

ONE TEACHER'S LEARNING TO FACILITATE ARGUMENTATION: FOCUS ON THE USE OF REPEATING

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Engaging students in collective mathematical argumentation is a practice leading to authentic learning in mathematics classrooms (see, e.g., Krummheuer, 1995). Researchers have reported multiple cases of expert teachers supporting collective argumentation and described student learning in these cases (e.g., Krummheuer, 2007). However, little is known about how novice teachers learn to support their students in making mathematical arguments. Our goals of professional development (PD) with beginning teachers included stimulating learning through reflection and documenting the learning as evidenced by both practice and conversations about practice. The following research question guided our study: *How did the ways in which a beginning mathematics teacher used repeating to support collective argumentation change and mature over time while participating in professional development activities?* For this study, we focus on the PD activities in which a secondary mathematics teacher, Jill (a pseudonym), participated during her first 3 years of teaching. During the PD activities, we engaged Jill in identifying and diagramming arguments from her teaching using Toulmin's (2003) diagram, and in analyzing and reflecting upon her own practices with respect to supporting argumentation using Conner et al.'s (2014) Teacher Support for Collective Argumentation framework. To encourage and facilitate Jill's learning to support argumentation, a mathematics teacher educator-researcher (MTE-R) asked questions and provided feedback and assistance to her during 14 one-on-one PD meetings, structured similarly to stimulated recall interviews. We video-recorded all the meetings. To answer our research question, we focused on instances in which Jill identified, analyzed, and critiqued her repeating actions, such as restating and displaying. We wrote memos describing changes in Jill's use of repeating over time. The analysis is in the initial stage and is ongoing. In year 1 PD, we see Jill enacting one of two repeating actions rather naturally in her practice as she restated student contributions to the collective. Through focused reflections on her practice with the guidance of the MTE-R, Jill learned more about how she could use both restating and displaying actions to support collective argumentation. As we followed Jill's learning into year 3 PD, we found that Jill used both repeating actions in purposeful ways. She also used these actions in strategic ways to support her students in taking a more active role in the classroom discourse and argumentation. Jill serves as a case to demonstrate how a novice teacher learned to support argumentation through stimulated recall interviews of practice.

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