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Stockero, Shari L.; Van Zoest, Laura R.

Characterizing pivotal teaching moments in beginning mathematics teachers' practice.

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Summary: Although skilled mathematics teachers and teacher educators often “know” when interruptions in the flow of a lesson provide an opportunity to modify instruction to improve students’ mathematical understanding, others, particularly novice teachers, often fail to recognize or act on such moments. These pivotal teaching moments (PTMs), however, are key to instruction that builds on student thinking about mathematics. Video of beginning secondary school mathematics teachers’ instruction was analyzed to identify and characterize PTMs in mathematics lessons and to examine the relationships among the PTMs, the teachers’ decisions in response to them, and the likely impacts on student learning. These data were used to develop a preliminary framework for helping teachers learn to identify and respond to PTMs that occur during their instruction. The results of this exploratory study highlight the importance of teacher education preparing teachers to (a) understand the mathematical terrain their students are traversing, (b) notice high-leverage student mathematical thinking, and (c) productively act on that thinking. This preparation would improve beginning teachers’ abilities to act in ways that would increase their students’ mathematical understanding.

Classification: B50 C70

Keywords: mathematics teacher education; beginning teachers; student thinking; teachable moments; teacher decisions

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