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CURRENT REPORT

‘Ability’ in primary mathematics education: patterns and implications

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The research reported here presents results from my doctoral study into the notion of ability in primary mathematics. The notion of ability is a powerful ideology in the UK and underscores a long history of segregated education. Setting – grouping pupils between classes by ability for specific subjects – is common in secondary mathematics in the UK, is encouraged by the Government (e.g. Gove 2007) and is becoming increasingly common in primary schools (Hallam, Ireson and Davies 2004). Secondary mathematics studies suggest that ability-grouping has a negligible overall effect on attainment (Hallam 2002), and whilst the impact on attitudes is inconclusive; polarisation of attitudes appears to increase with ability-grouping. There is, however, relatively little research into the impact of the notion of ability in primary mathematics. This research begins to address this gap.

The research involved a total of 284 Year 4 (ages 8–9) and Year 6 (ages 10–11) pupils in two schools, one using a high degree of setting for mathematics and one using limited setting. Attainment tests and Nicholls et al.’s (1990) attitudinal questionnaire were conducted as pre- and post-tests with the full cohort in October 2007 and July 2008. Over this period, 48 mathematics lessons involving 13 sets/classes were observed, and 48 interviews were conducted with 24 focal pupils and eight teachers to explore their productions and experiences regarding the notion of ability. Qualitative data, reported here, were analysed using constructivist grounded theory (Charmaz 2006), together with Spradley’s (1979) organising domains.

The findings presented here provide an overview of the themes arising across the research. A key issue to emerge was that discourses of ability were pervasive across both schools. In the same way as it is argued that we have lost the capacity to see our everyday use of the notion of intelligence as in any way peculiar (White 2006), teachers appeared to lack awareness of how pervasive the notion of ability is, and how much it impacts on teaching and learning. Teachers were not always aware of the extent to which they were engaged in ability-predicated practices, reproducing many of the experiences they had as pupils (Hodgen and Marks 2009).

Almost all pupils believed that mathematical ability was hereditary and genetically determined. All pupils expressed beliefs that only some individuals could be good at mathematics, and that this was dictated by being born to be good at mathematics or not. In holding a belief that mathematical ability was something individuals were born with, these pupils also expressed a conviction that any

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individual, including themselves, would not be able to improve on their attainment in mathematics. The majority of pupils, particularly those placed in lower sets, felt powerless to effect group movement, and one outcome of this may be that any effort put into change is limited. Statutory assessments and tests connected with secondary school selection were found to reinforce segregating practices and strengthen pupils' beliefs that mathematical ability is a fixed quantity that cannot be changed.

This research suggests that, despite the different cultures of primary and secondary mathematics education, many of the issues raised in the secondary mathematics education literature on ability appear also to be issues for primary mathematics. This is an important finding given the rise of ability-predicated practices, for instance various forms of ability-grouping and statutory testing, in primary mathematics. The wider study explores more fully the impacts of the notion of ability in primary mathematics and examines issues of reproduction and transformation of ability-predicated structures. Whilst change will be very difficult given the strength of our ability-based ideology in mathematics education, the study examines possibilities for change, in particular through greater teacher engagement.

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