

Analysis of young children's achievements in measuring 'time'

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The English national curriculum includes 'time' as a key element within the measures section with the expectation that seven year old children achieving above average in their Key Stage One assessment tests (attaining level 3) will be able to "use standard units of time in a range of contexts" (DfEE/QCA 1999). An initial analysis of the results of these tests shows that many children who attain level 3 are still unable to fulfil the requirements with respect to time, for example to draw the hands on a clock face accurately to indicate the time "half a hour after nine o'clock", or to calculate a finishing time given the starting time and duration, where the calculation requires movement across the next hour. The conclusions drawn (e.g. QCA 2001) are that teachers are not teaching children sufficiently in the early years of schooling to read the clock face and to calculate time. However an alternative interpretation could be that we are asking something that the majority of children at this age are unable to understand.

Time is the measure of an abstract quality, which cannot be observed. It is difficult to assess the child's understanding, as indeed Piaget found - resorting to activities which related more to speed than time (Piaget 1969). Experience of time is subjective, some hours seem to go on for ever, others pass in an instant, depending on activity. Secondly, 'telling the time' requires the interpretation of a complex continuous scale, which bears little relationship to any other measuring instrument. Reading the clock face requires attention to two separate markers (the hour and the minute hands) and the relationship between them and fixed marks (hours) interpreted as two different scales (hours and minutes). Thirdly, calculation of time requires calculation with a set of different bases (60 minutes in an hour, 24 hours in a day, etc.) which do not accord with base ten calculation that the children are learning at the same time (Cockburn, A. 1999).

The research sets out to analyse children's understanding of time and to identify children's procedural and conceptual misconceptions. Data collected and analysed from standard assessment test papers and from observations of classroom lessons will be presented and discussed and the implications for teaching 'time' to young children drawn out.

References:

- Cockburn, A. (1999) Teaching mathematics with insight. London, Falmer
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