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Knowing and understanding instructional mathematics content through intensive studies of textbooks.

Li, Yeping (ed.) et al., How Chinese teach mathematics and improve teaching. London: Routledge (ISBN 978-0-415-89500-2/hbk; 978-0-415-89601-6/pbk; 978-0-203-11011-9/ebook). Studies in Mathematical Thinking and Learning Series, 66-82 (2013).

From the text: Chinese elementary teachers were found to possess a profound understanding of fundamental mathematics (PUFM) and the teachers in *L. Ma's* study [Knowing and teaching elementary mathematics. Teachers understanding of fundamental mathematics in China and the United States. Mahwah, NJ: Lawrence Erlbaum Associates (1999; 1999d.02385)] reported that their PUFM was mainly attained through the intensive study of textbooks. Although textbooks have played a crucial role in Chinese school education to guide and structure classroom instruction, very few studies have explored how Chinese teachers study textbooks. Thus, much remains unclear about how the study of textbooks may help Chinese teachers gain knowledge and design classroom instruction. This chapter explores these issues through Chinese teachers' knowledge and understanding of a seemingly trivial but actually important mathematical idea, "0 cannot be a divisor", that has been commonly ignored by many U.S. teachers when teaching equivalent fractions. In particular, we aim to explore how the study of textbooks may have contributed to Chinese teachers' understanding of this knowledge point. It is expected that this case study will reveal effective practices that Chinese teachers employ to acquire their PUFM through the study of textbooks.

Classification: D39 D49

Keywords: profound understanding of fundamental mathematics; study of textbooks; classroom instruction; teachers' knowledge