ABSTRAK

Maryati Yusdarni Tanjung, NIM 4181141027 (2022). Efektivitas Model Pembelajaran *Project Based Learning* (PjBL) Berbasis STEM (*Science, Technology, Engineering And Mathematics*) Terhadap Hasil Belajar Biologi Siswa Materi Sistem Pernapasan Kelas XI PMIPA MAN Tanjung Balai Tahun Pelajaran 2021/2022.

Penelitian ini bertujuan untuk mengetahui efektivitas model pembelajaran PjBL-STEM terhadap hasil belajar biologi materi sistem pernapasan pada kelas XI PMIPA MAN Tanjungbalai Tahun Pelajaran 2021/2022. Penelitian ini menggunakan quasi eksperimen dengan desain *Pretest and Posttest Control Group Design*. Pengambilan sampel dilakukan dengan teknik *Simple Random Sampling*. Sampel pada penelitian ini terdiri dari 2 kelas, yakni kelas XI PMIPA 4 (Kelas Eksperimen) dengan model pembelajaran PjBL-STEM dan XI PMIPA 5 (Kelas Kontrol) dengan model pembelajaran *Discovery Learning*. Pengumpulan data dengan tes dan dokumentasi. Data rata-rata *pretest* dan *posttest* hasil belajar pada kelas eksperimen masing masing adalah 43,88 dan 84,48, dan pada kelas kontrol 43,76 dan 80,85. Data dianalisis dengan menggunakan *Independent Sample t-test* menggunakan SPSS Versi 21. Berdasarkan uji hipotesis diperoleh bahwa model pembelajaran PjBL-STEM efektif digunakan terhadap hasil belajar biologi materi sistem pernapasan pada kelas XI PMIPA MAN Tanjungbalai Tahun Pelajaran 2021/2022. Pada kelas eksperimen ketuntasan belajar siswa tuntas, tingkat penguasaan siswa terpenuhi dan ketercapaian indikator pembelajaran tercapai dengan nilai N-gain kelas eksperimen sebesar 0,72 dengan kategori tinggi. Dan pada kelas kontrol ketuntasan belajar siswa belum tuntas, tingkat penguasaan materi terpenuhi dan ketercapaian indikator pembelajaran tercapai dengan nilai N-gain kelas kontrol sebesar 0,68 dengan kategori sedang. Dapat disimpulkan bahwa model pembelajaran PjBl-STEM efektif digunakan terhadap hasil belajar materi sistem pernapasan pada kelas XI PMIPA MAN Tanjungbalai Tahun Pelajaran 2021/2022.

Kata Kunci: *PjBL, STEM, Hasil Belajar*

ABSTRACT

Maryati Yusdarni Tanjung, NIM 4181141027 (2022). The Effectiveness of STEM-Based Project Based Learning (PjBL) Learning Model (Science, Technology, Engineering And Mathematics) Against Student Biology Learning Outcomes for Respiratory System Materials for Class XI PMIPA MAN Tanjung Balai Academic Year 2021/2022.

This study aims to determine the effectiveness of the PjBL-STEM learning model on the biology learning outcomes of respiratory system material in class XI PMIPA MAN Tanjungbalai in the 2021/2022 academic year. This study uses a quasi-experimental design with Pretest and Posttest Control Group Design. Sampling was done by using Simple Random Sampling technique. The sample in this study consisted of 2 classes, namely class XI PMIPA 4 (Experimental Class) with the PjBL-STEM learning model and XI PMIPA 5 (Control class) with the Discovery Learning learning model. Data collection by tests and documentation. The average pretest and posttest data on learning outcomes in the experimental class were 43.88 and 84.48, respectively, and 43.76 and 80.85 in the control class. The data were analyzed using the Independent Sample t-test using SPSS Version 21. Based on the hypothesis test, it was found that the PjBL-STEM learning model was effectively used to improve the learning outcomes of biology learning materials for the respiratory system in class XI PMIPA MAN Tanjungbalai in the 2021/2022 academic year. In the experimental class, student learning completeness is complete, the level of student mastery is met and the achievement of learning indicators is achieved with the experimental class N-gain value of 0.72 in the high category. And in the control class, student learning completeness has not been completed, the level of mastery of the material is met and the achievement of learning indicators is achieved with the control class N-gain value of 0.68 in the medium category. It can be concluded that the PjBl-STEM learning model is effectively used for the learning outcomes of the respiratory system material in class XI PMIPA MAN Tanjungbalai in the 2021/2022 academic year.

Keywords: *PjBL, STEM, Learning Outcomes*