

ABSTRACT

Edwin Pakpahan, NIM 4223131073 (2026). Development of an Innovative Redox Reaction E-module Based on Project Based Learning (PjBL) Integrated with Ethnopedagogy.

Chemistry learning, particularly on redox reaction material, is often perceived as abstract and less contextual. At SMA Negeri 2 Percut Sei Tuan, the implementation of Project-Based Learning (PjBL) and the integration of local wisdom have not been optimally applied. This study aimed to develop an innovative redox reaction e-module based on PjBL integrated with the ethnopedagogical value of tuak fermentation. The research employed a Research and Development (R&D) approach using the 4D model (Define, Design, Develop, and Disseminate). The scope of this research was limited to the dissemination stage, with a focus on evaluating product feasibility and user responses without conducting large-scale implementation. The study was conducted in the even semester of the 2025/2026 academic year involving 33 students of class XII Science. At the development stage, validation was conducted by three chemistry lecturers from Universitas Negeri Medan and three chemistry teachers. Lecturer validation results showed an average score of 87.10% for material aspects and 87.22% for media aspects, both categorized as very feasible. Teacher validation produced an overall average of 95.18%, with material validation averaging 95.24% and media validation 95.13%, also categorized as very feasible. During the disseminate stage, student responses reached an average of 89.20% (very good), while teacher responses achieved 93.30% (very good). These findings indicate that the developed e-module is feasible, practical, and positively received. The integration of local wisdom within the PjBL framework enhances students' conceptual understanding, engagement, and appreciation of cultural values, while demonstrating the potential of digital instructional materials to connect scientific concepts with traditional practices in a meaningful learning context.

Keywords: E-module, Ethnopedagogy, Local Wisdom, Project-based learning, Redox Reaction