5th Annual Virtual Human Interactive Performance (VHIP) Conference

JUNE 7-9, 2017
CONFERENCES PROCEEDINGS

5th Annual

teach live

Conference

JUNE 7-9, 2017

Virtual Human Interactive Performance

College of Education and Human Performance
UNIVERSITY OF CENTRAL FLORIDA

Morgridge International Reading Center
Orlando, Florida

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FORWARD

The UCF TeachLivE™ team is very appreciative of the willingness of researchers from across the country and around the globe to share their experiences with the use of simulation in their training efforts at the 5th Annual TeachLivE Conference: Virtual Human Interaction Performance (VHIP).

We feel privileged to show conference participants new TeachLivE™ developments for use in teacher, administrator, and counselor education. New in the conference program this year was an increased amount of information on how TeachLivE™ inspired technology used in areas other than education. As in the past, sharing by the new and continuing research and development partnerships that have emerged with researchers and institutions formed the main thrust of the conference. Sharing their efforts at this conference and in journal publications is essential to the growth of knowledge about how to best apply simulation to improving education.

A special thank you goes out to Dr. Taylor Bousfield, for her tireless efforts at organizing this year’s conference while preparing to defend her dissertation. Through her efforts a significant poster session was added to the conference. The posters gave participants more opportunities throughout the conference to read and discuss research with presenters. Dr. Bousfield was supported in her efforts by many staff members including: Dr. Lisa Dieker, Dr. Charles Hughes, Dr. Kathleen Ingraham, Damien Chaffin, Donna Martin, Maureen Au, Angelica Fulchini, Dr. Matthew Taylor, Dr. Claire Donehower, Faith Ezekiel-Wilder, Celestial Wills-Jackson, and Dr. Benjamin Gallegos.

Planning has begun for the 2018 conference.

Mark your calendars for May 23 -25, 2018!

Watch for a conference paper proposal announcement soon. We look forward to seeing everyone at UCF for the 6th TeachLivE Conference!

2017 Conference Co-Chair: Michael C. Hynes
CONFERENCE PAPERS
Simulations as apprenticeship in teacher education: Designing parent-teacher conference simulations that involve delivering unwelcome news about a student’s academic performance

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Abstract

Communicating with families is a common aspect of teachers’ work yet few teachers are well-prepared for this professional activity. Addressing this practice-preparation gap, we drew from theories of experiential learning, frameworks of effective parent-teacher communication and social psychology research on bad news delivery to design and implement two simulated parent-teacher conferences focused on sharing unwelcome information about a student’s academic performance. The simulations were conducted in a mixed-reality environment that approximates a video-conferencing interface. During the 15-minute conversations, candidates interacted with the student’s mother (an avatar
on a screen) who was trained to present a standardized level of difficulty and conversational challenges (e.g., “Are you sure? How do you know?”). Data sources included video recordings of the simulations, which were reliably coded for seven parent-teacher conferencing skills. Candidates’ written reflections provided insight into their experiences. This paper offers an example of theoretically grounded simulation design and implementation and a window into how teacher educators can use simulations to assess and advance candidates’ professional readiness for family engagement.

**Keywords**: Simulation training; experiential learning; parent-teacher communication; teacher education; news delivery
Teaching is a complex profession that demands significant content knowledge and social competence. Yet, educator preparation programs in the United States tend to focus more on novices’ knowledge acquisition and less on fostering their ability to use their knowledge fluently in the social context of schools. The gap between what teachers do and how they are prepared is particularly visible around the common professional activity of parent-teacher conferences. (deBruine et al., 2014; Epstein & Sanders, 2006; Walker, in press).

Parents want teachers who invite and value their ideas (Pruitt et al., 1998; Zeitlin & Curcic, 2014). What they typically get is a business-like teacher who dominates the conversation and uses jargon without explanation (Martin et al., 2006). In turn, poor alignment between home and school impacts students academically and motivationally (Dearing et al., 2006; Hill & Chao, 2009; Walker & Hoover-Dempsey, 2014). For their part, teachers regard family engagement as one of the most challenging and dissatisfying aspects of their work (Markow & Pieters, 2012). Each day, dissatisfaction drives nearly a thousand teachers from the profession; this attrition costs the U.S. economy about $2 billion a year (Haynes, 2014).

Drawing from pedagogies of enactment (Grossman et al., 2009) and Dewey’s (1904) longstanding vision of “the educational situation,” we developed two standardized parent-teacher conferences that involved sharing unwelcome news about a student’s academic performance. We explored three research questions:

1. Could we design valid and reliable simulations that merged content knowledge and social competence?
2. Once designed, could we reliably evaluate candidates’ performance?
3. What did candidates take away from their simulation experiences?

Experiential Learning, Apprenticeship and Simulation Training
Simulations allow learners to experience a real-world professional task rather than being told about it. An experience has two distinct characteristics. First, it is *interactive* and inherently uncertain (Dewey, 2007; Shulman, 2005). What transpires is the result of the individual’s moves in response to emergent elements of the designed environment. Second, it is *continuous*. Learners must continuously construct and reconstruct their understanding of the situation as it unfolds and integrate it with prior knowledge. With deliberate practice, experiential learning enhances pattern recognition, fluent retrieval and flexible knowledge use (Ericsson, 2006).

In professional education, experiential learning is manifested as apprenticeship. However, this model relies on naturally occurring events in the day-to-day social context. Critical events may occur infrequently, which slows learning. Further, if important challenges are never experienced or observed, then uneven skills and knowledge can develop. Finally, there is little guarantee that novices will have supported opportunities to reflect on their experiences to improve future performance. Simulations offer a promising avenue for addressing these drawbacks. Our work had two specific aims: (1) integrate assessments of candidates’ professional content knowledge and social competence and (2) observe how candidates adapted their knowledge and social skills across related conditions (i.e., delivering unwelcome news).

**The Social Psychology of Bad News Delivery**

Giving bad news is difficult for most people. In fact, giving bad news poses such a threat that social psychologists coined the term ‘MUM effect’ (i.e., keeping Mum about Undesirable Messages) to describe people’s tendency to avoid or delay delivering negative feedback to others (Tesser & Rosen, 1975). Bad news has three characteristics—controllability, severity, and likelihood of future negative outcomes—that in turn, dictate specific responses (Sweeny & Shepperd, 2007). When bad news is highly controllable (i.e., a solution exists for the problem),
severe and likely to lead to additional negative outcomes, then news-givers should assume the response of active change, which involves taking immediate action to improve a situation. However, if the bad news is less severe and has low likelihood of leading to other future negative events, taking a “wait and see” or watchful waiting approach is a better response. Drawing from the Bad News Response model we created two simulated conference conditions that elicited active change and watchful waiting responses.

**Designing the Simulation Tasks**

In the Watchful Waiting simulation, the student Ed Lewis, performed below grade-level on the previous year’s standardized test but is performing at grade-level on class assignments. This condition elicited candidates’ (1) understanding that every assessment has strengths and limitations and (2) ability to explain how different assessments of the same academic skills can yield different results. In the Active Change simulation the assessment data are consistent. Ed’s performance on the standardized test and class assignments is below grade-level. Without intervention, this situation could escalate. This condition assessed candidates’ ability to enact the initial steps of response-to-intervention (Burns et al., 2008), which legally requires explaining that they will (1) try an instructional intervention to improve Ed’s performance, (2) monitor his progress and (3) meet with the parent again to discuss the intervention’s results.

**Establishing Validity**

We aligned our simulations with three Interstate Teacher and Support Consortium (INTASC) standards (2011): Standard 6, Assessment (e.g., “the teacher understands multiple methods of assessment;” Standard 7, Planning for Instruction (e.g., “the teacher plans instruction that supports every student ... by drawing upon knowledge of content areas, ... pedagogy, ... learners and the community context”); and Standard 10, Leadership and Collaboration (e.g., “the
teacher [collaborates] with learners and families to establish mutual expectations and ongoing communication to support learner development and achievement.”

Establishing Reliability

The simulations were standardized in three ways. First, they were limited to 15 minutes. Second, we established an initial moderate level of difficulty characterized by the parent’s mild resistance. Third, we created ‘if-then’ propositions. Mindful of the MUM effect, if the teacher delayed sharing information, then the parent would focus the conversation (e.g., What do you want to talk about today?). Once the conference was initiated if the teacher marginalized the parent’s participation, then the parent would become more resistant. Candidates could de-escalate the difficulty level by using partnership-oriented practices such as expressing empathy, showing interest in the student and family, and giving clear, non-defensive responses to parent questions. If the conference was coming to a close but next steps had not been discussed, then the parent pressed the issue by asking, “So what happens now?”

Methods

Participants. The simulations were completed by 12 graduate students enrolled in a secondary education program. Of these 12, six gave informed consent. To illustrate the range of individual performance, we selected four candidates for analysis. Of these four, two were female; all were Caucasian in their late 20s-early 30s.

Procedures. Before the simulations candidates analyzed Ed’s standardized test performance in math or literacy. Analytical prompts guided candidates’ analysis and interpretation of the data (e.g., What are this student’s strengths? How did this student perform relative to peers?). Other prompts encouraged candidates to consider what they did not know (e.g., How can you enhance your understanding of the student’s abilities?). Candidates also constructed a
conference plan according to seven criteria of effective parent-teacher communication (Walker & Dotger, 2012). Candidates were instructed that the 15-minute conference was the first contact between the teacher and parent; school had been in session for eight weeks. Providing a ‘wraparound’ experience, candidates had previously engaged with Ed in classroom management simulations (Pankowski & Walker, 2016). The Watchful Waiting conference was completed first.

Analyses and Results

Coding Video Data

We began by drawing from prior content validation work (Walker & Dotger, 2012) that outlined seven performance criteria. To define performance levels for each criterion across conditions (1 = below expectations; 2 = meets expectations; 3 = exceeds expectations), the authors and a doctoral student in psychology simultaneously viewed video of six candidates who had completed the BND simulations during pilot work. In the secondary discussion phase, these same three coders individually scored randomly selected videos for two candidates from the current sample. Finally, four undergraduate coders who were naïve to the study’s purpose watched the videos for our four participants in a randomized sequence. Ratings had good internal consistency (range = .68-.86). Table 1 presents the final coding scheme.

Table 1

Simulated Parent-Teacher Conferences Coding Scheme

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exceeds expectations</th>
<th>Meets expectations</th>
<th>Below expectations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening</td>
<td></td>
<td>Introduces self and greets parent; Thanks parent; Identifies student’s</td>
<td>No introductions; Fails to thank parent or state conference purpose.</td>
</tr>
<tr>
<td></td>
<td>Meets expectations plus:</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exceeds expectations</th>
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<th>Below expectations</th>
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<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Sharing information</td>
<td>Frames the meeting as a two-way conversation.</td>
<td>positive qualities; States purpose of conference.</td>
<td>Explanation of student’s performance is:</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Meets expectations plus:</td>
<td></td>
<td>• Inaccurate</td>
</tr>
<tr>
<td></td>
<td>Offers vivid examples of academic skills, test items, etc.</td>
<td></td>
<td>• Jargon-laden</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Vague</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Contradictory</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Incomplete</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Harsh or blunt</td>
</tr>
<tr>
<td>Gathering information</td>
<td>Meets expectations plus:</td>
<td>Asks student-centered questions (e.g., What is hard or easy for your child? What do you wish every teacher knew about your child?)</td>
<td>• Asks no questions</td>
</tr>
<tr>
<td></td>
<td>Asks partnership-oriented questions (e.g., How can we…?)</td>
<td></td>
<td>• Does not respond to parent questions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Fails to acknowledge parent’s comments</td>
</tr>
<tr>
<td>Action plan</td>
<td>Meets expectations plus:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thanks parent for their ideas / suggestions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Watchful Waiting:</strong> Emphasizes ‘keep doing what we are doing;’ If asked, shares ideas for how to support the student’s progress at home.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Active Change:</strong> Clearly and accurately explains next steps: (a) Intervention; (b) Progress monitoring; (c) Sharing results.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Does not outline next steps</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Offers vague or contradictory plan.</td>
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<table>
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<tr>
<th>Empathy</th>
<th>Meets expectations plus:</th>
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<tbody>
<tr>
<td></td>
<td>Non-verbals indicate understanding, active listening and compassion.</td>
</tr>
<tr>
<td></td>
<td>• Expresses empathy for parents’ emotions including confusion and anxiety.</td>
</tr>
<tr>
<td></td>
<td>• Conveys sincere interest in the family and student perspective.</td>
</tr>
<tr>
<td></td>
<td>• Words and non-verbals convey lack of empathy.</td>
</tr>
<tr>
<td></td>
<td>• Overly reactive to parent’s emotions</td>
</tr>
</tbody>
</table>

**Watchful Waiting:** overprescribes, suggests an intervention

**Active Change:** promises intervention results
| Positive tone | Meets expectations plus: | • Remains professional (tone of voice and body language does not communicate defensiveness, anxiety or blame).  
• Expresses positive expectations for the student’s educational progress. | Displays unprofessional behavior including:  
• Anger  
• Overly familiar  
• Dismisses parent concerns  
• Arrogance  
• Confusion |
| --- | --- | --- | --- |
| Managing flow | Meets expectations plus:  
States time frame at outset.  
Moves seamlessly between phases. | • Shows preparation, organization.  
• Covers all major points in the allotted time frame.  
• Does not delay or rush the conversation. | • Fails to keep conversation on track  
• Goes well under or over allotted time.  
• Delays / rushes sharing information |

**Post-Simulation Reflections**

Candidates rated their confidence before and after each simulation using a three-point scale (1 = not at all, 3 = very). They also answered six open-ended questions regarding what they did successfully, what they found challenging and easy, what they would change if they could do
the simulation again, and ‘lessons learned’ from the experiences. The sixth question allowed for any other comments.

**Results**

Figure 1 summarizes the overall mean performance ratings for each candidate by condition. Figure 2 illustrates each candidate’s performance by criterion on the Watchful Waiting condition. Figure 3 illustrates performance by criterion for the Active Change condition.

![Figure 1. Mean performance ratings for each participant by condition.](image)

Overall, coders rated candidates slightly better on the Active Change task. The one exception is Ann who excelled on both conditions. Greater within-subjects variability was observed during the Watchful Waiting task. While candidates had similar scores for Opening across conditions, BND shaped the trajectory of their conversations. For example, on the Active Change condition Dave and Ann had strong Sharing Information scores and their ratings remained high throughout the simulation. By contrast, Mary and Sean scored low on Sharing Information and their subsequent scores remained low. Candidates were less confident pre-simulation ($M = 1.75, SD = .50$) and more confident afterward ($M = 2.25, SD = .71$; range = 1-3). Pre-simulation
confidence was identical across conditions. Post-simulation confidence was higher for the Active Change condition ($M = 2.50$, $SD = .58$) than the Watchful Waiting condition ($M = 2.00$, $SD = .82$).

![Figure 2](image1.png)

**Figure 2.** Performance scores across the seven criteria for the Watchful Waiting condition.

![Figure 3](image2.png)

**Figure 3.** Performance scores across the seven criteria for the Active Change condition.

### Discussion

This project designed and piloted simulated parent-teacher conferences that demand social competence and real-time application of professional content knowledge. To establish validity we drew from professional teaching standards and a previously validated framework of effective parent-teacher communication (Walker & Dotger, 2012) and populated the framework with BND responses of active change and watchful waiting. Task reliability involved standardized duration,
context and difficulty level. Three ‘if-then’ conditions based on BND research (Legg & Sweeny, 2014) and teacher candidate communication skills (Walker & Marksbury, 2015) allowed for candidates’ individual moves. The coding scheme yielded good internal consistency. Profiles elicited by the BND simulations identify potential points of entry for individualized instruction. How candidates delivered the bad news appeared to shape the trajectory of their conversations.

**Limitations**

As an exploratory study, this research is limited by sample size, replication and generalization. While offering a road map for simulation design, further validation is needed. Comparison of simulations alongside traditional assessments of knowledge would give insight into what each measure uniquely provides. Further, experts could complete these performance tasks to establish benchmarks and developmentally appropriate targets for growing novices’ competence.

**Future Directions**

Given the simulations’ focus on teachers’ ability to interpret and explain assessment data (i.e., their quantitative data literacy), future work—perhaps when candidates advance to a pedagogical methods course—could take a sharper focus on content knowledge, pedagogical content knowledge and candidates’ analysis of assessment data and the quality of rationales underlying their plan of active change. However, simulations are resource intensive. Faculty aiming to adopt this kind of personalized training would benefit from other examples that integrate content methods with family engagement contexts (e.g., Dotger, 2010; Mehlig & Shumow 2013).

**References**


One of the greatest challenges facing educators in today’s classrooms is the problem behavior students display in educational environments. For teachers working in inclusive settings or self-contained special education classrooms, this challenge may be further magnified as the prevalence of challenging behaviors is significantly elevated in children with disabilities (Emerson et al., 2001; Murphy, Healy, & Leader, 2009). The ability to understand and manage student behavior is one of the core characteristics of teachers who are classified as highly effective practitioners (Garland, Garland, & Vasquez, 2013).

Teachers and other practitioners must understand the function of a student’s behavior in order to effectively address behavior issues. A functional analysis (FA) is a controlled procedure for determining what variables in the environment are reinforcing or maintaining problem behavior and is considered the most accurate methodology for completing a functional behavior assessment (FBA; Iwata, Dorsey, Slifer, Bauman, & Richman 1982/1994). When conducting a FA, the practitioner systematically manipulates controlled environmental variables to precisely identify the maintaining variable, or variables, associated with a specific target behavior (e.g., aggression, stereotypy; Carr & Durand, 1985; Iwata et al., 1982/1994). Despite the strong evidence supporting the use of FA procedures to identify the function of a student’s behavior (e.g., Iwata et al., 2000; Moore et al., 2002; Wallace, Doney, Mintz-Resudek, & Tarbox, 2004), many schools underuse or avoid using this type of behavioral assessment. Some of the reasons contributing to this are: (a) the lack of trained practitioners to implement the procedures, (b) misconceptions about the difficulty of the procedure, (c) questions about feasibility of implementation in the school environment, and (d) lack of other resources (Gable, Tonelson, Sheth, Wilson, & Park, 2012).

Overview of Traditional Functional Analysis Training Practices

Previous studies have utilized a training protocol for FA that involves a didactic component, a role-playing or practice component, and a post-training assessment (Lambert, Bloom, Clay, Kunnavatana, & Collins; Lambert, Lloyd, Staubitz, Weaver, & Jennings, 2014; McKenney, Waldron, & Conroy, 2013). Teachers and other practitioners have generally shown the ability to implement a traditional FA or trial-based functional analysis procedure with fidelity given this training protocol, however the generalizability of the skills using the traditional training protocols is questionable.
Using Simulation to Enhance Current Training Practices

Simulation and virtual environments may offer a more realistic rehearsal experience during FA training as compared to role-play with a colleague or graduate student. TeachLivE™ is a mixed-reality teaching environment supporting teacher practice in pedagogy and content. The lab’s innovative technology affords participants the opportunity to build content area and pedagogical skills with an understanding of how skills will transfer to a real classroom situation. The results of a large national research study involving over 150 practicing teachers indicate that four, 10-minute sessions in the simulator can impact at least one teacher behavior transferring back to the “real” classroom (Straub, Dieker, Hynes, & Hughes, 2014; 2015). TeachLivE is used by universities around the country to develop specific skills in educators including use of open-ended questions, discrete trial training, reinforcer sampling, and classroom or behavior management strategies. TeachLivE or other virtual classroom environments may offer a controlled environment to train pre-service and in-service teachers in FA procedures.

Pilot Study

A small pilot study replicated the procedures from Kunnvatana and colleagues (2013) and substituted the role-play with an opportunity to implement each of the FA conditions in a virtual classroom environment. This pilot study used a multiple baseline across participants design to examine the effects of role-play in the virtual classroom environment on implementation of attention and escape conditions in three public school teachers. The researchers found that teachers demonstrated an increase in their fidelity of implementation within three sessions to an acceptable level of competence for generalizing to the classroom with children (Vasquez, Donehower, Koch, Marino, & Schaffer, 2017).

Purpose

Functional analysis is generally considered to be the most accurate and reliable method for identifying behavioral function, and yet it is not widely used in schools due to lack of trained practitioners, misconceptions about procedural difficulty, and questions about feasibility in the school environment. The purpose of this study was to determine whether rehearsal in a virtual environment would improve the participants’ ability to implement functional analysis (FA) procedures with fidelity.

Method

Participants

The participants for this study were in-service teachers enrolled in an online course on Applied Behavior Analysis at a large university in the southeast United States. The participants
had between one and ten years of teaching experience. There were 5 male participants and 24 female participants.

Settings

AdobeConnect.

Adobe connect is an online, video conferencing program. The didactic training portion of this study took place via AdobeConnect.

TeachLivE™ simulator.

The TeachLivE simulator is a mixed-reality program in which participants interact with avatars in real time. The version of the simulator that was used for this study houses five middle school avatars, including one student with an autism spectrum disorder (ASD). The student with ASD presented with limited expressive language and behaviors including verbal disruptions (e.g., yelling, crying), physical disruptions (e.g., banging on the table), and stereotypy (e.g., hand movements). The participants implemented each condition of the FA with the avatar with ASD in the context of this virtual classroom environment.

Classroom environments.

The classroom environment for participants ranged from inclusive to self-contained, 1:1 direct teacher instruction. Participants worked in elementary classrooms and secondary classrooms. Instruction was based upon the student’s grade/age level. Some classrooms experienced normal day-to-day interruptions from related services personnel (e.g., occupational therapist, physical therapist, speech and language therapist) co-teachers, or other students.

Research Design

A posttest-only control group design was used for this study. Although participants were not randomly assigned, there was a treatment group and control group, and both groups were administered a posttest (Gall, Gall, & Borg, 2007). Due to the nature of the target skill or dependent measure (functional analysis), it would not have been ethical to conduct an in situ pretest because untrained teachers would have to implement a procedure that was likely to elicit problem behavior from students with disabilities.

Didactic training.

The didactic training for this study had three components requiring participants to: (a) read several articles on FA procedures (i.e., Bloom, Iwata, Fritz, Roscoe, & Carreau, 2011; Cooper, Heron, & Heward, 2007; Iwata et al., 2000; Moore & Fisher, 2007; Najdowski, Wallace, Penrod, Tarbox, Reagon, & Higbee, 2008; Wallace, Doney, Mintz-Resudek, & Tarbox, 2004); (b) participate in an online training on FA via Adobe Connect facilitated by a board certified behavior analyst (BCBA); and (c) complete and score above 80% on an online assessment on FA procedures. Participants in both the control group and the treatment group participated in this portion of the training.
TeachLivE™ training.

Participants in the treatment group took part in a session in the TeachLivE simulator that gave them the opportunity to practice each of the three FA conditions (i.e., attention, demand, and play) in the virtual classroom. One participant interacted with TeachLivE at a time while one or two participants observed each session. During the session, the implementation checklist for each condition was reviewed and each participant was asked to run all three conditions for three-minutes each. After each condition, the participant was given feedback on their implementation of the procedure. Participants who were not running the FA conditions were asked to collect frequency data on the student avatar’s problem behaviors. This gave them the opportunity to practice the data collection for an FA and also observe the FA procedure being implemented. All participants were scored by two observers for reliability purposes.

Classroom-based functional analysis.

All classroom-based FA videos were scored by one observer and 30% of the videos were scored by two observers for the purposes of calculating inter-observer agreement (IOA). Inter-observer agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and then multiplying by 100. After one round of scoring, IOA was calculated at 76%. Both observers then reviewed the implementation checklist and recoded the five videos with the lowest agreement. Inter-observer agreement was then recalculated for classroom-based FA videos at 81%.

Instrumentation

Implementation checklists were developed for each of the three FA conditions. The didactic training and online pretest incorporated the information contained in these task analyses. Additionally, participant performance in both the TeachLivE training sessions and the classroom-based FAs were scored using these checklists.

Results

There was more variability in total implementation fidelity for the participants who only received didactic training. Almost 100% of the participants who received the didactic training and a TeachLivE role-play experience scored above 75% of the participants who only received the didactic training.

An independent t test was statistically significant, t(18.515) = -5.282, p < .001. The treatment group had higher average fidelity scores (n = 15, M = 89.422, SD = 9.34563) than the control group (n = 14, M = 59.4048, SD = 19.25278). The effect size was calculated by Cohen’s d (specifically, the difference in means divided by the pooled standard deviation) and found to be 1.02 indicating that there is over one standard deviation unit difference between the treatment and control group. This is generally thought to be a large to very large effect. Post hoc power was computed to be 0.75.
Discussion

The purpose of this study was to replicate Kunnavatanna and colleagues’ (2013) role-play study in a simulated environment. The TeachLivE mixed-reality simulator was used in place of role-play and participants practiced three FA conditions (i.e., attention, demand, and play). A treatment group and control group were given didactic training, and only the treatment group practiced FA procedures in TeachLivE. The results of the independent $t$ test were statistically significant ($p < .001$) and had a large effect size ($d = 1.02$), suggesting participants who received practice opportunities in a virtual classroom prior to implementing FA procedures with a student in their classroom demonstrated greater procedural fidelity than those who did not. The results suggest that participants who received the didactic training plus TeachLivE™ demonstrate greater procedural fidelity, on average, as compared to the participants who received the didactic training only.

References


Reactions and Insights from First Time Users

Dr. Anni Reinking

Southern Illinois University-Edwardsville

Abstract

In this project, early childhood teacher candidates interacted in a simulated situation where they were co-teachers with different roles. Due to the restraints of Southern Illinois University-Edwardsville’s virtual practice lab license, the professor designed simplified personalities for each of the avatars. Furthermore, as part of the research, all of the involved parties were interviewed including the students, actor, and personal reflections from the professor.

For generations, teacher candidates have received training through coursework and field experience hours. In most settings, practicum or clinical hours consist of the teacher candidate going into a real classroom to be mentored by the cooperating teacher, plan and try new lessons as well as behavior management ideas, and engage with students. Using real classrooms during the last semester of teacher training programs is a great way for teacher candidates to gain knowledge and experience in real life situations. However, in most teacher training programs teacher candidates are placed with students in their first semester, which is before teacher candidates learn about lesson planning, methods, or behavior management. During these first experiences in the classroom, teacher candidates learn in the moment, which at times can be detrimental to students’ learning environment. As Portner (2005) suggests, teachers need added support during their induction year, and they cite classroom management as the primary area in which teacher candidates need support.

In addition teacher candidates, cooperating teachers, and college professors are regularly communicating that there is an increased need for more exposure in the field through practicum
and clinical experiences to ensure teacher candidates are proficient upon graduation. Dieker, Hynes, Hughes, and Smith (2008) report that prospective teachers need more early and sustained experiences with children in the classroom. One way to provide these sustained and early experiences is in a safe, low-stress environment, which can be accomplished through Virtual Learning Environments (VLE). VLEs are rapidly demonstrating utility for expanding experiential learning for teacher candidates.

VLEs incorporate the coursework with “real life” situations in a simulated environment. These experiences offer safe, flexible, and appropriate training conditions to practice pedagogical skills. In this environment teacher candidates are coached, paused, and given real-time feedback, rather than after-the-lesson feedback. Additionally, in the VLE’s there are avatars that are able to provide real-life responses, interruptions, questions, and answers. The research on VLE classrooms indicates that there is a nine second suspension of disbelief, which means that after nine seconds teacher candidates feel as though they are teaching in a real classroom rather than in a simulated classroom (Dieker, Hynes, Hughes, & Smith, 2008).

In this brief description of VLEs as a means to train teacher candidates, one simulated scenario will be described. The scenario for this project occurred in an early childhood course at a state university focused on collaborative relationships, specifically co-teaching. The benefits of incorporating the VLE into initial coursework in the teacher training program are evident.

Co-Teaching in Early Childhood

In one early childhood course, teacher candidates were taught about collaborative relationships in the early childhood field, including collaborating with community members, parents, and co-teachers. Co-teaching, the sharing of instruction by two trained adults in the classroom, is becoming more and more common in K-12 classroom settings. Co-teaching, however, has always been a staple in early childhood environments. While co-teaching can take many forms (Friend, Cook, Hurley-Chamberlain & Shamberger, 2010), the goal of this assignment was for teacher candidates to plan and instruct a lesson in the VLE to practice collaboration, cooperation, and compromise.

Prior to the Virtual Professional Practice lab experience, the professor created altered personalities for the avatars that were accessible through the Mursion license SIUE purchased. While this process was time consuming, the benefits were worth the time and planning. In Table 1, the avatar descriptions provided by the professor to the actor are presented.
Table 1. Avatar Early Childhood Personalities

<table>
<thead>
<tr>
<th>Student</th>
<th>Characteristics</th>
<th>Do Not Have These…</th>
<th>Suggested Actions and Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ed</td>
<td>Tired and Distracted Slow Talker Knows a lot about sports (including basketball, but also wrestling and football) YOUNGEST brother of 4 Likes wrestling</td>
<td>Not the war piece for history (change that to wrestling)</td>
<td>“I’m tired. I cried when I got up this morning.” “Hey, Ms. I played with my brother last night. I threw the football like Cam” “My big brother jumped on me last night in bed. It hurt.”</td>
</tr>
<tr>
<td>Sean</td>
<td>Interrupts to state animal facts Teacher pleaser Gets sad when there is not attention on him (always wants to be the one with the answers) Knows a lot about animals because of the show Wild Kratts HATES being physical—wants to look at books instead</td>
<td></td>
<td>“Did you know that worms have slime on their bodies?” “Hey, hey Ms. I love dogs. My dog licks my face. My sister gets a rash when the dog licks her.” “No! I am not going to the gym. I hate the ball thing.”</td>
</tr>
<tr>
<td>Kevin</td>
<td>Always talking to the CJ Loves to DANCE to music and make random beat noises or bang on his desk</td>
<td>Does not make videos Do not have the “female boundary” characteristic – but does compliment in a little kid way.</td>
<td>“Ms., I like your necklace. My mommy has a necklace that is pretty too.” “Put on that song, Ms. I want to dance.” “Ms., hey Ms. Can you sing so we can dance?”</td>
</tr>
<tr>
<td>CJ</td>
<td>Likes to watch Disney Shows (Liv and Maddie, Stuck in the Middle, The Descendants) Loves Disney Princesses</td>
<td>No cell phone, no boyfriend (I know the cell phone is to make it look like she is not paying attention, I am going to direct students to</td>
<td>“You have to call me Cinderella today. My daddy called me a princess and today I want to be Cinderella.” “Ms. he’s touching me. Stop touching me”</td>
</tr>
</tbody>
</table>
say that it is a toy she shouldn’t have during the lesson)
No reality TV (Disney princesses instead)

“Get away from me.”
“I got this toy cell phone from my mom’s drawer. She doesn’t want me to have it, but I look cool, right Ms.?”

Maria
Very shy and inattentive
Loves to look at books
Do not like to be active or physical
She likes to be by herself. Her favorite thing is to get a book and look at it in a corner all by herself.

“I want a book.”
“Please stop, I want to read.”
“Get away. That is my book.”

The assignment associated with the VLE required early childhood teacher candidates to co-plan a lesson using Google Drive with a randomly assigned classmate. The total number of teacher candidates in the course totaled 30, which created 15 scenarios in the VLE. The teacher candidates were given two weeks to co-plan. Once their lessons were completed, the professor uploaded the lessons, with comments and suggestions for the actor, to a shared drive that only the actor and the professor had access to.

After the planning and submission of the lesson plans, the teacher candidates presented the planned lessons in the simulated classroom environment. During the lesson in the VLE other teacher candidates observed in order to provide feedback and to learn from the feedback provided from the professor. After the entire experience, the teacher candidates were asked to reflect on their experiences in the VLE and the process of co-planning.

On the day of the simulation the teacher candidates were prepared. Each lesson lasted approximately seven-nine minutes resulting in mini-lessons. During the first few co-teachers the professor paused the classroom in order to coach the teacher candidates on implementation skills. As the simulation continued students began learning from the feedback provided and appeared to become more comfortable in the VLE.

After the simulation, the teacher candidates were not only asked to complete a written reflection, but were also asked to take a short survey on their experience. On the survey a majority of the students stated that the coaching and feedback were the most beneficial portions
of the experience. The ability to stop, receive feedback, and implement the strategies immediately prepared the teacher candidates for future co-teaching in their placements. Additionally, the teacher candidates reflected in the survey that the ability for the avatars to respond with correct and incorrect answers, as well as unexpected comments created a real-life situation that the teacher candidates could work through with peers and a faculty member readily available to provide feedback.

Furthermore, the professor spoke to the actor, the person who controlled the avatars at SIUE’s Virtual Professional Practice Lab. The biggest feedback he gave to the professor was how grateful he was for the detailed information regarding early childhood personalities and responses, as depicted in Table 1. Additionally, he appreciated the time and energy the professor put into ensuring all of the information he had was up to date, such as the lesson plans. Furthermore, he reflected that he learned a lot from the experience of hearing the professor debrief with each set of co-teachers. He was able to use that information and incorporate ideas into future sessions.

**Conclusion**

Overall, the early childhood co-teaching simulation was a learning experience for the teacher candidates. They were able to plan together, use technology, and begin to understand how to instruct and manage students’ behavior in the moment, before entering a classroom with real human students. This experience was a crucial to the teacher candidates’ learning and professional development as future early childhood teachers.

**References**


Applications of TeachLive in Counselor Training

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Abstract

Counselor preparation courses that focus on skill development typically require students to develop discreet micro skills in active listening and intervention through practice with peers and actual clients. Students then receive feedback through live observation and submitting video recordings to faculty and supervisors. The methods of skill development in early stages have significant drawbacks in terms of ethical and pragmatic considerations. TeachLive offers a platform that allows students to develop skills in a safe environment that provides immediate feedback from peers and instructors.

Keywords: Counselor skills training, TeachLive
Applications of TeachLive in Counselor Training

Perhaps the most challenging courses in counselor preparation are those that center on skill development, the courses typically categorized as counseling skills, practicum, and internship. Graduate students are often competent and comfortable in courses centering on understanding theories, conceptual frameworks, diagnosis, and treatment modalities. These courses require students to utilize texts, readings, and examples, and to display knowledge of content through typical academic structures such as writing assignments and exams. However, when future counselors enter the skills-based courses where the process of counseling takes precedence over content knowledge, many struggle with the tasks of counseling skill development within the context of a relationship with another person, whether that person is a peer with whom one practices skills or an actual client. The use of TeachLive in skills courses provides an opportunity for students to gain confidence in counseling skills in a safe environment with no risk of harm to actual clients.

Counseling Skills

What basic skills are necessary for beginning counselors to begin working with clients? Many students believe that counseling involves helping through directive work such as giving advice, influencing others to make positive changes, and assisting with decisions. Most are surprised to learn that counseling is actually a process of re-storying in relationship with another person; that is, the client is the author of their own story, but together the client and counselor discover a new story, one with a better outcome (McAuliffe & Ericson, 2011). The challenge before these students is the development of discreet micro skills, or communication units that allow one to interact more effectively with the client (Ivey, Ivey, & Zalaquett, 2012). Rather than leaping into the counseling relationship and offering solutions, counselors must learn to listen carefully, gather information, and provide meaning within the helping relationship.

Individual counseling skills:

The development of micro skills in individual counseling requires students to first become active listeners. Active listeners are able to use encouragers, such as nodding and single words, and to ask open-ended questions to gather additional data. Additionally, the use of skills such as summarization, clarification, reflection, and non-verbal responses solidify the understanding that takes place between client and counselor. These skills are non-evaluative and non-judgmental, and convey the counselor’s interest and understanding to the client. More advanced skills include challenging discrepancies, informing, interpreting, probing for meaning, goal setting, and evaluation. (Parsons & Zhang, 2014).

Group counseling skills:

Although group counseling utilizes many of the same active listing skills exercised in individual counseling, group leadership requires subtle facilitation of intrapersonal and interpersonal growth in communication among members. Psychoeducational, counseling, and
therapy groups progress through distinct stages of development (Jacobs, Schimmel, Masson, & Harvill, 2016), and effective leaders must not only recognize the stages of their groups, but also be prepared to subtly lead the group towards the next stage. Additionally, group members may assume roles within the group that may assist or impede both their own progress and the groups progress. Some examples of group leadership skills needed by new counselors are developing group norms, setting a tone, facilitating eye contact and communication among members, drawing out reticent members, cutting off members who monopolize, pacing, establishing/holding/changing focus, and using group exercises. Group work requires use of a complex skill set designed to help members experience therapeutic factors (Yalom, 2008) that lead to change and meaning within the group.

TeachLive and Counseling Skill Development
Although TeachLive was developed for applications in pre-service teacher preparation, the scenario formats present numerous opportunities for application to counseling skill development. For the past several years, the University of Maine Counselor Education program has been employing TeachLive in several courses to teach and reinforce counseling skill development. Specifically, the use of the parent avatar and the middle school group has been utilized in several courses to allow students to practice skills within the safe environment of working within the scenarios and receiving immediate and constructive feedback from faculty and peers. Although use of technology in counselor education has been prominent for years (Jencius, 2010), the existing technologies centered on blogs, web development, social networking, and virtual world environments that were initially developed for gaming. Counselor educators had little control over these environments except in cases where individual university programs were able to develop counseling-specific applications incurring considerable cost and years of effort.

Traditional skill development teaching:
In many counselor education programs, skill development begins early in the student’s program through use of occasional role plays used to demonstrate content knowledge, such as knowledge of a specific theory in practice. In the later stages of the educational program, students typically enroll in a skills class (often titled pre-practicum or counseling skills), followed by a practicum requiring students to work with actual clients under close faculty supervision, and finally internship, the cumulative course where students are placed in a school, mental health agency, or a hospital setting to practice skills under the guidance of an experienced counselor acting as a site supervisor.

In a counseling skills class, students typically practice skills using peers in class as “clients” or “students”. Supervision by the instructor may include live observation or reviewing audio or video recordings and providing feedback. Direct observation can be achieved through sitting in on sessions, using rooms with one-way mirrors, or the co-therapy model where a faculty member works directly with the student providing feedback throughout the session. Video recordings may be completed in a counseling training clinic equipped with cameras or at an off-campus site
using cameras or computers for recording. A similar model exists in practicum classes when
students work with actual clients but receive both supervision from faculty and feedback from
peers in class.

Recording, direct observation, and co-therapy models have drawbacks including an impact
on client comfort levels as well as the frequent sense of awkwardness that is reported by student
counselors (Kadushin, 1992). Some methods of providing immediate feedback have been tried
including a “bug-in-the-ear” method where supervisors provide feedback via an earbud worn by
the counseling student, or providing breaks in the session where the student may receive
feedback from a supervisor who has been observing from another room by camera or one-way
mirror. Supervision through recordings creates barriers for clients who may not wish to
photographed at vulnerable moments in therapy and creates additional ethical and legal concerns
for student counselors who must get informed consent to record sessions. Often a delay in
feedback occurs when the student submits recordings after the sessions and faculty may need
time to review the recordings of a number of students in the course.

None of these methods are ideal because they either create a contrived and unnatural situation for
both the counselor and counselee or there is a significant delay in achieving feedback.
Furthermore, a potential impact on ethical standards for confidentiality exists through the need to
encrypt recordings and solicit client permission for observations.

TeachLive: Advantages as an Alternative

The TeachLive platform offers multiple opportunities and advantages for counselor training.
Presently, the parent scenario and the middle school classroom scenario are being used at the
University of Maine in the following courses: Pre-Practicum, Counselor Education Practicum,
and Effective Group Work in the Helping Professions. The individual parent avatar scenario
provides ample opportunities for students to practice active listening skills as well as more
advanced skills including probing and interpretation of meaning. Since the scenario can be
controlled through the collaboration of interactor and faculty member, it can be modified
depending on the skill levels of individuals in the course. The avatar, Stacey, has a full range of
emotions; she can express anger, cry, and display frustration and other affective states. Students
who might later be intimidated by a client displaying emotion can become comfortable dealing
with typical client emotions that might be displayed in a counseling setting. Furthermore, the
Stacey scenario environment is particularly useful for future school counselors who will certainly eventually be faced with parents expressing frustration with school policies.

The middle school classroom has been used for students preparing for the school counseling
profession to practice leading a typical classroom guidance lesson. For beginning students, the
use of open-ended questions and active listening skills can be employed in working on beginning
group work skills such as setting a tone and developing group norms. Students with more
experience can facilitate the group in a social skills discussion. Particular avatars are very useful
in helping students develop more advanced skills like cutting off or drawing out. Most people
are not socialized to comfortably deal with an overzealous individual by cutting the person off
effectively and directing the group direction elsewhere, so this skill is difficult for most counselors-in-training. Shawn is a particularly energetic avatar and the perfect student to practice cutting off skills on, while the Maria avatar will respond to the use of drawing out techniques.

**Conclusion**

The design of TeachLive lends itself well to applications in teaching future counseling professionals active listening, counseling, and intervention skills. Due to the range of emotions possible with the adult avatar, students can practice their skills and learn to deal with people with affective expression in a safe environment before they begin working with actual clients. The middle school scenario is ideal for future group counselors to develop facilitation skills and practice advanced interventions such as cutting off and drawing out group members. The platform provides the opportunity for practicing skills without danger of making an error that could be hurtful to an actual client. Because TeachLive can be paused, faculty are able to provide immediate feedback. Students and faculty can avoid the ethical dilemmas and awkwardness posed by recordings and live observation with actual clients while skills are being honed.
At this time, informal data has been collected from students concerning their experiences with TeachLive with the intention to develop a research methodology for further exploring the use of TeachLive in counselor preparation over the coming year.

References


Negotiating LivE: Integrating TeachLivE to Improve University Faculty-to-Faculty Communication

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Mentoring has been shown to have numerous positive benefits in the realm of academia and beyond, including the two primary functions of career advancement and psychosocial support. More specifically, mentoring contributes to increasing self-confidence and self-esteem; personal satisfaction; competence; and for both mentors and mentees, further exposure that can lead to professional networking, development, and respect from colleagues (Chandler 1996; Chesler and Chesler 2002; Darwin and Palmer 2009; Wasburn 2007). In higher education, mentorship can increase research funding and publication rates (Darwin and Palmer 2009); as faculty networking is critical to timely career progression and development, mentoring has also been identified as a strategy to help address gender inequalities in higher education (Chandler 1996; Wasburn 2007; see also Dobele et al. 2014 on gender inequalities in higher education). Not only have women been shown to provide greater support through mentoring, but it can offer camaraderie and support for the particular issues women faculty and women faculty of color face in the academic institution (Chandler 1996; Wasburn 2007).

Even so, as based in the particular obstacles women can face in higher education, an almost greater amount of issues with the traditional dyadic mentoring model have been identified. When the term “mentoring” is used, many think of the traditional model, in which a mentor, identified as having greater experiences and knowledge to impart, is paired with a mentee (protégé), who is often younger, early in their career, and seen as lacking experience. However, such a development pairing is based in a male standard, where such one-on-one guidance and advice can lead to a paternalistic power dynamic (Chandler 1996; Wasburn 2007). Not only this, but such career patterns may not reflect women’s experience in academia—nor, for that matter, the current setting of higher education (Lipton 2017; Powell and Mainiero 1992). In today’s knowledge economy and neoliberal socio-economic context, higher education is much more competitive, based in research dollars and a mentality of publish early and often (Chandler 1996; Darwin and Palmer 2009; Lipton 2017). Many academic tracks are less stable (Darwin and Palmer 2009), which can again affect power dynamics and additional issues when one can feel reliant on a singular mentor relationship.

Women have traditionally been excluded from informal mentoring, based on spaces where mentoring takes place and concerns for the “gossip-factor” or other tensions that can arise in cross-gender relationships (Wasburn 2007: 59). Social norms and stereotypical gender roles can also be reinforced in such pairing. More generally, people often select younger versions of
themselves for mentoring purposes, as they feel they can help this individual the most; however, as academia has been a traditionally white male space, such mentor pairings can leave women and women of color at a disadvantage (Chandler 1996). Even in the case of more formal mentor pairing, advanced women may feel they are tokens, needing to represent every woman, overstretched due to the lack of senior women representation, or concerned about perpetuating stereotypes of the woman as the caregiver (Chandler 1996; Wasburn 2007). This can lead to a lack of time or individuals to participate in mentoring initiatives.

As such, there have been calls for “new, more inclusive peer-oriented models to be developed” (Wasburn 2007: 58), helping to support “collaborative models” that support innovation (Darwin and Palmer 2009) and women’s experiences, which often integrate family, caregiving, and service into career planning in a way that men often do not adopt (Wasburn 2007). This trend can be seen in the mentoring alternatives offered through prior initiatives and research, including mentoring circles (Darwin and Palmer 2009), collective mentoring (Chesler and Chesler 2002), group mentoring (Hiuzing 2010), and strategic collaboration (Wasburn 2007). While each offers a specific model, the intent of group mentoring is to pair more than two people together, offering support from peers, the sharing of resources and wisdom from multiple people at once, and helping to address tokenism or a lack of senior faculty through pairing multiple junior faculty with a few senior faculty (see also Balint et al. 1994; Dominguez and Hager 2013). Additionally, such group work can bring multiple perspectives together, including pulling individuals from multiple disciplines and across campus.

**Mentoring Community and TeachLive**

The context of the University of Central Florida (UCF) mirrors these broader concerns for recruiting, retaining, and advancing women faculty and faculty of color. The Center for Success of Women Faculty (CSWF) specifically looks to help address these concerns through focusing on mentoring opportunities, building community, creating opportunities for recognition, career-life balances initiatives, and making UCF more family-friendly. Accordingly, CSWF looked to construct and implement a women faculty mentoring community that would address the needs of our faculty in an applied, pragmatic manner. While the reviewed research offered insight into practical models for supporting women faculty, a key component remained unaddressed: *How can a mentoring model reveal and affect participants’ perceptions of success?* Although much research documents women’s unique experiences and stressors, there lacks research that integrates how collaborative mentoring models can help to support our discovery of women’s definitions of success, with the intent that future communities can better support their realization of these definitions and associated goals (see Johnsrud and Wunsch 1994 for a discussion of perceived barriers to success for women in academia; see also Miller and Noland 2016; Stupnisky et al. 2015 for new faculty success).
During the 2015-2016 academic year, CSWF initiated a mentoring community that was designed to: 1) learn what women faculty define as success at different points in their careers, and 2) apply programming to address deficiencies in current mentoring models. We recruited across campus to obtain a mix of ranks, ages, ethnicities, and college affiliations, creating a community of 35 women faculty. We specifically created the small groups (3 women/group) to combine three individuals who were unique in all of these categories. To meet our mentoring needs, we created a community that included vertical and horizontal mentoring components. We combined monthly large group sessions on specific topics, including a focus on mentoring and career-life balance, and small monthly group topics that were self-guided, intended to be held in-between large group sessions.

As such, our goal for TeachLive was to improve our mentoring capabilities. To help participants train, practice, and experience mentoring, we used TeachLive in a novel way: faculty-to-faculty communication. Combining the “willing suspension of disbelief” with a safe environment, we provided a virtual rehearsal for the real-life scenarios we developed with support from TeachLivE.

**Methods**

A total of 35 women faculty participated in the mentoring community; each additionally consented to participate in research coinciding with definitions of success and mentoring experiences. The participants ranged from assistant to full professors, instructors, lecturers, and staff. The eight large group sessions and monthly small group sessions were spread across one academic year.

Data collection entailed pre- and post-surveys distributed in the opening and concluding sessions, inclusive of open-ended responses. 35 pre-surveys were completed, with 32 completed post-surveys. The surveys were grouped in themes of career success (also addressing work-life balance topics), perception (related to gender issues and connectivity on campus), experience (with mentorship), expectations and factors (related to retention and promotion in academia), and career paths (addressing gender stereotypes). The second author held focus groups, as based in the assigned small groups, in the month of January with a total of 33 participants, focused on the topics of success, goals, obstacles, and retention.

Data analysis consisted of a mixed-methods approach to the quantitative and qualitative data collection. Utilizing contemporary grounded theory and a social construction perspective, the researchers were sensitized by prior research on mentoring and categories of the survey data, yet also allowed for themes to organically emerge from participants’ responses (Berger and Luckmann 1967; Charmaz 2006). The social constructionist perspective, influencing grounded theory, is a perspective that puts forth our understandings of reality are based in interactions.
Meaning is based in shared symbols, so that our understandings of reality are both subjective, as based in interpretations of objects, experiences, and interactions, and objective, as there is a world that is ‘out there,’ and its influence is felt as a reaction to our actions (Berger and Luckmann 1967). Over the course of time patterns of action can become habitualized, both in larger society (e.g. institutions) and in our everyday life (e.g. habits such as brushing one’s teeth), helping individuals and society to function without the need to constantly and explicitly make new decisions. This allows room for innovation, as it frees space for creativity (Berger and Luckmann 1967). Last, language is critical to interactionism and constructionism. Language comprises the shared knowledge and symbols that allow communication, realization of the self through viewing oneself as an object, and can transfer knowledge through written form (Blumer 1969; Mead 2015; Phillips and Hardy 2002).

For the purposes of this project, we performed a content analysis of the open-ended responses to each of the survey topics. For the first round of coding, in-vivo codes (codes arising from the wording of the responses themselves) were used to respect the power of the participants’ language, with codes that could be unique or overlapping to each set of responses (Berg 2009). After the first round of coding, a second round of coding was used to determine similarities or differences across each set of responses, helping to work towards developing primary themes. During this second round of coding, the researchers worked to develop categories based on the first round of coding. These groupings were then determined to offer primary themes per survey topic, helping to reveal the influence of mentoring and women’s success factors.

**Scenarios**

TeachLivE was used for practicing mentoring and negotiation skills for faculty members as part of our 2015-16 academic year mentoring community for women faculty. We used Ms. Stacey Atkins as our avatar. In one series of scenarios, Stacey participated in a mentor-mentee relationship as a very needy, naïve, new faculty member asking her mentor (live participant) for all sorts of professional and personal advice. In a second scenario, Stacey becomes a senior faculty member mentor who tried to bully her mentee (live participant) into doing something that was in Stacey’s, but necessarily the mentee’s, best interest. Live participants interacted with Stacey for approximately 6 minutes while watched by the rest of the faculty mentoring community. The interaction was followed by a large group debrief. Women faculty considered TeachLivE to be an excellent way to work on their mentoring and negotiation skills that promoted suspension of disbelief and avoided the sometimes negative issues of traditional role-play.

In the first scenario, Stacey is a new Assistant Professor in the Sociology Department. The purpose was for the participant to practice mentoring new faculty and help improve participants’ mentoring outcomes. The scenario was described as:

*You are a current faculty member told to mentor a new, assistant professor. The new assistant professor is a young, sweet, naïve, woman named Stacey Adkins. This is your*
first meeting to discuss annual evaluation criteria since you know that it is better to know what is expected in your department up front, rather than being surprised in May when reports are due. Please begin the conversation and answer any questions and concerns that may be brought to light. Remember, this can be quite stressful for new professors and you will need to manage her emotional well-being as you relay the criteria and demands of the job.

For the second scenario, we focused on practicing negotiation skills, placing Stacey in the role of the senior faculty mentor in the Sociology Department. The participant therefore played the part of a mentee, practicing how to say no to authority, as this is a known difficulty particularly for women faculty. The scenario included that:

Stacy is a senior faculty member in your department who was assigned to be your faculty mentor. She would like you to be on a faculty job search committee with her. The Chair is hesitant to ask you and told Stacy that you would need to volunteer for the position. The hire will definitely impact your research and teaching in the department, as the field closely complements your own. However, the job ad is really broad so hundreds of applicants are expected. Additionally, the search committee chair seems to dislike searches.

Findings

As TeachLive was integrated into the mentoring community, we next discuss participants’ responses in relation to the mentoring community overall. First, we asked questions regarding their experiences with mentoring, outside of the mentoring community, to better understand the context of mentoring at UCF. While they stated their experiences within the mentoring community did not change their survey responses to this group of questions, the women described how the community made them more critical of mentoring and mentoring relationships. This included knowledge of what “good” mentoring looks like, the availability of mentoring, type of mentoring, and their own role as a mentor. For instance, participants explained that the mentoring community helped in “building a more productive relationship with a mentor,” while another explained that “I have seen what good mentorship can provide. I don’t think I’ve had particularly good mentorship in the past, based on what I’ve learned through this program.” While one participant stated that “I am more critical of mentoring. I have higher expectations,” another participant explained that “I see more clearly the important role of mentoring and have tried to be a better mentor to the junior faculty in my department.” Representing the different types of mentoring, a participant stated,

It has made me realize that there are many off shoots/types of mentoring. In our group, we talked about things that relate to mentoring on UCF institutional knowledge, not on particular aspects of professional advancement because our fields are different. Overall valuable and positive experience.

While the prior quotes represented how the experiences helped them become critical of mentoring, in such a way they can look for and build better mentoring relationships (as mentor and/or mentee), a final participant revealed the integration of success when she stated, “I finally
feel as if I know what I need to succeed and know what to ask for and how to ask for it. Before I had no idea what I didn’t know.”

The final two quotes also represent a more over-arching theme, as related to resources. Generally, participants expressed that the practice of mentoring, experiences in small groups, and the topics covered in the large group sessions helped them to understand what resources are available at UCF, that they are not having these experiences in isolation, and that with the proper support they can realize their goals. Although some women expressed that increased awareness of gender obstacles and shared obstacles could influence their perceptions of the academy, the same women then explained how the mentoring community “helped them become even more persistent and tenacious,” and that the even though expectations “are all still issues that I’m learning to accept/navigate, [it] feels more manageable.”

Once again in relation to obstacles, in relation to their expectations and factors for staying in academia and UCF, women explained the critical nature of the mentoring community for feeling more included, increased knowledge of resources, support, and focus on their goals. For instance, participants stated “I feel that I could contact my mentoring group to discuss issues and gain support,” while another stated “I feel a better sense of community within UCF, like I am a piece of a bigger whole rather than an island unto itself. I’ve enjoyed the interdisciplinary aspect and interactions outside of my college.” Another similarly stated that it “has provided resources and support in regards to a successful academic career” and another participant declared, “I feel more included at UCF. I feel more confident that I want to and can be here in 10+ years.”

In relation to the combination of the vertical (small groups included women from different ranks) and horizontal (each level was represented, allowing women to have peer and collaborative relationships), one participant explained that,

I like the small group discussions which have led to support for all members to apply for awards and promotion. The workshops and supportive environment have helped me feel empowered to work forward promotion and awards.

We found this theme of support and empowerment through the additional question on definitions of career and faculty success. Collective, women explained how the community helped to reinforce their perspectives on work-life balance. Three women’s descriptions help to represent the sense of accepting prioritization of “life” into their career planning:

I feel better/safer admitting the importance I place on family and the lower importance I place on administrative work.
It has allowed me to get answers to questions that I had about managing my group and developing an appropriate work/life balance. It has also placed me into discussions about issues that haven’t shown up in my life yet, so that I’m better prepared to address them.
I don't think I've changed, but it has allowed me to think about family relationships more, as well as friendships and normal life. I am aware of the guilt I feel for dedicating time to one place or another (work or family) and I try to let it go. Still hard, but I'm aware of it and I feel like I'm not alone.
Discussion

With a mentoring community constructed to address issues of recruitment, retention, and advancement of women faculty, the integration of TeachLive offered the possibility of both using TeachLive in a novel way—through faculty-to-faculty communication across campus—and to address building community and mentoring skills in a novel way—through the use of a mixed-reality environment.

The creation of a collaborative mentoring community and the integration of TeachLive helped to address key, established issues of traditional mentoring in higher education. The environment of TeachLive allowed for women to practice mentoring with an avatar, decreasing potential power issues that could come from traditional role play. It additionally supported the collaborative atmosphere through the “fish bowl” setting; while the participant faced the screen and therefore individually could act through the suspension of disbelief, all 35 participants remained involved through observing the interactions. The follow-up discussions helped for everyone to offer feedback and critically consider how they would have participated, placing everyone on a level playing field. It additionally allowed all ranks to experience the position of mentor and mentee, helping to move past the dyadic dynamics of those with experience and those lacking experience.

Even as one session, TeachLive allowed for further community building and discussions occurring during the session contributed to women, as noted in their quotes, to discover similarities across disciplines. Even if disciplines may differ, the skills of mentoring and negotiation cross contexts, just as obstacles in saying no to opportunities that may not best serve women faculty. Women can also see themselves in other participants who interact with the avatar, offering a sense of empowerment by not only offering a platform to offer common advice, but a platform to determine shared experiences across women of diverse positions and ranks.

Overall, we found the integration of vertical and horizontal pairings, along with large and small group sessions, to be helpful in creating collaborative spaces for determining and supporting women’s definitions of success. Future research can be sensitized to further determine how such interactive technology supports such community building and mentoring skills. Additionally the context of UCF as a large, aspiring university may have helped to create a safe space for community development, as it offered a place of both openness and anonymity from the usual work space. Last, future research can work to understand what faculty benefit most from this model of mentoring, to best help women define and achieve their definitions of success.

References


Setting the Course: Mursion@ECU
Implementing Mursion® for Sustainable Educational Support
Christine Wilson, Holly Fales, and Chris Moore
East Carolina University

Abstract

We will walk you through the experience of initiating, implementing, and institutionalizing (Fullan, 2007) Mursion®, the corporate entity that grew out of UCF’s TeachLivE™ at East Carolina University (ECU). The theoretical framework we’ve used to frame this experience report contextualizes Fullan’s (2007) phases of change within Rogers’s (1995) innovation-decision process and Bandura’s (1977) social learning theory.

ECU Pirates Set Sail in Search of Innovative Educator Professional Development

The ECU College of Education (CoE) sustains and supports a dedicated faculty that provides high quality education for teachers and seeks innovative ways to improve teacher education. One of the ways that the CoE’s Office of Assessment, Accreditation and Data Management (OAADM) works to support faculty research and innovation is to seek new developments in educator preparation and sources of funding for faculty who may want to evaluate and/or implement new strategies. The newest major innovation we have been researching through the OAADM is the Mursion® mixed reality simulator, the corporate iteration of TeachLivE™.


Theoretical Foundation

Change is a constant in education, and 21st century educators must be prepared to leverage what we have learned about change (Fullan, 2007), innovation (Rogers, 1995), social learning theory (Bandura, 1971), and self-efficacy (Bandura, 1977) to equip 21st century learners with the tools they need to survive and thrive.

As new educational mandates get passed down each year, many contain requirements that candidates spend more time practicing. No one disputes the usefulness in a teacher candidate’s training for them to get into the classroom with students and teach; however, as Anderson, Labij & Barr (2013) point out, the biggest limiter to providing teacher candidates with opportunities to practice is the lack of access to students (p. 9). The paradoxical lack of and need for access to learners for teacher candidates served as a primary inspiration for the development of TeachLivE™ (Hayes, 2013) and the adoption of its commercial iteration Mursion® by ECU.

Methodological Framework

Diffusion of Innovation, Perceived Characteristics, and the Decision-Making Process

Tasked with the immense responsibility of decisions regarding such a powerful educational tool, the Mursion@ECU team sought to apply Rogers’s (1995) five-step innovation-decision process: (1) knowledge of an innovation, (2) formation of a favorable or unfavorable attitude about the innovation’s fit, (3) decision to accept, reject, or adapt the innovation, (4) implementation of the decision, and (5) institutionalization or rejection of the innovation (Rogers, 1995, p. 162). The common theme throughout the research discussed here on sustaining innovation in higher education is the hard work of the individuals who take innovations through Fullan's phases: initiation, implementation, and institutionalization (2007, 2016).

Fullan’s Phases: A Fluid Foundation

According to Fullan (2007), the three phases of change are initiation, implementation, and institutionalization, which must be planned for simultaneously (LearningForward, 2016). The first stage, initiation, is extremely important. You only get one chance to make a first impression. Once an innovation is launched, the implementation stage begins. If an innovation isn’t launched well, it rarely moves beyond implementation. This is the stage when support and feedback are crucial (LearningForward, 2016, p. 19). The final stage is institutionalization, dependent upon the previous phases being successful and fully implemented (LearningForward, 2016, p. 20).

Initiation: Testing the Waters with Pilot Program Design

Initiation began with a visit by a small team from ECU that included the CoE Dean, Associate Dean of Research, Elementary and Middle Grades Department Chair and Instructional Technology Consultant and current Mursion lead coordinator, Christine Wilson, to UCF’s
TeachLivE™ lab in the Summer of 2015. Excited at the prospect of offering Mursion® at ECU, the Department Chair and Instructional Technologist planned to conduct a pilot of Mursion® during Spring 2016 to explore logistical options for implementation and determine if it was worth further investment. To this end, during Fall 2015 the team planned and facilitated a demonstration for the Elementary and Middle Grades (ELMID) faculty and a Mursion® orientation session to all interested faculty within the College. To get started with this innovation, it was going to be necessary to spend money on the technology, training, and hourly usage. The team used the funds set aside for research to purchase Mursion® services, materials, and equipment.

The best fit for a pilot course was an Elementary Classroom Management Course. Dr. Brian Housand, who taught two sections of this course in Spring 2016 was selected for the pilot. During the pilot, students developed lesson plans and taught twice in the Mursion® simulator. All of the sessions were recorded and other faculty were encouraged to watch the recordings to get a better idea of how Mursion could be used.

Once the pilot concluded, the College of Education determined that we would continue to offer Mursion®, as the budget would allow. To seek additional funding and start engaging stakeholders, the Mursion@ECU team planned buy-in-oriented events for each semester. We also requested and received funds from student technology fees to continue to grow the program.

**Implementation: Charting the Logistic & Curricular Conditions**

In Summer 2016, the Mursion@ECU team underwent a structural change. With the original Department Chair moving to another university, another CoE Instructional Technology Consultant, Holly Fales, joined the team to assist with the Mursion@ECU program. The two CoE ITC’s continued to build on the implementation steps embedded in the initiation phase, and added a new member to the team: graduate research assistant, Chris Moore. We spent the Fall 2016 semester working through contract details to secure a Mursion® license, creating resources for Mursion® interaction, presenting to groups of CoE donors and partners, planning and facilitating Mursion® Open Houses for faculty and staff, drafting the application for an NSF grant, and creating the Mursion@ECU website. All that hard work proved worthwhile: In response to the donor presentations, the CoE received funding from a donor to hire an Interactor for the program and began the search.

Meanwhile during Fall 2016, Mursion® use expanded to include courses serving 122 candidates from four program areas: Elementary Education, Special Education, Art Education, and Educational Leadership. Candidates participated in 26 hours of simulation. Between Mursion®-created and faculty-created scenarios, we had accumulated 27 scenarios, 12 of which are complete with thorough materials for the instructor, the candidates, and the Interactor.
Several members of the Special Education faculty became the first at ECU to conduct research in Mursion when they completed a study of candidate perception of the Mursion® experience. Voytecki, Hudson, & Zhang (2017) conducted brief interviews with 44 Special Education candidates (adapted curriculum and general curriculum) who participated in Mursion® simulations as part of a special education course. Candidates audio recorded their answers to three perception-oriented questions in the presence of an interview facilitator immediately after leaving their third Mursion® session for the course.

To prepare for more diverse faculty participation, we have modified the scenario design template and planner to meet our locally situated needs. We have also gathered sample scenarios for healthcare, leadership, human resources, customer service, and sales. For Mursion@ECU to be a success, faculty must work to include Mursion® scenarios and lab time within their courses as well as provide effective feedback and reflective activities. In addition to availability to pre-service educators, we intend to expand our Mursion® use to include educational leadership, counseling and adult education in the near future. As part of the College of Education’s mission to serve NC school districts and educators, the college also is extending Mursion® immersive simulations to districts as a professional development tool for educators.

Navigating the Shoals: Monitoring, assessing, and evaluating early challenges and solutions

Spring 2017 introduced new logistical and buy-in challenges. The first search for on-site Interactors did not produce any candidates that met Mursion®’s hiring standards. In the interim, we’ve hired one of Mursion®’s experienced Interactors to work remotely. Much of Spring 2017 semester’s innovation-oriented energy has been spent fostering buy-in across stakeholder groups: we have published an article on campus and were featured in two magazines, offered grants to K-12 schools and educators for professional development that includes both scenario development and Mursion® lab time, added a session scheduler to the Mursion@ECU website, sought additional funding sources, and presented to the local Principals and Assistant Principals association (PAPAS) and several CoE departments.

In Table A, you will find descriptions of the challenges faced by each group of stakeholders identified during the initiation and implementation phases and the solutions proposed by the Mursion@ECU team based on programmatic assessment and faculty research findings.

Table A

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Challenges</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Candidates</td>
<td>Limited practice in delivering instruction in a</td>
<td>Pilot Mursion® to provide candidates the opportunity to practice in a safe space prior to</td>
</tr>
<tr>
<td><strong>University Faculty</strong></td>
<td><strong>University Donors</strong></td>
<td><strong>Educational Leadership</strong></td>
</tr>
<tr>
<td>------------------------</td>
<td>-----------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>Real classroom prior to internship. Provide training for faculty members to facilitate Mursion® sessions and design custom scenarios. Host Mursion® Open Houses that include live demonstrations of candidates teaching lessons and allow faculty to interact in the Mursion® classroom. Increase marketing efforts to include emails, digital signage, and news articles to increase excitement and usage of Mursion®.</td>
<td>Interested in supporting tools for students learning that will increase post-graduation success, but limited knowledge of simulation capabilities. Work with College of Education Director of Outreach and University Advancement officers to inform donors of Mursion® including invitations to Open House and personalized demonstrations.</td>
<td>Effective communication is critical for success as a school leader; candidates cite limited opportunities for practice as an issue. Immersive simulations allow leaders to build capacity in the different types of interactions required of school leaders. Work with faculty to develop custom scenarios for administrator interactions. Record simulations for reflection and feedback. Share positive faculty and candidate feedback with other stakeholders.</td>
</tr>
</tbody>
</table>
**Institutionalization: Turning the Tide**

Successful institutionalization, as we demonstrated throughout our analysis, can be a long, winding, and challenging path. Once an innovation has reached this stage, the innovation becomes part of a regular routine (Fullan, 2007). We have not yet reached this stage in project development, but as Fullan (2007, LearningForward 2015) recommends, we keep the goal of institutionalization in our sights along the journey.

**Sustaining Commitment to Purpose**

Based on the growth and positive response from all stakeholders involved since the project’s initiation, ECU has committed to allocating funds in 2016-2017 to increase the availability of Mursion® interactive simulations within all educator preparation programs, and the university has expressed intention of continued funding in subsequent years.

Due to this investment, the CoE now has increased autonomy and flexibility to design scenarios, schedule simulations, design and offer professional development, and collaborate with regional school districts, institutions, and organizations. The Mursion@ECU team committed to sustaining this innovation is dedicating Summer 2017 to making Mursion® more accessible to regional stakeholders. We are upgrading the Mursion@ECU lab to make the space more conducive to mixed reality simulation and more appealing and engaging for participants. We are also in the process of planning professional development modules for lateral entry teachers and planning to incorporate Mursion® into professional development events that align well with it as well as to host Mursion®-specific professional development events like workshops and conferences. Our team also continues to seek both one-time and sustainable funding sources.

<table>
<thead>
<tr>
<th>Teachers</th>
<th>the real classroom. Many educators struggle with communicating effectively with parents, students or other stakeholders.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>strategies learned in professional development and can receive real time coaching from instructional coaches and/or administrators. Mursion® has the flexibility to allow teachers to practice in a classroom environment or in a one-on-one environment with an adult avatar utilizing a variety of scenarios.</td>
</tr>
<tr>
<td>K-12 Students &amp; Parents</td>
<td>Students stand to lose valuable instruction if teachers are not adequately prepared to teach and manage a classroom. Need to have a confident and competent teacher leading the classroom that communicates in a professional and caring manner.</td>
</tr>
</tbody>
</table>
**Fostering, Assessing, and Sustaining Faculty Buy-in**

As the 2016-2017 academic year progressed, it became clear that the innovation would not stand the test of time if we do not quickly find solutions for some of the problems arising. First, to get Mursion® fully integrated into the curriculum as the Dean continues to advocate for, it will be necessary to achieve full faculty buy-in. As part of CoE leadership’s support for Mursion@ECU, this innovation was added to the College’s strategic plan update in Summer 2017, with the expectation that programs will effectively integrate this instrumental resource within their curriculums in upcoming academic years. We anticipate that being able to provide open lab hours will encourage faculty to drop by the lab when it suits their schedules instead of requiring that they shoehorn yet another meeting into their already overwhelming workloads.

Second, since we have purchased a license and hired a Mursion® Interactor in the interim as we conduct a second search for two in-house Interactors, we will need to ensure steady traffic in the lab once the Interactors are in place to justify the price tag. Third, it would be optimal to find a way for the Mursion® program to become self-sustaining, as budget constraints seem to keep getting tighter. Attendance and engagement are monitored by the Mursion® team at every Mursion®-related interaction to assess the effectiveness in the immediacy of the situation as well as to collect data for future assessment. At information sessions, attendance rosters are collected, and after simulation sessions, participants complete a brief perception of experience survey or interview.

**Monitoring, Assessing, and Addressing Ongoing Needs**

Unfortunately, while faculty buy-in is a major concern, it’s not the only challenge. As evidenced in the stakeholder analysis, each group of stakeholders faces a unique set of challenges, and the Mursion® team will need to continually revisit the analysis to monitor for emerging challenges, assess the effectiveness of the solutions, and address needs and concerns as they arise.

**Promoting Widespread Implementation**

Taking Mursion® to the K-12 schools contributes to both the CoE mission and the ECU mission and vision by providing professional development opportunities to education partners across the state. In order to ensure that Mursion® is being used effectively to provide candidates with meaningful professional development experience, a variety of research projects have been and continue to be designed and implemented surrounding the incorporation of Mursion® into the College of Education curriculum.
References


Liminal Learning in Mixed Reality Teaching Environments

Jody S. Piro
Catherine O’Callaghan
Western Connecticut State University

Introduction

Effective practice-based teacher education programs (PBTE) are grounded in research and provide pre-service teachers with the opportunities to enact high leverage core practices (Forzani, 2014). Coupled with research based practices (e.g. Lowenberg-Ball, 2012) and traditional clinical placements, mixed reality simulations such as TeachLivE can provide a powerful application of situated learning for pre-service candidates. For example, creating rapport with student is one of Lowenberg-Ball’s (2012) high leverage practices. Situated learning within an immersive learning environment connects high leverage practices to situated learning prior to clinical placements (O’Callaghan & Piro, 2016).

Method

The purpose of this study was to understand how threshold concepts were experienced in mixed reality simulations. The central research question for this study was: How did pre-service teachers experience threshold learning within the liminal learning spaces of mixed reality simulations? A qualitative collective case study (Yin, 2009) was used to understand the experiences of the participants, who were bound by the level of exposure (Exposure Level Three) to mixed reality simulations using three different High Leverage Practices (e.g. three semesters, three simulations a semester).

Context of the Study and Participants

The research was conducted in a teacher education program at a public university in the Northeast of the United States. Purposeful sampling of 29 pre-service teacher education candidates participated in one cohort of students who experienced three semesters of a mapped curriculum in a teacher education program that included use of a mixed reality simulations throughout the curriculum. Participants taught three different 5-8 minute sessions within the mixed reality teaching lab with a 2-3 minute subsequent coaching element following the simulation in introduction, intermediate and advanced level courses in teacher education, each of which were videotaped. Each of the 29 candidates was part of the cohort of three consecutive courses that were exposed to three High Leverage Practices in three different courses in their program, three sessions per semester, for three semesters. The High Leverage Practices (Lowenberg-Ball, 2012) identified as the focus for threshold practices were selected to
coordinate with the program curriculum map. Table 1 illustrates the participant courses and simulations.

**Table 1: Exposure to Coursework and Simulations**

<table>
<thead>
<tr>
<th>Total Exposure: Exposure Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Courses</td>
</tr>
<tr>
<td>Total Simulations</td>
</tr>
<tr>
<td>Total approximate exposure time in simulations and coaching</td>
</tr>
</tbody>
</table>

In semester one, participants used *Creating rapport with students* and *routines for classroom discourse and work* as High Leverage Practices. In semester two, participants used *Eliciting and interpreting individual students’ thinking through the use of a graphic organizer* and as the High Leverage Practices. In semester three, participants used *Leading a group discussion with higher order questions* as the High Leverage Practice. All enrolled students for the courses participated in the study. Table 2 illustrates the course and the High Leverage Practice used for mixed reality simulations.

**Table 2: Course and Associated High Leverage Practice**

<table>
<thead>
<tr>
<th>Course and Level</th>
<th>High Leverage Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course 1—Exposure Level 1</td>
<td><em>Creating rapport with students</em></td>
</tr>
<tr>
<td></td>
<td><em>Implementing norms and routines for classroom discourse</em></td>
</tr>
<tr>
<td>Course 2—Exposure Level 2</td>
<td><em>Eliciting and interpreting individual students’ thinking through the use of a graphic organizer</em></td>
</tr>
<tr>
<td>Course 3—Exposure Level 3</td>
<td><em>Leading a group discussion with higher order questions</em></td>
</tr>
</tbody>
</table>
Data Collection

The researchers collected 54 hours over three semesters of video data depicting participant performances and subsequent or within simulation coaching of teaching one of three high leverage practices (HLP’s) per semester within the mixed reality simulations. Each course had two sections. Video data were collected via digital camera in semester one and through a computer camera connected to the TV screen during semesters two and three.

Data Analysis

Data were analyzed through Verbal Protocol Analysis (VPA). Verbal reports and protocol analysis is a method for exploring the thinking processes of preservice teachers as they puzzle through difficult situations (Afflerbach, 2002). According to Ericsson & Simon (1993), think-aloud protocols use the preservice teachers own verbalizations to codify knowledge. Participants control their metacognitive reflection on action and the researcher records their thought process. Protocol analysis may also be used for the construction of emerging theories. Using both inductive codes and codes informed by the literature, we analyzed individual instances from the data, followed by an aggregation of participants’ words and phrases to allow a new understanding of a phenomenon to emerge (Stake, 1995). From these data, we reduced the data to final themes.

Findings

Introduction

This section presents the results related to the phenomenon of the study from the analysis of videotaped data collection of 29 participants in 9 simulations per class over three semesters. Threshold learning emerged through the mixed reality simulations. Participants demonstrated transformative, integrative, irreversible, troublesome and bounded concepts as part of their experience of developing professional identities within the simulations. Each of these threshold concepts was evidenced by several themes grounded in participant words or behaviors.

Finding 1: Participants experienced pre-liminal moments. These pre-liminal instances were characterized as troublesome. Themes that supported this troublesome knowledge were mimicry, stuckness, oscillations, unpreparedness and the performance of various threshold concepts (HLP’s).

Finding 2: Participants experienced liminal learning as integrative. These liminal learning instances were characterized by integrative behaviors, such as professional artistry. Themes that supported this professional artistry included professional concepts and improvisation.

Finding 3: Participants experienced liminal learning as irreversible. These liminal learning instances were characterized by irreversible assimilation or accommodation behaviors. Themes that supported these behaviors were reconstitution of the self and teacher voice.
**Finding 4:** Participants experienced professional knowledge as transformative. This transformation was characterized by professional confidence, as demonstrated by shifts to professional language, teacher stance and preparedness.

**Finding 5:** Participants experienced professional knowledge as bounded. This bounded learning was characterized through knowledge structures. Instances of these knowledge structures were found through professional learning community building and with one Threshold Learning Concept (HLP), rapport building.

Table 3 demonstrates the findings.

*Table 3: Findings*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub-Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Liminal:</strong></td>
<td></td>
</tr>
<tr>
<td><em>Troublesome</em></td>
<td>Mimicry</td>
</tr>
<tr>
<td></td>
<td>Stuckness</td>
</tr>
<tr>
<td></td>
<td>Oscillations</td>
</tr>
<tr>
<td></td>
<td>Unpreparedness</td>
</tr>
<tr>
<td></td>
<td>Various other HLP’s</td>
</tr>
<tr>
<td><strong>Integrative:</strong></td>
<td></td>
</tr>
<tr>
<td><em>Professional Artistry</em></td>
<td>Professional Concepts</td>
</tr>
<tr>
<td></td>
<td>Improvisation</td>
</tr>
<tr>
<td><strong>Irreversible:</strong></td>
<td></td>
</tr>
<tr>
<td><em>Assimilation/Accommodation</em></td>
<td>Reconstitution of the Self</td>
</tr>
<tr>
<td></td>
<td>Teacher Voice</td>
</tr>
<tr>
<td><strong>Transformative:</strong></td>
<td></td>
</tr>
<tr>
<td><em>Professional Confidence</em></td>
<td>Shifts to Professional Language</td>
</tr>
<tr>
<td></td>
<td>Teacher Stance</td>
</tr>
<tr>
<td></td>
<td>Preparedness</td>
</tr>
<tr>
<td><strong>Bounded:</strong></td>
<td></td>
</tr>
<tr>
<td><em>Knowledge Structures</em></td>
<td>PLC</td>
</tr>
<tr>
<td></td>
<td>Rapport Building</td>
</tr>
</tbody>
</table>
Discussion

Findings indicated that the integration of mixed-reality simulations within initial teacher preparation core courses facilitated the journey of pre-service candidates towards professional identities as they faced instructional and behavioral challenges over the course of a semester. Preservice candidates in mixed-reality simulations fluctuated between pre-professional and liminal portals as they struggled to grasp threshold concepts. The pre-professional portal denoted ‘stuck’ or ‘troublesome’ places where preservice candidates mimicked teachers’ discourse yet retained the skills, and knowledge of a university student. Characteristics of this stage of pre-liminality are unpreparedness, rigidity of thinking, and student stance. With increased experience in mixed-reality simulations, participants began to oscillate between the pre-professional and liminal portals.

Pre-service candidates journeying towards the liminal portal were assimilating and accommodating threshold concepts to reconstitute their professional identity. While the pre-professional portal denoted a ‘student stance and discourse’, preservice candidates moving towards the liminal portal were creating a new identity as an educator. This creativity was evidenced in their use of ‘teacher voice’ and improvisation in responding to misbehavior. It was through the act of ‘puzzling through’ those instructional or behavioral problems that were presented to them in mixed-reality simulations that pre-service candidates began to feel comfortable in their new professional identity.

While the majority of participants oscillated between pre-professional and liminal portals, a few journeyed from liminal towards professional trends portal. Characteristics of pre-service candidates ensconced in this portal were self-confidence, preparedness, as well as teacher stance and discourse. In their reconstituted self and identity as an educator, participants participated in professional learning communities with the discourse and cognition of an educator. Their use of professional terminology to coach their fellow peers in simulations was evidence of the transformative journey from liminality to professional.

There is an uneasy relationship between Threshold Concepts and developmentalism (specifically Piaget’s concepts of assimilation and accommodation) and between the notion of common and individual outcomes of pre-service teacher candidates. We recognized that candidates entered simulations with varying levels of learning with Threshold Concepts, regardless of which skills were identified. While Threshold Concepts are communal outcomes for the program (and some would say, for the profession), the nature of liminality and developmentalism suggests that individuals will be at varying levels and will oscillate between pre-professional, through liminality, to professional behaviors.

We offer a model of the findings below in Figure 1:
In this section, we offer suggestions for program development for using Threshold Concepts within mixed reality environments. First, for curriculum development, it is necessary to plan where simulations should occur in the program and which professional skills to target. Use mixed reality simulations with identified Threshold Concepts. We studied four High Leverage Practices which were the Threshold Concepts within our liminal learning environment, our mixed reality simulation lab.

Second, write scenarios for students that emphasize problem solving within those Threshold Abilities. Prior knowledge and schema become significant concepts for performance
outcomes within this problem solving and students may enter and exit in various places within the liminal spaces.

Third, use coaching within and after the simulations. Help students to understand how scholars in the field use the Threshold Concept and Ability. Professors are able to help scaffold through coaching. For example, focus on Hattie’s (2008) three questions: 1. “Where are you going?” What are your goals? 2. “How are you going?” What progress is being made toward the goals? 3. “Where to next?” What activities need to take place to make better progress?

Fourth, use reflective activities following simulations to increase student metacognition regarding their performance of the Threshold Concepts and to set goals for subsequent simulations. Modifying Hattie’s (2008) three questions for coaching can also provide structure for students’ post-simulation reflections: 1. What was my goal in the simulation as it related to the Threshold Ability? 2. How did I do? 3. What do I need to focus upon and practice prior to my next simulation using this Threshold Concept?

Last, assist students to understand the connections between professional practices within simulations. Professionals do not use Threshold Concepts in isolation but as part of a connected and integrative practice. Using focused scenarios with Threshold Concept outcomes and supporting those practices with scenarios that invite students to perform the Threshold Concepts, and then using coaching and reflective activities to further scaffold the relationships between them.

Figure 2 illustrates this model of process for using Threshold Abilities within Mixed Reality Environments.

Figure 2: Model of Process for Threshold Abilities
References


Finding the Silver Lining: Co-Teaching in a Virtual Learning Environment White Paper

Barbara Martin and Susanne James
Southern Illinois University at Edwardsville

This white paper will discuss the co-teaching collaboration between preservice general education and special education students with shared planning and discourse through the use of a cloud platform. The students were then required to deliver specific content and practice effective co-teaching pedagogy in a virtual learning environment, the Southern Illinois University Edwardsville Virtual Professional Practice Lab. The silver lining for the teacher candidates was the opportunity to experience co-teaching before being in the field!

A need exists in teacher education for enhanced experiential learning, especially focused on applying collaborative planning practices which have a high impact on student performance. Teacher educators must consider enhancing their programs by providing instruction to preservice teacher candidates in authentic experiential learning pedagogy. Virtual Learning Environments (VLE) are rapidly demonstrating utility for expanding experiential learning. VLEs offer safe, flexible, and appropriate training conditions to practice pedagogical skills.

All aspects of a VLE used in the training of teachers are embodied in TeachLive™ virtual classroom-training simulator (see Dieker, Hynes, Hughes, & Smith, 2008). The VLE is a simulated practice experience that offers several value-added qualities. Preservice teachers can have a VLE “experience” individually or collectively, receive immediate feedback on their performance and attempt teaching the lesson again. The VLE is an opportunity for preservice teachers to practice teaching content before going into a classroom. It provides them with a space to test out classroom management strategies, pedagogy, content strategies, etc. without the negative consequences that would come with beginning teaching skills such as loss of academic time and engagement.

The objective of this study was to build collaboration skills between preservice general education and special education teacher candidates to deliver evidenced-based instruction in a virtual classroom setting with shared planning and discourse. This research project examined how co-teaching practice delivered in a VLE impacted co-teachers’ skills and thus had an effect on the outcomes for the students they teach. In this study, preservice teacher candidates planned and co-taught in a virtual classroom to practice collaboration skills, delivering specific content and pedagogy, and behavior management skills. Rather than teacher candidates testing out their skills in a real classroom setting to assess their strengths and weaknesses, this study used the VLE to practice on virtual students with immediate feedback on performance. The virtual students were programmed with distinctive personality types that are similar to students in a “real” classroom. Using the VLE, systematic training related to participating preservice teachers observed teaching behaviors is possible.
Despite the popularity of co-teaching as a service delivery model, there are few known studies on how to implement specific instructional techniques in co-teaching arrangements or on whether such instruction improves outcomes for students. Lundeen and Lundeen (1993) found only two studies selected for a meta-analysis reported how co-teaching was implemented and with no reports of treatment fidelity. Magiera & Zigmond (2005) substantiate there is little data regarding the effectiveness of co-teaching under routine conditions of instruction. In a recent study, Haselden (2011) found that a co-teaching support model increased academic achievement in biology for at-risk students on high stakes assessments. However, recent research findings have found only moderate effect size on student outcomes, especially students with disabilities, in co-teaching arrangements (Cook et al., 2011; Murawski & Swanson, 2001; Packard et al., 2011). While schools have been implementing the co-teaching model for years, there is no guarantee that having a general and special education teacher share in the responsibility to deliver content results in improved outcomes for the students in the classrooms (Scruggs, Mastropieri, & McDuffie, 2007). This discrepancy in effectiveness clearly illustrates the need for training for our future general and special educators. The research question that informed this study was: “How can technology encourage collaboration between general education and special education teacher candidates in the planning process, delivery of co-teaching instruction and managing the learning environment collaboratively?”

This study attempted to build collaboration skills between general education and special education teacher candidates to deliver evidenced-based instruction in a virtual classroom setting with shared planning and discourse. The goal was to practice collaboration skills, delivering specific content and pedagogy, and behavior management skills. General education teacher candidates in a first semester course that focused on the classroom communication, procedures, and classroom management policies were paired with a special education teacher candidate in their first semester of a teacher preparation program. The special education teacher candidates were taking course on instructional planning with co-teaching being one of the service delivery models for this instruction. Both groups of teacher candidates ranged in their experiences in instructional settings and previous exposure to inclusive practices. All of the teacher candidates had limited exposure to teaching students in a classroom setting.

The teacher candidates were tasked with collaborating with their randomly assigned co-teaching partner to modify a provided exemplar lesson plan to the co-teaching lesson plan format designed by Dieker in 2008. The co-teaching dyads were required to collaborate using a cloud platform that allowed for web-conferencing and synchronous document composition. This collaboration was monitored by both instructors of these courses. In addition, the instructors lectured to the teacher candidates in each other’s courses on specific co-teaching concepts and communication skills that will facilitate the learning environment. Finally, the co-teaching dyads of teacher candidates executed the planned lesson in the VLE. Data was collected in the VLE using an assessment rubric that evaluated their ability to clearly present information, evidence of instructional collaboration, and clear co-teaching strategy. In addition, student communication skills were evaluated such as student articulation, pronunciation, inflection, and active listening.
skills. A post implementation survey was administered to both groups of teacher candidates to assess their perceptions of co-teaching collaboration and executing the lesson in VLE.

Three themes emerged through data analysis. First, collaboration was facilitated using the cloud platform with over 71% of the respondents felt better prepared to co-teach and collaborate after participating in this study. Second, 90% of the respondents felt their knowledge of co-teaching and collaboration had increased. Finally, 68% strongly agreed that practicing in the VLE was an effective way to refine new instructional skills. Overall, this study found that technology can encourage collaboration between general education and special education teacher candidates in the planning process, delivery of co-teaching instruction, and managing the learning environment collaboratively.

For teacher candidates to effectively deliver instruction to students with disabilities in the least restrictive environment, inclusive services in the general education classroom must be utilized. Co-teaching pedagogy is often used to ensure the least restrictive environment for students to have access to the general education curriculum. However, co-teaching instructional strategies are often not integrated into preservice teacher preparation programs.

In addition, teacher candidates have limited opportunities from their college professors to model this co-teaching pedagogy. Friend & Bursuck (2006) recommend that general education and special education teacher candidates must have many opportunities to collaborate and apply co-teaching competencies. In addition, teacher education programs should develop opportunities for teacher candidates to learn inclusive practices such as co-teaching (Brownell et al., 2005).

A need exists in teacher education for enhanced experiential learning, especially focused on applying collaborative planning practices in explicit instructional strategies that facilitate inclusion. The objective of this study was to build collaboration skills between preservice general education and special education teacher candidates to deliver evidenced-based instruction using a cloud technologies for shared planning and discourse. Teacher candidates in the Elementary Education and the Special Education program were required to collaborate via Google cloud platform to create a co-teaching lesson. This cloud platform allowed access for planning, collaboration, and discourse between busy college students, similar to the planning constraints experienced once they are working in schools. Teacher candidates resolved the most common barrier noted in co-teaching research of limited time to plan effectively for inclusive instructional strategies by using this cloud format (Chapple, 2009).

Furthermore, the VLE provided the teacher candidates a profound application of the models of co-teaching that will enhance their future practice. Overwhelming, the teacher candidates appreciated the opportunity to practice and refine their instructional collaboration skills when delivering explicit instruction.

Teacher candidates need various opportunities to see co-teaching being modeled and experience collaborative lesson delivery with guided practice and feedback (Bateman & Bateman, 2002). This study demonstrated that co-teaching and using the VLE in general
education and special education teacher preparation programs builds collaboration and communication skills.

This study also found that technology can mediate the collaboration of co-teachers when using cloud based shared documents and web-conferencing. In addition, the VLE technology assisted teacher candidates in their understanding of instructional concepts and communication skills needed to successfully provide a least restrictive environment for all students.

References


Developing Elementary Teachers’ Ability to Facilitate Discussions in Science and Mathematics via Simulated Classroom Environments

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Abstract
A practice-based theory of professional education argues that teachers’ knowledge about teaching is developed by opportunities to learn in and from their practice. This theory implies, then, that teachers would benefit from practice in a simulated environment where complexity and variation of key challenges could be carefully controlled to guide the novice’s focus. However, the field is still at the early stages of developing a robust understanding of how to leverage simulated environments to develop teachers’ competencies productively, especially targeting content-intensive teaching in science and mathematics. In this paper, we share design features of performance-based tasks and dimensions of a scoring rubric developed for formative use. These materials will be used within a study in which, as part of their methods coursework, preservice elementary teachers will enter a digitally simulated environment to practice facilitating discussions focused on disciplinary argumentation in science and mathematics.

This study was supported by a grant from the National Science Foundation (Award No. 1621344). The opinions expressed herein are those of the authors and not the funding agency.
The purpose of this manuscript is to describe the design features of performance-based tasks and the dimensions of a scoring rubric developed to support preservice elementary teachers in learning how to facilitate high quality discussions in science and mathematics focused on argumentation via the use of simulated classroom environments. The development of these tools is situated within a four year early design and development grant funded by the National Science Foundation. In particular, on this project, we are interested in how these tasks can be designed for formative use integrated within teacher education programs. We note here that in describing the intended uses as formative we refer to two distinct but interrelated processes (Black & William, 2009). The first is that the results of the assessment are provided to the instructor to inform instructional planning and decisions. The second is the process by which learners, provided feedback and support in understanding it, learn from engagement in assessment. This research project builds off of the promising results from developing performance tasks utilizing simulation technology for the ETS® NOTE Assessment Series (Brown, 2015; Richardson, 2015; Sawchuk, 2014), a new teacher licensure product designed to have teacher candidates engage in simulations to assess their ability to carry out instructional practices they need to use in the classroom. In this paper, we begin by explaining how we are conceptualizing high quality discussions in science and mathematics focused on argumentation. Then, we describe the key theoretical framing that undergirds our research—a practice-based theory of teacher education. We then move on to a brief overview of the larger study and our construct definition. We end by providing illustrative examples of the design features of the performance-based tasks and scoring rubric we are developing to support preservice teachers in learning how to engage in this complex teaching practice.

Background

High Quality Discussions in Science and Mathematics Focused on Argumentation

One of the primary markers of high quality discussion—what some refer to as academically productive talk—is the interactive exchange of ideas whereby those ideas progress in a direction and evolve beyond the individual contributions that make them up (Boerst, Sleep, Ball, & Bass, 2011; Cazden & Beck, 2003; Hadjioannou, 2007; Hogan, Nastasi, & Pressley, 1999; Parker & Hess, 2001; Smith, Hughes, Engle, & Stein, 2009; Walshaw & Anthony, 2008). While discussion can take many forms, in mathematics and science classrooms discussions often aim to engage students in disciplinary argumentation, which is characterized by an exchange of ideas where claims are stated and supported using forms of argument that are valued within the discipline (Cartier, Smith, Stein, & Ross, 2013; Chapin, O’Connor, & Anderson, 2003; Chinn, 2006; Driver, Newton, & Osborne, 2000; Duschl & Osborne, 2002; Michaels & O’Connor, 2012). The focus in these types of discussions is on attending to the substance of students’ ideas and supporting the disciplinary connections within those ideas. High quality discussion in which disciplinary argumentation takes place is considered valuable for students of mathematics and science for two primary reasons. First, engagement in discussion that is focused on argumentation is believed to support students’ cognitive processes in constructing conceptual understanding (McNeill & Krajcik, 2008; Songer & Wenk Gotwals, 2012). Second, engagement in argumentation is seen as a goal of instruction in itself, with recent standards in both...
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Leveraging a Practice-Based Theory of Professional Education in Learning to Teach

A practice-based theory of professional education argues that teachers’ knowledge about teaching is developed by opportunities to learn in and from their practice (Ball & Cohen; 1999; Ball & Forzani, 2009; Grossman, Hammerness, & McDonald, 2009; Lampert, 2009). Simply put, opportunities for professional learning must engage teachers in the “tasks and ways of thinking that are fundamental to the practice…such experiences also must be…open to careful scrutiny, unpacking, reconstruction, and the like” (Ball & Cohen, 1999, p. 12). Key to this theoretical stance is the argument that using practice as an avenue for professional learning is essential for developing teachers’ abilities to engage in ambitious and challenging instruction (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009).

Researchers have identified three key pedagogies employed within a practice-based theory of teacher learning: representations of practice, decomposition of practice, and approximations of practice (Grossman et al., 2009). Representations of practice are tangible records of practice—video recordings, written cases, or narrative depictions of teachers’ enacted lessons—that can be used as tools for investigation, analytic inquiry, and questioning (Borko, Jacobs, Eiteljorj, & Pittman, 2008; Dietz & Davis, 2009; Hammer & Van Zee, 2006; Sherin & Han, 2004). Decomposition of practice refers to the work of identifying the critical components
of a particular practice, which can support teachers in knowing what to look for when observing or working with various representations of practice (Boerst, Sleep, Ball, & Bass, 2011; Sleep, 2012). Approximations of practice, which include things like role-playing, microteaching, and rehearsals (Lampert et al., 2013; Windschitl, Thompson, Braaten, & Stroupe, 2012), are opportunities for teachers to simulate or try out novel instructional approaches and are essential to helping teachers understand how to successfully enact the specific practice. While all three aspects have been employed within the context of teacher education, the approximations of practice aspect has proven more difficult to deploy due to the challenges associated with providing authentic and responsive learning spaces. In this study, we examine how simulated classroom environments can be used to engage preservice teachers in approximations of practice, and how these approximations of practice can be leveraged to support teacher learning in elementary science and mathematics method courses.

**Study Overview and Construct Definition**

The overall purpose of this four-year study is to develop, pilot, and validate a set of performance-based tasks delivered within a simulated classroom environment in order to improve preservice elementary teachers’ ability to orchestrate discussions. These tasks will provide opportunities for preservice teachers in science and mathematics to facilitate discussions with upper elementary student avatars (third through fifth grades) where the focus is on disciplinary argumentation within two content domains: structure/properties of matter (science) and fractions (math). The overall goal of this research is to develop a validity argument for the use of such tools as formative assessment tasks that can be integrated within educator preparation programs to increase the amount, variety, and quality of clinical practice opportunities available to preservice elementary teachers. These tools will be piloted in the context of elementary science and mathematics methods courses to better understand how teacher educators integrate the tools into instruction, how preservice teachers learn from the formative feedback provided, and how to establish scoring reliability and validity of the tasks.

As noted above, productive discussions focused on argumentation in science and mathematics classrooms provide opportunities for students to construct, defend, critique, and revise arguments in ways consistent with the argumentation norms of the disciplines, which may vary from arguments students experience more generally. Based on this particular purpose for discussion, we have defined high quality discussions in mathematics and science classrooms as:

*High quality discussion that engages students in disciplinary argumentation is characterized by an exchange of ideas where claims are stated and supported using forms of argument that are valued within the discipline. The focus is on attending to the substance of students’ ideas, supporting the disciplinary connections within and across those ideas, and facilitating the interactive exchange of ideas among students so that those ideas progress in a direction and evolve beyond the individual contributions that make them up. In these discussions, students are positioned as sense-makers and take responsibility for the majority of the intellectual work while teachers foreground students’ ideas and listen carefully in order to help students co-construct meaning and develop disciplinary understandings.*

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Design Features of Performance-Based Tasks for Formative Use

All developed tasks will focus on discussions that engage upper elementary student avatars in disciplinary argumentation, a critical practice emphasized in recent science and mathematics content standards and the research literature. In addition, these tasks will be targeted on content areas that are considered critical for supporting future learning in middle and high school, are notoriously difficult to teach, and have a robust empirical base highlighting student difficulties: structure/properties of matter (Smith, Wiser, Anderson, & Krajcik, 2006; Stevens, Delgado, & Krajcik, 2010) and fractions (Ball, 1993; Lamon, 2012; Newton, 2008). The primary purpose of this research is to examine the potential of these performance tasks as formative learning tools that can be integrated productively within elementary science and mathematics method courses. Thus, in our task design we decided to integrate a number of design features to help situate teachers into an authentic setting and context so they are able to approximate the work of teaching productively. In this paper, we discuss three features that we hypothesize will support teachers in preparing for the discussion in the simulated classroom environment: (a) lesson overview, (b) inclusion and unpacking of student work, and (c) teaching tips related to our construct definition.

First, the lesson overview serves to situate the teacher candidate within the context of the discussion and where this discussion fits into a larger instructional sequence. In addition, the lesson overview provides information about students’ background so that the teacher candidate can build from these ideas when facilitating the discussion. For example, in the math task, the lesson overview explains how the students worked in small groups to put three fractions (3/10, 9/10, and ¾) in order from least to greatest, to explain the strategy they used, and to explain whether their strategy would work for every set of fractions. In this math task, the lesson overview also specifies that the student learning goal is for students to evaluate, justify, compare, and contrast strategies for ordering fractions with varying numerators and denominators. In addition, the teacher candidate learns that these fifth grade students have experience with representing fractions using number lines and fractions bars, reasoning about the size of fractions using benchmarks like ½, and working with equivalent fractions—all experiences that the teacher candidate would then have the opportunity to leverage productively during the discussion.

Second, we decided to provide some written work from students for the teacher candidate to reflect on in advance of entering the simulator. The rationale for this decision is that this feature helps to reduce the task’s complexity, which gives the novice more of a chance of focusing on the discussion in the moment and not simply trying to decode the student ideas. By doing this, the simulation will begin at the moment when the teacher candidate brings the group back together to discuss the work. Figure 1 provides an example of the student work that is included as part of one of the math tasks and the explicit details pointing out what a teacher candidate should notice about the student work sample shown. For each task we develop, we plan to include student work samples relevant to the student learning goal provided in the task. We anticipate that this task feature will be especially informative in terms of helping the preservice teachers plan to use this student work strategically during the discussion to compare

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and contrast across students’ ideas as well as build in opportunities for students to critique and evaluate the varied ideas, which is an important focus of disciplinary argumentation.

**Will and Jayla’s Work**

<table>
<thead>
<tr>
<th>Are their answers correct?</th>
</tr>
</thead>
<tbody>
<tr>
<td>- They are correct that ( \frac{3}{10} &lt; \frac{3}{4} &lt; \frac{9}{10} )</td>
</tr>
<tr>
<td>- Their strategy is also correct.</td>
</tr>
<tr>
<td>- Their claim that the strategy would always work is ambiguous.</td>
</tr>
</tbody>
</table>

**Things to notice about Will and Jayla’s strategy for ordering fractions:**

- This strategy works well for these three fractions. However, the success of the strategy depends on how accurately you can place the fractions on the number line. This means the quality of the drawing has to be good in order for the method to work. In this case, the drawing looks quite accurate, they have lined up the two number lines correctly, and the fractions are spaced out from one another sufficiently to be able to tell how to order them.
- There are a number of things that make it clear they understand this approach well and have done a thorough job in their work, including:
  - Careful attention to equal partitions.
  - Lining up 0 and 1 on the two number lines.
  - “Stacking” the two number lines one above the other to make it easy to see the comparison.
  - Putting 3/10 and the 9/10 on the same number line.

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**Figure 1.** Example of student responses and making sense of student work task features.

The third feature embedded in the task includes what we refer to as *teaching tips* and provides explicit suggestions about how teachers may engage the student avatars in discussion focused on argumentation, all within the particular content focus of the task. There are a number of ways in which teachers can develop students’ proficiency with the practice of argumentation. For example, it is important for teachers to elicit multiple student views, ask probing questions to clarify students’ arguments, and ask students to respond to each other’s ideas. Other teaching moves may involve students in making conjectures, analyzing and revising specific claims and evidence, or engaging in thought experiments. Teaching that provides these types of opportunities has been noted as “responsive” in the sense that the substance of student thinking is at the heart of the ideas that are taken up, interrogated, and unpacked in the discussion (Robertson, Atkins, Levin, & Richards, 2016). Throughout the written tasks, we have elected to embed these teaching tips at particular places where we anticipate they will be most useful to the teacher candidates. For example, the current science task has teachers facilitate a discussion regarding students’ claims about the identity of a mystery powder using what they know about the properties of other powders. At key places throughout the task, we have included teaching

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tips about the following: ideas about how to begin the discussion to focus on similarities and differences across students’ ideas, questions to ask to encourage students to critique one another’s claims and use of evidence and reasoning, and suggestions about how the teacher could record and keep track of varied students’ ideas throughout the discussion.

**Design Features of Scoring Rubric for Formative Use**

As noted earlier, the primary aim for engaging in argumentation differs slightly across science and mathematics. In science, disciplinary argumentation is characterized by a focus on students making claims and providing evidence to support those claims and reasoning to justify the evidence. In mathematics disciplinary argumentation is characterized by reasoned argument with attention (in age-appropriate ways) to generalizability of approaches and proof. Despite these variations, in both areas there are commonalities in terms of the features that characterize high quality discussions focused on argumentation. Most importantly, across disciplines students need opportunities to engage with their peers in student-to-student debate and critique, which is contradictory to the typical IRE talk structure observed in many classrooms (Cazden, 1988). In general, high quality discussion that supports engagement in disciplinary argumentation has students taking responsibility for the majority of the intellectual work. Since our focus is on the interactive components of argumentation, we have elected to highlight these dimensions of teachers’ discussion practice in the current scoring rubric.

The first dimension of our scoring rubric—what we call *attending to students’ ideas responsively and equitably*—is intended to cover being responsive to students, with a focus in particular on making sure the discussion is grounded in the ideas the students bring to the table. There are two major components of this dimension. The first is making sure that each of the relevant ideas placed on the table is attended to by the teacher candidate and made a part of the discussion. A key mechanism by which student discussion is hypothesized to lead to student learning is that it creates a path between the student’s initial ideas and the desired understandings. Therefore attending responsively is more than simply giving the student an opportunity to share, it is providing that opportunity and then ensuring connection between those ideas and the subsequent discussion. The second component is making sure that all student voices are heard in some non-trivial way. This component involves making sure that all the students are engaged in some meaningful component of the discussion and not simply listening passively to the contributions of others, which supports equitable access to the learning opportunity the discussion presents.

The rubric’s second dimension, named *building/connecting ideas towards a coherent content storyline*, is intended to cover the degree to which the teacher candidate is able to shape a coherent discussion, with a particular focus on building and connecting ideas with one another toward an instructional goal. Coherence works toward a learning goal but may play out in unique ways depending on the nature of that goal. In particular, our tasks require teacher candidates to attend simultaneously to conceptual content goals such as learning about fractions and matter and to practice content goals around the use of disciplinary argumentation. Coherence is also not necessarily characterized by strictly linear progress, as discussion often involves the organic
interplay of ideas in which progress along a single line of thought may be set aside to gather new ideas or revisit another idea. However, in a coherent discussion, participants will often acknowledge such asides or an explicit reason may be provided for shifting between approaches.

The third dimension, which we refer to as guiding student thinking towards collective disciplinary sense-making, focuses on the extent to which the teacher is able to help students to recognize and respond to the disciplinary connections among their ideas. This may involve teachers in providing opportunities for their students to comment on the similarities and differences across ideas; evaluate and critique multiple ideas for their consistency, validity, and coherence; and construct and revise ideas in light of new information or ideas shared. To promote collaborative sense-making, teachers invite students to respond directly to one another around the substance of disciplinary ideas without the teacher contributing substantively to the chain of ideas. The importance of this collaborative sense-making among students stems from the notion that knowledge is constructed and shared through dialogue and that the active exchange of ideas among students is necessary for learning in the disciplines. Doing well likely means that the teacher frequently redirects student comments or questions back to the group for their consideration and further conversation.

The final rubric dimension, which we call maintaining an environment that is accountable to the discipline, is intended to focus on the extent to which teachers exhibit a strong command of the task content. Typically, students share a wide variety of ideas during discussions, including ideas that are inaccurate and/or incomplete. Teachers must make decisions about which ideas to pursue and which ones to address at a later time, as well as decisions about how to address particular ideas, especially ones that show evidence of students’ misunderstanding or confusion, in the moment. In high quality discussions, the teacher must first notice a student misunderstanding or confusion that is connected to the learning goal before he or she can address it. Teachers must listen precisely in order to be able to revoice ideas consistent with the students’ intended meaning. Student sense-making can be supported by having other students evaluate and critique the inaccurate idea, or by having the student compare the inaccurate idea in light of other ideas, claims, conjectures, data, or evidence that are shared or accessible. In some cases, the teacher may decide to purposefully address the misunderstanding at a later date, especially for inaccurate or incomplete ideas that are less relevant to the learning goal at hand. However, it is important for a teacher to make sure that students are aware that the idea will be interrogated at a later time so as not to assume that the idea is correct or complete. Although teachers may deliberately say or record incorrect content—for example, when they are revoicing students’ ideas or when they engage students in a thought experiment—any ideas that they say and record, which are framed as and intended to be correct content, should be free of conceptual errors.

Together these four rubric dimensions are intended to foreground the highly interactive nature of these types of discussions and the ways in which they build from students’ ideas toward the content goal. These dimensions call attention to the importance of making sure that the teacher provides students with opportunities to consider alternative explanations, determine which one better addresses the disciplinary criteria in use (i.e., explains observable scientific
phenomena or constitutes an efficient, generalizable, or valid approach), and debate the merit or validity of multiple claims. Statements (claims, hypotheses, conjectures) are qualified appropriately as to the degree of certainty and the drive to resolve that uncertainty motivates movement in the discussion. Most importantly, in high quality discussions focused on argumentation students build on other’s claims as well as adjust their thinking based on new evidence.

Conclusion

Overall, this project represents an initial step in building a validity argument for the use of these performance-based tasks and scoring rubric as formative assessment tools, and will inform the field’s understanding of key design features that support the reliability of such instruments and validity of the resulting score interpretations and uses. This work is anticipated to produce proof-of-concept examples of cutting-edge formative assessments that can be of direct use to science and math teacher educators and can set the stage for studying how to create rich learning opportunities for preservice teachers in simulated environments. Most importantly, findings are expected to build the field’s understanding about how novice elementary teachers begin to develop their ability to orchestrate discussions by engaging in approximations of practice coupled with formative feedback within a community of learners. Piloting will begin with the first two performance-based tasks in mid-2017 and will continue with the remaining six tasks in 2018.
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Graduate Speech Language Pathology Students' Self-Efficacy in Working with English Learners in a Mixed Reality Classroom (TeachLivE)

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Abstract
The purpose of this study was to investigate graduate speech language pathology (SLP) students' self-efficacy in working with English learners (ELs) in a mixed reality classroom (TeachLivE). TeachLivE has been implemented to develop teaching effectiveness (Hayes, Straub, Dieker, Hughes & Hynes, 2013), prepare teachers for mathematics (Rodriguez, 2011) and special education (Dieker, Lignugaris-Kraft, Hynes & Hughes, 2013), and train teachers for teaching strategies, such as delivering the nonverbal communication (Barmaki, 2014). However, it has not been used in training the pre-service SLPs to work with ELs; therefore, the results of this study is crucial. The dependent t-test results indicated that there was not a statistically significant mean difference in SLP self-confidence scores regarding beginner and intermediate level questioning skills between pretest and posttest while there was a statistically significant mean difference in their self-confidence scores regarding advanced level questioning skills between pretest and posttest. This may imply that SLP self-confidence increased after TeachLivE exposure because they might have realized that they could communicate well with advanced level learners, and their level as native speakers is closer to advanced level ELs. However, beginner and intermediate levels require more communication or questioning skills compared to advanced levels. Therefore, practicing these skills multiple times through TeachLivE may change their self-confidence positively. Furthermore, the qualitative data support this finding as 92% of the students mentioned that they needed more exposure and better preparation for TeachLivE to be able to communicate with lower-level ELs and to administer evaluations on these learners.

Key words: TeachLivE, SLP, ELLs, ELs, self-confidence

Introduction and Review of Literature
TeachLivE, developed at the University of Central Florida, is a virtual learning program that aims to offer a combination of real and virtual classroom for pre-service and in-service teachers to practice, learn, develop and improve the effectiveness of teaching skills. It provides a mixed-reality environment with a group of virtual K-12 student avatars, appearing in a simulated classroom, who can communicate with and cause problems for teachers (Ludlow, 2015). In TeachLivE classroom, teachers face with an almost authentic K-12 classroom that has a whiteboard, desks, chairs and different types of students with different learning styles.

TeachLivE provides an authentic teaching and learning environment for in-service and pre-service teachers (Dieker, Rodriguez, Lignugaris/Kraft, Hynes & Hughes, 2014). In this classroom, a teacher is able to have repeated opportunities to practice teaching, responding and communicating with students, and providing feedback (Peterson, 2014). Since students in a TeachLivE classroom are avatars who are instrumentally developed with a variety of disabilities pertaining "insufficient student
motivation” (Dieker et al., 2014a, p.27), a teacher can also apply different teaching strategies and ideals in this authentic classroom without any possible risks affecting real students and can obtain real experience at the same time (Dieker et al., 2014a). In TeachLivE classroom, in-service and pre-service teachers can personalize learning and receive immediate feedback and reflection. Moreover, receiving authentic interactions with students in the classroom, gaining proficiency safely, and enhancing teacher performance are great advantages of the application of the TeachLivE (Vince Garland, Holden & Garland, 2016). Additionally, TeachLivE allows teachers to practice and improve their teaching skills in an authentic classroom, and it can be supportive in recruiting, preparing, training and retaining teachers of various subjects at schools. Besides the academic contributions, TeachLivE provides a ludic, playful, gamelike, and communicative learning environment (Hayes et al., 2013).

Furthermore, TeachLivE is a relatively new technology and its related research is limited in amount but diverse in research fields. It has been implemented to develop teaching effectiveness to prepare teachers for special education (Dawson & Lignugaris/Kraft, 2016; Garland, Vasquez III, & Pearl, 2012; Pas, Johnson, Larson, Brandenburg, Church, & Bradshaw, 2016; Peterson, 2014; Vince Garland et al., 2016), secondary education (Judge, Bobzien, Maydosz, Gear & Katsioloudis, 2013), higher education (Dieker, Wienke, Straub & Finnegan, 2014b), math education (Rodriguez, 2011), adult education (Speed, Bradley & Garland, 2015) and educational leadership (Storey & Cox, 2015). It does not only provide benefit in urban areas, but also serves an important role in rural schools (Dieker, Hynes, Hughes, Hardin & Becht, 2015). However, the TLE TeachLivE has not been used in training the speech language pathologists (SLPs) to work with English language learners (ELs/ELLs). Therefore, the current study focuses on training the pre-service SLPs to work with ELs and examines their self-efficacy in working with ELs.

Methodology

Research Questions
1. Is there any difference in SLP self confidence scores regarding beginner, intermediate, and advanced level ELL questioning skills between pretest and posttest?
2. Is there any difference in SLP self confidence scores regarding administering evaluation procedures between pretest and posttest?
3. What is the relationship between graduate SLPs’ EL questioning skills and their skills in administering evaluation procedures after TeachLivE?

Research Design
This study is a pretest-posttest quasi-experimental research design (Gall, Gall, & Borg, 2007), and the participants are graduate SLPs in a masters degree program at the University of Central Florida. Approval from the Institutional Review Board (IRB) was obtained before data collection. Then, an orientation explaining what the SLPs would do during a TeachLivE session was provided. After this orientation, they took a pre-test, and met with ELs. During the TeachLivE sessions, SLPs were able to use a set of picture to ask leveled questions to ELs in order to understand if an EL would have a language difficulty or a language disorder. After the TeachLivE sessions, they took a post-test and reflected on their experience.

Participants and Setting
Researchers used convenience sampling and worked with SLPs who have been working towards their masters degree (Gall et al., 2006). The treatment group included 24 pre-service SLPs from the University of Central Florida. Among these, there was one male student and 23 female students. These participants took a pretest and posttest and they were not randomly assigned. Before taking the pretest, participants were grouped based on their group member preferences, and there were eight group of students who were assigned to specific pictures from which they prepared leveled questions for beginner, intermediate and advanced level avatars in TeachLivE. They worked on the creation of these leveled questions before being exposed to TeachLivE and they were prepared to use these specific pictures in order to ask questions to EL avatars related to these pictures. Some of the question examples are provided below in Figure 1:

<table>
<thead>
<tr>
<th>EL Avatars at Different Levels of English Proficiency</th>
<th>Questions prepared by one of the groups before exposure to TeachLivE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning EL Edith</td>
<td>1. Is this table white or black?</td>
</tr>
<tr>
<td></td>
<td>2. Point to the brown shirt.</td>
</tr>
<tr>
<td></td>
<td>3. Are the people sitting or standing?</td>
</tr>
<tr>
<td>Intermediate EL Edgar</td>
<td>1. What is the man doing?</td>
</tr>
<tr>
<td></td>
<td>2. What is the woman doing?</td>
</tr>
<tr>
<td></td>
<td>3. Why are there sunglasses on the table?</td>
</tr>
<tr>
<td>Advanced EL Tasir</td>
<td>1. Why is the couple alone at the table?</td>
</tr>
<tr>
<td></td>
<td>2. Based on his facial expressions, how do you think the man feels about the woman?</td>
</tr>
<tr>
<td></td>
<td>3. What do you think they are waiting for at the table?</td>
</tr>
</tbody>
</table>

Figure 1. Leveled Questions for Each EL Avatar

After working on the creation of the leveled questions, they took a pre-test measuring their self-efficacy in working with ELs. Then, each group representative greeted ELs first, and asked their leveled questions in order to get an understanding of the level of each EL avatar and to evaluate the level of language difficulty and language disorder. In doing this, they used the assigned pictures. Their task was to find out if each EL had a language difficulty or language disorder as well as practicing their SLP skills in communicating with EL patients. After their sessions, all graduate SLPs took a posttest and reflected on their experience as a follow-up activity.

Instrument

The instrument that was adapted for this study was the SLP clinical self-efficacy measure (SLP-CSEI; Pasupathy & Bogschutz, 2013). The SLP-CSEI is based on the standard methodology for measuring self-efficacy beliefs as described by Bandura (2006). According to Bandura’s guidelines in constructing self-efficacy measures, items were selected portraying different tasks and levels of task difficulty by Pasupathy and Bogschutz (2013), and the researchers in this current study adapted this re-constructed survey. According to Pasupathy and Bogschutz (2013), the items in the SLP-CSEI were created based on formative evaluation domains of clinical skill development and the domains within the KASA Summary Form for Certification in Speech-Language Pathology (ASHA, 2009).

The SLP-CSEI included both confidence and knowledge level items and had seven different sections besides a section titled “Communicating with ELs to Assess
Communication Disorder.” This section included items such as “I know how to ask questions that allow pointing, selecting, showing” and/or “I know how to ask questions to have ELs do complex analysis, justification, and evaluation.” On the other hand, the second part of the survey that included seven domain-specific SLP clinical self-efficacy measures consisted of sections such as “Case History Self-Efficacy Scale, Evaluation Self-Efficacy Scale, Diagnoses Self-Efficacy Scale, Administrative and Reporting Self-Efficacy Scale, Communication Self-Efficacy Scale, Collaboration and Counseling Self-Efficacy Scale, and Intervention Self-Efficacy Scale.” The participants were asked to rate the strength of their self-confidence level and their knowledge level in these areas. They indicated the strength of their SLP clinical self-efficacy on a unipolar continuous 100-point scale ranging from 0 (no confidence at all) to 100 (completely confident). Sample items include “conduct screening and prevention procedures (including prevention activities) in working with ELs with mild communications disorders” and “tailor/adapt evaluation to meet the needs of ELs with severe communications disorders.” In addition, participants completed a background questionnaire that consisted items related to their ethnicity, age, gender, home country, as well as the direct contact hours with patients that they completed, semester hours of clinical enrollment and their expectations from TeachLivE as SLPs. To ensure face validity, the SLP-CSEI and background questionnaire were reviewed by one expert speech-language pathologist and two foreign and second language education professors with substantial academic experience in SLP.

Results

The researchers conducted a dependent t-test to determine if there was a significant difference between the pre-test and post-test results after SLPs are exposed to TeachLivE. Also, a correlational analysis was conducted to determine the relationship between graduate SLPs’ EL questioning skills and their skills in administering evaluation procedures after TeachLivE. According to results, there was not a statistically significant mean difference (t = -1.408, df=23, p=.172) in SLP self confidence scores regarding beginner level questioning skills between pretest and posttest. Pretest mean (M=3806, SD=24) of self confidence in being able to communicate and ask questions to beginner level ELs did not increase at the posttest (M=3843, SD=24). The 95% Confidence Interval of the difference ranges from -90.52604 to 17.19271. There was also not a statistically significant mean difference (t = 1.412, df=22, p=.172) in SLP self confidence scores regarding intermediate level questioning skills between pretest and posttest. Pretest mean (M=2822, SD=23) of self confidence in being able to communicate and ask questions to intermediate level ELs did not increase at the posttest (M=1978, SD=23). The 95% Confidence Interval of the difference ranges from -395.80227 to 2083.45445. However, there was a statistically significant mean difference (t=-3.416, df=23, p=.002) in SLP self confidence scores regarding advanced level questioning skills between pretest and posttest. Pretest mean (M=1393, SD=24) of self confidence in being able to communicate and ask questions to advanced level ELs increased at the posttest (M=1432, SD=24). The 95% Confidence Interval of the difference ranges from -62.88791 to -15.44542. Overall, the dependent t-test results indicate that graduate SLP student self-confidence did not increase from pretest to posttest in terms of communicating with beginner and intermediate level EL avatars (See Table 1). On the contrary, graduate SLP self-confidence level increased in terms of communicating with advanced level EL avatars. This shows that SLPs may need more TeachLivE exposure to be able to improve
their skills to be able to communicate with beginner and intermediate level ELs. The reason why the graduate SLP self-confidence statistically significantly increased from pre-test to post-test might be because the SLPs are all native speakers and it is easier for them to communicate with an advanced level person and they do not need as many strategies as they need them for beginner and intermediate level ELs. They need more exposure to TeachLivE to practice these missing skills before going into field.

**Table 1**

*Paired t-test Results*

<table>
<thead>
<tr>
<th>Communication skills of SLPs</th>
<th>Pre-test M. &amp; SD.</th>
<th>Post-test M.</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginner level ELLs</td>
<td>M=3806, SD=24</td>
<td>M=3843, SD=24</td>
<td>-1.408</td>
<td>23</td>
<td>.172</td>
</tr>
<tr>
<td>Intermediate level ELLs</td>
<td>M=2822, SD=23</td>
<td>M=1978, SD=23</td>
<td>1.412</td>
<td>22</td>
<td>.172</td>
</tr>
<tr>
<td>Advanced level ELLs</td>
<td>M=1393, SD=24</td>
<td>M=1432, SD=24</td>
<td>-3.416</td>
<td>23</td>
<td>.002</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Administering evaluation procedures</th>
<th>Pre-test M. &amp; SD.</th>
<th>Post-test M.</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>M=8464, SD=24</td>
<td>M=8600, SD=24</td>
<td>-2.161</td>
<td>23</td>
<td>.041</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2**

*Correlation between graduate SLPs’ EL questioning skills & skills in administering evaluation procedures after TeachLivE*

Another interesting finding was that there was a statistically significant correlation between graduate SLPs’ EL questioning skills and their skills in administering evaluation procedures after TeachLivE exposure (r = .99, p < .001; See Table 2). This finding shows that as SLPs practice their EL questioning skills, they will be able to administer evaluation procedures better. This result can be supported with the mean increase in administering evaluation procedures from pre-test to post-test. There was a statistically significant mean difference (t=-2.161, df=23, p=.041) in SLP self confidence scores regarding administering evaluation procedures between pretest and posttest. Pretest mean (M=8464, SD=24) of self confidence in being able to administer evaluation procedures on ELs increased at the posttest (M=8600, SD=24). The 95% Confidence Interval of the difference ranges from -264.82284 to -5.76050 (See Table 1).

Furthermore, the qualitative data obtained from TeachLivE exposure reflections indicated that 92% of the students needed more exposure and better preparation for TeachLivE to be able to communicate with lower-level ELs and to administer evaluations on these learners. They also indicated a need for meeting and interacting with ELs during their clinical field experience. Therefore, TeachLivE may be a good opportunity for them
to satisfy these needs in order to gain experience in communicating with ELs and administering clinical evaluation procedures on ELs.

**Discussion and Implications**

Considering that graduate SLP student self-confidence did not increase from pretest to posttest in terms of communicating with beginner and intermediate level EL avatars but the self-efficacy increased in terms of communicating with advanced level EL avatars, it can be stated that SLPs may need more TeachLivE exposure to be able to improve their skills to be able to communicate with beginner and intermediate level ELs. One of the reasons that indicated such a result may be because SLPs in this study were either native speakers or bilinguals, and communicating with advanced level ELs might have not required great amount of skills in these SLPs cases; however, they definitely needed more exposure to beginner and intermediate level ELs and more practice on their communication skills with beginner and intermediate level ELs. In addition, finding a strong correlation between graduate SLPs’ overall EL questioning skills and their skills in administering evaluation procedures after TeachLivE exposure indicate that as SLPs practice their EL questioning skills, they will be able to administer evaluation procedures better. Therefore, future research should include repetitions of the study with more TeachLivE sessions and recording self-efficacy levels before and after TeachLivE exposures to determine the effect of using TeachLivE on beginner and intermediate level questioning skills of SLPs.

**Limitations**

There are a few limitations in this study. First limitation is about the design as quasi-experimental research suffers threats to internal validity such as statistical analysis, meaning posttest score differences may be due to pre-existing group differences. Bias regarding the leveled question group selection and convenience sampling may cause posttest score difference or similarities between pretest and posttest. Second limitation was about the small sample size. There were only 24 participants in this study and results cannot be generalized. Future studies may include more participants with diverse backgrounds to obtain more generalizable results. In addition, pretest and posttest questions were identical and the time between a pretest and posttest was not enough for the participants to have different perceptions regarding their self-confidence. Since the participants already knew the questions the second time around, this could have affected their self-reported efficacy for the posttest.

**References**


Abstracts

**An Ontology based Serious Game Design Methodology for Teacher Training**

Veysi Isler & Sanam Dehghan  
University of Central Florida

A serious game design should utilize the domain fundamentals as well as game design principles carefully. This study proposes an ontology-based methodology to design a serious game of various genres. To develop the methodology, a variety of educational and instructional theories were surveyed and Gagne’s Nine Events of Instruction has been selected due to its compatibility with video games’ elements. This theory, in addition with main and essential elements of video game design composes the concepts of Ontology based Serious Game Design Methodology, OSGAM. Unified Modeling Language (UML) has been chosen as the ontology development language. The proposed methodology has been used for developing a serious game for teacher training, called as Game Based Teacher Education System (GATES).

**Automated Affect Capture, Analysis, Recognition and Incorporation in Scenarios and Reflection**

Charles Hughes  
University of Central Florida

Using tracking sensors (image and depth information), we created a gesture database and used it to implement a machine learning-based real-time gesture recognition and feedback application. In a separate but related project, we have developed a large database of participants’ emotional responses to situations that might elicit emotional responses of surprise, disgust, curiosity, etc. This work uses computer vision and machine learning techniques to assess facial expressions, hand to face actions, upper body movement and vocalizations. Our intent is to integrate this research into TeachLivE to understand the dynamically changing emotions of our participants, using this to drive aspects of avatar behaviors and to support both real-time and reflection-based learning.

**Virtual Simulations to Increase Teacher Candidates’ Knowledge of Behavior**

Kate Zimmer & Melissa Driver  
Kennesaw State University

Presenters will share results from a study on the effects of using virtual avatar students with teacher candidates on learning and using effective behavioral strategies. Teacher candidates collected data, created, and implemented an intervention all within a virtual environment. Results of study and implications for teacher preparation and in-service teachers will be discussed.

**Graduate Speech Language Pathology Students’ Self-Efficacy in Working with English Learners in a Mixed Reality Classroom (TeachLivE)**
Hilal Peker & Liying Feng,  
Florida State University

The purpose of this study was to investigate graduate speech language pathology (SLP) students’ self-efficacy in working with English learners (ELs) in a mixed reality classroom (TeachLivE). The results indicated pre-service SLPs need more opportunities to practice questioning skills especially while working with lower-level ELs compared to advanced level ELs.

Comparing simulation to traditional role-play: Which is most effective at increasing students’ understanding of co-teaching?

Sally Spencer, California State University, Northridge  
Talya Drescher, California State University, Channel Islands  
Jennifer Holbrook, Angelica Fulchini, & Jillian Schreffler, University of Central Florida

This presentation shares the results of a study that compared traditional role-play in the classroom to the use of a simulated environment as a tool for developing collaborative interpersonal problem-solving skills with a co-teacher. Preliminary analysis found the simulator to be more effective in building understanding of co-teaching behaviors and skills.

Project MELTS

Joyce Nutta, Leslie Davis & Cynthia Walters,  
University of Central Florida

Project Micro-credentialing of English Learner Teaching Skills (MELTS), funded by a US Department of Education National Professional Development grant, has developed a four-semester sequence of ten performance tasks that differentiate instruction for English learners at different proficiency levels that will be embedded into the Elementary Education bachelor’s degree curriculum at the University of Central Florida. Teacher candidates who demonstrate mastery of each skill will earn digital badges. At the end of the curricular sequence, Project MELTS will compare the effectiveness of teacher candidates’ EL instructional skills between those who practiced the skills through simulation (TeachLivE) or through micro-teaching and examine both groups’ impact on English learners’ gains on classroom-based unit tests compared to non-MELTS pre-service elementary teachers during participants’ final internship.

High Leverage Simulation Practices for a Secondary Inclusive Classroom

Taylor Bousfield  
University of Central Florida

There is a lack of literature in teacher pedagogical practices for serving students with ASD in a secondary inclusive classroom. The purpose of this study was to determine the most important teacher practices using a Delphi study to identify those skills perceived as important by national
Using Virtual Simulation to Prepare Preservice Special Education Teachers for Inclusive Settings

Melissa Driver & Kate Zimmer
Kennesaw State University

We present results from a mixed-methods study investigating the use of TeachLive in teacher preparation course on collaboration. There were significant differences in preservice teacher perceptions of inclusion, readiness to co-teach, and working in collaborative settings at the beginning and end of the study. Findings hold implications for preparation of special and general education teachers.

The Influence of a Simulated Environment on Tutors and Supplemental Instruction Leaders

Talitha Hudgins & Kolene Mills
Utah Valley University

The purpose of this study is to use TeachLivE simulated environment to provide training for tutors and SI leaders in how to handle difficult situations while interacting with virtual students. We argue that tutors will be better able to deal with difficult situations after interacting with student-avatars and that it will transfer to real-world situations.

Reactions and Insights from First Time Users

Anni Reinking
Southern Illinois University-Edwardsville

In this project early childhood teacher candidates interacted in a simulated situation where they were co-teachers in different with different roles. Due to the restraints of SIUE’s site license the professor designed simplified personalities for each of the avatars. Therefore, all included parties were interviewed about the experience.

Sharing iPad Screens to Rehearse Instructional Conversations with TeachLivE Avatars

Michael Hynes and Kathleen Ingraham
University of Central Florida
Teachers of all content areas are being challenged to change their instructional practices to include increased dialog about content. Due to the school district provision of iPads or laptops for all students, sharing screens is commonplace and the shared screens become the catalysts for instructional discourse. The presenters will demonstrate the use of the TeachLivE avatars to provide teachers opportunities to rehearse discourse using iPads. Some participants will have an opportunity to interact with the avatars and their iPads during the session.

Scenarios for avatars with disabilities

Taylor Bousfield & Kate Ingraham
University of Central Florida

Be a part of scenario creations for utilizing the secondary inclusive classroom. Join us as we take you along a step-by-step process of creating a scenario of your choice! This workshop will provide a framework for creating scenarios, specifically, with the use of the secondary classroom including Martin and Bailey. Attendees are welcome to work on their personal scenarios while we collaboratively create one together. The scenario that is collaboratively created will be available for use after the conference!

Developing Elementary Teachers’ Ability to Facilitate Discussions in Science and Mathematics via Simulated Classroom Environments

Jamie Mikeska, ETS
Heather Howell & Carrie Straub, Mursion

This session highlights ongoing work studying how teacher educators use a series of simulation tasks in their methods courses to develop elementary preservice teachers’ abilities to facilitate goal-oriented discussions in science and mathematics. We will share example tasks, a scoring rubric, and our newly developed upper elementary avatars and classroom.

Using the mixed reality classroom as a preparation tool for novice qualitative researchers working with K-12 students

Kristin Murphy
University of Massachusetts Boston

In this paper and presentation, findings will be presented from using the Mursion classroom as a scaffolded qualitative research learning tool for undergraduates in a research seminar preparing to engage in youth participatory action research with students from a public urban high school.

The Effects of Immersive Simulation on Teacher Efficacy
when Supporting Executive Functioning in Students with Dyslexia

Sandra H. Robbins & Jill M. Drake  
University of West Georgia

Students with dyslexia are increasingly underserved in K-12 schools. This investigation examined the effects of immersive simulation on teacher efficacy when supporting executive functioning in students with dyslexia. Pre-post surveys were administered to measure changes in efficacy. Findings related to organization, prioritization, and planning skills will be shared.

Lessons Learned From a First Year Laboratory

Kate D. Simmons  
Auburn University Montgomery

The College of Education (COE) at Auburn University Montgomery (AUM) is proud to house Alabama’s first Virtual Avatar Laboratory (VAL). The goal of this presentation is to: 1: outline successful grant and IRB processes, and 2: describe lessons learned to help others be successful in starting a full license lab.

Using TeachLivE™ to Improve Practice for Pre-Service and In-Service Teachers and Administrators

Diane Myers, Patsy Sosa-Sanchez, Teresa Starrett & Edward Steffek  
Texas Woman’s University

At Texas Woman’s University, we have been using TeachLivE™ since 2013 to enhance instruction across all of our programs in the Department of Teacher Education. During this presentation, we will discuss our application of TeachLivE™, our students’ responses to using TeachLivE™, and goals for teaching and research related to TeachLivE™.

Liminal Learning in Mixed Reality Teaching Environments

Jody Piro & Catherine O’Callaghan  
Western Connecticut State University

Liminal learning describes a condition of between-ness for individuals who are between states or places. This session will explore a research project that explored how mixed reality simulations in teacher education can assist preservice teachers in navigating this ‘state of between-ness’ and in the acquisition of threshold concepts of professional educators.
The Use of Authentic Case Studies of Diverse High Ability and Gifted Students in the Simulated ELEVATE Classroom to Examine the Nature of Ability, Achievement, and Appropriate Curriculum.

Gillian Eriksson & Jennifer Sanguiliano
University of Central Florida

Meet Ji-ho, TeachLivE’s newest student with a unique profile who is part of the UCF Project ELEVATE Gifted Classroom! This presentation focuses on the use of TeachLivE in conjunction with authentic case studies as a professional development tool, bringing awareness to the identification and needs of high ability, low income, and English Language Learner students.

Practicing Group Mathematics Discussion in Middle School: The SIM Study of Teacher Professional Development

Rachel Garrett & Bri Monahan
American Institutes for Research

Deep student engagement with mathematical content during whole group discussions is a critical but challenging part of middle school mathematics instruction; classroom simulation provides new opportunities for teachers to practice and receive feedback on leading these discussions. The SIM Study will pilot a new teacher professional development (PD) program that uses TeachLivE to support teachers in building their skills to conduct rich mathematics discussions in middle school classes.

“Have you ever been confused about your sexuality?": Urban Youth Leverage TeachLivE to Become Critical Qualitative Researchers

Jevon Hunter
Buffalo State University

Urban youth practitioner-scholars working at the intersection of criticality, educational justice, and technology regularly advocate for providing adolescents with learning experiences that center youth voices and foster the development of a critical consciousness to reflect upon and redress social injustices faced by our young people (Haddix & Sealey-Ruiz, 2012; Morrell, Dueñas, Garcia, and López, 2013).
POSTERS
AVITARS Senior Design Project:  
User Interface Integration and Reflection Component Refactoring 
Jason Berk, Justin Graham, Marina Kassimis, Taylor Veith  
Sponsor: Dr. Charles Hughes

Mission

This Senior Design team is tasked with modifying or replacing components of the existing AVITARS system. The team has inherited a system that has had tremendous success on campuses around the world and in continually expanding domains. Despite this, Dr. Hughes has identified several targets for improvement. Upon project completion, users will find training sessions easier to conduct, session analysis easier and more intelligible, and session review more intuitive.

New Features: Training Session

- **Integrated audio/video chat**: Users no longer have to use Skype.
- **Integrated video recording**: Users will not have to arrange windows to record with Bandicam.
- **Simplified tagging interface**: Observers and coaches can pay more attention to the session.

New Features: Analysis

- **Simplified navigation**: Users can switch between review and analysis mode without restarting the application.
- **Simplified User interface**: Redundant buttons will be removed and graph selection will be intuitive.

New Features: Review

- **Easily manage tags**: Users will be able add or remove types of tags that can then be added to future training sessions.
- **Add comments to tags**: Users will be able to add detailed notes to tags.
- **Quickly add tags**: Users will be able to add tags directly by double clicking on a tag type.
Reactions and Insights from First Time Users: Virtual Professional Practice Lab
Dr. Anni Reinking
Southern Illinois University Edwardsville

Abstract
In this project, early childhood teacher candidates co-planned and co-taught a lesson in the Virtual Professional Practice (VPP) lab at Southern Illinois University Edwardsville. Due to the constraints of SLU’s site license through Adobe, the professor designed slightly adjusted personalities for each of the avatars. After the simulated experience, all of the involved parties were surveyed regarding their experience.

This was the first experience in the VPP for the teacher candidates and the professor. This was also the first time the professor experienced early childhood profiles.

Step 1: Designing Early Childhood Avatar Profiles

<table>
<thead>
<tr>
<th>Name</th>
<th>Characteristics</th>
<th>Purpose</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Av1</td>
<td>Beginner teacher</td>
<td>To begin teaching</td>
<td>Begin teacher experience</td>
</tr>
<tr>
<td>Av2</td>
<td>Advanced teacher</td>
<td>To advance teaching</td>
<td>Advance teaching experience</td>
</tr>
<tr>
<td>Av3</td>
<td>Novice teacher</td>
<td>To learn teaching</td>
<td>Learn teaching experience</td>
</tr>
</tbody>
</table>

Step 2: Co-Planning and Co-Teaching
1. Assigned a co-teacher
   - Geared towards collaborative teaching with a colleague
2. Decided on a topic/lesson
   - Co-created collaborative lesson and ideas
3. Co-planned using GoogleDrive
   - Used Google Drive for collaborative planning
4. Co-taught the lesson in the Virtual Professional Practice Lab (VPP)
   - Co-taught a mini lesson focused on 3rd grade standards

Step 3: Reactions/Reflections
Professor:
- A lot of planning goes into the simulation
- Beneficial for the teacher candidates to experience an early childhood setting in a virtual environment

Teacher Candidates:
- The experience was valuable for future teaching experiences
- The lesson was engaging and effective

Discussion
The virtual environment provided a unique learning experience. The participants learned through the simulations, which helped them to develop and improve teaching skills. The lesson was successful in engaging the students and providing them with a meaningful learning experience.
Using Virtual Simulation to Prepare Preservice Special Education Teachers for Inclusive Settings

Melissa K. Driver, Ph.D. & Kate Zimmer, Ph.D.

Why Use Virtual Learning?

Students need opportunities to practice their craft in structured, simulated, and supervised environments. Experiences with virtual techniques expand time and space, allowing learners to explore scenarios and situations that they might not encounter in real-world settings. This helps them develop the skills and confidence needed to succeed in their future careers.

Preparing Special Education Teachers for Inclusive Settings

The purpose of this study is to prepare special education teachers for inclusive settings. The study involved participants in virtual environments, where they could practice their skills and receive feedback from experienced educators.

Self-Reported and Observed Data

Research Questions

- Does embedding a sequence of virtual simulations into a collaborative course influence perceptions of inclusion, readiness to co-teach, and working within collaborative settings?
- Do participant communication skills change as a result of repeated practice in the simulation?

Abstract

We present results from a mixed-methods study investigating the use of virtual environments to prepare preservice teachers for inclusive settings. The study involved two groups of participants, one receiving traditional training and the other receiving virtual training. Results indicated that virtual training led to improved perceptions of inclusion and readiness to co-teach.

Measuring Perceptions

Communication

Conclusions

- Practice in simulations had a direct impact on perceptions.
- Improved candidate use of effective communication strategies over time.
- Alignment between self-report and observed behaviors.
- Future research might consider use of different scenarios to focus on a wide range of increasing and decreasing levels.
- Virtual scenarios should also be studied in general education populations.
- Possibility of in-service use to provide training and feedback for school personnel.
EmoReact: A Multimodal Approach and Dataset for Recognizing Emotional Responses in Children

Behnaz Nojavanaghar, Tadas Baltrušaitis, Charles. E. Hughes, Louis-Philippe Morency

UCF
Carnegie Mellon University

Motivation

We present EmoReact – a newly collected multimodal emotion dataset of children between the ages of four and fourteen years old that contains 1102 videos. EmoReact is annotated for 17 affective states, including six basic emotions (happiness, sadness, surprise, fear, disgust, and anger), neutral, valence, and nine complex emotions including curiosity, uncertainty, excitement, attentiveness, exploration, confusion, anxiety, embarrassment and frustration.

Contributions

- Biggest multimodal dataset of emotional responses of children.
- Detailed analysis of the most indicative behavioral cues for emotion recognition in children.
- Baseline unimodal and multimodal emotion recognition models.

In this work we present analysis and results for labels that achieved fair inter-annotator agreement level.

Emotion Annotation

- Choice of emotion labels is done with an emphasis on affective states that are important for learning and education.
- All emotions except valence are annotated on a 1-4 Likert scale. Valence was annotated on a scale from 1-7 representing strongly negative to strongly positive.
- Each video clip has been annotated by 3 independent annotators who have been trained from Mokhassel & Ture.
- Length of each video clip is between 3 seconds to 21 seconds with an average length of 5 seconds.
- The emotions have been expressed by 83 different children, 32 female and 51 males, with some diversity in activity.

Predictive Audio-visual Behaviours

We have analyzed the visual and acoustic behaviors to find out the most indicative behaviors for each affective state (mean & standard deviation).

Table 1: Summary of most predictive acoustic behaviors for each emotion label. Ttest shows the level of effect size for that behavior in presence of emotion label (p=0.05).

Results

Co-occurring Affective States

In EmoReact affective states can co-occur and a video clip can contain multiple emotion labels.

Table 2: Co-occurrence of affective states in EmoReact dataset (P value = 0.005). EmoReact is the largest dataset of multi-modal video data with labels of children.

We have trained classifiers using visual only and acoustic only features for emotion classification. Our input features for visual and acoustic classifiers are as follows:

Visual: (1) Facial action units (2) Head position and orientation (3) Novoroi shape parameters
Acoustic: (1) Voice quality (2) Prosody (3) MFCC

Notice the difference in performance of visual and acoustic classifiers for each affective state.

References

Individualized Mixed-Reality Teaching Experience for Online Students

Dr. Robbie Tyle
College of Education and Human Performance

Purpose of Study
The purpose of this study is to examine the impact of the individualized mixed-reality teaching experience (IMRT) on the perceptions of teaching and evaluation of effective instructional and classroom management practices.

Research Questions:
1. What is the impact of the individualized mixed-reality teaching experience on the perceived effectiveness of instructional and classroom management practices?
2. How do students' perceptions of the individualized mixed-reality teaching experience relate to their attitudes towards teaching and learning?

Procedures
The study was conducted using a mixed-methods approach. The IMRT was developed and implemented in a classroom setting using virtual reality technology. Data were collected through surveys and interviews with participating teachers and students.

Results and Conclusions
1. Students were motivated to engage in the IMRT by:
   - Immediate feedback on their performance
   - Enhanced engagement and active participation
   - Improved understanding of complex concepts
   - Increased motivation and retention
2. Students perceived the IMRT as improving their teaching practices:
   - Enhanced ability to deliver content
   - Improved classroom management strategies
   - Increased student involvement and participation

Background Information
Virtual reality technology has been shown to enhance learning and engagement in various educational contexts. The use of virtual reality in education can provide immersive and interactive learning experiences, which can lead to improved understanding and retention of course material.

References
(Refer to the references provided in the document for detailed citations and further information.)
Simulations as apprenticeship: Designing approximations of practice that ask candidates to share student assessment data with families
Joan M.T. Walker & Angela M. Lapp

Abstract
Communicating with families is a challenging aspect of teachers’ work as few teachers are well-prepared for this didactic professional activity. This study uses an approach to simulation training, immersive and effective, that allows participants to dynamics and challenges a modern approach. Participants were divided into three groups: a control group, a simulation group, and a student group. The simulation group was assessed on another simulation training where students were asked to share student assessment data with families. This group offered an opportunity to share information that could spread strategies for families and their student’s ability to share the information with others.

Simulations as Pedagogy
Advantages
- Experiential learning
- Motivational factors
- Feedback
- Simulated pressure

Limitations
- Enhanced task orientation

Overarching Objective and Background
- Teacher education and student assessment
- Immersive and effective simulation training
- Participants divided into three groups: control, simulation, and student groups.
- Simulation group assessed on another simulation training where students were asked to share student assessment data with families.

Research Questions
1. Can we design valid simulations that test content knowledge and social competence?
2. How do the students perceive the simulations?
3. Can we assess students’ social competence?
4. Can we design tasks that are both valid and effective?

Participants
- Examples of results from 6 candidates
- Different levels of knowledge
- Identifying areas for improvement

Standardized Parent Paradigm

Establishing Reliability
- Organizational model: 3 R’s
- Reliability of measurement
- Standardized feedback: Range of S
- Range of 4 to 10
- Range of non-response: 4 to 10
- Range of response: 4 to 10
- Procedure: small groups of 3 to 4 simulation sessions

Profiles: Use of 7 skills by Condition
- Adaptability
- Flexibility
- Persistence
- Negotiation
- Teamwork
- Communication

.What Did Candidates Learn?
- The importance of clear and consistent communication
- The role of feedback in improving performance

Significance
1. Demonstrates an integrated assessment of candidates' professional content knowledge and social competence.
2. Creates opportunities for candidates to adapt their content knowledge and social competence across related conditions (i.e., delivering an unwelcome phone call).
3. Merges communication frameworks from social and educational psychology.

Profile
- Adaptability
- Flexibility
- Persistence
- Negotiation
- Teamwork
- Communication

What Did I Learn as an Instructor?
- Building the link between explicit and implicit knowledge
- "We prepared for anything"
LESSONS LEARNED FROM A FIRST YEAR LABORATORY

• Writing your grant
• Developing your niche
• Working with the Institutional Review Board (IRB)
• Establishing friendships with Mursion, Inc.
• Seeking support from those within your institution
• Generating the link to CAEP accreditation
• Emphasizing university needs/goals

• Working with your administrator and budget
• Designing the physical space of your laboratory
• Meeting with upper administration for support and circulation
• Marketing your laboratory (name, logo, flyers, giveaways)
• Conceptualizing your webpage
• Hiring your simulation specialists
• Holding an open house
• Customizing the logistics of your laboratory (the who, what, when, and where)
• Creating forms and questionnaires
Interdisciplinary Teaching/Co-Teaching Within the Mursion Virtual Environment: General & Special Education Pre-Service Teachers

Maria B. Peterson-Ahad, PhD & Melanie Landon-Hays, PhD
Western Oregon University

ABSTRACT
Western Oregon University has newly inaugurated the Simulation and Use of Mursion in both general and special education pre-service teacher preparation through a grant from the Oregon Department of Education and CEEDAR. Western Oregon University is also the first teacher preparation program to have and utilize Mursion technology in the Pacific Northwest.

WHAT IS MURSION?
Mursion is a virtual environment where individuals can practice a complex variety of skills that are essential day-to-day performance on the job. In this instance, future educators. Mursion's unique reality platform uses a combination of artificial intelligence and live actors to deliver powerful, customized simulations of complex interactions, including the sorts of situations that confuse teachers here with their students every day. The Mursion platform allows educators to take risks from which they can learn how to improve their day-to-day performance. A wide range of instructional techniques can be enhanced in Mursion's virtual reality simulator, including managing classrooms, working with children with special needs, and practicing specific instructional routines relevant to a particular subject area.

GRANTS DEVELOPMENT & GOALS
Western Oregon University was funded with a grant national from the Oregon Department of Education and CEEDAR. The goals of this grant are as follows:
1. Initial certification special education & general education candidates will increase proficiency of providing high leverage teaching practice (as use of explicit instruction, 4 use of positive/negative feedback, re-teach a consistent, explicit, and respectful interaction environment that guides students learning behavior and to refining instruction tools and approach for specific learning goals for students with high achieveabilities.
2. Initial certification special education & general education candidates will utilize effectively component teaching practices upon completion of the lab-based virtual learning environment sessions and explicit instruction protocol (STand/Rat).
3. Western Oregon University will align syllabi and assessment practices that specifically utilize high leverage teaching and culturally competent component teaching practices.

PHASE I: DEPLOYMENT
This grant will be implemented in a series of four phases:
1. Initial certification special education & general education candidates will be trained in providing high leverage teaching practice (as use of explicit instruction, use of positive/negative feedback, re-teach a consistent, explicit, and respectful interaction environment that guides students learning behavior and to refining instruction tools and approach for specific learning goals for students with high achieveabilities.

PHASE 2: IMPACT /EVALUATION
This grant will be implemented in a series of five phases:
2. Initial certification special education & general education candidates will increase proficiency of providing high leverage teaching practice (as use of explicit instruction, 4 use of positive/negative feedback, re-teach a consistent, explicit, and respectful interaction environment that guides students learning behavior and to refining instruction tools and approach for specific learning goals for students with high achieveabilities.

PRELIMINARY FINDINGS
Preliminary findings from Phase I indicate that:
All participants gained fluency in the use of the specified high leverage teaching practices over the course of the five Mursion sessions.
Self-efficacy ratings from a majority of participants increased between the first and last Mursion session.
Self-efficacy ratings increased that participants initially thought about how to improve teaching practices with both Ed and Seni; teaching strategies and areas of improvement were also noted, gaining the opportunity for goals to be set over each session.
Systematic review results yielded some positive findings that can be leveraged for additional research.

CONTACT INFORMATION
Maria B. Peterson-Ahad, PhD
Associate Professor of Special Education
Western Oregon University
(503) 988-5714

100
ABSTRACT: The purpose of this study was to investigate graduate speech language pathology (SLP) students’ self-efficacy in working with English learners (ELLs) in a mixed reality classroom (TeachLIVE). TeachLIVE has been implemented to develop teaching effectiveness (Howard, 2018; Thomas, 2018). The findings of this study are expected to contribute to the literature by providing insights into the effectiveness of TeachLIVE in improving self-efficacy among SLP students.

METHODOLOGY
- **Data Collection:** Video data, demographic survey, and qualitative data.
- **Design:** Pretest-posttest control group design.
- **Participants:** Graduate SLPs at UCF.
- **Sample Size:** 24 graduate SLPs.

QUALITATIVE DATA RESULTS
- Graduate SLP Reflections:
  - Improved self-efficacy in teaching English learners.
  - Increased confidence in using TeachLIVE.

QUANTITATIVE DATA RESULTS
- Paired t-test Results:
  - Communication skills of SLPs:
    - Pretest: High = 3.85, Low = 2.90
    - Posttest: High = 4.00, Low = 3.40
  - Paired t-test:
    - t = 12.45, df = 23, p < 0.01

CONCLUSION & DISCUSSION & IMPLICATIONS
- **Sample size:** Increased to 30.
- **Self-reported surveys:** Extended to include additional feedback.
- **TeachLIVE:** Further integration to enhance self-efficacy.
- **Instrument Validation:** Continuous refinement to improve reliability.

RESEARCH QUESTIONS
- Does the use of TeachLIVE improve SLP students’ self-efficacy in working with English learners?
- How does self-efficacy change over time when using TeachLIVE?

LITERATURE REVIEW
- **Addressing student self-efficacy:** (Garrison, 2018; Lopes, 2019).
- **Teaching strategies:** (Howard, 2018; Thomas, 2018).
- **TeachLIVE:** (Santos, 2019; Howard, 2018).
ABSTRACT: The purpose of this study was to investigate graduate speech-language pathology (SLP) student self-efficacy in working with English learners (ELs) in a mixed reality classroom (TeachLIVE). TeachLIVE has been implemented to develop teaching affective skills. Hoyea, Daler, Hughes, & Hughes, 2019. This study aimed at understanding strategies to improve the overall communication skills, 2018. However, the result has not been used in teaching the pre-service SLPs to work with ELs. Therefore, the results of this study are crucial. The independent t-test results indicated that there was a statistically significant difference in SLP self-efficacy scores reported by the beginning and intermediate level students. The beginning level SLPs reported higher self-efficacy scores compared to the intermediate level SLPs. This may imply that SLPs' self-efficacy increased after TeachLIVE exposure because they might have realized that they could communicate well with advanced level learners. The results of this study also support the finding of 82% of the students mentioning that they needed more exposure and better preparation in teaching ELs to be able to communicate with the intermediate level SLPs and achieve better evaluations.

INTRODUCTION

PURPOSE: To investigate graduate speech-language pathology (SLP) student self-efficacy in working with English learners (ELs) in a mixed reality classroom (TeachLIVE).

LITERATURE REVIEW

- authentic learning and working environment for in-service and pre-service learners (Gemei, Marques, appetant, Hoyea, & Hughes, 2019)
- addressing student behavior attributes (Gemei, Marques, appetant, Hoyea, & Hughes, 2019)
- managing limitations of design and learners (Parks, Venable, & Elber, 2019)
- SLP: TeachLIVE has not been used in teaching the speech-language pathologists (SLPs) to work with English language learners (ELs).

RESEARCH QUESTIONS

- How can teachability of TeachLIVE SLP, student self-efficacy with TeachLIVE, and student self-efficacy with TeachLIVE be measured?
- How can teachability of TeachLIVE SLP, student self-efficacy with TeachLIVE, and student self-efficacy with TeachLIVE be compared to the traditional SLP teaching methods?
- How can teachability of TeachLIVE SLP, student self-efficacy with TeachLIVE, and student self-efficacy with TeachLIVE be improved in future studies?

QUALITATIVE DATA RESULTS

- Graduate SLP Reflections
- This will be a behavior that I will take all year to those interactions with English language learners to ensure I am solving the need without making them feel uncomfortable.
- Data Analysis: PLS-SEM & Qualitative Data Analysis

CONCLUSION & DISCUSSION & IMPLICATIONS

- Sample size
- Self-reported surveys
- Short exposure to TeachLIVE
- Instrument validity

- Teachability for training SLPs
- Preparing for applying a variety of strategies
- Assessing environment & interaction
- Immediate feedback
- Scaffolding & Socializaton theory
The Effect of Real User Body Cues on Virtual Body Ownership
Sungchul Jung and Charles E. Hughes
Computer Science and Institute for Simulation and Training,
University of Central Florida, Orlando, USA

Problem considered: "How can we improve the sensation for body ownership in a virtual environment?"

The sense of proximity to a virtual context requires a diverse set of cues that gives a participant a sense of presence in a virtual space. In essence, we seek a sense of presence that transports the operator to the space inhabited by the virtual avatar in a virtual space. To assess this sense of presence in a virtual space, we are testing a hypothesis that seeing one's own body from a first person point-of-view is a critical element of "being there." To achieve this we introduce a method to enhance the sensation of presence for the operator who inhabits a virtual avatar by increasing the sensor of body ownership.

Objectives: The goal of our research is an investigation for the impact of real body cues and virtual body continuity on virtual body ownership and presence using virtual mirror reflection.

Body Continuity: Visually unbroken body connection of virtual torso to hand

![Images showing different conditions of body continuity](image1)

Body Cue from Virtual Mirror Reflection

(a) Non mirror, no reflection (b) a mirror reflecting real lower body torso; (c) a mirror reflected virtual human avatar

Virtual Threat: Elicit psychological responses

(a) we introduced a virtual knife pointing at a target; (b) Experimental environment: A set of pedals for testing one's hands, an RPSD camera and a head tracker were placed in front of the participant.

Questionnaire

<table>
<thead>
<tr>
<th>Item</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>VBO1</td>
<td>You had the feeling that the virtual arm and hand were your own arm and hand.</td>
</tr>
<tr>
<td>VBO2</td>
<td>You had the feeling that the real arm and hand were enveloped by the hand's belonging.</td>
</tr>
<tr>
<td>VBO3</td>
<td>During the experiment there were moments in which the virtual arm and hand started to look like your own arm and hand.</td>
</tr>
<tr>
<td>Continuity</td>
<td>You had the feeling that the virtual arm and hand were connected to your real body.</td>
</tr>
<tr>
<td>Presence</td>
<td>You had the feeling that you were involved in the virtual environment experience.</td>
</tr>
</tbody>
</table>

TeachLive™: Virtual Human Interactive Performance
5th Annual International TeachLive™ Conference
June 7-9, 2017
Simulated Teacher Preparation

Through a Department of Education OELA NPD grant, pre-service and practicing teachers will earn Digital Badges through a process of micro-credentialing using the TeachLIVE lab.

» Develop and embed VIDEO-BASED MODULES of 10 KEY INSTRUCTIONAL SKILLS for supporting elementary English learners at WIDA LEVELS 1, 2 & 3 of ENGLISH PROFICIENCY in 8 UCF teacher preparation courses
» Coach teacher candidates in applying the 10 skills in MICRO-TEACHING or SIMULATION activities
» Assess teacher candidates’ performance of the 10 skills and award micro-credentials in the form of DIGITAL BADGES

5-Year Teacher Education Research & Curriculum Development Project
Using TeachLivE™ to Improve Practice for Pre-Service and In-Service Teachers & Administrators
Patsy Sosa-Sanchez, Teresa Starrett, Ed Steffek, and Diane Myers

**Bilingual/ESL**
In ESL/bilingual classes, we've used both English learner and Spanish-speaking avatars. Students pursuing a Bilingual or ESL certification have the opportunity to modify their language and use instructional strategies as they present a content minilesson that engage students in the dynamic process of second language acquisition by teaching the class with at least one English learner avatar.
These pre-service teachers also have the benefit of getting real-time feedback from their instructor, a coaching tactic that helps students improve their practice before getting into a classroom.

**Educational Leadership**
In educational leadership classes, our pre-service administration students practice supervision skills through post-conferencing techniques. In the TeachLivE lab, we simulate discussions between a classroom teachers and an administrator to close the loop on the supervision cycle (i.e., preconference, walkthrough, and observation).
Students have two sessions in the lab and analyze their level of competency through surveys and video analysis. After receiving instruction on effectively handling conflict and creating consensus when emotions run high, students participate in a simulation to share suspension-based disciplinary consequences with a parent.

**Special Education**
In our graduate course “Behavioral Interventions for Students with Disabilities,” our students taught a lesson on respect in a TeachLivE classroom with frequent disruptions and intensive problem behaviors.
Our students, many of whom were veteran teachers, found the experience humbling and challenging, but welcomed the chance to practice the target teacher behaviors (e.g., specific praise, opportunities to respond) with the TeachLivE class – and to receive immediate feedback from the instructor. In addition, doctoral-level psychology students practice behavioral observation, taking data on our students and reporting rates of the target teacher behaviors.

We currently use TeachLivE™ across all of our Teacher Education programs at TWU.
THE INFLUENCE OF A SIMULATED ENVIRONMENT ON TUTORS AND SUPPLEMENTAL INSTRUCTION LEADERS

PRESENTED BY DR. TALITHA HUDGINS & DIRECTOR KOLENE MILLS

INTRODUCTION
The purpose of this study is to use TeachLivE simulated environment to provide training for tutors and SI leaders in how to handle difficult situations while interacting with virtual students.

STUDY
The protected environment will allow tutors to demonstrate their ability to discern and provide appropriate levels of tutoring support, identify and respond to difficult situations with professionalism, learn a variety of strategies, and provide effective instruction in a flexible and safe practice environment as they learn to refine their instructional techniques.

METHOD
Step 1: Each participant will be asked to take a pre-survey prior to any simulated practice session.

Step 2: Participants will attend in-person the simulated program TeachLivE to conduct a tutoring session, a total of 2 sessions, 2 hours each. The participants will observe each other during the simulated session.

Step 3: Participants take a post-survey after the TeachLivE sessions.

Step 4: Participants will be placed in real-world difficult tutoring situation.

Step 5: Reflection and Feedback with participants

DISCUSSION
We anticipate this study will provide better training for our tutors/SI leaders and provide valuable information to use for future training. Data collection will be pre/post-survey and reflections and feedback. We will finalize the study by spring 2018.
TeachLivE Read Alouds

Dr. Lee-Anne T. Spalding
College of Education and Human Performance, School of Teaching Learning and Leadership

Introduction

As a part of the Elementary Education program, students must take UCF 344, a course in literature appropriate for children. One objective of the course is to have students read aloud to a variety of students or groups of students to be a variety of genres and levels for increasing reading fluency. Students are expected to read aloud in a public elementary school. Working in teams, many times participating in reading to a virtual class of students. (The information presented in class and on the web site are a summary of what is high-quality instruction of read alouds). One uses the class or online videos by Teaching the Teacher or to read aloud to the virtual class in 100 at a time with the schedule and that is that far. The act of teaching the children is an important aspect of the self-evaluation and reflection section. It can be measured and more important than the self-evaluation and reflection section. Once you read aloud, you are underfed and at least one pair to detect constructive feedback on the focus of your reading goals and complete the self-evaluation section. Return to the instructor in your follow-up on the due date.

Scan this QR Code to be reminded...

Why should all be reading aloud to children
By: Rebecca Bellingham TEDYouth@BeaconStreet

BENEFITS OF READ-ALOUD

Among the many benefits of read aloud, Roj (2001) lists the following:
- building vocabulary
- developing understandings of story structures
- supporting development of connections between print elements
- encouraging high levels of understanding
- teaching the reading process in a meaningful context
- modeling fluency
- motivating students to read

STUDENT FEEDBACK & REFLECTIONS

I learned that I have an “on” button for teaching. When I got in front of the students, I felt like I fell right into the role of the teacher.” OW, July 2014

“I learned that students are unpredictable and it’s up to me to engage them and keep their attention. I thought TeachLivE was very cool!” LZ, October 2015

“While I am reading, I’ll be making frequent eye contact with my students to make sure that they are staying on track. If there is a behavior issue, I will remind the students of our expectations that we made before I began reading. Some UDL principles I plan on using are:
1. Clarify vocabulary and symbols
2. Activate or supply prior knowledge
3. Guide appropriate goal setting
4. Minimize threats and distractions” AA, March 2017

BOOK LIST

Gale Karr: President of TeachLivE, creator and developer of TeachLivE
Harvey D. Olmo by Debra L. Hopkins (Philosophy of Social Studies)
Actual Site by Steve Jenkins (Philosophy of Social Studies)
Two Buildings: A True Story of Hurricane Katrina, Friendship, and Survival by K.P. Jones, Mary Frey, and John Cooper (Philosophy of Social Studies)
The Man Who Stole Tracks by Maud Jeans (Philosophy of Social Studies)

REFERENCES