ABSTRAK

Penelitian ini bertujuan untuk mengembangkan tes diagnostik *two-tier* berbasis piktorial yang dapat mengidentifikasi miskonsepsi siswa pada materi konsep mol. Metode yang digunakan dalam penelitian ini yaitu *development and validation*. Pengembangan tes dilakukan melalui empat tahapan, yaitu tahap pengembangan butir soal, tahap validasi, tahap penentuan kunci determinasi, dan tahap uji aplikasi. Tes yang dikembangkan terdiri dari dua *tier* dengan *stem* pada setiap butir soal berupa piktorial, *tier* pertama terdiri dari empat pilihan jawaban dan *tier* kedua terdiri dari empat pilihan alasan yang mengacu pada jawaban *tier* pertama. Berdasarkan hasil uji validitas isi menggunakan teknik CVR (*Content Validity Ratio*), 18 butir soal dinyatakan valid. Berdasarkan hasil uji reliabilitas menggunakan SPSS, diperoleh 17 butir soal dengan nilai alpha Cronbach sebesar 0,703 yang berarti bahwa butir soal termasuk kategori dapat diterima. Sebanyak 10 butir soal diaplikasikan kepada 35 siswa SMA Negeri di Kota Cimahi yang telah mempelajari materi konsep mol. Berdasarkan hasil uji aplikasi, miskonsepsi siswa teridentifikasi pada setiap label konsep pada materi konsep mol dengan persentase miskonsepsi pada label konsep mol sebesar (60,15%), tetapan Avogadro (34,28%), masa atom relatif (62,84%), masa molekul relatif (77,08%), massa molar (68,53%), volume molar gas (57,11%), molaritas (71,32%), persamaan reaksi (82,77%), pereaksi pembatas (91,40%), dan rumus molekul (77,13%).

Kata kunci: konsep mol, miskonsepsi, tes diagnostik *two-tier*, tes piktorial

ABSTRACT

The aim of this study was to develop the two-tier diagnostic test pictorial-based for identifying student misconceptions on mole concept. The methods used in this study are development and validation. The test development was obtained through four phases, development of any items, validation, determination key, and application test. The test was developed in the form of pictorial which consists of two-tiers, the first tier consists four possible answers and the second tier consists four possible reasons which refer to the first tier. Based on the results of content validity of 20 items using the CVR (Content Validity Ratio), as much as 18 items are declared valid. Based on the results of reliability test using SPSS, 17 items with Cronbach's alpha value of 0.703 are obtained, which means that the items are included in the acceptable category. A total of 10 items were conducted to 35 students of senior high school students who have studied the mole concept in one of high schools in Cimahi. Based on the application test's result, students' misconceptions were identified on each concept label in the mole concept's material with the percentage of misconceptions on concept label of mole as much as (60,15%), Avogadro's number (34,28%), relative atomic mass (62,84%), relative molecule mass (77,08%), molar mass (68,53%), molar volume of gas (57,11%), molarity (71,32%), chemical equation (82,77%), limiting reactant (91,40%), and molecular formula (77,13%).
Keywords: misconceptions, mole concept, pictorial test, two-tier diagnostic test