PENGEMBANGAN DAN VALIDASI TES BERBASIS PENALARAN UNTUK MENGUKUR PENGUASAAN MATERI STOIKIOMETRI SMA

Abstrak

Tujuan penelitian ini adalah menghasilkan tes berbasis penalaran yang valid, reliabel dan memenuhi kualitas pokok uji. Metode yang digunakan adalah metode pengembangan dan validasi (*Development and Validation*) yang terdiri dari lima tahapan penelitian yaitu: tahap pengembangan tes, tahap validasi tes, tahap uji coba tes, tahap analisis hasil tes dan tahap produk akhir. Tahap pengembangan tes, meliputi penyusunan kisi-kisi soal, draf soal awal berbentuk pilihan ganda sebanyak 43 soal sesuai KI-KD stoikiometri kurikulum SMA 2013 dan *framework* TIMSS 2015, pedoman wawancara dan lembar validasi. Tahap validasi tes, merupakan tahap validasi isi oleh tujuh orang *expert judgement* dengan menggunakan lembar validasi. Data hasil validasi isi dianalisis menggunakan CVR (*Content Validity Ratio*) untuk menentukan butir soal yang mempunyai nilai $CVR_{kritis} \geq 0{,}622$ yang akan digunakan sebagai instrumen tes pada tahap uji coba. Tahap uji coba tes dan wawancara, dilaksanakan terhadap 116 siswa kelas X MIPA SMA Negeri di kota Bandung dan wawancara terhadap lima orang siswa dan tiga orang guru kimia di tempat pelaksanaan uji coba tes dengan menggunakan pedoman wawancara. Tahap keempat analisis hasil tes, dilakukan dengan analisis statistik dan ms excel untuk menentukan validitas, reliabilitas, tingkat kesukaran, daya pembeda dan analisis hasil wawancara untuk menentukan kelayakan tes di lapangan. Tahap kelima produk akhir menghasilkan butir soal yang valid, reliabel dan memenuhi kualitas pokok uji sebanyak 37 butir soal dengan kriteria kualitas pokok-pokok uji tes $0{,}75 \geq$ tingkat kesukaran $\geq 0{,}25$, daya pembeda $\geq 0{,}25$. Nilai reliabilitas tes yang diperoleh sebesar 0,785 ditentukan melalui nilai *alpha cronbach*. Presentase kategori soal mudah 8,1%, sedang 62,2% dan sukar 29,7%.

Kata kunci : Pengembangan, Validasi, Tes, Penalaran, Stoikiometri.

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DEVELOPMENT AND VALIDATION TEST BASED ON REASONING TO MEASURE THE MASTERY OF STOICHIOMETRY OF SENIOR HIGH SCHOOL CONCEPT

Abstract

The purpose of this research is to produce a test-based on reasoning which is valid, reliable and qualified for the quality of test items. The method used is the method of development and validation (Development and Validation), which consists of five stages of research, is: the stage of test development, the stage of test validation, the stage of the test, the stage of the test results analysis and the stage of the end product. The stage of the test development, covers the preparation of lattice problem, draft matters as many as 43 multiple choice questions in accordance with KI-KD stoichiometry of high school curriculum framework of 2013 and TIMSS 2015, guideline of interview and validation sheet. Stage of validation test was the validation stage of contents, conducted by seven expert judgment using the validation sheet. Data validation results were analyzed by using CVR contents (Content Validity Ratio) to determine the items that had value of critical CVR $\geq$ 0,622 which will be used as the test instrument in the test stage at the trial and interview, carried out on 116 students of class X Mathematics of Senior High School in the city of Bandung and interviews with five students and three teachers of chemistry at the place of trial tests using an interview guide. The fourth stage of analysis of test results, conducted with statistical analysis and MS Excel to determine the validity, reliability, level of difficulty, distinguishing features and analysis of interviews to determine eligibility test in the field. The fifth stage of the final product produced items that are valid, reliable and qualified for the quality of test items as many as 37 items with the anality criteria of the points of the test, 0.75 $\geq$ difficulty levels $\geq$ 0.25, distinguishing $\geq$ 0.25. The value of the test reliability obtained at 0.785 was determined through Cronbach's alpha values. The percentage of easy question category was 8.1%, medium 62.2% and difficult one 29.7%.

Keywords: Development, Validation, Tests, Reasoning, Stoichiometry.