PEMBELAJARAN GEOMETRI MOLEKUL BERBASIS INTERTEKSTUAL BERBANTUAN LMS UNTUK MENINGKATKAN KETERAMPILAN BERPIKIR VISUOSPASIAL DAN PENGUASAAN KONSEP MAHASISWA

TESIS

Diajukan untuk memenuhi sebagian dari syarat memperoleh gelar Magister Pendidikan pada Program Studi Pendidikan Kimia

disusun oleh

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PROGRAM STUDI MAGISTER PENDIDIKAN KIMIA

FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM

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PEMBELAJARAN GEOMETRI MOLEKUL BERBASIS INTERTEKSTUAL BERBANTUAN LMS UNTUK MENINGKATKAN BERPIKIR VISUOSPASIAL DAN PENGUASAAN KONSEP

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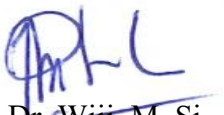

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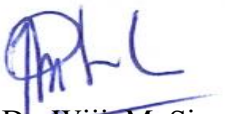

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ABSTRAK

Penelitian ini bertujuan untuk meningkatkan keterampilan berpikir visuospasial dan penguasaan konsep geometri molekul melalui pembelajaran berbasis intertekstual berbantuan LMS pada konsep geometri molekul. Metode penelitian *mixed method Experimental embedded design* digunakan untuk menjawab pertanyaan penelitian. Sampel penelitian dipilih secara *convinience sampling* dari mahasiswa calon guru kimia sebanyak 74 mahasiswa. Metode kuantitatif menggunakan desain kuasi eksperimen untuk membandingkan dua kelompok, yaitu kelompok kontrol (n=34) dan kelompok eksperimen (n=40). Hasil metode kuantitatif diperdalam menggunakan metode kualitatif desain deskriptif kualitatif. Instrumen penelitian yang digunakan untuk pengumpulan data kuantitatif adalah butir soal *test* penguasaan konsep geometri molekul dan *test* kemampuan spasial meliputi pengenalan bidang simetri, visualisasi, representasi dan translasi. Sedangkan untuk pengumpulan data kualitatif digunakan Lembar Kerja Mahasiswa. Untuk menentukan signifikansi nilai test digunakan uji statistik *t-paired test.* Sedangkan untuk mengetahui *efect size* dari implementasi pembelajaran digunakan kriteria *Cohen' d*. Penafsiran serta pengkodean data kualitatif digunakan untuk mendukung hasil analisis data kuantitatif. Hasil *t-paired test* menunjukkan adanya perbedaan signifikan pada hasil pre-post *test* baik pada penguasaan konsep maupun keterampilan berpikir visuospasial dengan nilai signifikansi $p<0,05$. *Effect siz;e* cohen' d peningkatan berpikir visuospasial kelompok kontrol sebesar 0,660 dan kelompok eksperimen sebesar. 2,484 *Effect size* cohen' d peningkatan penguasaan konsep kelompok kontrol sebesar 1,215 dan kelompok eksperimen sebesar 1,530. Hasil uji *Spearman rank* menunjukkan adanya korelasi positif antara keterampilan berpikir visuospasial dan penguasaan konsep. Temuan ini diperkuat oleh analisis jawaban kualitatif dari Lembar Kerja Mahasiswa, yang menunjukkan keterampilan indikator visualisasi, representasi, bidang simetri, dan translasi mahasiswa dalam aktivitas menggambar sketsa geometri molekul.

Kata Kunci: Pembelajaran Intertekstual; Berpikir Visuospasial; Penguasaan Konsep; Geometri Molekul; LMS.

ABSTRACT

This study aims to improve visuospatial thinking skills and mastery of molecular geometry concepts through intertextual learning assisted by LMS on the concept of molecular geometry. The mixed method Experimental embedded design research method was used to answer the research questions. The research sample was selected by convenience sampling from 74 prospective chemistry teacher students. The quantitative method used a quasi-experimental design to compare two groups, namely the control group (n = 34) and the experimental group (n = 40). The results of the quantitative method were deepened using the qualitative method of qualitative descriptive design. The research instruments used for quantitative data collection were test items on mastery of molecular geometry concepts and spatial ability tests including introduction to symmetry planes, visualization, representation and translation. While for qualitative data collection, the Student Worksheet was used. To determine the significance of the test score, the t-paired test statistic was used. Meanwhile, to determine the effect size of the implementation of learning, the Cohen' d criterion was used. Interpretation and coding of qualitative data were used to support the results of quantitative data analysis. The results of the t-paired test showed a significant difference in the results of the pre-post test both in concept mastery and visuospatial thinking skills with a significance value of $p < 0.05$. Effect size cohen' d for increasing visuospatial thinking in the control group was 0.660 and the experimental group was 2.484 Effect size cohen' d for increasing concept mastery in the control group was 1.215 and the experimental group was 1.530. The results of the Spearman rank test showed a positive correlation between visuospatial thinking skills and concept mastery. This finding is reinforced by the analysis of qualitative answers from the Student Worksheet, which shows the skills of visualization indicators, representation, symmetry planes, and student translation in the activity of drawing molecular geometry sketches.

Keywords: Intertextual Learning; Visuospatial Thinking; Concept Mastery; Molecular Geometry; LMS.

DAFTAR ISI

DAFTAR GAMBAR

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DAFTAR LAMPIRAN

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