

**PEMBELAJARAN IPA BERBASIS STEM DENGAN MODEL 6E
LEARNING BY DESIGN UNTUK MENINGKATKAN LITERASI
SAINTIFIK SISWA PADA TOPIK PENCEMARAN AIR**

ABSTRAK

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Penelitian ini bertujuan untuk memperoleh gambaran pembelajaran IPA berbasis STEM dengan model *6E Learning by Design* untuk meningkatkan literasi saintifik siswa pada materi Pencemaran Air. Penelitian ini menggunakan metode *pre experimental* dan desain penelitiannya yaitu *The One-Group Pretest-Posttest Design*. Data literasi saintifik siswa diperoleh melalui tes literasi saintifik pada domain kompetensi, skala sikap, dan observasi pembelajaran. Domain kompetensi yang diukur meliputi menjelaskan fenomena secara ilmiah, mendesain dan mengevaluasi penyelidikan ilmiah, serta menafsirkan data dan bukti secara ilmiah. Pembelajaran yang digunakan berbasis STEM dengan model *6E learning by design*, yang tahapannya meliputi *engage, explore, explain, engineer, enrich, dan evaluate*. Subjek penelitian adalah siswa kelas VII SMPN Bandung tahun ajaran 2017/2018. Hasil penelitian menunjukkan bahwa domain menjelaskan fenomena secara ilmiah sebesar 0,62 (sedang), mendesain dan mengevaluasi penyelidikan ilmiah sebesar 0,52 (sedang), serta menafsirkan data dan bukti secara ilmiah sebesar 0,22 (rendah). Pada domain sikap terhadap sains, ketertarikan terhadap sains rerata skornya 3,83 termasuk kategori tinggi, sedangkan tanggung jawab terhadap sumber daya dan lingkungan rerata skornya 4,16 termasuk kategori sangat tinggi. Keterlaksanaan Pembelajaran IPA berbasis STEM dengan model *6E Learning By Design* pada pertemuan kesatu (91%) dan kedua (95%) yang menunjukkan bahwa hampir seluruhnya kegiatan pembelajaran terlaksana, sedangkan pada pertemuan ketiga kegiatan pembelajaran terlaksana seluruhnya (100%).

Kata Kunci : Literasi saintifik, STEM, *6E learning by design*, pencemaran air

STEM BASED LEARNING WITH *6E LEARNING BY DESIGN* MODEL TO INCREASE STUDENTS' SCIENTIFIC LITERACY TOPIC OF WATER POLLUTION

ABSTRACT

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This study aims to obtain an overview of science learning based on STEM with *6E Learning by Design* model to increase students' scientific literacy on the topic of Water Pollution. This research used a *pre experimental* method and *One-Group Pretest-Posttest* design. The data of students' scientific literacy was obtained through the tests of scientific literacy on the domain of competency, attitude scale, and the learning observation. The domain of measured competency included explain phenomena scientifically, evaluate and design scientific enquiry, as well as interpret data and evidence scientifically. The learning was based on STEM approach with the model of *6E Learning by Design*, whose stages include engage, explore, explain, engineer, enrich, and evaluate. The subjects of study were students of class VII SMPN Bandung academic year of 2017/2018. The results showed that the domain of explain phenomena scientifically was 0.62 (moderate), evaluate and design scientific enquiry was 0.52 (moderate), and interpret data and evidence scientifically was 0.22 (low). In the domain of attitude, the average score of interest in science was 3.83, included in high category, while the responsibility for the resources and environment, the average score was 4.16, included in very high category. The implementation of science learning based on STEM with the *6E Learning by Design* model at the first meeting conducted was observed "*well fully done*" (91%) and the second meeting was observed "*almost fully done*" (95%) indicated that almost of all learning activities were implemented, while at the third meeting the learning activities were carried out entirely (100%).

Keywords: Scientific literacy, STEM, *6E learning by design*, water pollution