Status of teachers’ proficiency in mathematical knowledge for teaching at secondary school level in Kenya.


Summary: Mathematical knowledge for teaching (MKT), defined by D. Loewenberg Ball [“With an eye on the mathematics horizon, dilemmas of teaching elementary school mathematics”, Elem. Sch. J. 93, No. 4, 373–397 (1993; doi:10.1086/461730)] as knowledge that is needed to teach mathematics, has been used as a framework by researchers to interrogate various aspects of teaching and learning mathematics. In this article, which draws from a larger study, we show how an in-depth analysis of MKT can illuminate what teachers know and need to learn. This study described here uses MKT theory [D. Loewenberg Ball et al., “Content knowledge for teaching: what makes it special?”, J. Teach. Educ. 59, No. 5, 389–407 (2008; doi:10.1177/0022487108324554)] to develop an assessment tool, the MKT proficiency status tool, to measure and describe teachers’ MKT by proficiency status. The study explores Kenyan teachers’ interpretations of secondary school students’ unusual problem solving solutions from across five mathematics strands. In this article, we share findings from data collected using a MKT task questionnaire. Data were analyzed using descriptive statistics and interpreted against the MKT proficiency status tool continuum of fluent, partially fluent, and inadequate. The teacher was the unit of analysis. Findings from the study indicate that teachers’ levels of fluency were not consistent either by mathematical strand or by assessed MKT component. A fluency rate of 9.1% for mathematical strands and 1.7% for MKT components was found. The overall description of MKT proficiency status for this study was found to be partially fluent. From this study, we argue that the MKT proficiency status tool details and illuminates teachers’ professional development needs and enables an in-depth analysis of their MKT proficiency status.

Classification: D39 D69 C39

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