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The role of social aspects of teaching and learning in transforming mathematical activity: tools, tasks, individuals and learning communities.

Rezat, Sebastian (ed.) et al., Transformation – a fundamental idea of mathematics education. New York, NY: Springer (ISBN 978-1-4614-3488-7/hbk; 978-1-4614-3489-4/ebook). 203-222 (2014).

Summary: The purpose of this chapter is to explore how the reflexive interaction between resources, especially digital technologies and mathematical tasks and the users of these resources can lead to different types of transformation. In this exploration, *R. Strässer's* ["Instruments for learning and teaching mathematics an attempt to theorize about the role of textbooks, computers and other artefacts to teach and learn mathematics", in: Proceedings of the 33rd conference of the international group for the psychology of mathematics education "In search for theories in mathematics education", PME 33, Thessaloniki, Greece, July 2009, Vol. 1. Thessaloniki: Aristotle University of Thessaloniki & University of Macedonia. 67–81 (2009)] tetrahedral model for teaching and learning mathematics, which incorporates students, teachers, mathematical knowledge and resources, will be extended by considering the social aspects of coming to know and do mathematics. Research data collected from secondary mathematics classrooms will be used to illustrate how such transformations are played out in authentic classroom settings. Finally, selected types of small-group and whole-class social interactions, as they relate to Strässer's model [loc. cit.], will be theorised.

Classification: C60 U70 C70

Keywords: technological tools; learning with technology; teaching with technology; sociocultural perspective; interaction

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