

SUPPORTING MATHEMATICS TEACHERS' LEARNING: BUILDING
ON CURRENT INSTRUCTIONAL PRACTICES TO ACHIEVE
A PROFESSIONAL DEVELOPMENT AGENDA

JANA VISNOVSKA

This dissertation contributes to our understanding of how to design professional development programs that support teachers' development of effective instructional practices in which students' reasoning is in the center of instructional decision-making. I analyze the learning of a professional teaching community of middle-school mathematics teachers during the last three years of a five-year professional development design experiment. I propose a set of revisable design principles for ongoing professional development that are grounded in the specific design challenges that led to their formulation. Together with Chrystal Dean, who analyzed the initial two years of this experiment, I contribute to the development of an empirically grounded professional development theory that is specific to the domain of middle-school statistics. My dissertation provides conceptual resources that can inform the efforts of other professional development facilitators so that the successive forms of teacher reasoning I identified and the means of supporting their emergence can be reproduced in other professional teaching communities.

I present two complementary analyses of the collective learning of the teacher group. In the first analysis, I demonstrate that even though the membership of the group changed during

the years of the study, it is reasonable to view it as a single, evolving professional teaching community that was characterized by joint enterprise, mutual engagement, and a shared repertoire of tools. In the second analysis, I discuss the realized learning of the community over the three-year period by describing developments in the ways of talking and reasoning that became normative. I foreground shifts in pedagogical reasoning that were in the center of our design and research efforts, and document that the teachers came to view students' reasoning as a resource in their instructional planning by the final year. I document that our initial design conjectures proved to be unviable and that we had to make major modifications in the means for supporting the teachers' learning in order to achieve our professional development agenda. This modification involved building on teachers' current practices and interests, and was critical in designing supports that proved effective.