

PENALARAN ILMIAH (*SCIENTIFIC REASONING*) SISWA SEKOLAH BERORIENTASI LINGKUNGAN DAN SEKOLAH MULTINASIONAL

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ABSTRAK

Penelitian deskriptif ini bertujuan untuk mengungkap penalaran ilmiah siswa SMP tentang masalah lingkungan. Sebanyak 115 siswa kelas 7, 8, dan 9 dari sekolah berorientasi lingkungan dan sekolah multinasional mengikuti tes penalaran ilmiah dan wawancara. Angket siswa, hasil wawancara guru, dan observasi pembelajaran juga dikumpulkan lalu dianalisis. Penalaran ilmiah dalam penelitian ini diidentifikasi melalui argumen siswa menggunakan Pola Argumentasi Toulmin (TAP) yang membagi komponen argumen menjadi *claim*, *data*, *warrant*, *backing*, dan *rebuttal*. Analisis argumen siswa meliputi dua aspek, yaitu kelengkapan komponen argumen dan kekuatan argumen. Hasil penelitian menunjukkan bahwa pada aspek kelengkapan komponen, sebagian besar argumen siswa di sekolah berorientasi lingkungan (80%) dan sekolah multinasional (74%) dari semua tingkat kelas hanya tersusun atas *claim*, *data*, dan *warrant* (level 2) tanpa adanya *backing*, *qualifier*, dan *rebuttal*. Sementara itu, pada aspek kekuatan argumen, sebagian besar argumen siswa di sekolah berorientasi lingkungan (48%) dan sekolah multinasional (40%) merupakan argumen yang lemah, yang berarti *grounds* argumennya (*data*, *warrant*, *backing*) tidak valid secara konsep ilmiah dan tidak relevan terhadap *claim*. Faktor yang berperan dalam penalaran ilmiah siswa diantaranya pertanyaan guru, kegiatan diskusi, kegiatan praktikum, pengelolaan kelas, pemahaman konsep siswa, dan program kegiatan sekolah.

Kata kunci: penalaran ilmiah, argumentasi, masalah lingkungan

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STUDENTS' SCIENTIFIC REASONING IN ENVIRONMENT-ORIENTED SCHOOL AND MULTINATIONAL SCHOOL

Desti Herawati

ABSTRACT

This descriptive study aims to explore scientific reasoning of junior high school students about environmental problems. A total of 115 grade 7, 8, and 9 students from environment-oriented school and multinational school were administered scientific reasoning test and interview. In addition, students' questionnaire, teacher's interview, and class observation was also collected and analysed. Scientific reasoning was analysed through students' arguments about environmental problems. Toulmin Argumentation Pattern (TAP) was used to identify the component of argumentation, which consist of claim, data, warrant, backing, qualifier, and rebuttal. Then, the analysis of students' arguments involved two aspects: the complexity of argumentation components and the strength of argument. The result showed that in the complexity of argumentation components, most students' arguments in environment-oriented school (80%) and multinational school (74%) from all grades were consist of claim, data, and warrant only (level 2) without backing, qualifier, and rebuttal to support their claim. Whereas in the strength of argument aspect, most students' arguments in environment-oriented school (48%) and multinasional school (40%) were weak, which means that the ground of argument (data, warrant, backing) were not scientifically valid and support their claim. Some factors which affect to the students' scientific reasoning were teacher's question, discussion, experiment, class management, students' conceptual knowledge, and school's activity.

Keywords: scientific reasoning, argumentation, environmental problems