

**THEMES, PARADIGMS AND THEORIES IN RESEARCH ON THE PROFESSIONAL  
DEVELOPMENT OF MATHEMATICS TEACHERS IN SOUTH AFRICA: 2006-2015**

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In this paper I explore the dominant themes, paradigms and theories in research on the professional development (PD) of mathematics teachers in South Africa for the period 2006 – 2015. Following detailed electronic searches, I conducted a meta-analysis of the relevant literature covering about 60 peer reviewed journal articles and 50 peer reviewed conference proceedings papers. In this analysis I map the dominant themes that include mathematical knowledge for teaching (e.g. Kazima et al., 2008; Adler & Ronda, 2015; Berger, 2013; Brodie & Shalem, 2011; Wessels & Nieuwoudt, 2011; Venkat & Adler, 2012; Mhlolo et al. 2012), mathematical content knowledge (e.g. Bansilal, 2011; 2014; Ndlovu & Mji, 2012, Lampen, 2015), pedagogical content knowledge (Berger, 2013; Wessels & Nieuwoudt, 2013), pedagogical knowledge (e.g. Aldridge et al., 2009), PD curriculum design (e.g. Julie, 2009, Julie et al, 2011; Graven et al. 2012; Kaino et al., 2015; Plotz et al. 2012; Adler & Davis, 2006; Ndlovu, 2014), ICT integration (e.g. Stols et al., 2008; 2015; Gierdien, 2014; Berger, 2011), impact studies (e.g. Ndlovu, 2011a; 2011b). What are the research questions answered? What factors influence theme choice? Since SA learners continue to underperform in international benchmark tests, what are the recommendations for future research?

I also map the dominant theories (e.g. Vygotskian socio-cultural theory, situated learning, professional learning communities, etc.) that underpin these studies, and their predominantly global north origins to see how (dis)connected to the dominant theoretical discourses SA research is. Are the dominant theories adequate in addressing the South African conundrum? I also examine the dominant paradigms (e.g. traditional positivist, post-positivist, interpretive, critical, postmodern, pragmatic, and multi-paradigmatic) as well as any shifts in emphasis that have taken place over time. Who is conducting the research, on whom, what and why? What are the power relations between researchers and teachers? Some critics of South African mathematics education research generally (e.g. Adler) have pointed to the bias towards small scale qualitative research. I examine factors influencing that bias and the extent to which such bias succeeds or fails to impact policy and practice. What factors constrain or militate against the conduct of large scale quantitative research which would otherwise have better indications of intervention impact? What are the new directions that the research agenda on mathematics teacher professional development ought to take?

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