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Mathematics Education

**STRUCTURED PROBLEM-SOLVING IN MATHEMATICS EDUCATION:
ENHANCING REASONING, ACCURACY, AND CONFIDENCE AMONG
BILINGUAL LEARNERS**

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Problem-solving skills are crucial for students' development of foundational mathematics, such as conceptual understanding, accuracy, reasoning, and confidence. This study examines how an organised approach to problem-solving affects students' performance in a bilingual secondary school classroom in North Central Province, Sri Lanka. The objective was to determine how systematic teaching methods affect students' mathematical confidence, accuracy, and logical reasoning. Quantitative tests and qualitative information from students' interviews and classroom observations were combined in a mixed-methods methodology. Students were led through a series of processes in the structured technique, including comprehending the problem, determining known and unknown variables, choosing suitable approaches, methodically solving the problem, and confirming the result. Instructions were given bilingually in Sinhala and English to improve understanding and lessen cognitive burden. The findings showed that students' accuracy in problem-solving and logical thinking had significantly improved. About 85% of the students show more confidence when overcoming difficulties in mathematics. Furthermore, bilingual education reduces cognitive strain by roughly 40%, indicating that it promotes improved understanding of mathematical concepts and language. These results demonstrate how well-structured approaches to problem-solving can raise mathematical competency. Additionally, the study highlights how crucial bilingual education is to enhancing students' comprehension in multilingual classrooms. The information offered by this study can assist teachers in providing more effective support for bilingual students in mathematics classes.

Keywords: Bilingual students, Logical reasoning, Mathematics education, Structured problem-solving