## Resource sheet 2: Relational and Instrumental Understanding

# Relational Understanding and Instrumental Understanding

Richard R Skemp

One of these is 'understanding'. It was brought to my attention some years ago by Stieg Mellin-Olsen, of Bergen University, that there are in current use two meanings of this word. These he distinguishes by calling them 'relational understanding' and 'instrumental understanding'.

By the former is meant what I have always meant by understanding, and probably most readers of this article: knowing both what to do and why. Instrumental understanding I would until recently not have regarded as understanding at all. It is what I have in the past described as 'rules without reasons', without realising that for many pupils *and their teachers* the possession of such a rule, and ability to use it, was why they meant by 'understanding'.

Suppose that a teacher reminds a class that the area of a rectangle is given by $A=L\times B$. A pupil who has been away says he does not understand, so the teacher gives him an explanation along these lines. "The formula tells you that to get the area of a rectangle, you multiply the length by the breadth." "Oh, I see," says the child, and gets on with the exercise. If we were now to say to him (in effect) "You may think you understand, but you don't really," he would not agree. "Of course I do. Look; I've got all these answers right." Nor would he be pleased at our devaluing of his achievement. And with his meaning of the word, he does understand. We can all think of examples of this kind: 'borrowing' in subtraction, 'turn it upside down and multiply' for division by a fraction, 'take it over to the other side and change the sign', are obvious ones; but once the concept has been formed, other examples of instrumental explanations can be identified in abundance in many widely used texts.

Skemp, Richard R

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