

## ABSTRAK

**MARUDUT SINAGA.** Pengembangan Disain Pembelajaran Kontekstual berbasis Kesiapan Belajar untuk Meningkatkan Kompetensi Mahasiswa pada Matakuliah Kimia Umum, Disertasi, Medan, Program Pascasarjana Universitas Negeri Medan, Oktober 2021.

Pembelajaran kontekstual berbasis kesiapan belajar berperan sangat penting dalam pembelajaran kimia karena ilmu pengetahuan sangat erat hubungannya dengan pengalaman belajar dan praktek dalam kehidupan sehari-hari. Penelitian ini bertujuan untuk mendapatkan disain pembelajaran kontekstual berbasis kesiapan belajar mahasiswa yang dapat meningkatkan hasil belajar mahasiswa pada pengajaran Kimia Umum, dan sekaligus untuk pencapaian kompetensi dalam bidang kimia. Penelitian dilakukan di Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Negeri Medan (FMIPA Unimed) pada tahun akademik 2018/2019 dengan melibatkan 200 orang mahasiswa yang mengikuti kuliah Kimia Umum, terdistribusi pada empat Program Studi Pendidikan (Matematika, Fisika, Kimia, dan Biologi) yang dibagi menjadi kelas eksperimen dan kelas kontrol, masing-masing kelompok terdiri atas 100 orang mahasiswa. Tahapan penelitian terdiri atas: (1) Analisis tingkat kesiapan belajar mahasiswa menggunakan angket, (2) Pengembangan disain pembelajaran kontekstual dilakukan melalui Penelitian dan Pengembangan model ADDIE, (3) Standarisasi disain pembelajaran menggunakan responden ahli, dan (4) implementasi di dalam kelas menggunakan disain pembelajaran kontekstual di kelas eksperimen dan pembelajaran konvensional di kelas kontrol. Pengajaran di kelas eksperimen diawali dengan penyampaian bahan ajar oleh dosen pengampu mata kuliah, dilanjutkan dengan pengisian Lembar Kegiatan oleh Mahasiswa (LKM) yang berisi integrasi beberapa Kemampuan Generik Sains (KGS) dengan menggunakan Siklus Belajar 5E untuk meningkatkan kesiapan belajar dan pengalaman belajar mahasiswa, dilakukan berurutan pada pengajaran Pokok Bahasan Stoikiometri, Termokimia, dan Laju reaksi, sedangkan di kelompok kontrol dilakukan pengajaran dengan menggunakan pembelajaran konvensional. Hasil penelitian di kelas eksperimen diketahui bahwa kesiapan belajar dan LKM meningkatkan hasil belajar mahasiswa, berturut-turut pada Pokok Bahasan: Stoikiometri dari 8,05% menjadi 8,3%, Termokimia dari 2% menjadi 13,2%, dan Laju reaksi dari 8,2% menjadi 12,8%. Disain pembelajaran kontekstual berbasis kesiapan belajar terbukti meningkatkan kemampuan berpikir kritis mahasiswa di kelas eksperimen sebesar 32%, dan kompetensi mahasiswa dalam bidang kimia tercapai. Disain pembelajaran kontekstual dapat meningkatkan hasil belajar mahasiswa yang ditunjukkan dari nilai mahasiswa pada kelompok eksperimen lebih tinggi dibanding kelompok kontrol. Rata-rata hasil belajar mahasiswa pada kelompok eksperimen dan kelompok kontrol berturut-turut untuk Pokok Bahasan Stoikiometri ( $M=71,15\pm 6,86 > M=65,78\pm 6,53$ ), Termokimia ( $M=65,47\pm 7,41 > M=60,31\pm 6,88$ ), dan Laju reaksi ( $M=65,50\pm 6,93 > M=57,02\pm 6,03$ ), dan kedua kelompok berbeda secara signifikan ( $t = -5,670; -5,106; -5,106$  dan nilai Sig = 0,000). Disimpulkan bahwa kesiapan belajar dan lembar kegiatan mahasiswa berpengaruh secara signifikan terhadap hasil belajar mahasiswa, dan kemampuan generik sains mahasiswa dapat ditingkatkan melalui aktivitas pengisian lembar kegiatan dengan menggunakan siklus belajar 5E, yaitu sebagai strategi untuk mencapai kompetensi dalam bidang kimia. Disarankan agar pembelajaran sains dapat mengadopsi disain pembelajaran kontekstual berbasis kesiapan belajar karena terbukti dapat meningkatkan kemampuan berpikir kritis dan hasil belajar mahasiswa dalam rangka pencapaian kompetensinya. Kontribusi ilmiah produk penelitian ini telah dipublikasikan di Jurnal Internasional bereputasi terindeks scopus Q3 dua judul.

**Kata kunci:** Pembelajaran Kontekstual, Kesiapan Belajar, Kemampuan Generik Sains, Siklus Belajar 5E.

## ABSTRACT

**MARUDUT SINAGA.** The Development of Contextual Learning Designs based on Learning Readiness to Improve Student Competence in Teaching of General Chemistry, Dissertation, Medan, Postgraduate Program Universitas Negeri Medan, October 2021

Learning readiness based contextual learning plays a very important role in learning chemistry because science is closely related to learning experiences and practices in everyday life. This study aims to obtain a contextual learning design based on student learning readiness that can improve student learning outcomes in teaching of General Chemistry and at the same time for the achievement of competence in the field of chemistry. The research was conducted at the Faculty of Mathematics and Natural Sciences, Universitas Negeri Medan (FMIPA Unimed) in the 2018/2019 academic year, involving 200 students who attended General Chemistry courses, distributed in four Educational Study Programs (Mathematics, Physics, Chemistry, and Biology), which divided into experimental class and control class, each 100 students. The research was conducted at the Faculty of Mathematics and Natural Sciences, Universitas Negeri Medan (FMIPA Unimed) in the 2018/2019 academic year involving 200 students who attended General Chemistry courses, distributed in four Educational Study Programs (Mathematics, Physics, Chemistry, and Biology) which divided into experimental class and control class, each group consisting of 100 students. The research stages consisted of: (1) Analysis of the level of student learning readiness by using a questionnaire, (2) The development of contextual learning designs was carried out through Research and Development of the ADDIE model, (3) Standardization of learning design by using experts respondents, and (4) The implementation in the classroom by using of contextual learning design in the experimental class and conventional learning in the control class. Teaching in the experimental class begins with the delivery of teaching materials by the lecturer who teaches the course, followed by filling out the Student Activity Sheet (SAS) which contains the integration of several Generic Science Skills (GSS) by using the 5E Learning Cycle to improve learning readiness and to have student learning experience. The learning activities are carried out sequentially in teaching the Subjects of Stoichiometry, Thermochemistry, and Reaction Rate, while in the control group teaching was carried out using conventional learning. The results of research in the experimental class show that learning readiness and SAS can improve student learning outcomes, respectively on the Subject: Stoichiometry from 8.05% to 8.3%, Thermochemistry from 2% to 13.2%, and reaction rates from 8.2% to 12.8%. The learning readiness-based contextual learning design proved convincingly to improve students' critical thinking skills in the experimental class by 32% and competence of students in the field of chemistry is achieved. Contextual learning design can improve student learning outcomes which is shown from the student's score in the experimental group is higher than the control group. The average student learning outcomes in the experimental group and the control group respectively for the Subject of Stoichiometry ( $M=71.15\pm 6.86 > M=65.78\pm 6.53$ ), Thermochemistry ( $M=65.47\pm 7.41 > M=60.31\pm 6.88$ ), and the Rate of reaction ( $M=65.50\pm 6.93 > M=57.02\pm 6.03$ ), and the two treatment groups differed significantly ( $t = - 5,670; -5,106; -5,106$  and the value of  $Sig = 0,000$ ). It was concluded that learning readiness and student activity sheets had a significant effect on student learning outcomes, and students' generic science skills could be improved through filling in activity sheets using the 5E learning cycle, which is a strategy to achieve competence in chemistry. It is suggested that science learning can adopt a contextual learning design based on learning readiness because it is proven to improve critical thinking skills and student learning outcomes in order to achieve their competence. The scientific contributions of this research product have been published in reputable international journals indexed by Scopus Q3 with two titles.

**Keywords:** Contextual Learning, Learning Readiness, Generic Science Skills, 5E Learning Cycle.