ABSTRACT

Dika Adriani. 2021. Development of Acid-Base Module Electronic Based on Structured Inquiry Using Three Levels of Chemical Representation to Improve Students' Higher-Level Thinking Skills for Senior High School Student Grade XI. Thesis. Chemical Education Master Program. Faculty of Math and Science. Padang State University.

The aims of this research is to reveal the validity, practicality and effectiveness of acid-base e-module based on structured inquiry using three levels of chemical representation to improve student's higher order thinking skills and learning out comes. The type of this research is research and development (R&D). The module was developed with Plomp. The research instrument used was a validity questionnaire, practicality and test questionnair. The e-module was validated by 6 validators. The subjects of practicality and effectiveness tests were 132 students of class XI who were divided into experimental and control classes and 2 chemistry teachers from high schools in Padang City. The validity test was analyzed using Aiken's V. The practical results of teachers were analyzed using the kappa cohen formula and practical results of students were analyzed using the Likert scale formula. From the validity results obtained 0.85 with the validity category is very valid. The results of practicality by teachers and students were obtained 0.9 and 90% with very high categories. The of effectivities showed that e-module acid base-based on structured inquiry had an effect on HOTS and student learning outcomes, as evidenced by an increase in the average score from pretest to posttest. The results of the normality and homogeneity test state that the learning outcomes and HOTS of the samples are normally distributed and homogeneous. The results of the t-test were obtained by sig. (2-tailed) of learning outcomes and HOTS shows the results <0.05 means that the learning outcomes and HOTS of students who learn using e-module acid-base based on structured inquiry and e-module acid-base based on structured inquiry differ significantly.

Keywords: E-Module, structured inquiry, three levels of chemical representation, high order thingking skills, acid-base

ABSTRAK

Dika Adriani. 2021. Pengembangan E-Modul Asam Basa Berbasis Inkuiri Terstruktur Menggunakan Tiga Level Representasi Kimia Untuk Meningkatkan Keterampilan Berpikir Tingkat Tinggi Siswa Kelas XI SMA. Tesis. Program Studi Magister Pendidikan Kimia. Fakultas Matematika dan Ilmu Pengetahuan Alam. Universitas Negeri Padang.

Penelitian ini bertujuan mengungkap validitas, praktikalitas dan efektivitas dari e-modul asam basa berbasis inkuiri terstruktur menggunakan tiga level representasi kimia terhadap hasil belajar dan keterampilan berpikir tingkat tinggi siswa. Jenis penelitian ini adalah Researh and development (R&D) dan model pengembangan Plomp. Instrument penelitian yang digunakan yaitu angket validitas, praktikalitas dan soal tes. E-modul divalidasi oleh 6 orang validator. Subjek uji praktikalitas dan efektivitas yaitu 132 siswa kelas XI yang terbagi menjadi kelas eksperimen dan kontrol serta 2 orang guru kimia yang berasal dari Sekolah Menengah Atas di Kota Padang. Uji validitas dianalisis menggunakan rumus Aiken's V. hasil praktikalitas guru dianalisis menggunakan formula kappa cohen dan praktikalitas siswa dengan rumus skala likert. Dari hasil validitas diperoleh 0,85 dengan kategori kevalidan sangat valid. Hasil praktikalitas oleh guru dan siswa diperoleh 0,9 dan 90% dengan kategori sangat tinggi. Hasil evektifitas menujukkan bahwa e-modul asam basa berbasis inkuiri terstruktur berpengaruh terhadap keterampilan berpikir tingkat tinggi dan hasil belajar siswa, terbukti dengan peningkatan nilai rata-rata dari pretest ke posttest. Hasil uji normalitas dan homogenitas menyatakan bahwa hasil belajar dan HOTS semua kelas sampel berdistribusi normal dan homogen. Hasil uji-t HOTS dan hasil belajar memperoleh nilai sig (2-tailed) $<0,05$ artinya hasil belajar dan HOTS siswa yang belajar menggunakan e-modul asam basa berbasis inkuiri terstruktur dan tanpa menggunakan e-modul asam basa berbasis inkuiri terstruktur berbeda secara signifikan.

Kata Kunci: E-modul, inkuiri terstruktur, tiga level representasi kimia, *high order thingking skills*, asam basa