

**PENERAPAN PEMBELAJARAN BERBASIS STEM (*SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS*) UNTUK MENINGKATKAN *SCIENTIFIC REASONING* SISWA SMP PADA HUKUM PASCAL**

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**ABSTRAK**

Pada abad ke 21 ini perkembangan teknologi berkembang sangat cepat, sehingga menyebabkan terjadinya peningkatan kompetisi yang berdampak pada globalisasi dunia. Fisika merupakan salah satu bagian dari ilmu pengetahuan alam yang berperan penting dalam perkembangan teknologi. Dalam pembelajaran fisika kemampuan penalaran ilmiah atau *scientific reasoning* sangat diperlukan untuk proses pemecahan masalah. Sehingga untuk dapat mengembangkan kemampuan *scientific reasoning* siswa maka diterapkan pembelajaran berbasis STEM. Tujuan dari pembelajaran berbasis STEM dapat mengembangkan kemampuan saintifik, kemampuan saintifik diantaranya seperti *scientific reasoning*. Oleh karena itu, peneliti ingin mengetahui peningkatan *scientific reasoning* siswa dan peningkatan setiap dimensi *scientific reasoning* siswa setelah diterapkan pembelajaran berbasis STEM. Penitian ini menggunakan metode quasi eksperimen dengan *one group pre test and post test desain* pada sampel sebanyak 37 siswa menggunakan teknik *convenience sampling* disalah satu sekolah kabupaten Bandung Barat. Pengukuran dilakukan dengan menggunakan tes *scientific reasoning* berbentuk pilihan ganda bertingkat yang diadopsi dari *Lawson Classroom Test Scientific Reasoning* (LCTS) sebanyak 13 soal. Hasil Penelitian menunjukkan peningkatan *scientific reasoning* siswa setelah diterapkan pembelajaran berbasis STEM memiliki n-gain sebesar 0,59 dalam katagori sedang. Peningkatan setiap dimensi *scientific reasoning* diantaranya yaitu dimensi *deductive reasoning*, *control of variable* dan *hypothetical-deductive reasoning* berada kategori sedang masing-masing  $\langle g \rangle = 0,68$ ;  $\langle g \rangle = 0,45$ ;  $\langle g \rangle = 0,56$ , sedangkan dimensi *correlational reasoning* berada kategori tinggi yaitu  $\langle g \rangle = 0,7$ .

**Kata-kata kunci :** *Scientific Reasoning*, Pembelajaran Berbasis STEM

**THE IMPLICATION OF LEARNING BASED ON STEM (SCIENCE,  
TECHNOLOGY, ENGINEERING AND MATHEMATICS) IN ORDER TO  
IMPROVE JUNIOR HIGH SCHOOL STUDENT'S SCIENTIFIC  
REASONING TO LAW OF PASCAL.**

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**ABSTRACT**

In the 21th century the technology has been developing rapidly, therefore caused the growth in competition which affected the world globalisation. Physics in one way is an aspect of knowledge that plays a pivotal role in the advancement of technology. In learning physics the ability of scientific reasoning is incredibly important for the process of solving problems. Therefore, in order to develop the student's scientific reasoning, learning based on STEM is implicated. The purpose of learning based on STEM is to increase the scientific ability, such as scientific reasoning. To sum up, researcher keen on attaining information about student's development both in scientific reasoning and on the its every dimension after having made use of learning based on STEM. This research utilised one group pre test and post test design of quasi-experiment and convenience sampling technique to 37 students in one of the school in Bandung Western of city. Furthermore, as many as 13 scientific reasoning tests in form the degree type of Multiple-Choices which were adopted from Lawson Classroom Test Scientific Reasoning (LCTSR) was used as the measure instrument. The result presents that the improvement of student's scientific reasoning level after the implication of learning based on STEM had n-gain in the amount of 0,59 and is classified into medium level. Moreover, the deductive reasoning, control of variable, and hypothetical-deductive which are every of its dimension has also improve and are also classified into medium level; respectively  $\langle g \rangle = 0, 68$ ;  $\langle g \rangle = 0, 45$ ;  $\langle g \rangle = 0, 56$ . On the other hand, correlation reasoning dimension is classified into the high level of category which is  $\langle g \rangle = 0,7$ .

**Key words:** Scientific Reasoning, Learning Based on STEM