ABSTRAK

Hidayat, Taufik. 2025. Pengembangan LKPD Elektronik Berbasis *Process Oriented Guided Inquiry Learning* (POGIL) Pada Materi Perhitungan Kimia MA Madani Bintan. *Thesis. Tanjungpinang: Magister Pedagogi, Pascasarjana, Universitas Maritim Raja Ali Haji. Pembimbing I:* Dr. Tety Kurmalasari, M.Sc. *Pembimbing II:* Dr. Zaitun, S.S., M.Ag.

Kata kunci: E-LKPD, POGIL, *Scratch*, Perhitungan Kimia, Penelitian dan Pengembangan.

Materi perhitungan kimia merupakan bagian fundamental dalam pembelajaran kimia yang menuntut pemahaman konsep dan keterlibatan aktif peserta didik, namun pembelajaran yang masih bersifat konvensional sering berdampak pada rendahnya hasil belajar. Penelitian ini bertujuan untuk mengembangkan E-LKPD berbasis *Process Oriented Guided Inquiry Learning* (POGIL) pada materi perhitungan kimia serta menguji tingkat validitas, kepraktisan, dan efektivitasnya. Penelitian menggunakan metode *Research and Development* (R&D) dengan model ADDIE, dan produk dikembangkan menggunakan platform Scratch sesuai sintaks POGIL. Subjek penelitian adalah peserta didik kelas X MA Madani Bintan, dengan pengumpulan data melalui lembar validasi ahli, angket respons guru dan peserta didik, serta tes pretest dan posttest. Hasil penelitian menunjukkan bahwa E-LKPD memiliki tingkat validitas sangat tinggi dengan persentase penilaian ahli materi sebesar 90,25% dan ahli bahan ajar sebesar 89,50%, serta dinyatakan sangat praktis berdasarkan respons guru sebesar 90,25% dan peserta didik sebesar 88,50%. Efektivitas E-LKPD ditunjukkan oleh peningkatan nilai rata-rata hasil belajar peserta didik dari 58,40 menjadi 82,60 dengan nilai N-Gain pada kategori sedang, hasil uji Wilcoxon Signed-Rank Test yang menunjukkan terdapat perbedaan signifikan antara nilai pretest dan posttest ($p < 0,05$), serta nilai *effect size* pada kategori besar, sehingga dapat disimpulkan bahwa E-LKPD berbasis POGIL efektif meningkatkan hasil belajar peserta didik pada materi perhitungan kimia.

ABSTRACT

Hidayat, Taufik. 2025. Development of an Electronic Student Worksheet Based on Process Oriented Guided Inquiry Learning (POGIL) on Chemical Calculations at MA Madani Bintan. Thesis. Tanjungpinang: Master of Pedagogy, Graduate Program, Universitas Maritim Raja Ali Haji. Supervisor I: Dr. Tety Kurmalasari, M.Sc.; Supervisor II: Dr. Zaitun, S.S., M.Ag.

Keywords: Electronic Student Worksheet, POGIL, Scratch, Chemical Calculations, Research and Development.

Chemical stoichiometry is a fundamental topic in chemistry learning that requires conceptual understanding and active student engagement; however, conventional teaching practices often result in low learning outcomes. This study aimed to develop an electronic student worksheet (E-LKPD) based on Process Oriented Guided Inquiry Learning (POGIL) for stoichiometry materials and to examine its validity, practicality, and effectiveness. The study employed a Research and Development (R&D) method using the ADDIE model, and the product was developed using the Scratch platform in accordance with the POGIL learning syntax. The research subjects were tenth-grade students of MA Madani Bintan. Data were collected through expert validation sheets, teacher and student response questionnaires, and pretest–posttest assessments. The results indicated that the developed E-LKPD demonstrated a very high level of validity, with material expert validation at 90.25% and instructional media expert validation at 89.50%, and was categorized as very practical based on teacher responses of 90.25% and student responses of 88.50%. The effectiveness of the E-LKPD was evidenced by an increase in students' average learning outcomes from 58.40 to 82.60, with an N-Gain score in the moderate category. Furthermore, the Wilcoxon Signed-Rank Test revealed a statistically significant difference between pretest and posttest scores ($p < 0.05$), and the effect size was classified as large, indicating that the POGIL-based E-LKPD was effective in improving students' learning outcomes in stoichiometry.