ABSTRACT

Critical thinking skills are very important in 21st century learning, but there are still many students who have difficulty understanding and analyzing and evaluating information in depth. Differences in students' cognitive levels also affect the effectiveness of learning, so a learning model is needed that can adjust to various levels of ability. STEM-based PjBL (Science, Technology, Engineering, and Mathematics) is one of the approaches that actively involves students in project-based problem-solving, so that it can improve critical thinking skills. This study aims to identify and explain the influence of the STEM-based PjBL learning model on the critical thinking ability of grade X students of Nurul Iman High School Palembang in 2024/2025, especially in the context of the ecosystem. In this study, a pre-experimental method was used with a one-group pre-test post-test design. The subjects in this study are students of class X of Nurul Iman High School Palembang for the 2024/2025 school year. The population and sample in this study were 14 students determined by nonprobability sampling technique with saturated sampling. Data collection uses a test method in the form of multiple-choice questions. The data was analyzed using the help of SPSS 30 for windows. The critical thinking skills used are the ennis version which only uses 3 out of 5 indicators. The results of the study showed that there was an influence of the STEM-based PjBL model on students' critical thinking skills in the ecosystem material, which was shown by the results of the t-test obtained with a significance test result of 0.001, which means that the data was less than α=0.05, thus H0 was rejected and Ha was accepted, and the conclusion was obtained that the use of the STEM-based PjBL model had a significant effect on students' critical thinking skills. This is supported by the overall average posttest score of critical thinking skills of 88.5 with an average N-Gain of 0.85 in the high category. Then on the average posttest score of indicator one is 34.57 with an NGain value of 1.21, indicator two gets an average posttest score of 18.5 with an NGain value of 0.48 and on the average posttest value of the third indicator is 34.57 with an NGain value of 1.22.

Keywords: *Critical Thinking, Ecosystem, Project Based Learning, STEM*