Supporting Instructional Change: The Role of Facilitators in Online Working Groups

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Research has shown that faculty benefit from support and collaboration when introducing student centered instruction into their teaching (Henderson, Beach, & Finkelstein, 2011; Speer & Wagner, 2009). The RUME community has some knowledge about how these supports take shape and grow (e.g., Hayward, Kogan, & Laursen, 2015), but work is still needed. A crucial component is researching the facilitation of these supports. In this study, we focus on how the facilitation of online working groups occurs. Our preliminary results indicate that the actions facilitators take play crucial roles in how to use discussions of mathematics to proactively engage in student thinking.

Keywords: Instructional change, online faculty collaboration, facilitators

Faculty are currently making changes to their instruction by introducing different modes of student-centered instruction (Mathematical Association of America [MAA], 2018). Numerous support avenues have become available to these faculty such as faculty collaborations (Nadelson, Shadle, & Hettinger, 2013) and summer workshops (Andrews-Larson, Peterson, & Keller, 2016). In this study we focused on online working groups (OWGs) that supported mathematicians learning to teach inquiry oriented differential equations, abstract algebra, or linear algebra. Previous research has shown the importance of doing mathematics in this process to situate faculty's understanding of these "new" curricula (Andrews-Larson et al., 2016), but facilitating those discussions is largely unexplored. Thus, we aim to answer the research questions: 1) What role do facilitators take within OWGs focused on doing and understanding the mathematical content? 2) How does the topic of conversation shift as a result of the facilitators' actions?

## Methods

The current analysis focuses on facilitators who were participants from previous OWGs. Each session occurred via Google Hangouts and was screen recorded and transcribed. The 14 sessions under analysis were chosen to fit the research focus on weeks when the OWG participants were discussing how they solved the mathematical tasks. Two researchers developed a codebook that included a priori codes based on the stated goals of the OWG, and emergent codes from the analysis, and met to discuss and resolve any discrepancies.

## **Preliminary Results and Discussion**

We have found that facilitators regularly use discussions concerning how the OWG participants solved the mathematical task as a springboard for discussions regarding reporting on and student mathematical thinking and more general discussions concerning the pedagogical choices participants made or will make in their classrooms. Our continued analysis will be focused on unpacking the specific ways the facilitators make these transitions and whether/how participants respond to the facilitator's efforts. Implications for this work include showcasing how productive OWGs are facilitated so they can be replicated and have a deeper understanding of how online synchronous professional development programs operate.

## References

- Andrews-Larson, C., Peterson, V., & Keller, R. (2016). Eliciting mathematicians' pedagogical reasoning. In T. Fukawa-Connelly, N. E. Infante, M. Wawro, & S. Brown (Eds.), *Proceedings of the 19th Annual Conference on Research in Undergraduate Mathematics Education*. Pittsburgh, PA: West Virginia University.
- Henderson, C., Beach, A., & Finkelstein, N. (2011). Facilitating change in undergraduate STEM instructional practices: An analytic review of the literature. *Journal of Research in Science Teaching*, 48(8), 952–984.
- Mathematical Association of America [MAA]. (2018). MAA instructional practices guide. Washington, DC: Author.
- Nadelson, L. S., Shadle, S. E., & Hettinger, J. K. (2013). A journey toward mastery teaching: STEM faculty engagement in a year-long faculty learning community. *Learning Communities Journal*, *5*, 97–122.
- Speer, N. M., & Wagner, J. F. (2009). Knowledge needed by a teacher to provide analytic scaffolding during undergraduate mathematics classroom discussions. *Journal for Research in Mathematics Education*, 40(5), 530–562. https://doi.org/10.2307/40539355