

LOST IN SPACE: PRIMARY TRAINEE TEACHERS' SPATIAL SUBJECT KNOWLEDGE AND THEIR CLASSROOM PERFORMANCE

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The knowledge of mathematics that elementary teachers bring to their teaching is recognised as a significant influence on how successfully they teach mathematics (Fennema and Franke, 1992; NRC, 2001) yet this is more complex than simply requiring a grasp of mathematics content (Ball, 1990; Ma, 1999). A number of studies have examined trainee elementary teachers' knowledge of number, and how this knowledge is related to their teaching competence (for example, Rowland *et al*, 2000). This study extends this work to examine graduate primary school trainee teachers' knowledge and understanding of spatial concepts.

The theoretical framework being developed for this study builds on suggestions that Shulman's (1986) model of teacher knowledge may be too simplistic (see, for instance, Cochran, DeRuiter and King, 1993) and incorporates Ma's (*ibid*) notion of "profound understanding of fundamental mathematics" (PUFM). One aim of the study is to determine what form of geometrical knowledge is needed for the effective teaching of spatial concepts.

Data comes from audits of trainee teacher knowledge and confidence together with assessments of their teaching competency. Initial analysis of this data indicates that the trainees' knowledge of geometry is quite poor, certainly poorer than their knowledge of number or algebra. They appear not to recall some topics, may never have met others (for example, the nets of solids), and are unable to solve relatively simple problems such as calculating the surface area of a triangular prism.

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