

Threshold Concepts in Primary Mathematics

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Mathematics requires teachers to make decisions daily and often spontaneously about meaningful connections between concepts and instructional activities. Various curricula have attempted to simplify this process, while recognising that teaching is complex and nuanced. Curricula have centred around ‘Big Ideas and Understandings’ (Randall, 2005), ‘Powerful Ideas’ (Schwartz, 2008), and ‘Key Developmental Understandings’ (Simon, 2006), ‘Big Ideas in Number’ (Siemon, 2012), all endeavour to provide a framework for teachers to facilitate students in accommodating and assimilating new ideas.

This current study uses the Threshold Concept Framework (Meyer, 2003) to identify concepts that are transformative for learners to become mathematical thinkers. These concepts are not necessarily the same as ‘core,’ ‘fundamental,’ or ‘central,’ rather they irreversibly alter the way the learner thinks about the subject knowledge. Very often, these concepts are troublesome to learn as they may be counterintuitive, are understood in a particular way, and they connect other concepts across the discipline. This project aims to explore how primary teachers recognise and use these concepts in their everyday classroom teaching.

A literature search revealed minimal evidence of Threshold Concepts having been identified in primary mathematics; therefore, the initial stages of this study used a Delphi survey to identify Candidate Threshold Concepts. A content analysis of the Australian curriculum determined where and how often these concepts occurred. The remaining questions are:

- To what extent do teachers recognise these Threshold Concepts in the curriculum?
- To what extent is the teachers’ knowledge of these Threshold Concepts reflected in their pedagogy?

The purpose of the roundtable is to share the Candidate Threshold Concepts and to discuss how these concepts, e.g. partitioning, might be used as threads to pull together a wide and encompassing curriculum in an effective and manageable manner for a generalist primary teacher.

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