

## ABSTRAK

### EFEKTIVITAS PEMBELAJARAN *DISCOVERY* BERBANTUAN SIMULASI MOLEKUL UNTUK MENINGKATKAN KEMAMPUAN INTERPRETASI MAKNA REPRESENTASI KIMIA PADA MATERI TITRASI ASAM-BASA

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Penelitian ini bertujuan untuk mendeskripsikan efektivitas pembelajaran *discovery* berbantuan simulasi molekul untuk meningkatkan kemampuan interpretasi makna representasi kimia pada materi titrasi asam-basa, serta mendeskripsikan profil kemampuan interpretasi makna representasi kimia pada siswa setelah diberi perlakuan. Metode yang digunakan dalam penelitian ini adalah kuasi eksperimen dengan desain *the matching-only pretest-posttest group design*. Populasi pada penelitian ini adalah seluruh siswa XI IPA SMA Negeri 3 Bandarlampung Tahun Pelajaran 2022/2023. Sampel pada penelitian ini adalah kelas XI IPA 3 sebagai kelas kontrol dan kelas XI IPA 4 sebagai kelas eksperimen. Teknik analisis data yang dilakukan adalah uji perbedaan dua rata-rata menggunakan *independent sample t-test* atau uji t. Hasil penelitian menunjukkan bahwa nilai rata-rata *n-gain* siswa pada kelas eksperimen sebesar 0,54 yang berkategori sedang. Hasil uji t menunjukkan bahwa nilai rata-rata *n-gain* kemampuan interpretasi makna representasi kimia siswa di kelas eksperimen lebih tinggi dari nilai rata-rata *n-gain* kemampuan interpretasi makna representasi kimia siswa di kelas kontrol. Berdasarkan hasil penelitian, dapat disimpulkan bahwa pembelajaran *discovery* berbantuan simulasi molekul efektif untuk meningkatkan kemampuan interpretasi makna representasi kimia siswa. Profil kemampuan interpretasi makna representasi kimia siswa pada kelas yang diterapkan pembelajaran *discovery* berbantuan simulasi molekul ialah sebesar 17% siswa berkategori kurang, 27% siswa berkategori cukup, 53% siswa berkategori baik, dan 3% siswa berkategori sangat baik.

Kata kunci: pembelajaran *discovery*, simulasi molekul, titrasi asam-basa, kemampuan representasional

## ABSTRACT

### THE EFFECTIVENESS OF MOLECULAR SIMULATION ASSISTED BY *DISCOVERY* LEARNING TO IMPROVE THE ABILITY TO INTERPRET THE MEANING OF CHEMICAL REPRESENTATION ON ACID-BASE TITRATION

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This study aims to describe the effectiveness of molecular simulation assisted by *discovery* learning to improve the ability to interpret the meaning of chemical representations on acid-base titration, as well as describe the profile of the ability to interpret the meaning of chemical representations in students after being treated. The method used in this research is quasi-experiment with the matching-only pretest-posttest group design. The population in this study were all XI IPA students of SMA Negeri 3 Bandar Lampung in 2022/2023. The samples in this study were XI IPA 3 class as the control class and XI IPA 4 class as the experimental class. The data analysis technique used was the difference test between two means using independent sample t-test or t-test. The results showed that the average n-gain value of students in the experimental class was 0.54 which was categorized as moderate. The t-test results showed that the average n-gain value of the ability to interpret the meaning of chemical representations of students in the experimental class was higher than the average n-gain value of the ability to interpret the meaning of chemical representations of students in the control class. Based on the results of the study, it can be concluded that discovery learning aided by molecular simulation is effective to improve the ability of students' interpretation of the meaning of chemical representations. The profile of the ability to interpret the meaning of chemical representations of students in the class that applied discovery learning assisted by molecular simulation.

Keywords: *discovery* learning, molecular simulation, acid-base titration, representational competence