

The effectiveness of problem-based learning on form two Students' academic performance in balanced diet subtopic

ABSTRACT

Traditional teaching methods in science education are increasingly recognised as ineffective, often hindering students' understanding of concepts. While Problem-Based Learning (PBL) is acknowledged for its efficacy in fostering problem-solving skills, its adoption in Malaysian secondary schools remains nascent. This study investigates the impact of PBL on Form Two students' academic performance in the "Balanced Diet" subtopic, addressing challenges posed by traditional methods and the perception of science as daunting and unengaging. Employing a quasi-experimental design with a quantitative approach, the study involved 30 Form Two students from SMJK Shan Tao, divided into experimental (PBL) and control (traditional methods) groups. Pre-test and post-test assessments, comprising 15 multiple-choice questions, were conducted to evaluate academic performance. Analysis using independent-sample t-tests in SPSS version 29.0 indicated no significant difference in pre-test scores between groups ($t(30) = -1.486, p > .05$), but significant post-test improvement in the experimental group ($t(30) = -6.570, p < .05$). These findings suggest that PBL effectively enhances academic performance in the "Balanced Diet" subtopic, supporting its integration in science education to promote critical thinking and engagement. Further research should explore PBL's long-term effects across diverse subjects with larger sample sizes for broader applicability.