PENGEMBANGAN BAHAN AJAR BERORIENTASI ISU SOSIOSAINTIFIK PADA MATERI PENCEMARAN LINGKUNGAN UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KRITIS SISWA

TESIS

diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Magister Pendidikan Ilmu Pengetahuan Alam

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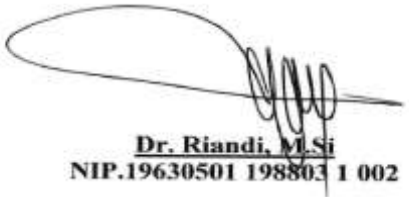

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PERNYATAAN

Dengan ini saya menyatakan bahwa tesis yang berjudul" Pengembangan Bahan Ajar Berorientasi Isu Sosiosaintifik pada materi Pencemaran Lingkungan untuk Meningkatkan Keterampilan Berpikir Kritis Siswa" ini beserta seluruh isinya adalah benar-benar karya saya sendiri. Saya tidak melakukan penjiplakan atau pengutipan dengan cara-cara yang tidaka sesuai dengan etika keilmuan yang berlaku dalam masyarakat kelilmuan. Atas pernyataan tersebut, saya siap menanggung resiko/sanksi apabila di kemudian hari ditemukan adanya pelanggaran etika keilmuan atau ada klaim daari pihak lain terhadap keaslian karya saya ini.

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PENGEMBANGAN BAHAN AJAR BERORIENTASI ISU SOSIOSAINTIFIK PADA MATERI PENCEMARAN LINGKUNGAN UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR KRITIS SISWA

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ABSTRAK

Menurunnya kualitas lingkungan di Kawasan Cirebon akibat pencemaran air, tanah, dan udara mendorong dipilihnya fokus pengembangan bahan ajar berorientasi isu sosiosaintifik. Penelitian ini menggunakan metode penelitian *Development Research (DR)* terdiri dari tahapan *Design, Develop* dan *Evaluation.* Penelitian ini menggunakanan desain *one grup pretest-postest.* Hasil tahapan design (rancangan) merupakan kegiatan pembuatan rencana produk bahan ajar. Kegiatan ini diawali dengan menganalisis kebutuhan yang dilakukan melalui penelitian dan studi literatur. Pada tahap ini telah dipilih tema bahan ajar serta keterampilan yang dilatihkan. Tahap *development* (pengembangan) merupakan kegiatan pengembangan bahan ajar pencemaran lingkungan beorientasi isu sosisosaintifik menggunakan metode 4S TMD (*Four Steps Teaching Material Development)* yang terdiri dari tahapan seleksi, strukturisasi, karakterisasi, dan reduksi didaktik. Tahap seleksi diawali dengan pemilihan ruang lingkup materi yang berkaitan dengan tema pencemaran lingkungan berdasarkan tuntutan kurikulum dan menentukan keterampilan berpikir kritis yang akan dilatihkan kepada siswa. Pada tahap strukturisasi dihasilkan peta konsep; struktur makro; dan multipel representasi yang menghubungkan antara level makroskopis, submikroskopis, dan simbolik. Hasil dari dua tahapan ini berupa draft bahan ajar yang siap diuji cobakan kepada siswa pada tahap karakterisasi. Pada tahap karakterisasi dilakukan uji keterpahaman untuk mengidentifikasi materi sulit pada bahan ajar yang hasilnya menunjukkan 32% teks masih dianggap sulit. Materi sulit kemudian direduksi tingkat kesulitannya dengan cara penggunaan penjelasan berupa gambar, simbol, dan percobaan. Pada tahap evaluasi dilakukan berdasarkan reviu dua ahli di bidang lingkungan mengenai kelayakan bahan ajar menunjukkan bahwa 90% (sangat layak). Hasil uji keterbacaan terhadap sejumlah siswa SMP kelas VII di Cirebon menunjukkan bahan ajar memenuhi kriteria sangat layak dari aspek isi (92%) aspek penyajian (91%), aspek bahasa (86%), dan aspek kegrafikaan (87%). Berdasarkan hasil uji tersebut, berarti bahan ajar tergolong kategori layak untuk digunakan dalam mengembangkan keterampilan berpikir kritis siswa. Hasil uji implementasi terbatas terhadap siswa SMP di tempat yang sama menunjukkan bahwa bahan ajar ini dapat meningkatkan keterampilan berpikir kritis siswa dengan kategori sangat baik (51%), baik (43%), dan cukup (3 %). Respon siswa terhadap bahan ajar setelah implementasi berada pada kategori baik sekali (94%). Perangkat bahan ajar pencemaran lingkungan layak untuk meningkatkan keterampilan berpikir kritis.

Kata Kunci: Pengembangan Bahan Ajar, Isu Sosiosaintifik, Keterampilan Berpikir Kritis

DEVELOPING MATERIALS FOR ENVIRONMENTAL POLLUTION-ORIENTED SOCIOSCIENTIFIC ISSUES TO IMPROVE CRITICAL THINKING SKILLS STUDENTS

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Abstract

Declining environmental quality in the area of Cirebon due to water pollution, soil, and air pushing the chosen focus of the development of learning materials-oriented socio-scientific issues. This research using the research method of Development Research (DR) consists of the phases of Design, Develop and Evaluation. This study uses the Pretest-posttest one group design. The result of the design stage is the creation of teaching materials product plan. This activity begins with analyzing the needs done through research and literature study. At this stage have chosen the theme of teaching materials and skills that are trained. The development is a development activity of environmental pollution teaching materials that is a socio-scientific issues using the method of TMD (Four Steps Teaching Material Development) 4S consisting of selection phases, structuring, characterization, and didactic reduction. The selection phase begins with the selection of material coverage relating to the theme of environmental pollution based on the curriculum demands and determines the critical thinking skills that will be trained to students. At the structuring stage generated concept maps; Macrostructure; and multiple representations linking between macroscopic, submicroscopic, and symbolic levels. The result of these two stages is the draft teaching materials that are ready to be tested to the students at the characterization stage. At the characterization stage carried out the feasibility test to identify the difficult material on the teaching materials that the results showed 32% of the text is still considered difficult. It was difficult to reduce the difficulty by using explanations of images, symbols, and experiments. At the evaluation stage based on the reviews of two experts in the environmental field on the feasibility of teaching materials showed that 90% (very decent). The results of legibility test in class VII junior high students in Cirebon show the teaching materials meet the very worthy criteria of the content aspect (92%) The presentation aspect (91%), the aspect of the language (86%), and the graphing aspects (87%). Based on the results of the test, it means that the teaching material belongs to the category worthy to be used in developing students ' critical thinking skills. The test results of the limited implementation of SMP students in the same place show that these teaching materials can improve students ' critical thinking skills with excellent categories (51%), moderate (43%). The student's response to the teaching materials after implementation is in a good category (94%). Device environmental pollution teaching materials to improve critical thinking skills.

Keywords: students teaching materials development, socio-scientific issues, critical thinking skills

DAFTAR ISI

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DAFTAR TABEL

Tabel Halaman

DAFTAR GAMBAR

Gambar Halaman

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