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Where is the mathematics? examining teachers' mathematical learning opportunities in practice-based professional learning tasks.

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Summary: Using the work of teaching as a central resource, practice-based approaches to teacher professional development attempt to coordinate and link different facets of teacher knowledge to each other and to the settings in which the knowledge is used. Advocates for practice-based professional development argue that learning experiences that are highly connected to and contextualized in professional practice can better enable mathematics teachers to make the kinds of complex, nuanced judgments required in teaching. Yet, evidence is generally lacking regarding if and how teachers might enhance their knowledge of mathematics through such professional development experiences. In this paper, we examine data from a practice-based professional development initiative to illuminate how the professional learning tasks (PLTs) used therein made available opportunities for teachers to work on and learn about mathematical ideas. We analyze data collected from several sources (e.g., video transcripts, interviews, end of session reflections) in the BIFOCAL (Beyond Implementation: Focusing on Challenge And Learning) project, which was a multi-year, practice-based professional development initiative intended to support teachers of mathematics in the middle grades (grades 6-8). We identify four distinct, though highly interrelated, opportunities for BIFOCAL participants to learn mathematics within the project's PLT cycle when anchored by a narrative case. We also present excerpts from professional development sessions to illustrate how teachers considered mathematical ideas in relation to the ways in which students think about these ideas, the pedagogical entailments of these ideas, and the consequences of teachers' decisions based on these ideas. Our analysis suggests that teachers had many opportunities to learn mathematics-to build or strengthen connections among related mathematical ideas-and to consider these ideas in relation to how students think about the ideas and to a range of pedagogical actions and decisions that affect students' opportunities to learn.

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