ABSTRACT

Khairunnisa. NIM 4193131046 (2019). Development of Five-Tier Diagnostic Test Instrument to Identify Misconceptions of Class XI Students on Reaction Rate Material.

Misconception is a mismatch of understanding or view of a concept. Misconceptions can be an obstacle for students in mastering a material because it can be said to be an error. This research aims to find out: (1) The results of the needs analysis of the five-tier diagnostic test instrument to identify student misconceptions on reaction rate material; (2) The results of the analysis of the five-tier diagnostic test items developed; (3) Students' understanding of concepts and misconceptions after being given a five-tier diagnostic test instrument; (4) Students' responses to the developed test instrument. The population in this study were all students of class XI IPA MAN 2 Model Medan with sampling through random sampling technique as much as 20% of the total population. The development stage refers to the ADDIE development model. The five-tier diagnostic test instrument developed was 30 questions. Expert validators amounted to 5 people, 3 chemistry lecturers of Medan State University and 2 chemistry teachers of MAN 2 Model Medan. Analysis of item questions using validity test, difficulty level, differentiating power, effectiveness of distractors and reliability using Microsoft Excel program. The test was conducted on a small scale and a wide scale. The results showed that: (1) MAN 2 Model Medan has never used a five-tier diagnostic test instrument to identify misconceptions experienced by students due to the unavailability of the instrument; (2) The results of item analysis on small-scale trials obtained 23 valid items and 7 invalid items. The questions were dominated by the moderate category by 90% and 10% in the easy category. Differentiating power analysis showed 20% of questions were very good, 30% of questions were good, 27% of questions were quite good and 23% of questions were bad. The working answer distractor is 88% while the reason distractor is 84%. Based on this analysis, 17 question items were obtained for a wide-scale trial. The reliability coefficient is 0.73 which shows a high reliability category; (3) The misconceptions of students in class XI IPA MAN 2 Model Medan occupy the highest position in the category of students' conceptual understanding of 33% which is classified as moderate; (4) The results of the analysis of student responses to the test instrument developed showed a positive response with an average of 85.45% and showed that the five-tier diagnostic test instrument was classified as very good. So it can be concluded that the five-tier diagnostic test instrument developed on reaction rate material successfully identifies students' misconceptions and is suitable for widespread use.

Keywords: Reaction Rate, Misconceptions, Five-Tier Diagnostic Test.

ABSTRAK

Khairunnisa. NIM 4193131046 (2019). Pengembangan Instrumen Tes Diagnostik *Five-Tier* untuk Mengidentifikasi Miskonsepsi Siswa Kelas XI pada Materi Laju Reaksi.

Miskonsepsi merupakan ketidaksesuaian pemahaman atau pandangan terhadap suatu konsep. Miskonsepsi dapat menjadi hambatan bagi siswa dalam menguasai suatu materi karena dapat dikatakan sebagai suatu kesalahan. Penelitian ini bertujuan untuk mengetahui: (1) Hasil analisis kebutuhan instrumen tes diagnostik *five-tier* untuk mengidentifikasi miskonsepsi siswa pada materi laju reaksi; (2) Hasil analisis item soal tes diagnostik *five-tier* yang dikembangkan; (3) Pemahaman konsep dan miskonsepsi siswa setelah diberi instrumen tes diagnostik *five-tier*; (4) Respon siswa terhadap instrumen tes yang dikembangkan. Populasi dalam penelitian ini adalah seluruh siswa kelas XI IPA MAN 2 Model Medan dengan pengambilan sampel melalui teknik *random sampling* sebanyak 20% dari jumlah populasi. Tahap pengembangan mengacu pada model pengembangan ADDIE. Instrumen tes diagnostik *five-tier* yang dikembangkan sebanyak 30 soal. Validator ahli berjumlah 5 orang, 3 dosen kimia Universitas Negeri Medan dan 2 guru kimia MAN 2 Model Medan. Analisis item soal menggunakan uji validitas, tingkat kesukaran, daya pembeda, efektivitas distraktor dan reliabilitas menggunakan program *Microsoft Excel*. Uji coba dilakukan pada skala kecil dan skala luas. Hasil penelitian menunjukkan bahwa: (1) MAN 2 Model Medan belum pernah menggunakan instrumen tes diagnostik *five-tier* untuk mengidentifikasi miskonsepsi yang dialami siswa karena ketidaktersedian instrumen tersebut; (2) Hasil analisis item soal pada uji coba skala kecil diperoleh 23 item soal valid dan 7 item tidak valid. Soal didominasi kategori sedang sebesar 90% dan 10% dalam kategori mudah. Analisis daya pembeda menunjukkan 20% soal sangat baik, 30% soal baik, 27% soal cukup baik dan 23% soal buruk. Distraktor jawaban yang berfungsi sebesar 88% sedangkan distraktor alasan 84%. Berdasarkan analisis tersebut diperoleh 17 item soal untuk uji coba skala luas. Koefisien reliabilitasnya sebesar 0,73 yang menunjukkan kategori reliabilitas tinggi; (3) Miskonsepsi siswa kelas XI IPA MAN 2 Model Medan menempati posisi tertinggi pada kategori pemahaman konseptual siswa sebesar 33% yang tergolong pada kriteria sedang; (4) Hasil analisis respon siswa terhadap instrumen tes yang dikembangkan menunjukkan respon positif dengan rata-rata sebesar 85,45% dan menunjukkan bahwa instrumen tes diagnostik *five-tier* tergolong dalam kriteria sangat baik. Sehingga dapat disimpulka bahwa instrumen tes diagnostik *five-tier* yang dikembangkan pada materi laju reaksi berhasil mengidentifikasi miskonsepsi siswa dan layak untuk digunakan secara luas.

Kata Kunci: Laju Reaksi, Miskonsepsi, Tes Diagnostik *Five-Tier*.