EXPLORING HOW THREE MIDDLE LEVEL MATHEMATICS TEACHERS USE THEIR EXPERIENCES IN A PROFESSIONAL DEVELOPMENT PROGRAM

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The purpose of this study is to investigate whether and how three middle level mathematics teachers' experiences in an ambitious professional development program influence their teaching practices. The data collected for three teachers during the 2005-2006 school year includes: classroom observations, videotape, and interviews of teachers, principals, and students. Two of the teachers involved in this study teach in rural settings; the third teaches in a city. The overarching question guiding this research is: How do middle level mathematics teachers use their experiences participating in an ambitious professional development program? The framework guiding this analysis is based on Ball et al.'s developing theory of mathematical knowledge for teaching (e.g., Ball & Bass, 2003; Ball, Thames, & Phelps, 2007); this analysis focuses on the ways teachers choose and use questions, representations, and precise mathematical language in teaching practices.

The Math in the Middle Institute Partnership is a five year NSF-funded grant creating increased teacher capacity to support middle level mathematics learners. The Institute's components include: a 25-month coherent program of studies to deepen and develop teachers' mathematical, pedagogical, and leadership knowledge and skills; and a research initiative to study educational improvement and innovation.

This analysis suggests it is overly simplistic to refer to teachers' contexts as if context were an easily definable shared entity: contexts are multi-faceted and multi-layered. Various aspects of context play differing roles for different teachers in terms of influence on mathematics teaching practices. In this study, the most influential aspects of context are: school structure, professional development, curriculum, testing policies, principal expectations, community expectations, and extra-curricular activities. This analysis suggests revisions to how particular dimensions of specialized content knowledge are conceptualized. In examining how these three

teachers translate their professional development experiences into classroom practices, this analysis suggests professional developers build in more overt discussion of program goals for participant learning to better communicate such goals to participants and attend to the mediating role of context.