

ZMATH 06675843

Kieran, Carolyn

Cognitive neuroscience and algebra: challenging some traditional beliefs.

Stewart, Sepideh (ed.), And the rest is just algebra. Cham: Springer (ISBN 978-3-319-45052-0/hbk; 978-3-319-45053-7/ebook). 157-172 (2017).

Summary: Recent studies using neuroimaging technology with tasks touching on various areas of mathematics are raising a great deal of excitement with their findings. This chapter presents some key work related to higher level mathematical reasoning and a few insights arising from these studies with respect to our current understanding of algebra learning. After a general introduction on cognitive neuroscience and its recent advances relevant to mathematics education, the chapter focuses on two studies in particular, one on the algebraic solving method and the other on representing functions. The chapter concludes with a discussion of the ways in which these results from the newly emerging field, which is at times referred to as mathematics educational neuroscience, offer the potential of casting a quite different light on how we think about students' processing of algebra-related material.

Classification: C30 C80 H20 H30

Keywords: cognitive neuroscience; algebra; functions; symbolic method; model method; excelling in algebra
doi:10.1007/978-3-319-45053-7_9