



EFFECTIVENESS OF PROJECT CIPHER IN ENHANCING JAVA PROGRAMMING PROFICIENCY AND PARTICIPATION AMONG GRADE 12 ICT STUDENTS

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ABSTRACT

This action research evaluated the effectiveness of Project CIPHER (Coding Innovation Program for Holistic Engagement and Reinforcement) in enhancing Java programming proficiency, participation, and real-world application among Grade 12 Information and Communications Technology (ICT) students of Lemery Senior High School during the School Year 2023–2024. Specifically, it sought to determine students' baseline Java programming proficiency based on a diagnostic assessment, assess their performance in hands-on learning activities, examine their level of participation in project activities, and evaluate their ability to apply Java programming concepts through the development of real-world applications. The study employed a descriptive action research design involving ninety-one (91) Grade 12 ICT students selected through total population sampling. Data were gathered through a diagnostic assessment, hands-on activity records, participation records, and project outputs. Frequency counts, percentages, mean scores, and ranking were used to analyze the data. Findings revealed learning gaps in several Java programming competencies, particularly in loop constructs, data types, and decision structures. Following the implementation of Project

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CIPHER, students demonstrated a 31% increase in performance, achieved a 90% participation rate, and attained a 100% success rate in developing Java-based applications through eighteen project groups. The study concludes that Project CIPHER was an effective intervention for improving programming proficiency, participation, and authentic application of learning. It is recommended that the project be sustained, institutionalized, and adapted for future ICT learners.

Keywords: *Project CIPHER, Java Programming, ICT Education, Student Participation, Action Research*



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