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Managing cognitive load in the mathematics classroom.

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Summary: Contemporary debates on effective pedagogies for K-12 mathematics have called for shifts in the way teachers and teacher educators conceptualise mathematics as a subject and how it should be taught. This is reflected by changes in the curriculum including the inclusion of a strand called Working Mathematically within K-12 mathematics curriculum documents not only in New South Wales but also across Australia. This strand brings focus to mental processes that underpin students' ability to acquire mathematical principles, concepts, and conventions, and the use of this knowledge in the solution of problems. The focus on cognitive processes that support mathematical learning and problem solving is a welcome change. However, there is a paucity of information about the nature of links that need to be made between process and mathematics content, and how students might be assisted to construct the links. In this article, the authors outline results of research about cognitive load that is associated with mental processes, the management of this load so that students can be better supported in the construction of connected mathematical information, and the interpretation of that information in making sense of worked examples. They attempt to show that worked examples can be effective in promoting useful and powerful mathematics schemas. (Contains 3 figures.) (ERIC)

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