

ABSTRAK

Arifatus Tsania. 2025. **IMPLEMENTASI METODE DEBAT DALAM MODEL PROBLEM BASED LEARNING (PBL) UNTUK MENINGKATKAN KETERAMPILAN ARGUMENTASI ILMIAH PESERTA DIDIK PADA MATERI ENERGI TERBARUKAN**

Keterampilan argumentasi ilmiah penting dikembangkan dalam pembelajaran karena melatih dua aspek utama keterampilan abad 21, yaitu *Communication* serta *Critical thinking and problem solving*. Rendahnya keterampilan argumentasi ilmiah peserta didik serta minimnya inovasi metode dan model pembelajaran Fisika melatarbelakangi penelitian ini. Salah satu upaya yang dilakukan adalah menerapkan metode debat dalam model *Problem Based Learning* (PBL) pada materi energi terbarukan. Penelitian ini bertujuan untuk mengetahui peningkatan keterampilan argumentasi ilmiah peserta didik setelah diterapkannya metode tersebut di kelas X SMA Negeri 1 Ciamis tahun ajaran 2024/2025. Metode yang digunakan adalah kuasi eksperimen dengan desain *Non-equivalent Control Group*. Populasi penelitian adalah seluruh siswa kelas X berjumlah 432 siswa dari 12 kelas. Sampel dipilih dengan teknik *purposive sampling*, yaitu kelas X E-8 sebagai kelas eksperimen dan X E-9 sebagai kelas kontrol, masing-masing 36 siswa. Instrumen penelitian berupa tes uraian sebanyak tiga soal yang diberikan sebelum (*pretest*) dan sesudah (*posttest*) perlakuan. Data dianalisis menggunakan *N-Gain* dan uji-t pada taraf signifikansi $\alpha = 0,05$. Hasil menunjukkan nilai $t_{hitung} > t_{tabel}$ ($2,68 > 1,99$), sehingga H_0 ditolak dan H_a diterima. Dengan demikian, dapat disimpulkan bahwa penerapan metode debat dalam model *Problem Based Learning* (PBL) secara signifikan dapat meningkatkan keterampilan argumentasi ilmiah peserta didik pada materi energi terbarukan.

Kata kunci: energi terbarukan, keterampilan argumentasi ilmiah, metode debat, model *Problem Based Learning* (PBL).

ABSTRACT

Arifatus Tsania. 2025. **IMPLEMENTATION OF DEBATE METHOD IN PROBLEM BASED LEARNING (PBL) MODEL TO IMPROVE STUDENTS' SCIENTIFIC ARGUMENTATION SKILLS ON RENEWABLE ENERGY TOPIC**

Scientific argumentation skills are important to develop in learning because they cultivate two core 21st-century skills: communication and critical thinking and problem-solving. The low level of students' scientific argumentation skills and the lack of innovation in Physics teaching methods and models form the background of this research. One effort undertaken is the implementation of the debate method within the Problem Based Learning (PBL) model on the topic of renewable energy. This study aims to determine the improvement of students' scientific argumentation skills after applying the method in class X of SMA Negeri 1 Ciamis in the 2024/2025 academic year. The method used is a quasi-experiment with a Non-equivalent Control Group design. The population consists of all 10th-grade students totaling 432 across 12 classes. The sample was selected using purposive sampling, with class X E-8 as the experimental class and X E-9 as the control class, each consisting of 36 students. The research instrument was an essay test consisting of three questions administered before (pretest) and after (posttest) the treatment. Data were analyzed using N-Gain and a t-test at a significance level of $\alpha = 0.05$. The results showed that $t_{\text{calculated}} > t_{\text{table}}$ ($2.68 > 1.99$), so H_0 was rejected and H_a was accepted. Therefore, it can be concluded that the implementation of the debate method within the Problem Based Learning (PBL) model significantly improves students' scientific argumentation skills on the topic of renewable energy.

Keywords: renewable energy, scientific argumentation skills, debate method, Problem Based Learning (PBL) model.