

Powerful pedagogical knowledge: attending to the quality of teachers' knowledge

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Conference abstract

The utilitarian view of mathematics (Ernest, 1991) as a 'tool' subject which equips pupils with the skills for solving problems, seems to have been better represented in the construction of the school curriculum for mathematics in England over the years. However, there is an imperative need of recognising mathematics as a school discipline in itself (Smith, 2004; Crisan, 2011).

To support the teaching mathematics for its disciplinary and intellectual value, researchers identified two key aspects of mathematics teachers' knowledge (Ball, 1991), namely knowledge about the discipline and its nature. The focus of research in this area has since been mainly on how a teacher should understand the content that they teach, that of school mathematics and so the domains of the Maths Knowledge for Teaching framework (Ball et al., 2008) have local features, relating primarily to the school mathematics curriculum.

However, recent research that has started focusing on more advanced mathematics knowledge (outside the typical scope of a school mathematics curriculum) has indicated that this body of knowledge is necessary and useful to functioning effectively as a teacher of mathematics at school level (Zaskis & Leikin, 2010).

In this paper we provide empirical evidence showing that the quality of teachers' knowledge (Winch, 2013) could be further supported through teacher education approaches that make explicit connections between these bodies of knowledge, namely academic maths and school mathematics. Such knowledge empowers teachers pedagogically in ways that allow for creating a solid foundation for development of further, more advanced ideas of the discipline of mathematics.

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