

ABSTRAK

Putri Nadia. 2025. Penerapan *Scaffolding* Konseptual dalam Model *Problem Based Learning* untuk Meningkatkan Kemampuan Berpikir Kritis Siswa pada Materi Energi Alternatif. Skripsi. Program Studi Pendidikan Fisika, FKIP, Universitas PGRI Madiun. Pembimbing: (I) Dr. Tantri Mayasari, S.Pd., M.Pd., (II) Farida Huriawati, S.Si., M.Si.

Kemampuan berpikir kritis merupakan keterampilan penting dalam pembelajaran abad 21, namun hasil asesmen internasional seperti PISA menunjukkan bahwa kemampuan ini masih rendah di kalangan siswa Indonesia. Salah satu penyebabnya adalah penggunaan model pembelajaran yang masih berpusat pada guru dan minim eksplorasi konsep. Penelitian ini bertujuan untuk mendeskripsikan penerapan *scaffolding* konseptual dalam model *Problem Based Learning* (PBL) dan menganalisis peningkatannya terhadap kemampuan berpikir kritis siswa SMA pada materi energi alternatif. Penelitian ini menggunakan metode campuran dengan desain *exploratory sequential*, diawali dengan eksplorasi kualitatif melalui wawancara guru dan siswa untuk merancang intervensi, kemudian dilanjutkan dengan pengumpulan data kuantitatif melalui tes *pretest–posttest*, angket respons siswa, dan observasi pembelajaran. Analisis kualitatif dilakukan secara tematik, sedangkan data kuantitatif dianalisis menggunakan statistik deskriptif, uji N-gain, dan uji *paired sample t-test*. Hasil penelitian menunjukkan bahwa penerapan *scaffolding* konseptual dalam PBL dapat meningkatkan kemampuan berpikir kritis siswa, ditunjukkan oleh peningkatan skor rata-rata dari 31 menjadi 57. Nilai N-gain sebesar 0,38 berada pada kategori sedang, dan hasil uji t menunjukkan signifikansi $< 0,05$, menandakan adanya peningkatan yang signifikan. Respon siswa terhadap pembelajaran menunjukkan kategori sangat baik. Dengan demikian, penerapan *scaffolding* konseptual dalam model PBL terbukti dapat membantu meningkatkan kemampuan berpikir kritis siswa secara bertahap, sistematis, dan kontekstual.

Kata kunci : Berpikir Kritis, *Problem Based Learning*, *Scaffolding* Konseptual

ABSTRAK

Putri Nadia. 2025. *The Implementation of Conceptual Scaffolding in a Problem Based Learning Model to Improve Students' Critical Thinking Skills on Alternative Energy Material.* Undergraduate Thesis. Physics Education Study Program, Faculty of Teacher Training and Education, Universitas PGRI Madiun. Advisors: (I) Dr. Tantri Mayasari, S.Pd., M.Pd., (II) Farida Huriawati, S.Si., M.Si.

Critical thinking is an essential 21st-century skill however, international assessments such as PISA indicate that Indonesian students' critical thinking ability remains low. One contributing factor is the dominance of teacher-centered learning models with limited opportunities for conceptual exploration. This study aims to describe the implementation of conceptual scaffolding in a Problem-Based Learning (PBL) model and to analyze its effect on improving high school students' critical thinking skills in the topic of alternative energy. The study employed a mixed-method approach with an exploratory sequential design, beginning with a qualitative exploration through interviews with teachers and students to design the intervention, followed by quantitative data collection through pretest–posttest assessments, student response questionnaires, and classroom observations. Qualitative data were analyzed thematically, while quantitative data were examined using descriptive statistics, N-gain analysis, and paired sample t-test. The results show that the implementation of conceptual scaffolding within PBL improved students' critical thinking skills, as indicated by an increase in the average score from 31 to 57. The N-gain score of 0.38 fell into the medium category, and the t-test results with a significance value of < 0.05 indicated a statistically significant improvement. Furthermore, students' responses toward the learning process were categorized as very positive. Thus, the integration of conceptual scaffolding into PBL is proven to gradually, systematically, and contextually enhance students' critical thinking skills.

Keywords: Conceptual Scaffolding, Critical Thinking, Problem-Based Learning.