

## Abstrak

**Nurlela Ramadani Marpaung**, Pengembangan Bahan Ajar Kimia Inovatif Berbasis Pendekatan Saintifik Untuk Pengajaran Titrasi Asam Basa, Tesis, Medan: Program Studi Pendidikan Kimia, Pascasarjana, Universitas Negeri Medan, 2018.

Penelitian ini bertujuan untuk memperoleh bahan ajar kimia inovatif berbasis pendekatan saintifik yang layak digunakan serta efektif dalam meningkatkan motivasi dan hasil belajar mahasiswa pada pengajaran titrasi asam-basa. Bahan ajar kimia inovatif berbasis saintifik dikembangkan melalui inovasi model pembelajaran berbasis proyek, kontekstual dan pendekatan laboratorium serta diintegrasikan menggunakan media teknologi dalam bentuk *web-blog*. Bahan ajar ini diharapkan dapat memfasilitasi mahasiswa untuk belajar secara *offline* maupun *online*. Jenis penelitian yang dilakukan adalah jenis penelitian dan pengembangan (Research and Development/ R&D), dengan tahapan, meliputi : (1) Analisis kebutuhan terhadap materi ajar titrasi asam- basa yang berorientasi KKNI, (2) Pengembangan bahan ajar kimia inovatif berbasis saintifik pada materi titrasi asam-basa melalui inovasi model pembelajaran berbasis proyek, kontekstual, dan pendekatan laboratorium, (3) Melengkapi bahan ajar dengan media online berbasis multimedia dan diaplikasi dalam bentuk *web-blog*, (4) Standarisasi terhadap bahan ajar kimia inovatif yang dikembangkan sesuai dengan kriteria BSNP, kelayakan media, dan saintifik (5) Uji coba terbatas terhadap bahan ajar kimia inovatif yang telah dikembangkan pada pengajaran titrasi asam basa. Instrumen pengumpul data berupa kuisioner, lembar observasi dan tes hasil belajar dalam bentuk uraian. Pemilihan sampel dilakukan dengan teknik *purposive sampling*, yang terdiri dari kelas kontrol dan eksperimen. Sampel dalam penelitian berupa 3 buah buku pegangan mahasiswa yang digunakan dalam pembelajaran titrasi asam-basa; 3 orang dosen Jurusan Kimia, FMIPA Unimed dan 5 orang mahasiswa Pascasarjana Prodi Pendidikan Kimia Unimed sebagai validator ahli; serta mahasiswa semester III Jurusan Kimia, FMIPA Unimed T.P. 2016/2017. Analisis data terhadap hasil belajar mahasiswa pada materi titrasi asam-basa dilakukan melalui uji-t dengan bantuan SPSS versi 21.0 menggunakan teknik uji *Independent Sample T-Test*. Hasil penelitian menunjukkan bahwa : (1) rata-rata penilaian buku pegangan mahasiswa yang dianalisis sesuai kriteria BSNP adalah 3,09 dan tergolong dalam kategori cukup layak untuk digunakan namun perlu dilakukan pengembangan dan inovasi. (2) Bahan ajar kimia inovatif berbasis saintifik untuk pengajaran titrasi asam-basa yang dikemas dalam bentuk *text book* dan *e-book* sangat layak untuk digunakan dengan rata-rata penilaian BSNP, kelayakan media dan kriteria saintifik berturut-turut adalah 4,69; 4,78; dan 4,68. (3) Paket pembelajaran saintifik yang dilengkapi lembar kerja, kegiatan laboratorium, dan aktivitas belajar berorientasi kurikulum KKNI dapat diintegrasikan dalam bentuk *web-blog* sehingga dapat diakses secara *offline* maupun *online*. (4) Persentase peningkatan hasil belajar mahasiswa yang menggunakan bahan ajar kimia inovatif berbasis saintifik lebih tinggi dibandingkan persentase peningkatan hasil belajar mahasiswa yang menggunakan buku pegangan (72,52% > 51,41%). (5) Persentase peningkatan motivasi belajar mahasiswa yang menggunakan bahan ajar kimia inovatif berbasis saintifik pada pengajaran titrasi asam-basa lebih tinggi dibandingkan persentase peningkatan motivasi belajar mahasiswa yang menggunakan buku pegangan (75,84% > 62,95%). (6) Terdapat korelasi yang positif antara motivasi dengan hasil belajar mahasiswa yang menggunakan bahan ajar kimia inovatif berbasis saintifik pada pengajaran materi titrasi asam- basa.

**Kata kunci** : Bahan ajar kimia inovatif, hasil belajar, motivasi, pendekatan saintifik, titrasi asam-basa.

## Abstract

**Nurlela Ramadani Marpaung**, The Development of Innovative Chemistry Learning Material Based on Scientific Approach in Teaching Acid Base Titration Topic, Thesis, Medan: Chemistry Education Program, Postgraduate, State University of Medan, 2018.

The aim of this research was to obtain the innovative chemistry learning material based on scientific approach which feasible and effective to improve students' motivation and learning outcomes in teaching acid-base titration topic. The innovative scientific learning material was developed through the innovation of project-based, contextual and laboratory approaches and it was integrated using media technology and produced into web-blogs. The learning material was expected to facilitate students in studying by offline and online. The kinds of this research was conducted to research and development (R & D), with stages that consist of : (1) Analysis demand of learning materials in acid-base titration topic based on curriculum of KKNI, (2) The development of innovative learning material based on scientific approach in acid-base titration topic by innovated project-based, contextual, and laboratory experiment, (3) Completing learning material with multimedia and applied it in web-blog form; (4) Standardizing of innovative chemistry learning material based on BSNP, media feasibility and scientific criteria (5) Limited trial of innovative learning material to improve students' motivation and learning outcomes in teaching acid-base titration topic. The instrument of data collecting consisted of questionnaires, observation sheets and test of learning outcomes. The sample selection was conducted using purposive sampling technique, which consisted of experiment and control class. The sample in this study consisted of three pieces of student handbook in acid-base titration topic; three lecturers of Department of Chemistry, FMIPA, Unimed and five graduate students of Chemical Education Program as expert validator; and third semester students of Chemistry Department, FMIPA, Unimed T.P. 2016/2017 as experiment and control classes. The data analysis of student's learning outcomes in acid-base titration topic was done through t-test with SPSS version 21.0 using Independent Sample T-Test technique. The results showed that: 1 the average of student handbook analyzing based on BSNP criteria was 3.09 and it's belong to quite feasible category to used but needs to be development and innovation. (2) The innovative learning material based on scientific approach in teaching acid-base titration topic was packaged into text book and e-book form and it was so feasible to use with the average of BSNP assessment, media feasibility and scientific criteria were 4.69; 4.78; and 4.68 respectively. (3) The scientific study was packaged by worksheets, laboratory activities, and learning activities could be integrated in web-blog form and could be accessed by offline or online. (4) The percentage of student's learning outcomes improvement using innovative learning materials was higher than the percentage of students' learning achievement using handbook (72.52% > 51.41%). (5) The percentage of student's learning motivation improvement using innovative learning material in acid-base titration topic was so higher than percentage of students' learning motivation improvement using handbook (75,84% > 62,95%). (6) There was positive correlation between motivation and student's learning outcomes that used innovative learning materials based on scientific approach in teaching of acid-base titration material topic.

*Keywords: Innovative chemistry learning material, learning outcomes, motivation, scientific approach, acid-base titration.*