ABSTRAK

Syafrialdi Azwar Harahap. Pengembangan Media Pembelajaran Berbasis Perhitungan Kimia Komputasi Pada Materi Senyawa Turunan Alkana Kelas XII MIPA SMA. Tesis. Medan: Program Studi Pendidikan Kimia, Pascasarjana UNIMED, 2024.

Penelitian ini bertujuan untuk mengembangkan media pembelajaran berbasis perhitungan kimia komputasi pada materi senyawa turunan alkana kelas XII SMA. Penelitian ini termasuk jenis penelitian pengembangan menggunakan model ADDIE dengan target sasaran atau subjek penelitian adalah siswa kelas XII MIPA SMA Negeri 2 Kotapinang sebanyak 2 kelas (60 siswa). Data penelitian dikumpulkan melalui lembar validasi ahli, lembar observasi, angket siswa serta instrumen tes. Teknik analisis data yang digunakan meliputi analisis kelayakan, kepraktisan dan analisis keefektifan produk (media) serta uji-t dengan pendekatan *one-sampel t-test* dan *paired-sampel t-test*. Hasil analisis kebutuhan menunjukkan bahwa materi senyawa turunan alkana termasuk salah satu materi yang dianggap sulit serta media yang digunakan guru hanya berbentuk *slide PowerPoint* dan kurang memotivasi siswa dalam belajar, sehingga perlu dikembangkan media pembelajaran inovatif berbasis perhitungan kimia komputasi. Media pembelajaran berbasis perhitungan kimia komputasi pada materi senyawa turunan alkana kelas XII SMA yang dikembangkan telah memenuhi kriteria layak, praktis dan efektif digunakan sebagai media pembelajaran di dalam kelas. Kelayakan media yang dikembangkan terpenuhi berdasarkan hasil validasi ahli materi (rerata skor sebesar 4,75); serta hasil validasi ahli media (rerata skor sebesar 4,53). Kepraktisan media terpenuhi berdasarkan hasil angket siswa (rerata skor sebesar 4,11) serta hasil observasi kegiatan guru mengelola pembelajaran (rerata skor sebesar 4,55). Keefektifan terpenuhi berdasarkan ketuntasan belajar klasikal siswa, rata-rata hasil belajar siswa (*posttest*) lebih besar dari 70 (KKM) serta hasil uji *one-sample t-test* dengan nilai Sig. sebesar 0,00<0,05. Pengimplementasian media yang dikembangkan dapat meningkatkan hasil belajar siswa dan dibuktikan dari hasil uji *paired-sample t-test* dengan nilai Sig. sebesar 0,00<0,05. Respon siswa terhadap media pembelajaran berbasis perhitungan kimia komputasi pada materi senyawa turunan alkana kelas XII MIPA SMA yang dikembangkan tergolong kriteria baik (rerata skor sebesar 4,19).

Kata Kunci: Media, Perhitungan Kimia Komputasi, Senyawa Turunan Alkana.

ABSTRACT

Syafrialdi Azwar Harahap. Development of Learning Media Based on Computational Chemical Calculations on Alkane Derived Compounds for Class XII MIPA SMA. Thesis. Medan: Chemistry Education Study Program, Postgraduate, UNIMED, 2024.

This research aims to develop learning media based on computational chemical calculations on alkane derivative compounds in class XII high school. This research is a type of development research using the ADDIE model with the target or research subjects being 2 classes (60 students) of class XII MIPA SMA Negeri 2 Kotapinang. Research data was collected through expert validation sheets, observation sheets, student questionnaires and test instruments. The data analysis techniques used include feasibility analysis, practicality and product (media) effectiveness analysis as well as t-tests using one-sample t-test and paired-sample t-test approaches. The results of the needs analysis show that the material on alkane derivative compounds is one of the materials that is considered difficult and the media used by teachers is only in the form of PowerPoint slides and does not motivate students to learn, so it is necessary to develop innovative learning media based on computational chemical calculations. The learning media based on computational chemical calculations on alkane derivative compounds for class The feasibility of the media being developed is fulfilled based on the results of material expert validation (mean score of 4.75); as well as media expert validation results (average score of 4.53). The practicality of the media is fulfilled based on the results of the student questionnaire (mean score of 4.11) as well as the results of observations of teacher activities in managing learning (mean score of 4.55). Effectiveness is fulfilled based on the students' complete classical learning, the average student learning outcomes (posttest) is greater than 70 (KKM) and the results of the one-sample t-test with a Sig value. equal to $0.00 < 0.05$. Implementation of the media developed can improve student learning outcomes and is proven by the results of the paired-sample t-test with a Sig value. equal to $0.00 < 0.05$. Students' responses to learning media based on computational chemical calculations on alkane derivative compounds material for class XII MIPA SMA which were developed were classified as good (average score of 4.19).

Keywords: Alkane Derived Compounds, Computational Chemical Calculations, Media.