PENGEMBANGAN BAHAN AJAR KIMIA UNTUK SISWA SMK BIDANG KEAHLIAN KESEHATAN PROGRAM KEAHLIAN KEPERAWATAN MELALUI *FOUR STEPS TEACHING MATERIAL DEVELOPMENT*

ABSTRAK

Penelitian ini didasarkan atas adanya kesulitan guru mendapatkan bahan ajar kimia yang relevan untuk siswa SMK program keahlian keperawatan. Tujuan dari penelitian ini adalah untuk mengetahui kriteria bahan ajar kimia, peta materi kimia, proses pengembangan, keterpahaman, dan kelayakan produk bahan ajar kimia yang dikembangkan untuk siswa SMK kesehatan program keahlian keperawatan. Metode yang digunakan yaitu *Research & Development* (R&D) sampai pada tahapan uji lapangan skala kecil dan revisi produk. Obyek penelitian ini adalah bahan ajar kimia untuk siswa SMK program keahlian keperawatan sedangkan subyek penelitian melibatkan satu kelas siswa, tiga guru kimia, dan delapan guru keperawatan di SMK kesehatan program keahlian keperawatan. Hasil penelitian menunjukkan bahwa kriteria bahan ajar kimia untuk siswa SMK keperawatan adalah mengungkap pengetahuan dasar kimia dalam konteks yang relevan dengan kebutuhan program keahlian keperawatan dan materi yang disajikan menunjang keterampilan keperawatan. Hasil pemetaan materi kimia menunjukkan bahwa materi kimia yang relevan dengan program keahlian keperawatan diantaranya materi dan perubahannya; unsur, senyawa, dan campuran; reaksi kimia; larutan; asam basa; laju reaksi; termokimia, sifat koligatif larutan; sistem koloid; hidrokarbon dan turunannya; makromolekul (polimer); biomolekul; atom; hidrolisis; larutan penyangga; kimia lingkungan dan kimia nuklir. Bahan ajar kimia dalam penelitian ini dikembangkan melalui *Four Steps Teaching Material Development* dengan tahapan seleksi, strukturisasi, karakterisasi, dan reduksi. Hasil yang diperoleh pada tahapan seleksi berupa indikator dan konsep hasil dari pengembangan Kompetensi Dasar (KD); dan nilai. Pada tahapan strukturisasi, diperoleh peta konsep, struktur makro, dan multipel representasi. Pada tahapan strukturisasi teridentifikasi teks sulit yang berupa gambar dan konsep tentang karakteristik rumus kimia senyawa dan definisi campuran. Pada tahap reduksi diperoleh teks sulit yang telah tereduksi. Gambar dan tabel yang sulit direduksi dengan memberikan penjelasan terhadap gambar dan tabel tersebut. Sementara itu materi rumus kimia senyawa direduksi dengan partikularisasi dan penjelasan dengan gambar. Materi definisi campuran direduksi dengan partikularisasi dan penggunaan percobaan. Berdasarkan hasil uji keterpahaman, sebagian besar siswa dapat memahami materi dengan baik. Berdasarkan hasil uji kelayakan bahan ajar kimia untuk siswa SMK program keahlian keperawatan, dapat dinyatakan bahwa bahan ajar yang dikembangkan telah memenuhi kriteria kelayakan menurut BSNP (2014) berdasarkan aspek isi, penyajian, kebahasaan, maupun kegrafikaan.

Kata Kunci : Bahan ajar, *Four Steps Teaching Material Development*

CHEMISTRY MATERIAL DEVELOPMENT FOR STUDENTS AT VOCATIONAL HIGH SCHOOL MAJORING IN THE HEALTH OF NURSERY PROGRAM THROUGH FOUR STEPS TEACHING MATERIAL DEVELOPMENT

ABSTRACT

This research was done owing to the difficulty faced by the teacher in getting the relevant materials of chemistry for teaching students at vocational high school particularly in the nursery program. This research was aimed at knowing the criteria of teaching materials for chemistry, its material mapping, development process, understandability, and the product suitability to the students at vocational high school majoring in the health of nursery program. The method used in this research was *Research & Development* (R&D) up to the field testing stage using the small scale and product revision. The object of this research was the teaching materials of chemistry used in teaching the students at the vocational high school majoring in the health of nursery program. In addition, the subject employed was a class of students, three chemistry teachers, and eight nursery teachers at the concerned school. The result of the research indicated that the criteria of chemistry teaching materials for the researched students was to express the basic understanding of chemistry in the relevant context to the needs of the nursery program in which the materials presented should support the nursery skills. The result of materials mapping indicated that the materials relevant to the nursery program were, among others, substance, compound, and mixture; chemical reaction; solution; chemical acid and base; reaction rate; thermochemistry; colligative characteristics of solution; colloid system; hydrocarbon and its derivation; macromolecular (polymer); biomolecules; atom; hydrolysis; buffer solution; environmental and nuclear chemistry. The teaching materials in this research were developed through Four Steps Teaching Material Development consisting of selection, structurization, characterization, and reduction. The result gotten in the selection stage was in terms of the indicators and the concepts derived from the development of Basic Competence and the score. In the structurization stage, the researcher structured the concept mapping, macro structure, and the multiple representation. In this stage, there were several texts assumed to be difficult in which it could be found in the picture and the concept of the characteristics of chemical compound formula and the definition of the mixture. Furthermore, in the reduction stage, the texts considered difficult was reduced. The difficult pictures and the tables was reduced by giving explanation delineating these two. Meanwhile, the chemical compound formula was reduced through particularization and explanation with pictures. The teaching materials regarding the definition of the mixtures was reduced through particularization and the trial use. Based on the understandability test, majority of the students can understand the materials well. Then, based on the suitability test, the teaching materials for these students had fulfilled the criteria of suitability based on the BSNP (National Standard Board of Education) (2014) seen from content aspect, display, language, and graphic aspect.

Keywords: *Teaching Materials, Four Steps Teaching Material Development*