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Guiding mathematical inquiry in mobile settings.

Zaslavsky, Orit (ed.) et al., Constructing knowledge for teaching secondary mathematics. Tasks to enhance prospective and practicing teacher learning. Berlin: Springer (ISBN 978-0-387-09811-1/hbk; 978-0-387-09812-8/ebook). Mathematics Teacher Education 6, 191-207 (2011).

Summary: Engaging mathematics students in active exploration of real-life scenarios and supporting inquiry processes are major challenges for teachers. It requires a shift in the teacher's role from lecturing and telling to listening, observing, facilitating, and guiding. In our exploratory work we found that mobile devices can offer a challenging setting for educators to deepen their thinking about sensing mathematics and about socially constructing and mediating mathematical knowledge. The unique qualities of this setting follow from the mobility that enables learners to share knowledge. To demonstrate the possibilities of such a setting, we present innovative function graphing applications for mobile phones and a sequence of tasks designed to support the qualitative and quantitative inquiry of functions. We suggest that by engaging in such tasks, mathematics teachers can rethink their pedagogical, curricular, and subject matter knowledge, connect mathematical knowledge with real-life contexts, and interact socially in ways that support the creation of a community of proficient mathematics teachers.

Classification: D49 U19 R29 C39 M19 B50

Keywords: mobile learning; guided inquiry; mathematical modelling; socio-cultural interaction; collaboration; elementary algebra; calculus; mathematical applications; everyday mathematics; mathematical model building; teacher education; educational technology; teaching methods

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