

Utilizing Predict-Observe-Explain (POE) Strategy in Teaching Chemical Reactions: Basis for the Development of Supplementary Learning Materials (SLMs)

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Abstract

This study investigated the influence of the Predict-Observe-Explain (POE) strategy on the conceptual understanding of Grade 10 learners in Chemistry, specifically regarding Chemical Reactions. Employing a quasi-experimental research design, this study compared two intact classes at Tondo High School (SY 2026-2027): a control group taught via conventional lecture methods and an experimental group taught through the POE strategy. Baseline data indicated that the groups were academically comparable prior to the intervention ($t = 1.098 < 1.995$), with both the control ($M = 8.02$) and experimental ($M = 8.60$) groups exhibiting low initial conceptual mastery. Following the intervention, both groups demonstrated statistically significant growth; however, the experimental group achieved a higher post-test mean score ($M = 23.63$, $SD = 4.00$) compared to the control group ($M = 18.34$, $SD = 4.61$). A comparison of post-test 2 Philippine Christian University Graduate School of Education performance revealed a statistically significant difference between the two groups ($t = 6.228 > 1.995$, $p < .05$). The findings suggest that the POE strategy is associated with higher post-test performance and provides a structured opportunity for learners to confront and reconsider alternative conceptions regarding chemical processes. Based on these results, the study led to the development of Supplementary Learning Materials (SLMs) anchored in the POE framework to support secondary science teachers in implementing inquiry-based instruction. The research concludes that the POE strategy demonstrates potential as an effective instructional approach for fostering conceptual mastery and addressing instructional challenges within the MATATAG Science Curriculum.

Keywords: *Predict-Observe-Explain (POE) Strategy, Chemical Reactions, Quasi-Experimental Design, Science Education, Supplementary Learning Materials (SLMs)*

