



ENGAGEMENT IN CHEMISTRY LABORATORY EXPERIMENTATION OF SENIOR HIGH SCHOOL LEARNERS TOWARDS THE DEVELOPMENT OF INTERVENTION PROGRAM

BERNADETTE H. MANALO

Chemistry laboratory experimentation plays a vital role in deepening students' understanding of scientific concepts through hands-on learning and inquiry. However, many senior high school learners face challenges which hinder meaningful engagement. This study aimed to assess the level of engagement of Senior High School STEM learners in chemistry laboratory experimentation and to develop an intervention program based on identified challenges. Utilizing a descriptive research design, the study surveyed 284 Grade 11 and 12 STEM learners from five public senior high schools in Area 3 of Batangas Province through a researcher-made and validated questionnaire. Statistical tools such as weighted mean, Pearson r correlation, and t-test were used to analyze the data. Findings revealed that while students demonstrated moderate engagement in laboratory experimentation—particularly in equipment use, collaboration, and real-world application—they faced challenges such as limited facilities, time constraints, and inadequate troubleshooting skills. Statistical analysis confirmed a significant relationship between the level of engagement and the challenges encountered. In response, an evidence-based intervention program was developed focusing on five core areas: (1) optimizing laboratory time through pre-lab preparation, modular experiment design, and streamlined setup protocols; (2) expanding access through virtual labs, supervised open lab sessions, and take-home mini-lab kits; (3) simplifying complex procedures via visual guides, scaffolded instruction, and peer support; (4) maximizing existing resources through inventory planning, low-cost alternatives, and partnerships; and (5) ensuring equitable group participation through defined student roles, structured group processing, and combined individual-group assessments. The intervention aims to create a more inclusive, accessible, and engaging laboratory environment that promotes student motivation, enhances scientific skills, and strengthens conceptual understanding in chemistry.

Key Words: Chemistry Laboratory Engagement, STEM Education, Laboratory Challenges, Science Instruction, Intervention Program

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