



# Metacognition through prompts in mathematical problem-solving

**JACOB WILSON**

HEAD OF KEY STAGE 4 MATHS,  
KING ALFRED'S ACADEMY, UK

## Why problem-solving?

Problem-solving has long had a strong emphasis in mathematics education. In 1982, the Cockcroft Report asserted that 'the ability to solve problems is at the heart of mathematics' (Cockcroft, 1982). In recent years, as a result of reforms to the mathematics GCSE, a focus on problem-solving has re-emerged. A minimum of 30% of the marks in higher-tier GCSE papers now involve problem-solving (previously 15–25%), and students are increasingly required to make links between different areas of maths within a broad range of contexts (OFQUAL, 2015).

As a consequence of these curriculum changes and exam reforms, it became

apparent that many of my top set Year 11 students, who previously viewed themselves as strong mathematicians, were losing confidence in their ability to solve the increasingly difficult problems expected of them. In search of a possible solution to this, I developed and trialled a new approach to developing my students' problem-solving abilities. Metacognition, which Swanson defines as 'the knowledge and control one has over one's thinking and learning activities' (1990, p. 306), formed the starting point for my research, because the ability to self-regulate one's thoughts is both a common trait of expert problem-solvers (Swanson, 1990) and prominent in the EEF's Teaching &