

**IMPLEMENTASI MODEL PEMBELAJARAN BERBASIS PROYEK  
DENGAN PENDEKATAN STEM (*SCIENCE, TECHNOLOGY,  
ENGINEERING, AND MATHEMATICS*) TERHADAP PERUBAHAN  
KETERAMPILAN MEMECAHKAN MASALAH SISWA SMA**

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**ABSTRAK**

Keterampilan abad 21 merupakan isu keterampilan yang perlu di ajarkan dalam pembelajaran sains termasuk didalamnya keterampilan memecahkan masalah. Namun hasil penelitian menunjukkan keterampilan ini masih belum secara optimal dibekalkan dalam pembelajaran. Penelitian bertujuan menemukan cara-cara melatih keterampilan memecahkan masalah melalui penerapan pendekatan STEM dengan *setting* pembelajaran berbasis masalah pada topik Dinamika rotasi ini menggunakan *Quasi Experiment* dengan desain penelitian *one-group pre-test post-test* menggunakan populasi salah satu SMA Swasta di Kota Bandung dengan sampel 30 siswa yang diperoleh secara random. Instrumen penelitian berupa 24 Tes essay ketrampilan memecahkan masalah dengan validitas 0.6 dan reliabilitas 0.7 Hasil penelitian melalui analisis portofolio menunjukkan adanya peningkatan di beberapa aspek keterampilan memecahkan masalah dan analisis terhadap keefektifan melalui nilai gain ternormalisasi diperoleh dalam kategori sedang. Penelitian ini telah menemukan cara-cara yang dipandang efektif untuk aspek identifikasi masalah, keterkaitan terhadap konsep fisika dan pemberian alternatif solusi, namun belum menemukan cara-cara yang dipandang efektif untuk aspek desain dan perancangan.

Kata kunci : STEM, keterampilan abad 21, keterampilan pemecahan masalah..

# **IMPLEMENTATION OF PROJECT BASED LEARNING WITH SCIENCE TECHNOLOGY ENGINEERING AND MATHEMATICS (STEM) APPROACH TO IMPROVE HIGH SCHOOL STUDENTS' PROBLEM SOLVING SKILLS**

## **ABSTRACT**

21st century skills are skills that need to be taught in science learning that includes problem-solving skills. However, previous research shows that these skills can not be trained optimally in learning. This quasi experiment research with one-group pre-test post-test design that using population of one high school in Bandung City and 30 students as a random sample aims to find ways to train problem-solving skills through the implementation of problem-based learning with STEM on the topic of rotational dynamics effectively. Worksheets that describe problem-solving skills and 24 essay questions of problem-solving skills with validity 0.6 and reliability 0.7 are the instruments used in this study. The results of study through portfolio analysis show an improvement in some aspects of problem solving skills and analysis of their effectiveness through normalized gain values obtained in the medium category. This study also found ways that are effective for the problem identification, the relevance of the physics concept and the provision of alternative solutions aspects, but have not found ways that are effective for design improvements aspects.

Keyword : STEM, 21st century skills, problem solving skills