ABSTRAK

Vania Ayu Irfani, NIM 4223321004 (2026). Pengaruh Model PBL Berbantuan *Website* HTML 5 terhadap Kemampuan Pemecahan Masalah dan Argumentasi Ilmiah Siswa pada Materi Energi Terbarukan

Penelitian ini bertujuan untuk mengetahui pengaruh model *problem based learning* (PBL) berbantuan *website* HTML 5 terhadap pemecahan masalah dan argumentasi ilmiah siswa pada materi energi terbarukan di kelas X SMA, dengan metode kuasi eksperimen *pretest-posttest control group design*. Populasi penelitian seluruh siswa kelas X SMA Negeri 5 Binjai berjumlah 7 kelas. Sampel penelitian terdiri dari 2 kelas. Kelas X-2 sebagai kelas eksperimen menggunakan model PBL berbantuan *website* HTML 5 dan X-1 sebagai kelas kontrol menggunakan model PBL, masing-masing kelas berjumlah 36 siswa. Teknik pengambilan sampel secara *cluster random sampling*. Instrumen penelitian terdiri dari tes pemecahan masalah dan argumentasi ilmiah yang sudah valid. Instrumen penelitian pemecahan masalah dan argumentasi ilmiah masing-masing berjumlah delapan soal berbentuk uraian berbasis masalah. Hasil *pretest* dan *posttest* pemecahan masalah kelas eksperimen sebesar 32,33 dan 77,41, kelas kontrol 31,83 dan 64,00. Hasil *pretest* dan *posttest* argumentasi ilmiah kelas eksperimen 43,00 dan 75,80, kelas kontrol 45,16 dan 59,50. Data dianalisis menggunakan uji manova, korelasi, dan N-gain dengan syarat data berdistribusi normal dan homogen. Hasil uji manova diperoleh ada pengaruh yang signifikan dengan penerapan PBL berbantuan *website* HTML 5 terhadap pemecahan masalah dan argumentasi ilmiah siswa. Hasil uji korelasi diperoleh hubungan positif dan signifikan antara pemecahan masalah dengan argumentasi ilmiah dengan penerapan PBL berbantuan *website* HTML 5 dengan nilai $r = 0{,}529$. Peningkatan N-gain kelas eksperimen, pemecahan masalah 0,66, argumentasi ilmiah 0,56 kategori sedang, dengan penerapan PBL berbantuan *website* HTML 5. Peningkatan N-gain di kelas kontrol pemecahan masalah 0,46 kategori sedang, argumentasi ilmiah 0,24 kategori rendah dengan penerapan PBL.

Kata Kunci: *problem based learning, website HTML 5, pemecahan masalah, argumentasi ilmiah*

ABSTRACT

Vania Ayu Irfani, NIM 4223321004 (2026). The Effect of the HTML 5 Website-Assisted Problem-Based Learning (PBL) Model on Students' Problem-Solving and Scientific Argumentation Skills in Renewable Energy

This study aims to determine the effect of the problem-based learning (PBL) model assisted by the HTML 5 website on students' problem solving and scientific argumentation on renewable energy material in class X of senior high school, using a quasi-experimental pretest-posttest control group design method. The study population was all 7 class X students of SMA Negeri 5 Binjai. The research sample consisted of 2 classes. Class X-2 as the experimental class using the PBL model assisted by the HTML 5 website and X-1 as the control class using the PBL model, each class consisting of 36 students. The sampling technique was cluster random sampling. The research instrument consisted of a problem-solving test and a scientific argumentation test that had been validated. The problem-solving and scientific argumentation research instruments each consisted of eight questions in the form of problem-based descriptions. The results of the pretest and posttest for problem solving in the experimental class were 32.33 and 77.41, while the control class was 31.83 and 64.00. The results of the pretest and posttest of scientific argumentation of the experimental class were 43.00 and 75.80, the control class 45.16 and 59.50. The data were analyzed using the MANOVA, correlation, and N-gain tests with the condition that the data were normally distributed and homogeneous. The results of the MANOVA test showed a significant influence with the application of PBL assisted by the HTML 5 website on students' problem solving and scientific argumentation. The results of the correlation test obtained a positive and significant relationship between problem solving and scientific argumentation with the application of PBL assisted by the HTML 5 website with a value of r = 0.529. The increase in N-gain of the experimental class, problem solving 0.66, scientific argumentation 0.56 in the medium category, with the application of PBL assisted by the HTML 5 website. The increase in N-gain in the control class problem solving 0.46 in the medium category, scientific argumentation 0.24 in the low category with the application of PBL.

Keywords: *problem based learning, HTML 5 website, problem-solving, scientific argumentation*