

## **REMOTE ENGAGEMENT IN EARLY MATHEMATICS PROFESSIONAL DEVELOPMENT: USING TANGIBLE ARTIFACTS TO MEDIATE PARTICIPATION**

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Although the field has recognized the importance of early mathematics education for young children, many early childhood educators do not have access to high-quality, engaging professional development in math or science (McClure et al., 2017). In particular, educators in rural communities lack opportunities to grow professionally due to geographical isolation or under-resourced programs. In addition, many professional development opportunities offer prescribed programs that do not encourage active participation and are not connected to teachers' existing practices or approaches (Kennedy, 2016).

Building on frameworks for effective professional development (Fishman, Davis, & Chan, 2014) and embodied design (Abrahamson & Lindgren, 2014), we used video conferencing technology paired with tangible materials to engage a cohort of remote online early childhood educators in four sessions of professional development in early mathematics education. Each session was one hour in length and included opportunities for online teacher learners to engage with tangible materials (e.g., Froebel gifts, triangle construction materials) to explore mathematical concepts central to early childhood development. Our approach was designed to 1) engage teachers as learners with carefully designed materials to develop their own understanding, and 2) open pathways for mediated participation through the sharing of physical constructions via video conferencing. In this poster, we focus on the following research question: How do participants' material constructions and interactions act as mediating resources in their participation in remote online professional learning?

We video recorded two of the professional learning sessions, surveyed participants, and interviewed a sample of participants about their experiences in the professional learning. Our findings suggest that tangible materials allowed for common sense-making and active participation throughout the sessions. Furthermore, tangible materials served as resources for mathematical engagement and dialogue in spite of educators' remote participation. This poster will highlight the professional development approach and suggest several implications for the use of tangible materials to enhance online professional development engagement.

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