DIAGNOSTIC TEACHING AND RATIO: THE EFFECT OF PICTORIAL REPRESENTATIONS ON STRATEGIES

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We believe that an essential aspect of improving the effective teaching of ratio involves raising teachers' awareness of their students' strategies and misconceptions. A good diagnostic test can be a helpful tool for evoking teachers' knowledge about their children (Williams & Ryan, 2001). This communication is part of a research project which involves the construction, analysis and scaling of two parallel forms of such a test for 10 to 14 year olds (sample, n=236), one in which children are provided with hypothetically helpful diagrams, models and referents and one without.

For instance, six pairs of parallel items differing in numerical structure and context were presented in two versions: one accompanied by a pictorial representation aid in the manner of Lamon (1993) and one without. Here we report the results for these items.

The analysis of the results shows that the addition of pictures in each task affected the kind and the frequency of strategies that students employ. A notable finding is that several students answered the items correctly, based only on the pictorial aid-as shows their work on the scripts. Equally interesting is the fact that, as Santos (1996) commented about illustrations in mathematics textbooks, pupils did not always see the accompanying pictures as aid.

Acknowledgement

We gratefully acknowledge the financial support of the Economic and Social Research Council (ESRC), Award Number R42200034284

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