PROPOSED PEDAGOGICAL CONTENT KNOWLEDGE TOOL FOR ASSESSING TEACHERS' PROFICIENCY IN MATHEMATICAL KNOWLEDGE FOR TEACHING

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Studies have indicated that the development of mathematical knowledge for teaching (MKT), mathematics knowledge that is specifically useful in teaching mathematics, is rooted in the experiences afforded to teachers in their daily work (Ball, 1993). To determine the role of teaching experience in the development of mathematical knowledge for teaching, a tool was developed to capture all the MKT tenets and their combinations for analysis for teacher's proficiency in MKT. This article shares the evolved tool for assessing teachers proficiency in MKT and provides its effectiveness in examining the relationship between years of teaching experience and the development of mathematics knowledge for teaching (MKT) . This example was drawn from a larger study on MKT proficiency status carried out in Kenya involving 117 trained secondary school mathematics teachers with varying levels of years of teaching experience and academic backgrounds. Though the tool takes on a qualitative ensemble it is used to analyze and interpret both quantitative and qualitative data. In this example data analyzed was collected on teacher-interpretations of students' problem solving strategies using questionnaires, classroom observation schedules and interviews. Data was coded using the study's developed MKT rubrics for the determination of teacher's proficiency. Both descriptive and inferential statistics can be interpreted accurately using this tool. In this example. data was analyzed using the ANOVA technique. When years of experience was regressed against MKT proficiency status tool (Miheso and Margot 2016), a very weak positive relationship (ß= 0.171) was found. The study found no significant difference of facilitating learning between teachers with more than 15 years and those with less than five years of teaching experience irrespective of class composition by gender. The tool validated the study finding that MKT proficiency is not progressive and it is non directional and can regress based on quality of classroom interactions. From this finding we argue that this pedagogical tool can sufficiently be used to discuss exhaustively teachers' MKT proficiency.

Key words: MKT, PCK tool, teaching experience, PCK proficiency

References

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