ABSTRAK

ELMIRA SURYANI SUTISMAN :"Pengaruh Model Pembelajaran *Project Based Learning* (PJBL) Berbasis STEM Terhadap Keterampilan Pemecahan Masalah Peserta Didik Pada Materi Inovasi Teknologi Biologi"

Salah satu keterampilan pemecahan masalah sebagai bagian dari abad 21 sangat penting bagi peserta didik dan belum banyak diintegrasikan dalam pembelajaran Biologi. Penelitian ini bertujuan untuk menganalisis pengaruh model *Project Based Learning* (PjBL) berbasis STEM terhadap keterampilan pemecahan masalah peserta didik pada materi Inovasi Teknologi Biologi. Metode yang digunakan yaitu *quasi experiment* dengan desain penelitian *non-equivalent control group design*. Penelitian dilakukan di sekolah Madrasah Aliyah Negeri dengan sampel penelitian terdiri dari 31 peserta didik pada kelas eksperimen maupun kelas kontrol. Hasil penelitian pada kelas dengan model PjBL berbasis STEM menunjukkan bahwa keterlaksanaan pembelajaran memperoleh persentase sebesar 94% (sangat baik). Hasil analisis keterampilan pemecahan masalah menunjukkan bahwa indikator menyusun rencana penyelesaian memperoleh nilai *N-Gain* tertinggi sebesar 0,29 (rendah). Respon peserta didik terhadap pembelajaran memperoleh persentase sebesar 78% (kuat). Dengan demikian terdapat pengaruh model PjBL berbasis STEM terhadap keterampilan pemecahan masalah peserta didik pada materi Inovasi Teknologi Biologi dengan nilai sig. (2-tailed) < 0,001 dan besaran pengaruh 0,62 (sedang).

Kata Kunci: Keterampilan Pemecahan Masalah, *Project Based Learning* (PJBL), STEM, Inovasi Teknologi Biologi.

ABSTRACT

ELMIRA SURYANI SUTISMAN : "The Effect of STEM-Based Project-Based Learning (PJBL) on Students' Problem-Solving Skills in Biology Technology Innovation"

Problem-solving skills, as one of the essential 21st-century skills, are crucial for students and have not been widely integrated into Biology learning. This study aimed to analyze the effect of the STEM-based Project Based Learning (PjBL) model on students' problem-solving skills in the topic of Biological Technology Innovation. The research employed a quasi-experimental method with a non-equivalent control group design. The study was conducted at a State Islamic Senior High School, involving 31 students in the experimental class and 30 students in the control class. The results showed that the implementation of STEM-based PjBL achieved a percentage of 94%, which was categorized as very good. The analysis of problem-solving skills indicated that the highest N-Gain score was obtained in the planning a solution indicator, with a value of 0.29, categorized as low. Students' responses to the learning process reached a percentage of 78%, indicating a strong category. Furthermore, the results revealed that the STEM-based PjBL model had a significant effect on students' problem-solving skills in the Biological Technology Innovation topic, with a significance value of $p < 0.001$ and an effect size of 0.62, categorized as moderate.

Keywords: *Problem-Solving Skills, Project Based Learning (PJBL), STEM, Biological Technology Innovation.*