Reflections on Changes in Field-related Experiences during COVID-19

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The Association of Mathematics Teachers Educators' (AMTE) *Standards for Preparing Teachers of Mathematics* (2017) states programs should "include clinical experiences that are guided on the basis of a shared vision of high-quality mathematics instruction and have sufficient support structures and personnel to provide coherent, developmentally appropriate opportunities for candidates to teach and to learn from their own teaching and the teaching of others". However, many K-12 schools have either limited or denied preservice teachers' (PSTs) traditional clinical experiences in classrooms during the fall 2020 semester due to the COVID-19 health pandemic. Additionally, many universities have allowed all students, including PSTs, the option of taking their classes fully online. These circumstances have created a need for mathematics teacher educators (MTEs) to reconsider and redesign their courses' field-related experiences. During the fall 2020 semester I taught four mathematics education courses, all of which involved some form of connection to the field. These experiences had to be altered related to both the preparation provided to the PSTs and their ways of engaging with and implementing field-based components, while remaining true to course goals and objectives aligned with AMTE's Standards (2017). The modified activities involved using manipulatives, implementing an instructional task, observing in classrooms, and teaching lessons. Although each of these experiences was offered differently, PSTs demonstrated mastery of the course-related learning outcomes and reported finding the experiences enjoyable and beneficial. In this article, I reflect upon each modified experience.

The first altered field-related experience involved the use of mathematics manipulatives with K-6 students in the context of a mathematics content course for elementary PSTs. Traditionally, PSTs plan and implement K-6 lessons using both concrete and virtual manipulatives. For the modified experience, I first had the PSTs watch videos of students using concrete manipulatives to learn a variety of K-6 topics. The PSTs used a Noticing Framework where they were asked to use Attending, Interpreting, and Deciding prompts to analyze the learning they observed (Bondurant, Poling, & Moss, 2020). Then, I introduced virtual manipulatives to the PSTs. The course textbook (Musser, Peterson, & Burger, 2014) includes a companion website with virtual manipulatives (built in *GeoGebra*) related to the content taught in each chapter. Finally, I asked the PSTs to plan instructional activities using the virtual manipulatives and complete a written reflection on the pros and cons of manipulatives that are concrete and those that are virtual.

Another modified clinical experience occurred in the same mathematics content course for elementary PSTs. Specifically, the PSTs were given the opportunity to implement a K-6 mathematics instructional task through engaging in a virtual field experience (Sweeney, Milewski, & Amidon, 2018) called Mursion™ (see Figure 1). The PSTs were provided with the mathematics task and guidance on implementation strategies, and Mursion™ (also called TeachLive ™) was used as the platform in which PSTs interacted with virtual students. The arrangement of the virtual field experience involves an enactor facilitating the moves of five virtual students in the classroom environment from a remote location. Through video

technology, the enactor can see the classroom environment and the PST engaging with the virtual students through a large screen. The observer is in the classroom environment or views the teaching through a video recording of the experience. I was able to provide the PSTs with this opportunity because I was selected as a field tester in the project *RAPID: Learning to Teach During COVID-19: Leveraging Simulated Classrooms as Practice-Based Spaces for Preservice Elementary Teachers within Online Teacher Education Courses* (NSF Award # 2032179). In a study I conducted on this experience, survey and interview data show the PSTs found these virtual rehearsals realistic, beneficial, and enjoyable. Some of the benefits included having a record of instruction to analyze afterwards, not having concerns about how less than effective instruction could impede the learning of "real students," and the ability to target specific skills such as facilitating high-quality discussions and equitable teaching practices. These records of instruction have also been especially useful for research. For example, I am currently exploring the PSTs' use of equitable teaching practices by looking for associations between PSTs' implicit biases (based on the Harvard Implicit Bias skin-tone and gender-STEM surveys) and equity analytics (based on EQUIP rubric discourse dimensions).

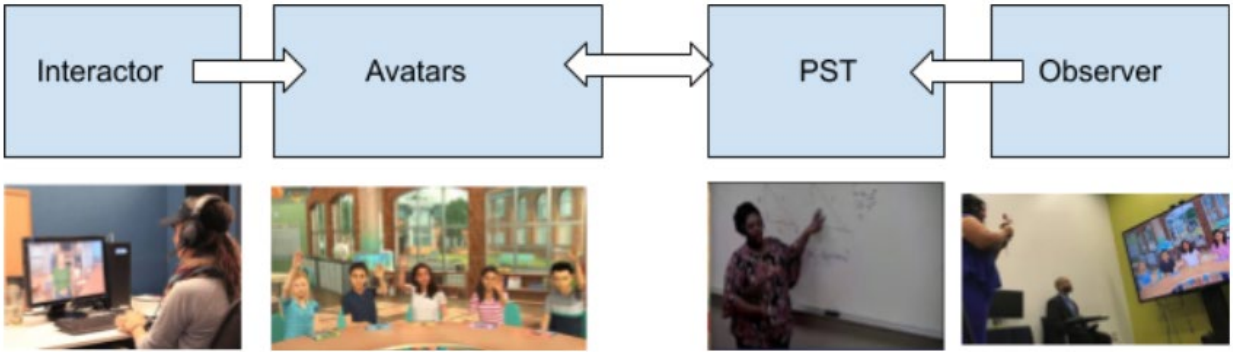

Figure 1. *Components of Mursion™ Simulation*

A third redesigned field-related experience occurred in my introductory mathematics methods course for secondary mathematics education PSTs taken during the junior year. The modification included replacing their traditional clinical placements, where they spend 15 hours observing and gradually assuming some teaching responsibilities in 7-12 mathematics classrooms (students are placed in a variety of classrooms in our partnership school district in an attempt to determine the best fit prior to their internship semester), with online professional development (PD) offered through the IRIS Center in the Peabody College at Vanderbilt University (2020). This PD, *High-Quality Mathematics Instruction: What Teachers Should Know*, focuses on the components of high-quality mathematics instruction and highlights several effective practices teachers should use. Through videos, readings, and reflective questions, PSTs learned how to identify the components of high-quality mathematics instruction and assess whether mathematics curricular materials are standards based. They became familiar with evidence-based instructional strategies for teaching mathematics and were able to recognize specific effective classroom practices that promote and support the learning of mathematics. A benefit of using this resource was PSTs' immersion in learning about and observing evidence-based instructional practices, which may or may not have been the case in their traditional placement classrooms.

As a final example, I modified secondary mathematics education PSTs' leading of both middle and high school lessons in an advanced mathematics methods course taken during their senior year. Traditionally, PSTs spend a total of 20 hours between one 7-8 and one 9-12 classroom, where they assist the teacher in routine tasks, observe classroom instruction, and plan and implement instructional activities. This semester I only had one PST in the course. Based on this, I had the PST complete a planning template from *Five Practices for Orchestrating Productive Mathematics Discussions* (Smith & Stein, 2018), with at least three student strategies included. When implemented, I played the role of these three students. The PST had to anticipate misconceptions and questions, which I exhibited and asked. The PST was also asked to plan questions for each hypothetical student, which I answered, assuming the role of the student.

The COVID-19 health pandemic has caused many MTEs to alter their PSTs' field-related experiences. My redesigned experiences remained true to important course goals and objectives (AMTE, 2017). I believe that the modifications enhanced the quality and quantity of the PSTs' experiences. The quality was enhanced because I was able to target specific skills and control the content to which they were exposed, rather than classroom placements that provide variability of exposure. The quantity was enhanced, because the PSTs could have more field-focused experiences, as they could engage anytime from anywhere. K-12 teaching and learning will most likely look different after the pandemic. MTEs will need to take changes, as well as the lessons they learned from the pandemic, into account when making decisions about the best clinical experience offerings for PSTs.

References

Association of Mathematics Teacher Educators. (2017). *Standards for Preparing Teachers of Mathematics*. Available online at http://amte.net/standards

Bondurant, L., Poling, L., & Moss, D. (2020). An analysis of preservice elementary teachers' professional noticing skills in a mathematics education setting. *Journal of Practitioner Research, 5*(2). https://scholarcommons.usf.edu/jpr/vol5/iss2/6

IRIS Center Peabody College Vanderbilt University (2020). *High-Quality Mathematics Instruction: What Teachers Should Know.* https://iris.peabody.vanderbilt.edu/

Musser, G.L, Peterson, B.E., & Burger, W.F. (2014). *Mathematics for Elementary Teachers: A Contemporary Approach*, 10th Edition, Wiley.

Smith, M.S., & Stein, M.K. (2018). *Five practices for orchestrating productive mathematics discussions*, Second Edition. Reston, VA: [Thousand Oaks, CA]: National Council of Teachers of Mathematics.

Sweeney, J., Milewski, A., & Amidon, J. (2018). On-ramps to professional practice: Selecting and implementing digital technologies for virtual field experiences. *Contemporary Issues in Technology and Teacher Education, 18*(4).