

ABSTRAK

EFEKTIVITAS *FLIPPED CLASSROOM* DENGAN KERANGKA *DEEP LEARNING* BERBASIS *MULTIPLE REPRESENTATIONS* PADA MATERI KESETIMBANGAN KIMIA UNTUK MENINGKATKAN KETERAMPILAN PROSES SAINS

Oleh

SAYU FENI SINTA DEWI

Penelitian ini bertujuan untuk mendeskripsikan efektivitas pembelajaran menggunakan strategi *flipped classroom* dengan kerangka *deep learning* berbasis *multiple representations* pada materi kesetimbangan kimia dalam meningkatkan keterampilan proses sains. Populasi penelitian meliputi seluruh peserta didik kelas XI.F SMA Negeri 15 Bandar Lampung Tahun Ajaran 2025/2026 yang berjumlah 175 peserta didik. Sampel ditentukan menggunakan teknik *purposive sampling*, dengan kelas XI.F.4 sebagai kelas eksperimen dan XI.F.5 sebagai kelas kontrol. Kelas eksperimen diberikan pembelajaran *flipped classroom* dengan kerangka *deep learning* berbasis *multiple representations*, sedangkan kelas kontrol menggunakan pembelajaran konvensional. Penelitian ini menggunakan metode *quasi experimental* dengan desain *nonequivalent pretest-posttest control group*. Analisis data dilakukan dengan menggunakan uji *Independent Sample t-test*. Hasil penelitian menunjukkan bahwa rata-rata *N-gain* keterampilan proses sains peserta didik pada kelas eksperimen sebesar 0,67 dengan kriteria sedang dan lebih tinggi secara signifikan dibandingkan kelas kontrol. Dengan demikian, pembelajaran *flipped classroom* yang terintegrasi *deep learning* berbasis *multiple representations* pada materi kesetimbangan kimia efektif dalam meningkatkan keterampilan proses sains peserta didik.

Kata kunci: *flipped classroom*, *deep learning*, *multiple representations*, keterampilan proses sains, kesetimbangan kimia

ABSTRACT

THE EFFECTIVENESS OF THE FLIPPED CLASSROOM WITH A DEEP LEARNING FRAMEWORK SUPPORTED BY MULTIPLE REPRESENTATIONS IN CHEMICAL EQUILIBRIUM MATERIALS TO ENHANCE SCIENTIFIC PROCESS SKILLS

By

SAYU FENI SINTA DEWI

This study aims to describe the effectiveness of learning using the flipped classroom strategy deep learning and supported by multiple representations in the topic of chemical equilibrium for improving science process skills. The study population consisted of all 175 students in Class XI.F.4 at State High School 15 in Bandar Lampung during the 2025/2026 academic year. The sample was selected using purposive sampling, with Class XI.F.4 serving as the experimental class and Class XI.F.5 as the control class. The experimental class received flipped classroom instruction integrated with deep learning supported by multiple representations, while the control class used conventional instruction. This study employed a quasi-experimental method with a nonequivalent pretest-posttest control group design. Data analysis was conducted using the Independent Sample t-test. The results of the study indicate that the average N-gain for students' science process skills in the experimental class was 0.67, which falls into the moderate category and is significantly higher than that of the control class. Thus, flipped classroom instruction integrated with deep learning based on multiple representations in the topic of chemical equilibrium is effective in improving students' science process skills.

Key words: flipped classroom, deep learning, multiple representations, science process skills, chemical equilibrium