

## Understanding mathematics education through teachers' perspectives

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Mathematics teachers have been studied in a variety of ways that include investigating their knowledge, beliefs, conceptions, identity, learning, change, and teaching. Some of these studies have enabled us to understand mathematics education and implications for teacher education and professional development through teachers' perspectives. These perspectives tend to be practice based and deal with practical knowledge (Fenstermacher 1994), that is, knowledge that arises out of action and experience in the classroom. This knowledge, for example, relates to knowing the right place and time to do things or how to see and interpret events related to one's actions, including adapting to situations in the classroom, shaping situations in the classroom, and making selections when choices are available. Given the growing complexity of classroom contexts and expectations for more meaningful teaching of mathematics, ongoing focus on the teachers' perspectives in research is important to broaden and deepen our understanding of mathematics and teacher education based on lived experiences. The studies in this issue of the Journal of Mathematics Teacher Education contribute to this focus in some important ways. In particular, in the context of teaching mathematics, they include a focus on teacher thinking of authority in the classroom, teacher decision making, teacher noticing, and teacher views of themselves as engaging in reform-based practices.

David Wagner and Beth Herbel-Eisenmann investigated how mathematics teachers tend to think about authority in their classrooms, in particular, the sources of authority and how the teachers related these sources to each other. They developed a tool involving the use of a diagram to access teachers' thinking about authority in their classrooms. The diagrams generated by the teachers in the study described how they saw authority at work in their classrooms, that is, from their perspectives as participants in the classroom discourse. The study highlights various perspectives the teachers worked from when thinking about authority in their classrooms. It illustrates the importance of understanding teachers' perspectives about authority and suggests the need for more research to help us to further understand authority in the mathematics classroom from the teacher's perspective.

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Mike Thomas and Caroline Yoon investigated the decisions made by a teacher who valued student-centered learning and wanted to use it during a lesson on graphical anti-derivatives. The teacher incorporated many aspects of student-centered learning throughout the lesson, but there were occasions when he decided to use a teacher-led approach, which, from his perspective, was to alleviate the tension he experienced from his conflicting instructional goals. The study highlights how the decisions teachers make about instruction can be in conflict with the perspective of teaching and learning they value, but justified from their perspectives of these decisions and the impact of these decisions on their teaching. This finding further supports the importance to attend to teachers' perspectives as a basis of their learning and understanding of their classroom decisions.

Amy Roth McDuffie et al. investigated an approach to help prospective teachers to learn to notice children's competencies regarding children's mathematical thinking and *multiple mathematical knowledge bases* in order to identify resources that children bring to the classroom and to build on them during instruction to promote equity and learning in their classrooms. They designed a video analysis activity to engage prospective teachers in noticing during a methods course. They found that the structure of the activity along with their video choices and prompts and repeated enactment of noticing supported the prospective teachers' learning by increasing their depth of noticing and their foci in noticing. The study suggests that prospective teachers can be helped to develop awareness for multiple aspects of teaching and learning and to notice at deeper levels. This is important given the role of noticing in framing their perspectives, particularly regarding engaging students meaningfully in learner-centered mathematics classrooms.

Damon Bahr, Eula Ewing Monroe, and Dennis Eggett investigated the impact of an elementary mathematics methods course with an accompanying practicum on participating prospective teachers' thinking and teaching after they became practicing teachers. They focused on the extent to which the teachers viewed themselves as engaging in reform-based practices. University and elementary school structures were interwoven through weekly course sessions conducted at a school site followed immediately by related practicum experiences in the school and professional development for mentor teachers that encouraged them to create reform-oriented classrooms. The course–practicum combination enabled the prospective teachers to identify with the reform movement, view themselves as teachers who understood and embraced the tenets of this movement, and engage in reform-based inservice teaching to various degrees. These findings were based on the teachers' perspectives of themselves and their teaching.

These four articles provide examples of what and how we can learn about the teacher, practice, and teacher education through teachers' perspectives. They offer insights about the role of teachers' perspectives in mathematics teacher learning, teaching, and research. Continued focus on this role is important to broaden and deepen our understanding of issues surrounding practice and mathematics teacher learning from a practical, contextual, and realistic perspective.

## Reference

- Fenstermacher, G. D. (1994). The knower and the known: The nature of knowledge in research on teaching. *Review of Research in Education*, 20, 3–56.