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Using TeachLivE to Foster the Development of High-Leverage Practices in a Teacher Education Program

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Abstract: During the Spring 2020 semester, a group of students (preservice teachers) in the elementary education program at a university in south Texas were required to deliver part of a lesson focusing on one particular high leverage practice, eliciting student thinking in a TeachLivE lab setting. The authors used the Instructional Coaching Model (Knight, 2007) to prepare students for the session and provide feedback immediately after the session. The participants were rated in several aspects of their ability to apply the high-leverage practice (HLP) and were asked to reflect on the process immediately after the TeachLivE session. Quantitative data was analyzed to assess change in the use of the HLP. Qualitative data, in turn, was examined in terms of how participants felt about their performance and what improvements they would like to make in the future.

Introduction

Every year, in the US, approximately 110,400 teachers leave the teaching profession (Carver-Thomas & Darling-Hammond, 2019), which translates to about 8% annually for a total workforce of 3.8 million. In fact, teacher attrition accounts for 90% of annual teacher demand. When teachers leave abruptly, schools often hire inexperienced or unqualified teachers to take their place, increase class sizes, or cut class offerings altogether. Teacher attrition negatively impacts students, teachers, and the school system. Students experience a lack of continuity in teaching, and the teachers who leave are often demoralized and devastated for having to leave a career for which they spent at least four years and a significant amount of money undergoing professional preparation. Further, schools must bear the cost of hiring and training new teachers. Why do so many teachers leave the teaching profession? Although many studies have examined factors that contribute to teachers' decision to leave the profession, comparatively few studies have investigated the relationship between teacher attrition and preservice teacher quality (Feng & Sass, 2016; Krieg, 2006). One such study was conducted by Boyd, Grossman, Lankford, Loeb, & Wyckoff (2009) who found that highly effective teachers are less likely to leave teaching. Henry, Bastian, & Fortner (2011), on their part, investigated the relationship between teacher effectiveness and teacher attrition and found that teachers who leave after their first year are less effective than those who continue teaching. Teacher attrition due to lack of effectiveness is corroborated by four other studies examining teacher attrition in Texas, Washington State, New York, and North Carolina. In a study of public-school teachers in Texas, Hanushek, Kain, & Rivkin (2004) found that teachers who leave significantly underperformed in the year they left compared to teachers who stayed. Similarly, in a study of public-school teachers in Washington State, Krieg (2006) found that lower value-added estimates significantly predicted higher probabilities of exit. Further, Boyd et al. (2009) found that in New York, first year teachers who were least effective in raising student math scores had higher attrition rates than their first-year peers who were more effective. Finally, in a study of elementary teachers in North Carolina, Goldhaber, Gross, & Player (2011) found that continuous and quintile measures of teacher effectiveness indicated that less effective teachers were more likely to leave the profession.

One of the reasons less effective teachers leave the profession is due to the disconnect between theory and practice in many teacher education programs which leads to the inadequate preparation of teachers. Many of the teacher preparation programs in the U.S. are “front-loaded”, meaning that teacher candidates spend the first few years learning about the theories and practices of teaching without opportunities for interactive practice. Although most programs are field-based and have students conduct observations of actual classrooms, they are not at liberty to interrupt a teacher’s curriculum to have pre-service teacher candidates practice teaching. The actual practice of teaching in an authentic classroom environment is reserved for the final semester of student teaching. In the high-stakes environment of an actual classroom, teacher candidates do not have opportunities for “do-overs”, nor do they have a teacher educator to provide scaffolding and support. Advocates of practice-based teacher education maintain that no amount of “teaching about teaching” can replace actual teaching in an authentic classroom setting. In a practice-based approach, teaching is deconstructed into a set of essential competencies or fundamental skills that can be understood and practiced by novice teachers (Grossman & McDonald, 2008). The fundamental skills essential to teaching are referred to as high-leverage practices (HLPs). To be considered high-leverage, a practice must improve the achievement of all students, occur frequently in instruction, and be learnable by novice teachers. There are 19 high-leverage practices ranging from leading a group discussion to explaining and modeling content, practices and strategies to specifying and reinforcing productive student behavior to name a few. In addition to focusing on a limited number of targeted skills fundamental to good teaching, preservice teachers need a context in which they can practice these skills. However, providing preservice teachers with opportunities to enact lessons in an actual K-12 classroom can be challenging. Having preservice teachers design and teach a lesson in field and arranging time for faculty to conduct observations and serve as instructional coaches is often not feasible. Further, preservice teachers in their first year of the teacher preparation may not be ready to teach in an actual classroom. So, how can teacher preparation programs provide students with opportunities to practice implementing HLPs in a way that is feasible? One suggestion tendered by this study is virtual reality, which can be used to recreate a classroom environment where students behave and misbehave like actual students. TeachLivE is a mixed-reality teaching platform created at the University of Central Florida. It gives preservice teachers an opportunity to practice a very short lesson or part of a lesson by interacting with five avatars. Each of the avatars have their own unique personalities, strengths, and abilities. Preservice teachers can see the avatars on a screen in front of them. However, what preservice teachers do not see is that there is an actor—called an ‘interactor’—behind the scenes who plays the part of all five student avatars. The interactors are somewhat like orchestra leaders. They direct performances that are interactive and unscripted.

The Study

This study reports on 22 students enrolled in the elementary education program at the University of Texas Rio Grande Valley (UTRGV). UTRGV is located in Edinburg, TX and is just 20 minutes from the U.S. – Mexico border; thus, it serves a largely Hispanic population (89.4%). The participants were students in the elementary education program at UTRGV and were enrolled in a required course, “EDCI 3332: Instructional Planning and Assessment in Culturally Sustaining Classrooms”. All of the participants in this study were Mexican-American, comprised of 21 females and one male, and between the ages of 20 and 30. As part of the course requirements, participants were asked to take part in a TeachLivE session with upper elementary students in which they introduced the book “Mr. Lincoln’s Way”, a story about a beloved high school principal who works hard to reach out to the school bully, “Mean Gene” and help him change his ways and become a better person. Participants were asked to listen to the book at <https://www.youtube.com/watch?v=jw1q7uP3q-U&t=9s> and formulate an open-ended question that would help students recall relevant prior knowledge prior to reading the book, pique their interest in the book, and connect personally to the story. The high-leverage practice (HLP) the participants focused on in this study was HLP 3 - eliciting and interpreting individual students’ thinking. Participants were asked to focus on the following learning objectives.

- Give a brief summary of the book Mr. Lincoln’s Way.
- Ask one open-ended question of each of the five students to help them begin thinking about the book, Mr. Lincoln’s Way.
- Listen to the students’ answers and ask appropriate follow-up questions.

The instructor modeled the task in TeachLivE prior to having participants take part in a TeachLivE session. During the demonstration, the instructor introduced herself to students, gave a brief summary of Mr. Lincoln's Way and then proceeded to ask each student a question.

Each TeachLive session was held online through Zoom and lasted 20 minutes with 10 minutes of active teaching and 10 of debriefing. The only individuals present were the Mixed Reality Simulation Program Specialist who sets up the TeachLivE environment and schedules the TeachLivE sessions, the course instructor, and the participant. All sessions were individual and scheduled outside of class time. A spreadsheet of sign-up times was shared with participants two weeks prior to the actual session, participants simply signed up for one 20-minute session. Most participants logged on from home; however, a few did complete their sessions in the TeachLivE lab on campus. Nearly all participants were able to log on successfully, only one had technical difficulties and was asked to reschedule her session. At the appointed time both the instructor and participants would log on to Zoom, once the student was ready, he or she simply said "start simulation". Following the session, the instructor provided feedback regarding each participant's performance noting positive attributes of a student's performance such as establishing good rapport, asking good follow-up questions, and responding appropriately to students and provided suggestions for improvement. In addition, participants were asked to complete a reflection immediately after their TeachLivE session and answer the following questions.

1. What question did you ask of all the students to get them thinking about the book, "Mr. Lincoln's Way"?
2. Reflect on your feelings during the session in general. Were you nervous? Did you have fun? Did you enjoy interacting with the students?
3. What do you feel you did especially well during the session?
4. What do you feel you could improve?

In addition to the reflections, the instructor also took notes during each individual TeachLivE session, noting the questions students asked, their follow-up questions, and ability to build on students' thinking.

Findings

During the first TeachLivE session, twenty-one participants successfully completed their TeachLivE session and submitted a reflection; only one participant was unable to complete her session due to technical difficulties. All participants mentioned that they preferred the individual sessions over having to conduct a TeachLivE session in front of the class and appreciated being able to schedule it on their own time and complete it off campus through Zoom. Many of the participants mentioned that they were very nervous prior to their session. To alleviate their nerves and help them become familiar with TeachLivE, the instructor modeled a teaching session in TeachLivE prior to the individual sessions.

In terms of the first question, "What question did you ask of all the students to get them thinking about the book, 'Mr. Lincoln's Way'?", most of the questions participants asked centered around bullying. Participants asked questions such as the following:

- What does the word "bully" mean to you?
- Have you ever been bullied? If so, how did you handle it?
- Have you known someone who has been bullied?
- Have you ever helped anyone who was being bullied?
- Why does someone become a bully?

Others asked about hobbies and asked the students what hobbies they enjoy doing.

In retrospect, most of the participants asked the same question the instructor used in the TeachLive demonstration as an example. In hindsight, it may have been better to leave the task more open-ended so participants don't all ask the same question.

When asked to reflect on their feelings during the session, participants indicated that they were very anxious prior to the simulation; some even said that they felt nauseated and felt their heart racing. One participant said that seeing the thumbnail of the instructor in Zoom made her nervous; therefore, after the first participant, the instructor turned off her camera so that she could not be seen during the session. Although all participants said they were nervous immediately before the session, they did indicate that they began to relax and enjoy the session after they got started. Many said they had fun during the session and would like more TeachLivE sessions in the future. One participant said that being able to do the session from home made her feel more comfortable. All participants mentioned how “real” the students felt; one even said, “It is so real; you forget it’s just a simulation.”

In terms of the third question, “What do you feel you did especially well during the session?” many participants said that they were most worried about being able to keep the discussion going during their TeachLivE session. All participants were able to keep the discussion on track; none of them had to pause the simulation. Many mentioned that they felt they did a good job of listening to the students’ answers, responding appropriately, and asking follow-up questions. Several indicated that they felt they established a positive classroom environment. Many mentioned that they read the book multiple times and rehearsed their questions and because of that were able to give a polished performance. A few said they were worried about talking too fast, but said they felt they were able to slow down and give enough wait time for students to answer questions. All participants were able to accomplish the task of not only asking each student the main question but asking a follow-up question unique to each avatar’s response within the allotted time of 10 minutes.

Finally, when asked “What do you feel you could improve?” nearly all participants mentioned that they felt they need to improve calming themselves down during teaching and controlling their nerves. Some participants mentioned that they would get flustered during the session and pause too long before asking a follow-up question or forget the question they wanted to ask. In addition, a few participants said they feel they needed to speak more slowly and give students enough time to respond. A few participants mentioned that this was the first time they used Zoom and that they would have liked to have been more familiar with it prior to the TeachLivE session.

The data collected thus far was the first round of data collection. Participants will take part in a second session during the spring 2020 semester. For the next task, participants will be asked to focus on leading a class discussion on the book, “Mr. Lincoln’s Way”. Participants will be asked to assume students have read the book and to formulate six questions from at least three levels of Bloom’s Taxonomy (Anderson, Krathwohl, Airasian, Cruikshank, Mayer, Pintrich, Raths, Wittrock, 2001). For the second session, the level of difficulty in TeachLivE will be increased from level 0 “neutral” (all students are attentive and are not resistant to the teacher) to level 1 or “low”, wherein students are mildly resistant and may become inattentive if activities are not engaging. The goal is for the participants to teach an entire lesson with introduction, body, and conclusion but to break up the lesson into parts to make it more manageable.

Discussion

TeachLivE is a unique teaching tool in that it very closely approximates the actual environment in which students will have to ultimately perform. The very fact that all participants mentioned how nervous they were prior to the TeachLivE session is a testament to its’ realism and fidelity. All participants mentioned that they felt that they were teaching in a real classroom and that the practice was valuable. However, the greatest advantage of TeachLivE, the fact that it feels like a real classroom, however, this is the very thing that needs to be managed. Participants mentioned that they would have been much more intimidated with TeachLive if they had had to use it in front of the entire class. Many mentioned that they did not have such positive feelings toward it prior to the first session in EDCI 3332 because of experiences in other classes where they were asked to use it in front of the entire class. Another factor to consider with using TeachLivE is time, it is rather time consuming. Each participant needs at least 10 minutes, 5 for teaching and 5 for a debrief; anything less than 10 minutes feels rushed and does not give the instructor adequate time for feedback and debriefing; for this reason, it is best used outside of class. In addition, it is much more feasible for participants when they can schedule their own sessions and do them from home through Zoom. The University of Texas Rio Grande Valley serves students in the entire Rio Grande Valley region; the university itself is located in Edinburg, TX, but it serves students in neighboring cities such as Pharr, McAllen, Mission, Weslaco, Harlingen, Roma, and even Brownsville. Students who reside in Edinburg have about a 15-minute drive to the university but students in other areas have at least a 30-minute drive or even an hour and a half to

campus. In addition, most students work and have children; so, it can be difficult to make time to drive back and forth to the university outside of classes. Allowing participants to schedule their own individual sessions outside of class and allowing them to do them from home through Zoom made the use of TeachLivE much more feasible and much less intimidating to students. In addition, it also prevented the instructor from having to drive back and forth to the university for multiple individual sessions in one day. Finally, scheduling the sessions outside of class allowed the professor to use it without having to sacrifice valuable teaching time. It is a great tool, but it is imperative that researchers think mindfully about how to use it in a practical and feasible way. In addition, it is important to consider the time to allot for a TeachLivE session; too little time makes the session feel rushed and does not give the instructor time to give feedback and too much time can feel overwhelming for students. In addition, it is best to break up an entire lesson into manageable parts such as an introduction, body, and conclusion. Focusing on the same content for one lesson that is broken up into three parts allows participants to maintain continuity and focus on pedagogy as opposed to trying to learn new content for each individual session. Further, instructors need to be sensitive to how intimidating the use of TeachLivE can be for participants. Because it allows students to suspend disbelief, they feel all the natural feelings of nervousness and anxiety that they would feel teaching their first class. Instructors need to be mindful of participants' nervousness prior to using TeachLivE and model a lesson for students prior to asking them to use TeachLivE and make all sessions individual so that participants don't feel like they have to perform in front of the entire class. One of the major outcomes of this study was finding a way to use TeachLivE that did not sacrifice class time and allowed students to use TeachLivE in a way that was most convenient and least intimidating for them. Finding the best way to use such a valuable tool is important so that students are receptive to a powerful tool that has helped make great strides in the advancement toward practice based teacher education.

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