

**The implementation of a mandatory mathematics curriculum in South Africa:
The case of mathematical literacy**

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I dedicate this dissertation to

Kyriaco & Panayiota

My Parents

My Inspiration to Knowledge and Love

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SUMMARY

What happens when teachers are required to implement a mandatory mathematics literacy curriculum whose purposes and pedagogy is distinctly different from that of mathematics curricula of the past? More specifically: How do teachers beliefs and understandings of the curriculum affect the implementation pathway of a mathematics reform intended for ALL?

In 2006 the national Department of Education of South Africa introduced a new curriculum into the mathematics landscape, namely Mathematical Literacy. This curriculum, which is markedly dissimilar in pedagogy, politics and purposes from past mathematics curricula, was introduced as a mandatory alternative to mathematics in the senior secondary phase of schooling; not as an integral component of mathematics curricula but as a unique subject of its own. It recognizes that every adult and therefore every child can and should do some form of mathematics.

This research focuses on the implementation of this new curriculum in a context where mathematical literacy levels are not only unacceptably low among pupils leaving secondary schooling but also among many teachers charged with delivering mathematics education to the learners in South Africa. The three research questions guiding this study are:

- 1) What do teachers understand to be the purposes, problems and possibilities contained in the mathematical literacy curriculum?
- 2) How do teachers proceed to implement the mathematical literacy curriculum in their classrooms?
- 3) Why do teachers implement this curriculum in the ways they do? In other words, what explains the implementation pathways followed by the mathematical literacy curriculum in real classroom contexts?

A review of the literature on curriculum and policy implementation revealed broad encapsulating themes that provide lenses for reform failure. It also provided a perspective that calls for domain specific research. Following on this, the study articulated a broader conceptual framework premised on the perception that a deep understanding of a curriculum is required, for contemporary reforms in mathematical literacy, especially if the goal is to pursue deep change in instructional practices and beliefs. Within this framework, three propositions were generated and then later tested against the emerging data:

Proposition one: Teachers may not have a deep understanding of the purposes, problems and possibilities contained in the Mathematical Literacy curriculum.

Proposition two: Teachers implement the Mathematical Literacy curriculum in their classroom using beliefs and pedagogies that are already entrenched in their practice.

Proposition three: Teachers implement mathematical literacy only because it is a mandatory subject and not because of any strong conviction of the inherent value of this curriculum.

A qualitative research design was used which included two in-depth case studies against the backdrop of a snapshot survey of fifty-four mathematical literacy teachers as an embedded unit of analysis. Using evidence from an array of data collection instruments, the study found that the two educators had a superficial understanding of the intentions of the curriculum both in terms of required pedagogy and purpose of the reform. For both educators the teaching of mathematics in context was outside their paradigm of understanding as was their limited grasp of the 'spirit' of this new reform. What was further revealed was that educators teaching mathematical literacy felt and expressed an overwhelming threat to the status of their professional teaching identity.

The explorative study concludes with implications for future studies and professional teacher development. It also further expands on why a strong theory of action is mandatory if the challenges of complex curriculum change are to be met.

Key words: mathematical literacy, curriculum reform, curriculum implementation, deep change, mathematics in context, theory of action, theory of change, teacher identity, 'spirit' of reform, nature of mathematics

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