ABSTRAK

Rachel Septoraya Br Bangun, NIM 4203351016. Pengaruh *Problem Based Learning* berbasis *Science, Technology, Engineering, and Mathematics* terhadap Literasi Sains dan Kemampuan Berpikir Kritis Siswa pada Materi Sistem Ekskresi Manusia di SMP Negeri 2 Pancur Batu.

Penelitian ini bertujuan untuk mengetahui pengaruh penerapan model *problem based learning* berbasis *science, technology, tngineering, and mathematics* terhadap literasi sains dan kemampuan berpikir kritis siswa pada materi sistem ekskresi manusia di kelas VIII SMP Negeri 2 Pancur Batu. Penelitian ini termasuk jenis penelitian eksperimen semu (*Quasi Experimental research*) dengan desain *two group pretest posttest*. Populasi dalam penelitian ini adalah seluruh siswa kelas VIII SMP Negeri 2 Pancur Batu yang terdiri dari 6 kelas sebanyak 180 siswa. Sampel penelitian diambil dengan teknik *class random sampling* yang terdiri dari dua kelas yaitu kelas VIII-5 (kelas eksperimen) dengan model PBL berbasis STEM dan kelas VIII-6 (kelas kontrol) dengan menggunakan model PBL, masing masing kelas terdiri dari 30 siswa. Instrumen penelitian adalah tes pilihan berganda dengan empat pilihan untuk mengukur literasi sains dan tes esai untuk mengukur kemampuan berpikir kritis siswa. Analisis data menggunakan uji manova, uji normalisasi-gain (N-gain), dan uji korelasi. Berdasarkan hasil uji manova ditemukan bahwa model PBL berbasis STEM berpengaruh signifikan terhadap literasi sains dan kemampuan berpikir kritis siswa. Persentase peningkatan N-gain pada literasi sains di kelas eksperimen sebesar 71% (kategori tinggi) dan pada kelas kontrol 46% (kategori sedang). Persentase peningkatan N-gain kemampuan berpikir kritis di kelas eksperimen sebesar 59% (kategori sedang) dan pada kelas kontrol sebesar 34% (kategori sedang). Hasil uji korelasi menunjukkan bahwa terdapat hubungan antara literasi sains dengan kemampuan berpikir kritis sebesar 0.736 pada kelas eksperimen, artinya terdapat korelasi yang tinggi antara literasi sains dan kemampuan berpikir kritis dengan model *problem based learning* berbasis *science, technology, engineering, and mathematics* di kelas VIII pada materi sistem ekskresi manusia.

Kata Kunci: PBL, STEM, literasi sains, kemampuan berpikir kritis.

ABSTRACT

Rachel Septoraya Br Bangun NIM 4203351016. The Influence of Problem Based Learning based on Science, Technology, Engineering, and Mathematics on Students' Scientific Literacy and Critical Thinking Ability on Human Excretory System Material in SMP Negeri 2 Pancur Batu.

This research aims to determine the effect of applying the Problem Based Learning model based on Science, Technology, Engineering, and Mathematics on students' scientific literacy and critical thinking abilities on human excretory system material in class VIII SMP Negeri 2 Pancur Batu. This research is a type of quasi-experimental research with design two group pretest posttest. The population in this study were all students in class VIII of SMP Negeri 2 Pancur Batu, consisting of 6 classes totaling 180 students. The research sample was taken by class random sampling technique which consisted of two classes, namely class VIII-5 as a experimental class with model PBL-STEM and class VIII-6 as a control class with model PBL, each class consisted of 30 students. The research instrument is a miltiple-choice test with four choices to measure scientific literacy and essay test to measure critical thinking skills. Data analysis uses manova, normalization-gain (N-gain), and correlation test. Based on the results of the manova test, it was found that the model PBL-STEM had a significant effect on students' scientific literacy and critical thinking abilities. The percentage increase in N-gain in scientific literacy in the experimental class was 71% (high category) and in the control class was 46% (medium category). The percentage increase in N-gain in critical thinking skills in the experimental class was 59% (medium category) and in the control class was 34% (medium category). The results of the correlation test showed that there was a relationship between scientific literacy with critical thinking skills of 0.736 in the experimental class, meaning that there was a high correlation between scientific literay and critical thinking skills with model PBL-STEM in class VIII on human excretory system material.

Keywords: PBL, STEM, scientific literacy, critical thinking skills.