

PRESERVICE TEACHERS APPROXIMATIONS OF PRACTICE: PLANNING FOR AND PRACTICING WHOLE CLASS DISCUSSIONS

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The complexity of effectively orchestrating a whole class mathematical discussion is well documented as is the importance of developing this practice (Boerst, Sleep, Ball, & Bass, 2011). For a whole-class discussion to be mathematically meaningful, teachers need to purposefully select and sequence students' solutions to directly address the intended mathematical learning goals. (e.g., Smith & Stein, 2018). Learning to orchestrate such discussions is not trivial (Boerst et al., 2011). In describing their support of elementary PSTs learning to orchestrate discussions, Boerst et al. (2011) note the importance of learning through "doing practice" rather than just analyzing practice (p. 2849), but "doing practice" is difficult when methods courses do not include field experiences. To address this need, we designed a learning experience for an introductory methods course to support PSTs in developing skills needed to orchestrate effective whole class discussions.

To practice orchestrating a whole class discussion by breaking it into a string of "smaller and increasingly specified" pieces (Boerst et al., 2011), PSTs engaged in four sequential activities - 1) analyzing multiple samples of authentic student work, 2) selecting a specific sample of student work as their "favorite wrong answer" to be used to launch a whole class discussion, 3) scripting out a whole class discussion utilizing the student work they analyzed, and 4) creating an animation that captures the way they envision the whole class discussion would occur. Throughout this sequence of activities, PSTs' were expected to justify their choices based on a stated mathematical goal. The purpose of activities one and two was to set the stage by engaging PSTs in practices that would occur prior to launching a discussion, and given that by nature discussions are interactive, activities three and four provided progressively more detailed opportunities to *approximate* (Grossman, 2009) those interactions.

This study focused on PSTs' approximation of preparing for and orchestrating a whole class discussion for which the mathematical goal is to define function. The written responses, scripts, and animations of 21 PSTs were analyzed. Preliminary results showed all 21 PSTs focused on the learning goal in the planning of the discussion and made explicit connections to the learning goal throughout their approximations. Further analysis is being conducted using Boerst et al. (2011) Framework for Teacher Questions to examine the ways in which this series of approximations supports early PSTs in practicing orchestrating discussions. In addition, we plan to compare the findings between the script and the animation to better understand the ways the medium of the approximation of practice supports PSTs articulation of a whole class discussion. Findings from this study will be important for mathematics teacher educators designing effective tasks for developing this complex practice.

References

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