

ABSTRACT

Ester Ndruru, NIM 4223131066 (2026). Development of E-Module Based on Problem Based Learning (PBL) Model Using Canva on Chemical Bonding.

This study aims to determine the results of the initial needs analysis, feasibility, effectiveness, and student responses to the development of Problem-Based Learning (PBL)-based e-modules using Canva on the topic of molecular geometry. This study employed the Research and Development (R&D) method using the 4D model (Define, Design, Develop, Disseminate) and was conducted at State Senior High School 2 Medan with 35 students from class X-6. The needs analysis results indicate that students face difficulties in understanding the abstract concept of molecular structures and that there are limitations in learning media that support visualization. The validation results indicate that the e-module is highly feasible for use, with overall material validator percentage of 89.38% and a media feasibility percentage of 90.56%. The effectiveness of the e-module was demonstrated through improved learning outcomes, with the average pretest score of 39.29 increasing to 82.43 on the posttest. The N-gain value of 0.71 falls into the high category, indicating that the e-module is highly effective in enhancing students' understanding. Student responses to the e-module were also very positive, with an average percentage of 85.33% (strongly agree category), covering aspects of appeal, ease of use, and effectiveness. Thus, the PBL-based e-module using Canva is deemed feasible, effective, and receives a positive response in chemistry learning, particularly regarding molecular structure.

Keyword: 4D Model, E-Module, Problem-Based Learning (PBL), Canva, Molecular Geometry.