A Study of Students' Conceptual and Procedural Knowledge in Learning Mathematics at the Middle School Level

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Abstract

The purpose of this study is to study students' conceptual and procedural knowledge in learning mathematics at the middle school level. Quantitative methodology was used to study students' conceptual and procedural knowledge, students' mathematics achievement and their misconception in performing mathematics problems. The design adopted in this study was a descriptive research design. Twelve high schools were randomly selected from four townships of four districts in Yangon Region. The population in this study consisted of (783) Grade Seven students. It was employed two instruments: a questionnaire for students' conceptual and procedural knowledge and a mathematics achievement test. For obtaining reliability of the instruments, the pilot test was administered. The internal consistency (Cronbach's Alpha) of questionnaire and of achievement test was (.891) and (.760) respectively. As a result of one-way ANOVA, there were significant differences in students' conceptual knowledge (F (2, 780) = 60.575, p< .001) and procedural knowledge (F (2, 780) = 69.242, p< .001) in terms of their achievement group. In this study, it was found that students' procedural knowledge is higher than their conceptual knowledge. In addition, it was also found that students had more misconceptions about procedural knowledge rather than about conceptual knowledge. Moreover, Pearson product-moment correlation result revealed that students' conceptual knowledge was positively correlated with their procedural knowledge (r = .612, p< .01). Similarly, students' conceptual and procedural knowledge was positively correlated with their achievement (r = .507, p< .01).

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