
Examining the level of secondary level mathematics teachers' pedagogical content knowledge in algebra

Rupasinghe D.D.^{1*}, Amarasinghe A.K.² and Vitharana P.R.K.A.³

¹*Amarasuriya Teachers' College, Unawatuna, Galle. Sri Lanka.*

²*Department of Mathematics, Faculty of Science, University of Peradeniya, Peradeniya, Sri Lanka.*

³*Department of Education, Faculty of Arts, University of Peradeniya, Peradeniya, Sri Lanka.*

Teachers' knowledge is considered to be a factor influencing student learning outcomes. Pedagogical Content Knowledge (PCK) is defined as the manner in which a teacher's content knowledge on a subject and pedagogical knowledge are related. Recent research on PCK has indicated that mathematics teachers' PCK is very low and it influences on students' understanding negatively. This study was focused on measuring the secondary level mathematics teachers' PCK in algebra, in the Galle education zone. A survey research design was used to conduct the study. A questionnaire, prepared with the help of five subject specialists, was used to collect data. The data obtained from 281 teachers who submitted complete answers to the questionnaire were analyzed quantitatively using SPSS (version 25) statistical software. The mathematics Teachers' PCK was measured in terms of addressing students' misconceptions and promoting students' algebraic thinking. The items of the questionnaire consisted of declarative, procedural and conditional knowledge categories. The correlation between the declarative, procedural and conditional knowledge with PCK was significant at 0.01 level (2- tailed) and concluded a good relationship among them. The study results revealed that 82.5% of participants were in the medium level of their PCK while 1.8% and 18.5% were in the low and high levels respectively. The mean and the standard deviation were 43.33 and 6.99 respectively. It revealed that the teachers' PCK is in the medium level. We invented that the mathematics teachers' PCK is not in a satisfactory level. Therefore, in order to enhance the students' mathematics understanding, the secondary level mathematics teachers' PCK should be professionally enhanced.

Keywords: Algebra, Algebraic thinking, Misconceptions, Pedagogical content knowledge, Secondary level mathematics teacher

*Corresponding author: deepadayangan@gmail.com