PROYEK *SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS* (STEM) PADA ISU PENGENDALIAN PERUBAHAN IKLIM DAN DAMPAKNYA TERHADAP BERPIKIR SISTEM, PENGAMBILAN KEPUTUSAN, DAN KESADARAN BERKELANJUTAN

DISERTASI

diajukan untuk memenuhi sebagian syarat untuk memperoleh
gelar Doktor Bidang Pendidikan Dasar

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SEKOLAH PASCASARJANA
UNIVERSITAS PENDIDIKAN INDONESIA
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ABSTRAK

Perubahan iklim merupakan isu sosiosaintifik kompleks yang menjadi tantangan global saat ini. Pendidikan adalah pilar utama untuk membelajarkan adaptasi dan mitigasi terkait perubahan iklim. Mengingat kompleksitasnya, pemahaman terkait perubahan iklim memerlukan berbagai kemampuan, diantaranya berpikir sistem, pengambilan keputusan, dan kesadaran berkelanjutan. Di sisi lain, masalah perubahan iklim memerlukan perspektif dari berbagai disiplin ilmu, seperti *science, technology, enjineering, dan mathematics* (STEM). Pembelajaran STEM juga diyakini dapat membelajarkan kemampuan yang diperlukan untuk memecahkan masalah perubahan iklim. Karena itu, penelitian ini bertujuan untuk mendeskripsikan proyek STEM pada isu pengendalian perubahan iklim dan dampaknya terhadap berpikir sistem, pengambilan keputusan, dan kesadaran berkelanjutan. Metode penelitian yang digunakan adalah *mix methods experimental (intervention) design*. Siswa kelas 4 sekolah dasar yang menerapkan Kurikulum Merdeka di Kota Bandung menjadi populasi penelitian, sedangkan 303 siswa kelas 4 dari tiga sekolah menjadi sampel penelitian. Sampel dipilih dengan *purposive sampling.* Instrumen yang digunakan untuk menggali data adalah tes berpikir sistem, tes pengambilan keputusan, dan angket kesadaran berkelanjutan. Data yang diperoleh dianalisis menggunakan uji beda dan uji prasyaratnya, n-gain, serta deskriptif. Temuan penelitian menunjukkan bahwa proyek STEM pada isu pengendalian perubahan iklim berdampak terhadap 1) berpikir sistem meskipun terbatas pada hal konkret dan sederhana, 2) pengambilan keputusan tetapi dengan penguasaan jumlah indikator yang bervariasi dan acak, 3) kesadaran berkelanjutan dengan profil kesadaran berkelanjutan cukup bervariasi dengan kecenderungan pada kategori baik.

Kata Kunci: Pembelajaran proyek, STEM, Perubahan Iklim, Berpikir Sistem, Pengambilan Keputusan, dan Kesadaran Berkelanjutan

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS (STEM) PROJECT ON THE ISSUE OF CLIMATE CHANGE CONTROL AND ITS IMPACT ON SYSTEMS THINKING, DECISION MAKING, AND SUSTAINABILITY AWARENESS

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ABSTRACT

Climate change is a complex socio-scientific issue that is a global challenge today. Education is the main pillar for learning climate change adaptation and mitigation. Given its complexity, understanding climate change requires various skills, including systems thinking, decision making, and sustainability awareness. On the other hand, the problem of climate change requires perspectives from various disciplines, such as science, technology, engineering, and mathematics (STEM). STEM learning is also believed to be able to teach the skills needed to solve climate change problems. Therefore, this study aims to describe a STEM project on the issue of climate change control and its impact on systems thinking, decision making, and sustainability awareness. The research method used is a mix methods experimental (intervention) design. Grade 4 elementary school students implementing the Merdeka Curriculum in Bandung City became the research population, while 303 grade 4 students from three schools became the research sample. The sample was selected by purposive sampling. The instruments used to collect data were systems thinking tests, decision making tests, and sustainability awareness questionnaires. The data obtained were analyzed using different tests and prerequisite tests, n-gain, and descriptive. The research findings show that STEM projects on climate change control issues have an impact on 1) systems thinking although limited to concrete and simple things, 2) decision making but with mastery of a varying and random number of indicators, 3) sustainability awareness with a fairly varied sustainability awareness profile with a tendency towards the good category.

Kata Kunci: Project learning, STEM, Climate Change, Systems Thinking, Decision Making, and Sustainability Awareness

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DAFTAR GAMBAR

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