AN INVESTIGATION OF THE RELATIONSHIP BETWEEN YOUNG CHILDREN'S UNDERSTANDING OF THE CONCEPT OF PLACE VALUE AND THEIR COMPETENCE AT MENTAL ADDITION.

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This Nuffield-sponsored research project was a follow-up to an earlier study that led to the author arguing that there are two distinct aspects to 'place value'. These he called 'quantity value', where, say, 35 is treated as 30 and 5; and 'column value', where 35 is treated as 3 in the tens column and 5 in the ones (or units) column (Thompson, 2003).

This study took the form of a series of one-to-one interviews with a stratified sample of 144 children aged 6 to 9 from eight primary schools. They were asked to complete a range of practical and written graded questions related to place value. On the question 'What is 25 plus 23' (children were shown a card with 25+23 written on it), 63% of the sample answered the question correctly using a strategy that partitioned either (or both) 25 and 23 into 20 and 5 and 20 and 3 respectively. However, on two questions, both done practically, and which involved important aspects of place value, the children were less successful. On the 'milometer' question (Brown, 1981) [*The reading is 6299, what happens after one more mile?*], 24% gave the correct answer. On the 'bricks' question (APU, 1982) [*How does the value of a brick change when moved one column to the left?*] only 10% were correct. The percentage of children who were successful on both questions was just **4%**, compared to the **63%** who correctly added using partitioning.

The results suggest that children can mentally add two digit numbers successfully without understanding what is traditionally called place value. They add weight to Thompson's (2003) argument that the teaching of 'column value' should be delayed in English schools until children are to be taught a standard algorithm for any of the four basic operations.

References

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