

# **THE EFFECT OF NATURE OF SCIENCE (NOS) BASED LESSON ON STUDENTS' CONCEPT MASTERY AND SCIENTIFIC ARGUMENTATION SKILLS IN LEARNING WATER POLLUTION**

Ceshilia Putri Palaguna  
International Program on Science Education

## **ABSTRACT**

The aim of this research is to investigate the effect of NOS based lesson on students' concept mastery and scientific argumentation skill in learning water pollution and to reveal the impression of students after learning water pollution using NOS based lesson. The method used in this research was pre-experimental with one class pre-test post-test design. Sample was taken purposively (n=22 students) at grade 8 in a Bilingual School in Bandung. Students' concept mastery was assessed by using pre-test and post-test while students' scientific argumentation skill and students' impression were assessed by using rubric and questionnaire. Based on the analysis of the results, it shows that students' concept mastery is categorized in the medium improvement. It could be detected from the N-Gain score which is 0.50, the result is ensured by the statistical analysis using paired t-test in SPSS which sig. is 0.002, so that the alternative hypothesis is accepted which means that there is significant improvement of students' concept mastery. Meanwhile the result of scientific argumentation skill shows that 63.64% of students are in the third level and more. It indicates that half of students already able to present one or more rebuttal in their argumentation statement. These results are supported by the impression of students towards NOS based lesson implementation which is showed positive response for all indicators. Thus, it indicates that the implementation of NOS based lesson in learning water pollution can improve students' concept mastery and scientific argumentation skill.

Key words: Nature of Science, Concept Mastery, Scientific Argumentation Skill, Water Pollution

# THE EFFECT OF NATURE OF SCIENCE (NOS) BASED LESSON ON STUDENTS' CONCEPT MASTERY AND SCIENTIFIC ARGUMENTATION SKILLS IN LEARNING WATER POLLUTION

Ceshilia Putri Palaguna  
International Program on Science Education

## ABSTRAK

Tujuan penelitian ini adalah untuk menginvestigasi efek pembelajaran berbasis hakikat sains terhadap penguasaan konsep siswa dan keterampilan berargumentasi ilmiah pada pembelajaran polusi air dan untuk mengetahui impresi siswa setelah mempelajari materi polusi air menggunakan hakikat sains. Metode yang digunakan pada penelitian ini adalah pra-eksperimental dengan desain pre-test dan post-test pada satu kelas. Sampel diambil dengan teknik *purposive sampling* ( $n= 22$  siswa) pada kelas 8 di sebuah sekolah dua bahasa di Bandung. Penguasaan konsep siswa dinilai menggunakan *pre-test* dan *post-test* sedangkan kemampuan berargumentasi ilmiah dan impresi siswa dinilai menggunakan rubrik dan kuisioner. Hasil analisis menunjukkan penguasaan konsep siswa dikategorikan ke dalam peningkatan sedang. Hasil tersebut dapat dilihat melalui nilai N-Gain yaitu 0.50, dan diperkuat melalui analisis statistik menggunakan *Paired t-test* di SPSS dengan sig. 0.002, sehingga hipotesis alternatif diterima yang berarti ada peningkatan yang signifikan pada penguasaan konsep siswa. Sedangkan hasil kemampuan berargumentasi ilmiah menunjukkan 63.64% siswa berada pada level tiga atau lebih. Hasil tersebut mengindikasikan bahwa sebagian siswa sudah mampu menyertakan satu atau lebih sanggahan dalam pernyataan argumentasi mereka. Hasil tersebut diperkuat oleh impresi siswa terhadap pembelajaran berbasis hakikat sains yang menunjukkan respon positif di semua indikator. Dengan demikian, implementasi pembelajaran berbasis hakikat sains pada topik polusi air mampu meningkatkan penguasaan konsep dan kemampuan berargumentasi siswa.

Kata kunci : Hakikat Sains, Penguasaan Konsep, Kemampuan Berargumentasi Ilmiah, Polusi Air