

Mathematically-responsive teaching: present developments and future opportunities

Gil Schwartz, 12/12/2022, WIS

Responsive teaching aims at centering students' ideas, perspectives, and experiences in classroom interactions. While several studies investigated this idea from various socially-related aspects (e.g., culturally-responsive and language-responsive pedagogies), my aim is to unpack its mathematical facets, thus to focus on mathematically-responsive teaching. In this term I refer to teachers' decision-making when they engage with, and act upon, students' mathematical thinking.

In the talk, I present my recent research around mathematical responsiveness at the University of Michigan, where I: 1) explore mathematics teachers' rationalities when they make decisions related to student thinking, using artifacts such as samples of student work and storyboarded mathematics lessons, and 2) study how teachers may be supported in advancing mathematically-responsive teaching. The analysis reveals that teachers' mathematical considerations are often related to instructional norms regarding the topic at hand, which may be in tension with responsiveness and openness to student ideas. Building on the results, I offer principles for designing mathematics teacher learning environments that are focused on mathematical responsiveness to student ideas and at the same time are also responsive to teachers' professional needs. In particular, I describe how the results inform the design of simulations of practice for mathematics teachers, and touch upon the potential of such simulations to become a scalable resource for professional development, thus enabling large-scale research.

Overall, I highlight the need for coherence (but not sameness) between the goals of mathematics teacher and student learning, and suggest the focus on responsiveness as a promising avenue for research and design.