AI-like interactivity. In conclusion, the RUPI Game is highly effective in accelerating early childhood CBP Rupiah literacy.

Keywords: *Sentence-BERT, Interactive NPC, Educational Game, CBP Rupiah, ADDIE-Scrum.*