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**12.30HRS – 13.30HRS**

**FRIDAY**

**Pre-service elementary teachers' geometric subject knowledge and their classroom performance**

One outcome of the implementation of the National Numeracy Strategy at the primary school level in England is the privileging of the teaching and learning of number. Yet, as the recent Royal Society and Joint Mathematics Council (2001) report on geometry stresses, it is important to begin the developing of spatial thinking and reasoning at this level. This study considers the trainees' geometric subject knowledge confidence and competence and investigates the impact of these on classroom performance.

Data for this study come from audits of pre-service elementary 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. The analysis indicates that although there are clearly some statistically significant correlations within the different elements considered, the only significant factor identified so far in the study with regard to the summative mathematics teaching grade, is the trainees mathematical background. Most interestingly, the result that was closest to a zero correlation was 'interest' verses 'summative math teaching grade'.

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). 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.

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