

**ESD TRAINING PROGRAM TO PROMOTE SCIENCE
TEACHERS' COMPETENCIES TO INTEGRATE ACTION-
ORIENTED ESD INTO SCIENCE LESSONS**

DISSERTATION

Submitted to fulfill part of the requirements to obtain a
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ESD TRAINING PROGRAM TO PROMOTE SCIENCE TEACHERS' COMPETENCIES TO INTEGRATE ACTION-ORIENTED ESD INTO SCIENCE LESSONS

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ABSTRACT

Education for Sustainable Development (ESD) implies the need to promote sustainable development through education. Due to the lack of teachers with an ESD background and students' textbooks being content-oriented rather than action-oriented, science teachers must develop strategies to integrate ESD into their teaching. Science teachers' abilities to incorporate ESD into science lessons are still lacking. It is important to develop science teachers' competencies to integrate ESD into science lesson through teacher training program. However, teacher training programs focusing on ESD and science teachers' competencies in integrating action-oriented ESD remain very limited. Therefore, this research attempts to promote science teachers' competencies to integrate action-oriented ESD into science lessons through ESD training program. The research method employed in this study was a mixed-methods intervention design consisting of three phases: before the intervention, experimental intervention, and after the intervention. Science teachers' competencies to integrate action-oriented ESD into science lessons, along with the ESD training program, were developed before the intervention. During the experimental intervention, both quantitative and qualitative data were collected simultaneously. To strengthen the findings, interviews and analysis of teachers' journals were conducted after the intervention. The research instruments used in this study were valid and reliable. The research subjects were 31 junior high school science teachers from Bandung, Bandung Barat, and Cimahi, consisting of 22 females and 9 males. The participants were selected using purposive sampling. The general activities of the teacher training program consist of ESD-based science learning for the given topic, ESD-based science learning for a free-to-choose topic, and eco-friendly actions. The implementation stages were conducted from January 9th to May 11th, 2024. The study's findings indicate that the ESD training program enhances science teachers' competencies to integrate action-oriented ESD into science lessons across all assessed standards (PCK, INQ, PP, EA, AT, and PD). The statistical analysis reveals a significant improvement in science teachers' PCK, science teachers' competencies in planning action-oriented ESD, science teachers' competencies in implementing action-oriented ESD, science teachers' attitude, and science teachers' commitment to follow professional development. Science teachers' competencies to integrate action-oriented ESD into science lessons in free-to-choose topic are better than in given topic. ESD training programs should include systematic reflection, more training in inquiry skills, and the maintenance of learning communities.

Keywords: Action-Oriented ESD, ESD Training Program, Science Teacher Competencies.

ABSTRAK

Pendidikan untuk Pembangunan Berkelanjutan (ESD) menyiratkan perlunya mempromosikan pembangunan berkelanjutan melalui pendidikan. Karena kurangnya guru berlatar belakang ESD dan buku teks siswa yang berorientasi pada konten daripada berorientasi pada tindakan, guru sains harus mengembangkan strategi untuk mengintegrasikan ESD ke dalam pengajaran mereka. Kemampuan guru sains untuk mengintegrasikan ESD ke dalam pembelajaran IPA masih kurang. Oleh karena itu, penting untuk mengembangkan kompetensi guru sains untuk mengintegrasikan ESD ke dalam pembelajaran sains melalui program pelatihan guru. Namun, program pelatihan guru yang berfokus pada ESD dan kompetensi guru sains dalam mengintegrasikan ESD berorientasi tindakan masih sangat terbatas. Oleh karena itu, penelitian ini berupaya untuk meningkatkan kompetensi guru sains untuk mengintegrasikan ESD berorientasi tindakan ke dalam pembelajaran sains melalui program pelatihan ESD. Metode penelitian yang digunakan dalam penelitian ini adalah desain intervensi metode campuran yang terdiri dari tiga fase: sebelum intervensi, intervensi eksperimental, dan setelah intervensi. Kompetensi guru sains untuk mengintegrasikan ESD berorientasi tindakan ke dalam pembelajaran sains, beserta program pelatihan ESD, dikembangkan sebelum intervensi. Selama intervensi eksperimental, data kuantitatif dan kualitatif dikumpulkan secara bersamaan. Untuk memperkuat temuan, wawancara dan analisis jurnal guru dilakukan setelah intervensi. Instrumen penelitian yang digunakan dalam penelitian ini valid dan reliabel. Subjek penelitian adalah 31 guru sains SMP dari Bandung, Bandung Barat, dan Cimahi, yang terdiri dari 22 perempuan dan 9 laki-laki. Peserta dipilih menggunakan purposive sampling. Kegiatan umum program pelatihan guru terdiri dari pembelajaran sains berbasis ESD untuk topik yang ditentukan, pembelajaran sains berbasis ESD untuk topik yang dipilih bebas, dan tindakan ramah lingkungan.. Tahapan implementasi dilakukan dari 9 Januari hingga 11 Mei 2024. Temuan penelitian menunjukkan bahwa program pelatihan ESD meningkatkan kompetensi guru sains untuk mengintegrasikan ESD berorientasi tindakan ke dalam pembelajaran sains di semua standar yang dinilai (PCK, INQ, PP, EA, AT, dan PD). Analisis statistik mengungkapkan peningkatan yang signifikan dalam PCK guru sains, kompetensi guru sains dalam merencanakan ESD berorientasi tindakan, kompetensi guru sains dalam menerapkan ESD berorientasi tindakan, sikap guru sains, dan komitmen guru sains untuk mengikuti pengembangan profesional. Kompetensi guru sains untuk mengintegrasikan ESD berorientasi tindakan ke dalam pembelajaran sains pada topik pilihan lebih baik daripada pada topik yang ditentukan. Program pelatihan ESD harus mencakup refleksi sistematis, pelatihan keterampilan inkuiri yang lebih intensif, dan pemeliharaan komunitas belajar.

Kata Kunci: ESD Berorientasi Tindakan, Program Pelatihan ESD, Kompetensi Guru Sains.

PREFACE

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