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Exploring evaluative criteria and modes of representation in early number teaching across English and Sepedi medium classrooms

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ABSTRACT

In South Africa, Hoadley (2007 & 2008) has investigated evaluative criteria at the classroom level and focused on differences between teachers' use of evaluative criteria in working class and middle-class schools. Such studies have not investigated how language(s) of teaching and learning might interact with the ways in which evaluative criteria are transmitted or taken up. In the field of primary mathematics, a lack of progression from counting to calculation strategies and reliance on concrete modes of number representations during the teaching and learning of number has been noted in earlier research (e.g. Ensor, Hoadley, Kühne, & Schmitt, 2009; Schollar & Schollar, 2008). Given the reliance on concrete modes of representation and Hoadley's (2007) evidence pointing to the absence of evaluative criteria, this study sought to investigate what teachers transmitted as evaluative criteria and how modes of representation featured in what was transmitted in the context of language.

Two English and two Sepedi medium grade 3 mathematics teachers participated in this study. A total of 16 lessons (Four lessons from each teacher) on the teaching of early number, additive and multiplicative relations were observed, and video recorded. A grounded theory analysis of the 16 lessons led to the development of a framework that combined attention to evaluative criteria (EC) and moves between modes of representation (MoR) considered in relation to multilingual (ML) and mathematical (MM) moves: the EC/MoR – Framework. The EC/MoR framework is the major contribution of this study.

Using EC/MoR framework, I report on a range of levels of evaluative criteria teachers transmitted and variations in how ML and MM representations were used across the two language groups. General finding of this study showed that lower levels of the evaluative criteria were associated with more limited moves between modes of representation across ML and MM while higher levels of evaluative criteria more often included a network of moves between modes of representation. An important aspect of difference between the two language settings was evidence of much greater prevalence of very basic

‘restatement’ moves between the oral and the symbolic modes of representation with teaching in the Sepedi medium classrooms in comparison to the teaching in the English medium classrooms where there was evidence of moves between representations involving concrete, iconic and number-based modes alongside oral working.

Keywords: Evaluative criteria, modes of representation, number, additive relation, multiplicative relations, language, moves between representations, multilingual moves, mathematical moves