EMBEDDING SIMULATED LEARNING OPPORTUNITIES FOR TEACHER CANDIDATE PEDAGOGICAL DEVELOPMENT THROUGHOUT A PANDEMIC

Maria B. Peterson-Ahmad, PhD
Texas Woman's University

Amanda Hurlbut, PhD
Texas Woman's University

Abstract

COVID-19 caused K-12 schools across the United States to close starting in the spring of 2020, which cascaded back to educator preparation programs (EPPs), greatly reducing and altering the clinical practice experiences of teacher candidates. This continued into the 2020-21 academic year as schools in many communities remained closed for in-person instruction (Goldhaber & Theobald, n.d.). The pandemic directly impacted the extent to which teacher candidates gained any experience in the 'practice' of teaching due to these school closures. Lessons learned from the pandemic have informed how practice opportunities for teacher candidates are provided and must be modified. Technology, through use of a simulated learning environment, is one way that can afford teacher candidates practice opportunities regardless of closures or limited in-person opportunities and it is worthy of consideration across EPPs.

Keywords: *pre-service teacher, simulated learning, technology*

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Introduction

The future of teacher education stands on the shoulders of effective preparation and learning experiences that allow teacher candidates to become prepared to work with all students in today's classrooms, however, data indicate that fewer individuals are choosing to go into the education profession, with significant decreases noted in EPP enrollment over the past decade (Carver-Thomas & Darling-Hammond, 2017; Sutcher et al., 2016). It is suspected that within the next few years, there will be a deficit of more than 100,000 teachers annually (National Center for Education Statistics, 2020; Sutcher et al., 2016). The COVID-19 pandemic exacerbated another layer of urgency in that educators have had to triage students' academic and social skills due to the vast variance in instructional time that occurred over the past two years in attempts to get students back on level. Furthermore, teacher candidates who were actively seeking certification during the COVID-19 pandemic had their clinical student teaching experiences cut short when schools across the nation shut down and instruction moved online. It is estimated that more than 80% of EPPs drastically reduced or removed student teaching requirements (Goldhaber & Theobald, n.d.). Implemented pedagogies instead shifted to that of asynchronous and synchronous virtual teaching methodologies, many of which teaching candidates had not received any preparation to implement effectively.

The problem compounded and persisted when many schools continued offering virtual instruction during the subsequent 2020-21 school year. This move in essence barred teaching candidates from enacting and implementing best pedagogical methods learned in their EPP because they had no classroom

available to them (Porath & Myers, 2021). Rather, teaching candidates delivered instruction in conjunction with mentor teachers through virtual environments, but used remote, online practices that many had not learned or integrated prior to the student teaching experience. A final resulting complication from the COVID-19 shutdown was revealed in the recent 2021-2022 school year, when schools began to re-open. While many clinical student teaching placements had gone back to normal, due to the limited early field placements in the years prior, this was often the very first opportunity for teacher candidates to practice their newly emerging pedagogical practices in authentic classroom environments which results in limited preparedness on day-one (Griffin, et al., 2020; Sasaki et al., 2020).

As efforts to improve EPPs and the learning experiences of teacher candidates continue in a mid-COVID landscape, so does the need for increasingly innovative ways to incorporate such involvement into program coursework. EPPs must embed longitudinal and scaffolded learning opportunities with technology that allow for repeated practice of high impact pedagogical strategies so that new teachers entering the field can effectively and efficiently implement teaching strategies that incorporate data collection/analysis in order to make better informed instructional decisions that exemplify differentiation and positively impact students' academic and social-emotional progression. EPPs must also examine a variety of outcome variables associated with effective teacher performance and assess teacher knowledge and instructional experiences in order to broaden their teaching skills (Landon-Hays et al., 2020). It is essential that repeated practice opportunities start at the beginning of an EPP and continue through completions of a program so that candidates have numerous opportunities to gain fluency in pedagogy across various settings with diverse learners, gain explicit feedback and obtain frequent and sustained support from faculty and teacher mentors, and can engage in the practice of self-reflection (Birman et al., 2000; Garet et al., 2001). One way to do so is to mindfully embed repeated practice opportunities using a simulated learning environment as described in below.

The Urgency of Teacher Preparation Experience Alignment

Given the extreme shortage of educators across the United States, the continued projection of teacher shortage through 2025, and the increasing uncertainty and unavailability of early classroom field experiences for clinical student teachers, it is crucial that EPPs provide teacher candidates with early and intentional repeated practice opportunities in teaching methods, implementation of strategies, opportunity to receive focused feedback on teaching practices, and opportunities to refine their teaching so that they are successful and remain in the classroom. When teacher candidates are well-prepared in both content and pedagogy, it allows for a vast difference in classroom effectiveness, but also whether candidates enter into and stay in the teaching field. In efforts to improve the alignment of coursework and field experiences throughout EPPs, Thomassen and Rive (2009) suggested that it may be necessary to create simplified contexts where teacher candidates can gain initial proficiency with target skills. Transfer of practice from more simplified teaching tasks and situations to actual classrooms depends upon the extent to which practice opportunities match the authentic contexts in which the learner applies the information (Landon-Hays, Peterson-Ahmad, & Frazier, 2020). One vision that EPPs may propose to mitigate some of the challenges that new teachers may encounter when entering their first classroom and as an effort to promote retention is to utilize innovative platforms, such as a simulated learning environment.

A simulated learning environment is a piece of technology that can be defined as the combination of real and virtual worlds and provides users with a sense of real-life presence. One example of a simulated learning environment, Mursion, is powered by a blend of artificial and human intelligence that facilitate interactions between avatars and the participants (e.g., teacher candidates) by immersing them

in learning how to teach based on real-time avatar responses. The avatars portrayed in Mursion, embody characteristics typified by personalities that would exist within any classroom environment and represent an array of student ages, demographics, and personalities (Peterson-Ahmad, 2018). During a simulation, the avatars and participants engage in interactions to practice various strategies by providing real-time verbalization of teaching or other practice-based interactions (e.g., parent discussions, etc.) in a classroom or other appropriate setting with proportionally sized avatars that provide immediate responses (Dieker, et al., 2014). Within the Mursion environment, various levels of complexity (e.g., levels of classroom behavior, avatar response rates) can be controlled depending on the year of the teacher candidate within the EPP (Dawson & Kraft, 2013). This variability affords EPPs the flexibility needed to individualize practice opportunities specific to the specific needs of each teacher candidate.

Research has demonstrated the capacity that Mursion has to produce significant and lasting changes in the increased acquisition of specific pedagogical skills (e.g., academic strategies, behavior management strategies, etc.) through rehearsal and reflection (Landon-Hays, et al., 2020; Peterson, 2014; Peterson-Ahmad, 2018) and provide change in human behavior, including specific skill development in instructional strategies, student engagement, and classroom management (e.g., Dawson & Kraft, 2013; Elford, et al., 2013; Garland, et al., 2012; Hudson, et al., 2019; Landon-Hays, et al., 2020; Peterson, 2014). When EPPs utilize a technology such as a simulated learning environment throughout the duration of an EPP program, teacher candidates have repeated opportunities to practice pedagogical skills that can deepen knowledge and provision of teaching and improvement of classroom practices across repeated trials that allow for the increased transfer of learning to practice over time (Maheady et al., 2007). A simulated learning environment, like Mursion, can serve as a conduit in learning various pedagogical skills, prior to required practicum or student teaching requirements. It can also allow EPPs to strategically plan and embed experiences into specific coursework so that practice of specific skills and pedagogical skills can enhance strategy development in academic and/or social-emotional teaching skills. Additionally, EPPs can support the use of a simulated learning environment by aligning data (e.g., certification test trends of recent graduates, course assignment trends), standards, and course objectives, to hone in on specific areas of teacher candidate need so that the simulations match what teacher candidates need for refined training and practice.

Implementation Considerations for a Simulated Learning Environment

Today's classrooms expect that all teachers can effectively and efficiently support students of varying abilities, including students with disabilities (DaFonte & Barton-Arwood, 2017). EPPs are responsible for providing learning opportunities that focus on strategies that teach pre-service teachers how to facilitate such practices, however, this cannot be done without intentional use and practice across the entire duration of an EPP. Teacher candidates can benefit from purposeful, repeated practice opportunities in Mursion where mistakes can be made and explicit feedback can be given prior to practicing a particular skill again and make adjustments based on immediate feedback; something that cannot always be guaranteed in a traditional classroom setting.

As EPPs consider the facilitation and use of a simulated learning environment, like Mursion with their teacher candidates, it is advised to be strategic in this implementation (see Table 1). While implementation will look different for each EPP, there are commonalities in advice that can be shared for increased success. First, teacher educators need to encourage their candidates to take learning risks and fully embrace each simulated learning environment session with the avatar students just as they would a classroom of 'real' students. When this is done, a more authentic experience will occur and allow for

increasingly explicit feedback to ensue. Secondly, teacher educators should take time after each simulation to provide explicit feedback related to their candidates' teaching pedagogy so that improvements can be made for future simulation, role-play, or practicum trials. When candidates receive explicit feedback, simultaneously use self-reflection as a planning and goal setting tool to think about how to make these improvements for the future can be utilized. Explicit feedback coupled with the opportunity for self-reflection offers significant potential teacher candidates to deepen their knowledge in teaching and improve classroom practices' (Maheady et al., 2007). Moreover, when teacher candidates utilize feedback and use it to improve and increase implementation of teaching strategies that best support their classroom needs, it directly impacts the students in which they serve, including children with disabilities (McCray et al., 2017).

Table 1
Example of EPP Simulated Learning Environment Implementation

Step 1	Secure funding for simulated learning environment resources and acquire technology needed technology for implementation.
Step 2	Conduct data-dives to determine specific courses and course objectives, assignments, and areas of specific need (e.g., exit surveys, exam trends) where a simulated learning environment would best serve as a strategic practice tool for teacher candidates.
Step 3	Schedule and run simulated learning sessions while simultaneously providing explicit feedback and having teacher candidates engage in self-reflection with goal-setting after each session. Faculty evaluate each simulated session and modify as needed to best meet the needs of each teacher candidate.
Step 4	Start over with Step 2.

Other Considerations for Using a Simulated Learning Environment

On a more practical level, it is important for EPPs to plan and implement purposeful simulation experiences that ensure that teacher candidates get a wide variety of practice related to pedagogical implementation that are staggered and differentiated according to preparation experiences and candidate readiness. For example, candidates could first experience a simulated learning environment by establishing teacher presence and practicing clear and concise communication skills in a mini-lesson. Subsequent experiences could focus on one or more advanced techniques such as delivering a complex content-based lesson, practicing formative assessment, asking open-ended questions, allowing for wait time, using techniques that actively engage learners, and effectively managing various behaviors in a classroom. More complex simulated learning environment sessions could implement an unknown scenario where a teacher candidate must work to quickly adapt to whatever classroom situation arises such as disruptive behavior or other urgency.

EPPs should also be attentive to the variety of non-pedagogical aspects of teaching that candidates will also encounter on a day-to-day basis, such conducting a parent-teacher conference, participating in an Admission, Review, and Dismissal (ARD) meeting for students receiving special education service, and facilitating campus data review meetings. These experiences can also be purposefully planned and integrated where possible into EPP coursework and field-based experiences and should strategically involve teacher education faculty as mentors prior and concurrent to formal classroom experiences.

Finally, simulated learning environments can be used as a supplement in helping teacher candidates refine and practice specific techniques prior to or in combination with school-based experiences. For example, simulations may focus on training explicit teaching strategies within a specific content area (e.g., explicit instruction related to vocabulary), or complimentary simulations may coincide with school-based field placements. For example, with information gleaned from self-reflections and mentor teacher feedback from their school-based placement, teacher candidates could then come into the simulated learning environment and teach the same mini-lesson to the avatars where they work on targeted skills such as questioning, probing, wait time, redirection, etc. This allows teacher candidates additional opportunities to practice specific skills in a low-stakes environment where they can truly reflect and improve on such skills, while receiving real-time feedback from a faculty member or the opportunity to try a teaching skill again. Feedback, in any environment, is an important predictor of teacher effectiveness through the reflection and refinement practice and a simulation learning environment can effectively facilitate this opportunity (Gün, 2010).

Conclusion

The preparation of future teachers is certainly a multi-faceted topic complicated by the urgency to attract new teachers to the profession, effectively prepare them for their first classroom, ensure they can enact sound pedagogical practices, and ultimately retain them in the field. Unfortunately, early field experiences have been severely limited over the past two years resulting in teacher candidates who lack sufficient development and opportunities to test out their newfound teaching knowledge. Simulated learning environments such as a simulated learning environment provide an opportunity for EPPs to fill in these gaps to guarantee that the clinical student teaching experience is not the first time a candidate implements a pedagogical teaching strategy. However, these experiences must be planned, purposeful, and effectively aligned with EPP standards for teaching and learning to maximize its effectiveness.

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