INOVASI PEMBELAJARAN BERBASIS PROYEK DAN MULTIMEDIA UNTUK MENINGKATKAN KOMPETENSI MAHASISWA DALAM PENGAJARAN TITRASI KOMPLEKSOMETRI

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ABSTRAK

Inovasi pembelajaran berbasis proyek dan multimedia dalam pengajaran titrasi kompleksometri ini bertujuan untuk mengetahui (1) bentuk inovasi yang dilakukan untuk meningkatkan kompetensi mahasiswa; (2) bentuk multimedia yang digunakan untuk meningkatkan kompetensi mahasiswa; (3) multimedia yang digunakan telah memenuhi kriteria kelayakan; (4) hasil belajar mahasiswa kelas eksperimen lebih tinggi dibandingkan dengan hasil belajar kelas kontrol; (5) keterampilan psikomotorik mahasiswa kelas eksperimen lebih tinggi dibandingkan kelas kontrol; dan (6) tanggapan mahasiswa terhadap pembelajaran. Penelitian ini dilakukan terhadap mahasiswa Semester V Prodi Pendidikan Kimia T.A. 2019/2020. Sampel penelitian terdiri dari 42 orang mahasiswa, yaitu mahasiswa kelas Pendidikan Kimia D 2017 (kelas eskperimen) dan kelas Pendidikan Kimia A 2017 (kelas kontrol) yang dipilih dengan teknik *random sampling*. Penelitian ini menggunakan pendekatan *Research and Development* (R&D). Berdasarkan hasil analsis kebutuhan maka dikembangkan multimedia berbasis proyek berbentuk flash yang didalamnya terdapat 6 set kegiatan proyek yang diintegrasikan sesuai dengan subtopik titrasi kompleksometri. Multimedia berbasis proyek telah memenuhi kriteria kelayakan oleh ahli materi (nilai rata-rata 3,29 atau sangat layak) dan ahli media (nilai rata-rata 3,46 atau sangat layak). Pengambilan data untuk hasil belajar siswa diperoleh dengan tes hasil belajar yang menggunakan instrumen yang valid sebanyak 20 soal dan reliabel (0,881). Berdasarkan data hasil analisa data hasil belajar dengan menggunakan Uji-t Pihak Kanan dan Uji *Independent Sample T-Test SPSS 17.0 for windows* , diperoleh bahwa hasil uji *Independent Sample T-Test SPSS 17.0 for windows* diperoleh sig (2.tailed) < α (0,000 < 0,05), sementara hasil Uji-t Pihak Kanan diperoleh harga t_{hitung} sebesar 4,072 sedangkan t_{tabel} sebesar 1,680 pada taraf α = 0,05) dan db = 40, sehingga $t_{hitung} > t_{tabel.}$ Berdasarkan kedua hasil analisis data tersebut maka Ha diterima, sehingga hasil belajar mahasiswa kelas eksperimen lebih tinggi dibandingkan dengan hasil belajar mahasiswa kelas kontrol. Sementara Berdasarkan data hasil analisa data keterampilan psikomotorik dengan menggunakan Uji-t Pihak Kanan dan Uji *Independent Sample T-Test SPSS 17.0 for windows* , diperoleh bahwa hasil uji *Independent Sample T-Test SPSS 17.0 for windows* diperoleh sig (2.tailed) < α (0,000 < 0,05), sementara hasil Uji-t Pihak Kanan diperoleh harga t_{hitung} sebesar 2,350 sedangkan t_{tabel} sebesar 1,680 pada taraf α = 0,05) dan db = 40, sehingga $t_{hitung} > t_{tabel.}$ Berdasarkan kedua hasil analisis data tersebut maka Ha diterima, sehingga keterampilan psikomotorik mahasiswa kelas eksperimen lebih tinggi dibandingkan dengan keterampilan psikomotorik mahasiswa kelas kontrol. Tanggapan mahasiswa terhadap inovasi pembelajaran yang dilakukan yaitu 3,46 (sangat baik).

Keyword: Kompetensi Mahasiswa, Multimedia, Pembelajaran Inovatif, Projek, Titrasi Kompleksometri,

INNOVATIVE LEARNING MATERIAL BASED PROJECT AND MULTIMEDIA TO IMPROVE STUDENTS PERFORMANCE IN THE TEACHING OF COMPLEXOMERTY TITRATION

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ABSTRACT

Innovative learning material based project and multimedia in teaching complexometry titration aim to determine (1) the form of innovation undertaken to improve student competence; (2) multimedia forms used to improve student competence; (3) the multimedia used has met the eligibility criteria; (4) student learning outcomes of the experimental class were higher than those of the control class students; (5) the psychomotor skills of the experimental class students were higher than the control class; (6) student responses to learning. This research was conducted on the fifth semester students of the Chemistry Education Study Program, T.A. 2019/2020. The research sample consisted of 42 students, namely students of the 2017 D Chemical Education class (experiment class) and the 2017 Chemical Education class A (control class) who were selected by random sampling technique. This study uses a Research and Development (R&D) approach. Based on the results of the needs analysis, a flash-based project-based multimedia was developed in which 6 sets of project activities were integrated according to the subtopic of complexometric titration. Project-based multimedia has met the eligibility criteria by material experts (mean score 3.29 or very feasible) and media experts (mean score 3.46 or very feasible). Retrieval of data for student learning outcomes obtained by learning outcomes tests using valid instruments as many as 20 questions and reliable (0.881). Based on the results of data analysis of learning outcomes using One Tailed T-Test and the Independent Sample T-Test SPSS 17.0 for windows, it was found that the results of the Independent Sample T-Test SPSS 17.0 for windows were obtained sig (2.tailed) $<\alpha$ (0,000 <0.05), while the results of One Tailed T-Test obtained the t_{count} of 4.072 while the t_{table} was 1.680 at the level of $\alpha = 0.05$) and db = 40, so that $t_{count} > t_{table}$. Based on the two results of the data analysis, Ha is accepted, so that the learning outcomes of the experimental class students are higher than the learning outcomes of the control class students. Meanwhile, based on the data analysis results of psychomotor skills data using One Tailed T-Test and the Independent Sample T-Test SPSS 17.0 for windows, it was found that the results of the Independent Sample T-Test SPSS 17.0 for windows were obtained sig (2.tailed) $<\alpha$ (0,000 <0.05), while the results of One Tailed T-Test obtained the t_{count} of 2.350 while the t_{table} was 1.680 at the level of $\alpha = 0.05$) and db = 40, so that $t_{count} > t_{table}$ Based on the two results of the data analysis, Ha is accepted, so that the psychomotor skills of the experimental class students are higher than the psychomotor skills of the control class students. Student responses to the learning innovation carried out were 3.46 (very good).

Keywords: Complexometry Titration , Innovative Learning, Multimedia, Project, Student Performance