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Joseph F. Wagner* (wagner@xavier.edu), Dept. of Mathematics and Computer Science, Xavier University, 3800 Victory Parkway, Cincinnati, OH 45207. *Beyond the mathematics: What else is needed to teach in an inquiry-oriented classroom?* Preliminary report.

Orchestrating class discussions of mathematics in ways that conform to reform-based principles of mathematics instruction can be challenging to instructors accustomed to lecture-oriented classrooms. In particular, instructors are challenged to direct classroom activities and discussion in mathematically productive ways, while simultaneously encouraging students to seek mathematical authority not in their teacher, but in their own mathematical reasoning and judgment. In this report, I investigate the experiences of two university mathematicians during their first attempts to foster whole-class dialogue and argumentation using an inquiry-oriented differential equations curriculum. I argue that differences in class outcomes were associated with the different ways each instructor negotiated the tension between serving as a mathematical authority and enabling students to find mathematical authority in legitimate mathematical reasoning. Balancing these roles shapes opportunities for student learning, and understanding such effects offers support to university mathematics instructors who wish to adopt reform-based principles of instruction in their classrooms. (Received September 09, 2007)