6th Annual

teach live

Conference

MAY 23-24, 2018

Virtual Human Interactive Performance (VHIP)

Conference Co-Chairpersons:

Angelica Fulchini & Michael C. Hynes
CONFERENCE PROCEEDINGS

6th Annual
teachlive
Conference

MAY 23-24, 2018

Virtual Human Interactive Performance (VHIP)

Morgridge International Reading Center
University of Central Florida
Orlando, Florida

Conference Organizing Committee:

Lisa A. Dieker
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Donna Martin
Annette Romualdo
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 education and training efforts at the 6th Annual TeachLivE Conference: Virtual Human Interaction Performance (VHIP).

This year, we were informed, challenged and motivated to action by our keynote speakers, Roger Azevedo, Larry Hodges and Robb Lindgren. Dr. Azevedo, Professor of Psychology at North Carolina State University, was our opening keynote speaker. His presentation was titled Measuring Self-Regulation During Learning with Advanced Learning Technologies. His insights into the complex relationship between humans and intelligent learning systems provided a context for discussions throughout the conference. Coincidentally, we are now pleased to announce that Dr. Azevedo has come to UCF to lead our Learning Sciences Cluster. Dr. Hodges, Professor of Human Centered Computing at Clemson University, closed out the first day. His talk was titled Sixteen Years Conversing with Virtual Human Agents. We all enjoyed the interdisciplinary spirit and the perspectives of this pioneer in the field of Virtual Reality. On the second day of the conference, Dr. Lindgren, Assistant Professor of Curriculum and Instruction at the University of Illinois, Urbana-Champaigne, was our midday keynote speaker. His presentation was titled Embodied Learning in Digital Environments. His focus was on how digital technologies can be used to construct new identities and generate new perspectives that lead to stronger comprehension of complex ideas. On behalf of all attendees, we thank our keynote speakers for sharing their perspectives and insights with the TeachLivE™ community.

We, the UCF team, had the opportunity to show conference participants new TeachLivE™ developments and applications, including job interview preparation, early childhood literacy, diagnostic assessment and intervention, GTA training for student-centered learning, and medical resident training for dealing with complex interpersonal interactions. As in the past, our research partners shared their new and continuing projects. This sharing of research designs and results, both at the TeachLivE™ conference and within other venues, including journal publications, is essential to the growth of knowledge about how to best apply simulation to improve teaching and learning.

The post conference day this year was a Deep Dive into Scenario Design by our commercial partner, Mursion, Inc. As always, Dr. Carrie Straub’s presence at the conference and willingness to lead this workshop were greatly appreciated. We also thank Mursion and its CEO, Mark Atkinson, for sponsoring the first day’s reception. It gave attendees a chance to network in a relaxed environment while perusing posters presented by our many wonderful partners.

A special thank you goes out to Drs. Angelica Fulchini and Mrs. Donna Martin for their tireless efforts at organizing this year’s conference. We also appreciate the contributions of Dr. Lenora Forsyth, Dr. Kathleen Inghram, Damien Chaffin, Maureen Au, and Annette Romualdo. We are sad to see our amazing TeachLivE coach, Ms. Pam Jones, move on but understand her desire to spend more time with her grandchildren. To Pam, we express our deep appreciation for her years of service to our UCF students, and the conference. We also acknowledge the great contributions of our sustained partners and wish to express our appreciation for the ongoing partnership and leadership provided by Mursion, including their contributions to the conference each year, with a special thanks to Dr. Carrie Straub for co-leading the conference.

Planning has begun for the 2019 conference. Mark your calendars for May 22 -24, 2019! We look forward to seeing everyone at UCF for the 7th annual TeachLivE Conference!
Generating Positive Programming for Hispanic Children with Disabilities through Mixed-Reality Simulations

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and

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Abstract

Research suggests school professionals do not feel prepared for working with Hispanic parents of children with disabilities, the purpose of this intervention study is to address the gap between family-centered practices and current practice regarding parent engagement skills of special education practitioners, through repeated experiences in Mixed-Reality Simulation (MRS). Researchers designed scenarios, intended to generate interactions between parent-avatars and practitioners, to find ways MRS could improve practitioners' performance toward engaging Hispanic families with children with disabilities in the context of IEP meetings. IEP meetings are meetings in which school personnel meet and collaborate with parents of children with disabilities to make appropriate educational decisions for the child. Practitioners demonstrated DEC Recommended Practice competencies as reflected in the parent-practitioners interactions during their MRS experiences. Results indicated the need for teacher education programs to improve practitioner’s development of empathy toward the parents and their development of in-depth knowledge of the intent of special education law IDEA regarding parent participation in IEP meetings.

Keywords: Mixed-reality Simulation; parent-teacher engagement; DEC Recommended Practices.
Family engagement is critical in the implementation of Individualized Education Programs (IEPs). It is critical in that it is the time when parents formally participate in their child’s educational programming and collaborate with school professionals. However, "quality relationships between parents and teachers are not always straightforwardly achieved" (Gwernan-Jones, et al., p. 2), particularly in the case of children with exceptionalities. Special education parents, often times, have "negative communication and collaboration experiences [that] result in a lack of trust of the educational professionals" (Schultz, Sreckovic, Able, & White, 2016, p. 345). As Walker and Legg (2017) pointed out, parents perceive a professional as “a business-like teacher who dominates the conversation and uses jargons without explanation” (p. 3).

Effective engagement of parents of young children with exceptionalities also requires the practitioners’ positive attitudes and sincere communication (Ward, 2014). Despite of the critical needs, special education teachers perceive themselves as not prepared through university course work, "although many teacher preparation programs acknowledge the importance of parent involvement, frequently the preparation and training that teacher candidates receive in these programs falls short of what is needed to actually foster collaboration and partnership with parents" (Collier, Keefe & Hirrel, 2015, p. 119). Schools and university alike need to provide training and professional development to practitioners on how to collaborate with families (de Bruïne, et al., 2014; Rubin, Abrego, & Sutterby, 2012). At the university level, it is feasible and necessary to create a safe learning environment that provides stimuli for practitioners to have
hands-on collaboration experiences and reflect on their beliefs and behaviors toward family engagement.

Virtual tools have become known for providing learners learning opportunities in acquiring professional and vocational skills. Lindgren and colleagues (2016) examined the differences in intervention efficacy between learners’ interaction with a computer program and a virtual physical simulation. They found, in their short-term study, that real-time sensorimotor experiences through virtual reality helped the participants ground their new learning and that the repetition of this new learning increases the likelihood of long-term gains (Lindgren, Tscholl, Wang, & Johnson, 2016).

The purpose of this intervention study is to address the gap between family-centered practices and current practice regarding parent engagement skills of special education practitioners. We provided special education practitioners repeated experiences in Mixed-reality Simulation (MRS), an avatar simulation that can be used by designing various scenarios, to help the practitioners develop family engagement skills.

**Theoretical Framework**

Teachers do not have adequate capacities in engaging diverse families of children with disabilities (Walker & Legg, 2017). Research on Hispanic parents’ engagement, meanwhile, report parents’ lack of skills and confidence as collaborators to their children’s teachers (Dotger, 2010; Forsingdal, et.al, 2013). To this, Department of Education’s Dual Capacity-building Framework for Family-School Partnership highlights the importance of capabilities, connections, cognition, and confidence (4 C’s) for both professionals and parents.

The Division for Early Childhood of the Council for Exceptional Children’s (DEC) Recommended Practices was the theoretical basis for this study. The set of family engagement
practices was compiled through examination of best practice in early childhood special education settings and are evidence-based practices. For this study, we asked “How might MRS experiences generate positive programming for young Hispanic children with disabilities?”

**Methodology**

A mixed-method case study was used to collect, analyze, and report findings on how the use of Mixed Reality Simulation (MRS) helped teachers to improve their parent engagement skills while conducting Individualized Education Planning (IEP) meetings for Hispanic children with disabilities.

**Process**

Three teacher-parent IEP meeting scenarios were created by the researchers. Each of the scenarios described a case of a Hispanic young boy with educational challenges related to his individualized education programming. to be discussed with his parents. Practitioners were given a case description in advance in order to prepare for the IEP virtual meetings. They formed teams to study the case; they assigned team member roles and developed a plan to resolve the conflict embedded in the case. At the same time, the MRS avatar actor was provided with the same case scenario each time in order to prepare for her virtual meeting performance. Prior to each simulation, the avatar actor met with the researchers and the technician handling the MRS software to receive instructions and rehearse the actions and reactions based on the Hit and Miss behavioral descriptions. The prescribed scenarios were learning opportunities for students and were part of the course material in special education law class.

Practitioners were asked to form teams of 4-6 members for each of the virtual meetings. Then, each team and the parent- avatars joined to conduct the IEP meeting. Each team held three different meetings with different parent-avatars. After every team’s MRS, one of the three peer
raters and the course instructor (the principal investigator) provided oral feedback to each team member and the team member reflected on their own experiences.

**Data Collection**

**Research Instrument.** The Family Engagement IEP Observation Scale was developed based on DEC 15 family engagement Recommended Practices. Three observers assessed each of the IEP team members to decide if the IEP team member’s words and actions were consistent with each of the 15 behavioral indicators of Family Engagement Recommended Practices. The scale includes five degrees of agreement and a “Not Applicable” option when the behavior stated in the indicator cannot be observed during some meetings. Each behavioral indicator was worded from parent perspectives. For example, item 1: “S/he makes me feel that s/he really cares about my child”.

**Peer rating data.** At each IEP simulation, every IEP team member’s performance was rated by 3 of his or her peer observers who were not participating in the IEP meeting, using Family Engagement IEP Observation Scale.

**Practitioner self-rating data.** After the three MRS, each practitioner was asked to rate his/her words and actions in the 3rd scenario, using the same rating scale.

**Researchers’ observation data.** The research team took observational notes during each of the three MRS and discussed their observations afterwards.

**Data Analysis**

Data from 153 peers rating forms and 21 practitioners’ self-rating forms were recorded and analyzed. Researchers’ observation and discussion data were used to
Results and Discussions

The group means of individual scores from 3 peer-ratings were compared using SPSS and no statistically significant differences were found. Then, we used descriptive statistics to make the comparison of group Peer-Rating scores and the participants’ group self-rating scores data (Table 1) to explore if MRS experiences help the practitioners participate in IEP meetings.

It was clear that the average of 3 peer rating scores was above 4 in general, except item 7 which denotes the use of visual representations to help parents understand their child’s behavior or academic performance. This weakness was also identified by the participants themselves as an area for improvement. The participants recognized that they did not use visuals to help them communicate. In the participants’ self-rating, there were many areas that they perceived that the parent would not have rated them as showing the desired behaviors. The areas include: Using Spanish to communicate with parents, using interpreter to help with their communication, explain clearly what the child’s learning or behavior problem was, giving wait time for parents to express their opinions, and most importantly, including parents’ ideas in the decision-making.

Table 1

*Peer and Self-rating on IEP Words and Actions*

<table>
<thead>
<tr>
<th>Items</th>
<th>Peer rating</th>
<th>Self-rating</th>
<th>Behaviors</th>
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<tbody>
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<td>4.7</td>
<td>4.9</td>
<td></td>
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<tr>
<td>2</td>
<td>4.6</td>
<td>3.4</td>
<td>Spanish use</td>
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<td>3</td>
<td>4.2</td>
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Qualitative data from researchers’ observations and discussions indicated that the MRS scenarios prompted reactions on practitioners every time parent-avatar interjected, changed mood, or requested clarifications. We found that the practitioners shaped the virtual IEP meetings based on legal requirements. For example, they made sure that the parent avatar was given parents’ rights booklet. They also made sure that they included a language interpreter in the meeting in two of the three cases where the parent-avatar was Spanish speaking. However, they did not seem to consider parent-avatar’s needs to be heard and valued. During the feedback sessions, the practitioners noted that they became aware of the impact of their words and actions on parents and they were able to monitor what they did in real IEP meetings. The MRS experiences were especially helpful to early career practitioners.

Conclusions
The usefulness of MRS was evident. The scenarios and the avatar responses, by design, prompted practitioners’ actions and reactions throughout their MRS experiences. Practitioners grew confident interacting with the avatars. MRS helped improve their performance in engaging Hispanic families with children with disabilities in the context of IEP meetings. Still, researchers found that

(a) some practitioners did not have the Spanish language skills to function in an IEP meeting and they would need to learn to communicate effectively through the use of a language interpreter. For example, practitioners should have eye contact with the parents while the translation is taking place.

(b) none of the practitioners came prepared with visual aids to help them communicate with the parents;

(c) practitioners need to grow their empathy toward parents; and

(d) practitioners need to conduct IEP meetings with an in-depth understanding of the intent of IDEA. That is, practitioners tended to focus on how they would comply with IDEA while the intent of IDEA is really about parent-practitioner collaboration to achieve the child’s best learning outcomes.

Overall, practitioners’ actions and reactions indicated that MRS has worked to help them gain better understanding in how to interact with Hispanic parents of children with disabilities. However, we also noted that some practitioners interacted in a “formal” and “scripted” manner. To help them truly collaborate with Hispanic parents of children with disabilities, teacher education programs should provide learning experience such as MRS to help them see the importance of parent engagement in an IEP, despite of the legal boundaries set for
special education practice. However, the peers raters had between 3 and 9 rating experiences by session 3; hence, session 3 scores would tend to show more accurate peer ratings.

References


Training Teachers in Virtual Environments

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Abstract

This article summarizes a study that examines how two groups of teacher candidates were trained in a virtual learning environment at the beginning of their time in a university teacher training program. Through these two experiences the data shows that in virtual learning environments teacher candidates are able to grow and receive real-time feedback, mentoring, and have time for trial and error without adversely affecting the academic or social growth of any student.
For generations, teacher candidates have received training through coursework and field experience hours. In most settings, practicum/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 cooperating teachers in 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, two simulated scenarios will be described. Each of the simulated sessions occurred in different courses, were taught by different professors, and were requirements for graduation from the teacher education program at this state university. While the scenarios and experiences were different, the benefits of incorporating the VLE into initial coursework in the teacher training program are evident.

**Scenario 1: Early Childhood Teacher candidates**

In one early childhood course, teacher candidates are taught about collaborative relationships in the early childhood field, including collaborating with 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, the goal of this assignment was for teacher candidates to plan and instruct a lesson in the VLE to practice collaboration, cooperation, and compromise.

The assignment associated with the VLE required the 30 enrolled early childhood teacher candidates to co-plan a lesson using Googledrive with a randomly assigned classmate. The teacher candidates were given two weeks to co-plan. They then had to present the lesson 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 co-taught mini-lessons that lasted approximately seven to nine minutes. During the first few simulations 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 to other co-teaching pairs.

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 experiences. Additionally, the teacher candidates reflected that the avatars responses and comments were realistic creating a real-life situation that the teacher candidates could work through with readily available coaching.

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.

**Scenario 2: Learning Environments**

Another course in which both early childhood and elementary education teacher candidates are required to take focuses mainly on theories of classroom management and design, and how they interact with teaching style to create supportive, challenging, growth enhancing learning environments. The purpose of this course is to help teacher candidates become familiar
with classroom management theories and their application to teaching practice. The focus is on developing an effective, positive learning environment through the use of differentiated instruction, appropriate behavioral management, motivational strategies and active engagement. It is important to note that this course is taken early in the program progression, which means that many of the teacher candidates have not had the experience of teaching in the field experience classroom yet.

The assignment in this course associated with the VLE required the 13 teacher candidates in the course to plan and deliver one, 10 minute learning environment or classroom management concept learned in the course to the simulated classroom. Such topics considered were: establishing classroom rules/procedures, building positive student-teacher relationships, sharing the proactive classroom management plan, encouraging student motivation or managing disruptive behavior. Teacher candidates were allowed to choose the topic and one of three presentation dates in the semester.

Much like the previous scenario, on the day of the presentations, teacher candidates observed each other in the VLE. Each teacher candidate was given a feedback form that detailed the expected instructional and management strategies they had learned in the course. Teacher candidates watched their peers teach in the VLE simulated classroom and recorded detailed feedback on the form. When the session was over, the class shared some immediate feedback from the lesson beginning with strengths and ending in suggestions. Although the teacher candidates did not provide official written feedback in this course, through the feedback discussions they did verbally report similar positive feedback of the VLE assignment.
Conclusion

There were several common themes that emerged in our VLE simulated classroom instructional experiences. There were quite a few positive comments from students about the experience. To begin with, teacher candidates commented on how they enjoyed the opportunity to practice their instructional and management skills in a safe learning environment as opposed to trying these skills out in a high-stakes setting with “real” PK-elementary students under the watch of a cooperating teacher. Teacher candidates felt that this safe environment lessened their anxiety and the pressure to master their beginning instructional skills.

Another common theme that emerged through the VLE simulated classroom experience was the use of immediate feedback from both the course instructor and peers. Coulter & Grossen (1997) concluded that immediate feedback is so effective to teacher candidates because it gives learners an opportunity to change specific behaviors in the instructional environment instead of repeating errors until feedback is delivered after the fact. Other researchers support the idea that immediate feedback is essential to preparing teacher candidates (Goodman et al., 2008; Rock et al., 2009; Scheeler, McKinnon, & Stout, 2012).

Overall, during the above highlighted VLE sessions the peers who were watching were able to build their own practical knowledge of instruction and management by critically evaluating their peers. In addition, teacher candidates who became stressed or nervous during the instructional time, were able to pause the VLE classroom to either gain a clear vision or receive guidance from their peers or instructor. This is a benefit of using a simulated classroom. The ability to stop a real classroom, with real students, in order for the teacher to relax and refocus would be nearly impossible. Another reason why immediate feedback was so important to the above illustrated VLE experiences is because students were able to readily apply the
feedback in a setting that was not previously hindered by incorrect instruction. Finally, the peers who received feedback were able to immediately reflect upon their instructional experience and begin to conceptualize areas of future improvement. The VLE provides an environment for teacher candidates to learn, grow, and develop their skills prior to entering a classroom with real students, which is a benefit for all involved parties.


Improving Early Childhood Teacher Classroom Instruction Using the Early Childhood TeachLivE Scenario/Avatars

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Abstract

In the two described studies, the researcher will present preliminary results from the initial use of the early childhood/kindergarten classroom scenario. In this study, the TeachLive early childhood classroom scenario was implemented with both early childhood teachers and early childhood teacher candidates. The coursework and professional development sessions involving the early childhood scenario included behavior management, classroom instruction, and co-teaching. The initial results support other research focused on TeachLivE scenarios: engagement in the scenario improves teacher performance overall (Dieker, 2007).
There currently is, and has been for generations, a need for teachers and teacher candidates to engage in experimental learning to improve their professional practice (Boud, Keogh, & Walker, 1985). Therefore, providing experiences for both teachers and teacher candidates to engage in authentic experimental learning pedagogy, using a virtual learning environment (VLE), is essential to the education of our educators (Bateman & Bateman, 2002). Utilizing enhanced learning opportunities, or experiences in a VLE, provides teachers and teacher candidates the opportunity to participate in an effective teaching pedagogy with ample feedback under controlled settings (Oliver & Reschly, 2007; Smartt & Reschley, 2007).

Virtual Learning Environments (VLE) combine the real and virtual worlds into one environment to immerse the teacher and/or teacher candidate in both the physical and social aspects of a classroom (Biocca, Harms, & Burgoon, 2003; Hayes, 2015). This environment combines both human and artificial intelligence to provide authentic experiences in teaching (Blascovich, & Bailenson, 2011). VLEs offer safe, low-stress, flexible, and appropriate training conditions to practice pedagogical skills. “Virtual reality systems promote situated learning through the immersive experience of interactive objects, environments and processes” (Greenwald, Kulick, Kunert, Beck, & Frohlich, 2017, p 721).

In this article, two research projects will be described, both of which used the new (2018) kindergarten classroom designed by University of Central Florida. As a first adopter, Southern Illinois University-Edwardsville gathered (and still is gathering) initial data from field implementation. The two projects include:

1. Undergraduate students co-teaching a lesson in the kindergarten classroom during the Spring 2018 semester in the course CIED 318: Collaborative Relationships.
2. Early childhood teachers, who work at Illinois Action for Children centers in the Chicago area, practicing effective teaching strategies. Specifically, the teachers used the VLE to practice behavior management techniques and classroom instruction implementation methods.

Both of the projects will be described. It should also be noted that both projects utilized the scenario of the five kindergarten students sitting on the carpet.

**Project 1: Undergraduates**

Traditionally, experiential learning in teacher preparation programs could only happen during practicum or student teaching placements in other teachers’ classrooms. However, in this project, teacher candidates practiced and received feedback in an immersive VLE that simulated a traditional early childhood setting. This project allowed teacher candidates to increase learning through discovery and exploration as they applied evidence-based strategies.

Specifically, for this assignment, teacher candidates were assigned a co-teacher to plan, implement, and reflect on a lesson in the kindergarten VLE. During the co-teaching scenario, teacher candidates were placed in groups of 10 or 5 co-teaching pairs. The group of 10 all entered the lab together to sit in a fishbowl setting in order to provide feedback to peers. A “fishbowl” setting has been shown to improve the practice of all involved participants.

After the simulation, teacher candidates then reflected on their performance in the VLE by using the After Action Review (ARR). ARR is a structured review or debrief process for analyzing what happened, why it happened, and how it can be improved. The goal of using AAR after interacting in a VLE is to improve future performance.

Although, reflections were completed in several formats, the survey data provides an overall picture. In one of the survey questions, the 17 participants, which were the teacher
candidates who completed the survey, were asked if they felt like they were in a real classroom in the simulation. Over half indicated that they felt as if they were in a real classroom. In Figure 1, a pie chart shows the responses.

![DID YOU FEEL LIKE YOU WERE IN A REAL CLASSROOM?](image)

Figure 1.

The participants were then asked to describe their answers. Some of the descriptions for “yes” included:

“The children responded just like they would in a real classroom” (Participant 2).

“It gives people a chance to practice with some help with the pause classroom option” (participant 6).

“The children possessed behaviors of children in a typical classroom” (Participant 16).

The participant responses that supported the answer of “no” included:

“The students’ actions and appearance were unrealistic” (Participant 5).

“Although the children respond to you it still doesn’t feel like you are really interacting with them through the screen” (Participant 9).
“Felt like the reactions of the kids were too over dramatic” (Participant 15).

Another question on the survey asked participants if they would want to use the simulation of the early childhood classroom again. The same percentage said yes and no to this question, however if a participant said yes to the “real classroom” question, it did not always predict their answer to the “use again” question. In Figure 2, the pie chart displays the answers.

![Pie chart showing DO YOU WANT TO USE THE LAB AGAIN? with 41% Yes and 59% No](image)

Figure 2.

The responses the corresponded to the “yes” and “no” responses included:

“I think that it is an interesting and beneficial learning experience” (Participant 14). (Yes)

“Teaching real students is more effective” (Participant 8). (No)

**Project 2: Classroom Early Childhood Teachers**

The purpose of the second project was (and still is, as it continues through 2018) to provide virtually simulated classroom experiences to early childhood professionals through the available and transportable Virtual Professional Practice Lab at Southern Illinois University-Edwardsville. Specifically, in the state of Illinois, this project is extremely important as
policymakers, faculty members, and administrators are striving for a high-quality early learning workforce through training and education.

By utilizing the kindergarten classroom scenario, paid for through grant funds from the McCormick Foundation, teacher candidates were and still are able to practice evidence-based practices with confidence and in a setting where feedback is welcomed and provided in real-time. The participants include 20 early childhood teachers working in centers funded and supported by Illinois Action of Children in the Chicago area.

The professional development experiences in the early childhood simulated classroom environment are based on the CLASS (Classroom Assessment Scoring System) data of the teachers and classrooms at Illinois Action For Children, the partnering agency for the grant. When discussing the CLASS data, which is an observational instrument, used to assess classroom quality in PK-12 classrooms, the directors identified key areas needed for improvement: behavior management in the classroom and classroom instruction. Once these topics were identified, specific teachers were identified, based on classroom/teacher low CLASS scores. In all, there were 10 participants in each group, 20 in total.

The participants attended four sessions over the course of four months. The goal of the professional development was to teach a new concept based on the CLASS area, implement the new concept in the virtual lab using the kindergarten students, and implement the new concepts in their personal classrooms between each session. Each virtual session was evaluated using an edited version of the TPOT, which is a valid and reliable observation scale used to determine levels of proficiency in educational practices. It should be noted, however, that at the time of this white paper (May 2018), the research is still in progress; however, initial data has been collected.
The project began in March 2018 and will end in November of 2018 with two groups receiving the sets of professional development and experiential learning in the virtual lab.

Specifically, the classroom instruction professional development and VLE focused on:

- Engaging in open-ended questioning techniques with children.
- Promoting the integration of real world into the classroom.
- Developing and implementing transitions between activities.

The behavior management professional development and VLE focused on:

- Addressing challenging behaviors.
- Engaging in positive teacher language.
- Providing choices.
- Understanding and implementing redirection.

After completing three full sessions with the two groups of teachers they, along with their supervisors, have expressed their appreciation of the interactive professional development and have been able to implement new practices within their classrooms.

Along with the ability to interact in the new kindergarten virtual environment, the teachers also provide feedback to the development of the characters and scenarios. Some of the important feedback they provided focused on the behaviors of the early childhood avatars, especially at-risk students, which is a majority of the demographics of student at Illinois Action for Children. In Figure 3, a description of the types of challenging behaviors are outlined.
Figure 3: Forms of Challenging Behaviors

**Conclusion**

Although the kindergarten/early childhood classroom scenario is a work in progress, being able to use the simulation, implement lessons and professional development with teachers and teacher candidates, and help in the feedback of creating a solid kindergarten classroom is exciting. I, as the lead research on the project in Illinois, along with colleagues at UCF and SIUE are striving to reach all teachers, from high school down to the foundational level of early childhood.
References


Liminal Learning with Avatars: Journeying Toward the Profession with Educational Leadership Candidates

Jody S. Piro, EdD
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Western Connecticut State University
Abstract

Liminal learning denotes a disruption of previously known conventions and norms and a repositioning of the self within a culture of learners as students negotiate common, threshold learning tasks. This paper explores how participants in an educational leadership program negotiated liminality within mixed reality simulations through a collective case study design.
Using mixed reality simulations (MRS) within educator preparation is a trending practice (Andreasen & Haciomeroglu, 2009; Bautista & Boone, 2015; Dieker, Kennedy, Smith, Vasquez, Rock, & Thomas, 2014; Gundel, 2018; Peterson, 2014; Piro & O’Callaghan, 2018). This form of embodied learning (Lindgren & Johnson-Glenberg, 2013) within educator preparation programs may be enhanced by engaging in a community of practice (Lave & Wegner, 1991), such as in a simulation laboratory with peer and mentor colleagues. Educational leaders in training may interact with a digital display of an adult avatar representing a parent in an office environment (Mursion, 2018) to rehearse high leverage practices which are fundamental to the profession. For educational leader preparation programs, the central question is how do these augmented reality simulation rehearsals impact the learning processes of the students? For this article, we examine this question within the theoretical foundations of liminal learning.

**Method**

The central research question for this study was: How did mixed reality simulations impact the learning processes of educational leadership students? A qualitative collective case study (Yin, 2009) was used to understand the experiences of the participants. Students were bound by participation in two subsequent educational leadership seminar courses and a current or previous EdD student in Instructional Leadership at one university which used mixed reality simulations to augment the curriculum.

**Context of the Study and Participants**

The research was conducted in an educational leadership program at a public university in the Northeast of the United States. Thirteen educational leadership students participated in two semesters of a seminar class that included the use of a mixed reality simulations during their
seminars attached to one-year clinical experiences. The purposeful sample (n=12) required registration in the educational leadership program, engagement with the simulations and coaching, and informed consent. All but one student from a total population of 13 students who engaged in the simulations and coaching experiences over two semesters agreed to participate in the study. This student was dropped from the case in that she did not participate in the simulations. Table 1 illustrates the pseudonym name, gender, and educational level of each participant in the case.

Table 1: Participant Demographics

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Gender</th>
<th>Educational Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kenner</td>
<td>Female</td>
<td>Current EdD student in Instructional Leadership</td>
</tr>
<tr>
<td>Savannah</td>
<td>Female</td>
<td>Current EdD student in Instructional Leadership</td>
</tr>
<tr>
<td>Maria</td>
<td>Female</td>
<td>Current EdD student in Instructional Leadership</td>
</tr>
<tr>
<td>Sonya</td>
<td>Female</td>
<td>Current EdD student in Instructional Leadership</td>
</tr>
<tr>
<td>Frank</td>
<td>Male</td>
<td>Current EdD student in Instructional Leadership</td>
</tr>
<tr>
<td>Selene</td>
<td>Female</td>
<td>Current EdD student in Instructional Leadership</td>
</tr>
<tr>
<td>Miriam</td>
<td>Female</td>
<td>Current EdD student in Instructional Leadership</td>
</tr>
<tr>
<td>Shawna</td>
<td>Female</td>
<td>Current EdD student in Instructional Leadership</td>
</tr>
<tr>
<td>Tina</td>
<td>Female</td>
<td>Current EdD student in Instructional Leadership</td>
</tr>
<tr>
<td>Leticia</td>
<td>Female</td>
<td>Earned an EdD in Instructional Leadership</td>
</tr>
</tbody>
</table>
Simulations and coaching were conducted within a mixed reality simulation laboratory on the campus. In this arrangement, a simulated learning community was established to provide coaching and dialogue around the teaching participants’ instructional choices and problem-solving during the simulations. Coaching occurred during and/or after the simulation from both peers and from university mentors assigned to each participant in the fishbowl structured mixed reality laboratory. The participants had the opportunity to “freeze the simulation” during the simulation to garner advice or to wait for coaching subsequent to the simulation.

Participants experienced two different 10-15 minute sessions, one for each semester of the study, within the mixed reality simulation lab with a typically 5-8 minute subsequent coaching element following the simulations for a total of approximately 15-20 minutes of simulation and coaching experience each semester. The 12 participants were focused on two threshold practices in the two educational leadership seminar classes in subsequent semesters related to conferencing as administrator. These threshold practices delivered via conferencing were: 1. conducting and delivering difficult news in a conference with a parent; and 2. conducting a post-observation conference by creating a plan of action with a struggling teacher. The foci of the scenarios were written by Mursion (Mursion®, 2018). Table 2 illustrates the participant courses, number of simulations and the threshold concept used for the simulations.
Table 2: Seminar Courses, Simulations and Threshold Concept

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Courses</strong></td>
<td>2 courses (Seminar 1, Seminar 2 in Educational Leadership)</td>
</tr>
<tr>
<td><strong>Total Simulations</strong></td>
<td>2 (1 simulation per semester with coaching)</td>
</tr>
<tr>
<td><strong>Threshold Concept</strong></td>
<td>Seminar 1- Conduct a principal/parent conference and deliver difficult news.</td>
</tr>
<tr>
<td></td>
<td>Seminar 2- Conduct a principal/teacher conference and create a plan of action.</td>
</tr>
</tbody>
</table>

Participants conferenced with an adult avatar for each conference, with the avatar being re-purposed depending on the scenario plot. Figure 1 depicts the view of the adult avatar as seen by the participant conducting the conference.

Figure 1: Principal/Parent Conference Scenario

Reprinted with permission from Mursion®
Data Collection

There were three data sources: video observational data of the simulation and coaching (both peer and mentor); individual semi-structured interviews; and reflective documents following the simulations.

Video Observational Data

The researchers collected 12 hours over two subsequent semesters of video data depicting participant performances and subsequent or within simulation coaching of the Mursion® conference simulations. Video data were collected through a computer camera connected to the TV screen. These screen-within-screen videos collected through a custom video recording system through open source free software (DeSantis, 2018) displayed the avatar office environment placed within the simulation laboratory classroom, allowing the researchers to view both the laboratory and the avatar within conference environment simultaneously, and providing access to adult avatar reactions to the participant behaviors and vice versa. Peer and mentor coaching data were also collected through video. Figure 2 demonstrates the recorded view of the simulations for data analysis.
This figure 2 illustrates the screen within screen view used to capture the TV screen that displayed the adult avatar. The remainder of the view depicts participant facing the TV screen, engaged in the conference with the adult avatar (both parent and teacher avatars) as the professional learning community observed the process from behind and from the sides of the laboratory classroom (Gundel, 2018).

**Interview Data**

Ten semi-structured interview data were collected from participants. The interviews lasted from 23 minutes to 48 minutes with an average interview time of 35 minutes. Interviews were collected in the form of VoIP (voice over Internet protocol) conferencing services (via Skype or in two instances, via Facetime). The semi-structured interviews were scheduled in advance and were organized around a set of predetermined open-ended questions derived the literature on liminal learning (DiCicco-Bloom & Crabtree, 2006) and emergent interview questions.

**Reflection Document Data**

Additionally, 21 documents of post-simulation reflections (1 for each participant from both semesters) were collected. The reflections were written by participants following the simulation each semester. Each reflection asked participants to address strengths, weaknesses and goals for each of the rubric components. Reflections ranged from two to five pages with a
typical length of four, double-spaced typed pages. One participant did not complete the Seminar 2 reflection. Table 3 demonstrates the data collection sources.

Table 3: Participant Data Collection Sources

<table>
<thead>
<tr>
<th>Pseudonym</th>
<th>Interview (Total Time in Hours)</th>
<th>Time (Minutes Per Participant)</th>
<th>Video Observations (15-20 minutes each semester)</th>
<th>Post-Simulation Reflections (Typically 4 double-spaced pages each semester)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.5 Hours</td>
<td>Average=35.55 Minutes</td>
<td>Seminar 1</td>
<td>Seminar 2</td>
</tr>
<tr>
<td>Kenner</td>
<td>✓</td>
<td>45</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Savannah</td>
<td>✓</td>
<td>38</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Maria</td>
<td>✓</td>
<td>45</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Sonya</td>
<td>✓</td>
<td>45</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Frank</td>
<td>✓</td>
<td>48</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Selene</td>
<td>✓</td>
<td>44</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Miriam</td>
<td>✓</td>
<td>45</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Shawna</td>
<td>✓</td>
<td>23</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tina</td>
<td>✓</td>
<td>30</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Leticia</td>
<td>✓</td>
<td>28</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Tim</td>
<td>✓</td>
<td>n/a</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Simon</td>
<td>n/a</td>
<td>n/a</td>
<td>✓</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Data Analysis

All three forms of data—video observational, interviews, and reflections—were analyzed through a hybrid process of deductive and inductive methods. The coding process using a template approach (Crabtree & Miller, 1999) resulted in an over 500 page code book with initial codes arising from the analysis of the observation rubric, participant utterances and content
analysis of the reflections. Starting with the rubric provided to participants, all video observational data were analyzed for performance outcomes. The rubric, which also served as a performance guide for participants, provided the initial framework for analyzing the data. The rubric and participant expectations are depicted below in Table 4.

*Table 4: Simulation Rubric*

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>Criteria</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behaviors</strong></td>
<td><strong>Opening</strong></td>
<td>Candidate immediately establishes a context for the meeting.</td>
<td>“The purpose of this meeting is…”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Today, we will be discussing…”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“We are here today to review…”</td>
</tr>
<tr>
<td></td>
<td><strong>Gathering Information</strong></td>
<td>Candidate asks parent for pertinent information.</td>
<td>“What is your understanding of the situation?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“What are your thoughts on your performance?”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Is there anything else you would like us to address or are there other goals you would like to see us address?”</td>
</tr>
</tbody>
</table>
| Sharing Information | Candidate explains the situation from his or her point of view using evidence to support explanation. | “My concerns are…”
“I noticed that…”
“I’d like to describe my understanding of the issue. Can you confirm your understanding?” |}

| Making a Plan/Problem Solving | Candidate suggests potential solutions to the situation while incorporating parent’s or teacher’s ideas if possible. | “Based upon our conversation today, a plan of action is…”
“I’d like to suggest some possible strategies…”
“Some learning opportunities here are…” |
<table>
<thead>
<tr>
<th>Dispositions</th>
<th>Maintaining a Positive Relationship</th>
<th>Candidate is encouraging, friendly, and personable regardless of the parent’s or teacher’s behavior by showing appreciation for his/her efforts, using positive language, and creating rapport.</th>
<th>“Let’s make a plan of action together…”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Let’s follow up on _______ to _______.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I hear how important _______ is to you.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“______ does this well.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I can see how you support your child/students…”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accepting Emotions</td>
<td>Candidate expresses empathy for parents’ emotional state by listening carefully and empathetically and accepting emotions.</td>
<td>“I hear how this could be difficult.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I understand your point of view.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I appreciate your willingness to try something new although it might be difficult.”</td>
</tr>
<tr>
<td>Managing Flow</td>
<td>Candidate propels the momentum of the conversation by maintaining movement between each criterion. Keeps to allotted time frame.</td>
<td>“Okay, let’s move on…” Very good. Now…”</td>
<td></td>
</tr>
</tbody>
</table>


Following the initial data analysis of the videos through the rubric, thematic analysis of the interview transcripts and reflection documents developed into codes guided by theory and literature on threshold concepts and liminal learning (Gall, Gall, & Borg, 2008; Merriam, 2009; Wolcott, 2009). We developed approximately 50 in vivo and descriptive codes (Creswell, 2013; Saldaña, 2009), such as Difficulties, Feedback, Language Use, Goals, Emotional Reactions, Coaching, Body Posture, Planning, and Guidelines. Subsequently, an inductive form of coding (Boyzatis, 1998) for emergent and relational connections between codes ensued with all three data sources (Daly, Kellehear, & Gliksman, 1997). Approximately 20 axial codes (Gall, Gall & Borg, 2007) emerged from this process, ultimately developing into the key characteristics of the final themes, such as Disequilibrium, Fragmentation, Student Identity, Ritual Isolation, Anxiety, Troublesome Learning, Oscillations, Leader Identity, Outcomes Orientation, and System 1 & 2. Last, a finding statement with four supporting themes (Kvale & Brinkman, 2009)—separation, liminal, novice-professional and master-professional learning portals—emerged as a final step of the data analysis. The findings are discussed in the next section.
Findings

A finding statement with four themes emerged from the data analysis. This finding statement was *using purposefully identified threshold curriculum practices, participants navigated mixed reality simulations through the learning portals of separation, liminal, novice-professional, and master-professional thresholds as they journeyed toward the priming of/or the use of practice and problem-solving in professional contexts of use*. Starting with the common threshold practices of conferencing with a parent and with a teacher, the mixed reality simulation participants’ journey evidenced themes related to learning portals – a separation portal, a liminal portal, a novice-professional portal, and a master-professional portal. Each of these portals was typified by key characteristics. Table 5 demonstrates the theme, key characteristics and examples from the data.

Table 5: Themes, Key Characteristics and Examples

<table>
<thead>
<tr>
<th>Theme</th>
<th>Key Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Separation</td>
<td>Disequilibrium, Differentiation, Student Identity, Ritual Isolation, Anxiety, Little Reflection</td>
<td>Ritual Isolation/Differentiation</td>
</tr>
<tr>
<td></td>
<td>Recognition of isolation/disequilibrium as a learner but little use of data, reflection, emotional management or outcomes orientation to problem solve in the moment.</td>
<td>“It is hard for me to be in front of a group of adults.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“At first, when I heard about [the simulations] I remember thinking, thank god I am out of there [the undergraduate program].”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>System 1-Anxiety</td>
</tr>
</tbody>
</table>
The conversation did not go as I thought. But, this really led to anxiety.”

**Student Identity**

“I apologize for that; however we have to give 3 days for a fight. Alright Mr. Mullen?”

<table>
<thead>
<tr>
<th>Theme</th>
<th>Key Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liminal:</td>
<td>Transition, Stuck Places, Troublesome Learning, Oscillations in Identity, Betwixt and Between with Emotional Responses, System 1 &amp; 2, Awareness of Reflection</td>
<td>Stuck Places-Planning and Improvisation</td>
</tr>
<tr>
<td>Oscillating between educational leader and student identity. Beginning understanding and reflection of troublesome learning, emotional management and future orientation as a leader. Some problem solving in the moment.</td>
<td>“I could be more open to change. Changing the course of the conversation and flexibility and listening.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“One of my colleagues said, you sounded very scripted. So that was an interesting piece of feedback I tried to carry with me into the spring.”</td>
<td><strong>System 1 &amp; 2</strong></td>
</tr>
</tbody>
</table>
“I had not expected the System 1 to kick in and when it came to the spring semester. I anticipated it and calmed myself and let that go.”

<table>
<thead>
<tr>
<th>Theme</th>
<th>Key Characteristics</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice-Professional:</td>
<td>Primed Leader Identity, Primed Application to Context, Primed Emotional Management, Primed Use of Feedback, Primed Outcomes Orientation, Primed for Improvisation, Primed for System 2, Primed for Critical Reflection</td>
<td>Primed for System 2 Thinking</td>
</tr>
<tr>
<td>Based upon critical reflection of performance, data and outcomes orientation, primed toward making goals for application in context.</td>
<td>“I am learning that cooling off to that email is the right professional choice.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“There will be times when difficult conversations that are rife with emotion happen, and I need to learn strategies for handling such situations with grace and poise.”</td>
<td></td>
</tr>
<tr>
<td>Thinking and Feedback</td>
<td>“She did not want to compromise so I needed to come up with a way to use what she was comfortable with but I wanted the goal of more student talk. So I gave a creative way to use that time more creatively.”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>“That is something I will take away, to have a rough idea of what I should address.”</td>
<td></td>
</tr>
<tr>
<td>Theme</td>
<td>Key Characteristics</td>
<td>Examples</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Master-Professional:**      | Leader Identity, Application to Context, Emotional Management, Established Use of Feedback, Outcomes Orientation, Improvisation, System 2 Thinking, Critical Reflection and Use of Data to Problem Solve-Multitask |**Application to Context**  
“The coaching others has transferred. I am able to say why [a colleague] should not have done something, bring it up a different way. So the PLC has translated into my own work”.  
“I have done some mock post observations [with my mentor] and I have been taking the rubric with me to use.”  
“I printed a blank rubric and used it in a [parent] conference.” |

Figure 3 illustrates the findings.

Figure 3: Graphic of Findings
Implications

1. Mixed reality simulations allowed the educational leader candidates to try on the roles of the professional educational leader.

2. Mixed reality simulations facilitated the management of emotions through rehearsal performances.

3. When simulations were approached as curriculum with identified threshold concepts with accompanying rubrics and guidelines as part of the pre-simulation planning, the combination allowed the educational leader candidates to prepare for, to prime and also
to critically reflect upon their performances. It was the combination of the curriculum with the high threshold concept and rubric, combined with the simulations, that resulted in the layered and more nuanced master professional behaviors as outcomes of the simulation (such as critical reflection).

4. Mixed reality simulations had the potential to impact application to context.

5. The performance at the master-professional level may facilitate future problem solving in the moment in the professional capacity of educational leader.
References


Development, Accountability, and Reform Center website:


Peterson, M. B. (2014). *Pre-service special education teachers' frequency of opportunities to respond in the TeachLivE™ virtual classroom*. Texas Woman's University.


Enhancing Pre-Service Teachers’ Early Literacy Instruction with TeachLivE

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Introduction

Preservice teachers enter their undergraduate programs with varying experiences that support or deter from their development in education. At large, it is understood that the more hands-on, relevant experiences that preservice teachers engage in, the better prepared they are for the field. In a time where teacher shortages are abundant and retention rates are grim, it is essential for preparation programs to engage candidates in relevant experiences. TeachLivE (TLE), a mixed reality, simulated teaching experience, allows for candidates to engage with avatars and practice a predetermined strategy or skill. The simulated environment provides a low-risk setting in which the candidate can practice instruction.

The purpose of this study was to explore how TLE could be embedded within a curriculum module to develop preservice teachers’ knowledge and understanding of instructional formats in literacy education. Specifically, this study addressed shared reading in its first iteration. Shared reading is a whole group instructional format that is used predominantly in primary elementary grades to engage students in enjoyable literacy events that develop reading interest (Holdaway, 1979). Overall, this study sought to develop practical use of simulation in undergraduate reading education courses and determine if simulated experience had the potential to improve preservice teachers’ perceived knowledge and understanding of shared reading. The following research questions were explored:

● How might TeachLivE, a mixed-reality, simulated learning experience enhance instruction within preservice teachers’ reading course continuum?
  ○ How might it impact pre-service teachers’ knowledge and perceptions of knowledge of shared reading?

● What are pre-service teachers’ perceptions on learning in a simulated experience?
**Educational Significance**

According to the New Media Consortium’s (NMC) 2017 report on Higher Education, institutions face continual challenges in fostering authentic, active learning environments that students find relevant to their field of study (Adams Becker et al., 2017). Learning environments that allow for experiencing, creating, and demonstrating provide students with the practice and relevance they need prior to entering the workforce (Adams Becker et al., 2017). Simulations honor this call to action by allowing users to experience various situations and approaches in a low-risk setting (Kaufman & Ireland, 2016). Further, simulations offer the potential for deeper learning to occur, as preservice teachers find relevance in the “practice” it provides related to their future classrooms (Adams Becker et al., 2017). Specific to the field of education, simulations provide opportunities for application of theory to action and may expose preservice teachers to diverse students (i.e. English Learners, Special Education Students) that they may not otherwise encounter during field and/or internship experiences (Ferguson, 2017).

**Theoretical Framework(s)**

Simulated teaching experiences allow for low-risk, common experiences among preservice teachers, which provide an opportunity for hands-on, active learning that includes discussion and co-creation of knowledge with peers (Ferguson, 2017). This collaborative, embedded approach honors learning as a social process (Vygotsky, 1978). Vygotsky’s (1978) sociocultural learning theory validates that learning is a social event that should be meaningfully scaffolded and allow students multiple attempts to collaboratively refine their learning. The phases of this study provided reflective, collaborative cycles that acknowledged learning as an ongoing, social event.
Shared reading, an instructional format, paired well in a simulated teaching experience because the lesson framework allowed for flexibility in planning and delivery. This flexibility afforded preservice teachers the opportunity to develop, teach, and revise lessons based off of course instruction, the simulation experience, and the reflective conversations that followed.

Methods

A mixed methods research design using sequential exploratory strategy allowed for layered data collection (Creswell, 2009). The purpose of the mixed methods approach was to gather preliminary data from participating preservice teachers. The sequential approach was essential, as additional iterations of the study will be completed with different course sections of participants in future semesters. This study occurred in three phases: 1) Design of materials; 2) Implementation; and 3) Data analysis and revision. The initial design phase consisted of curriculum module development that provided research on shared reading, exemplar lessons, templates, and videos. This module was meant to serve as an additional resource, or supplement, to regular course instruction on shared reading. The second phase, Implementation, afforded preservice teachers the experience to interact with materials designed in Phase 1. This included creating, teaching, and revising a shared reading lesson in a collaborative setting using TLE. Last, the focus of Phase 3 was data collection and analysis to determine successes and make necessary revisions to the curriculum module prior to the next iteration.

The data sources used to inform this research include a pre/post survey, interviews, and review of artifacts. First, a researcher designed pre/post survey was distributed to participants enrolled in a foundations reading course before and after the experience. The purpose of the survey was to gather knowledge and growth specific to shared reading, as well as perceptions of growth and overall learning from the simulation experience. After the initial survey, candidates
attended their regularly scheduled reading course and received initial instruction about shared reading. This instruction included a model lesson demonstrated by the instructor. Following instruction, candidates divided into self-selected groups to collaboratively design a shared reading lesson. Several weeks later, these lessons were used in ten minute sessions with the kindergarten TeachLivE classroom. Immediately after the simulation experience, candidates complete the post-survey. The small groups were afforded the opportunity to revise their shared reading lesson plans based off of the simulated experience before submitting them for a final grade. The day after the simulation experience, phone three phone interviews were conducted with a purposive, convenience sample of three preservice teachers. The researcher developed, semi-structured interview protocol of guiding questions captured perspectives of self-reported growth based off of the simulated teaching experience and overall reactions to the experience. Artifacts, including but not limited to checklists, rubrics, and work samples, were also examined.

**Findings & Limitations**

Data collected via the pre/post survey was intended to determine the effectiveness of the materials and simulation experience for building knowledge on shared reading and participants’ perspectives of the experience (pre survey n=26, post survey n=22). Post survey results indicated that all participants (100%) found the shared reading simulation experience valuable, specifically with 86% of participants finding the experience positive and the remaining 14% neutral. Results indicated that 77% of participants agreed that simulations should be used more frequently in preservice teacher education programs. Further, the preservice teachers’ understanding of shared reading increased from 73% on the pre survey to 95% on the post survey able to proficiently explain shared reading in a short answer response.
Interviews were transcribed verbatim and coded to assist the researchers in developing common themes and drawing conclusions (Creswell, 2009). Common responses in the interviews were in support of the model lesson, demonstrated by the course instructor, in helping preservice teachers learn about shared reading. Preservice teachers interviewed were able to articulate that the TeachLivE simulation experience allowed them to practice teaching, and also helped them put theory into their practice. These results, along with upcoming iterations, will inform further development of curriculum modules for other reading instructional formats taught with simulation.

In addition to this study’s small sample size (n=26), another potential limitation was that the study took place on a regional campus, in which the population is generally composed of what is considered to be non-traditional students. While much of the data collected can be generalized to any undergraduate elementary education program, it is important to note the differences in demographic data that occur on a regional campus. The varying levels of experiences these students bring to the classroom has the potential to bring forth a different perspective on learning.

**Conclusion**

This study was carried out under the design premise, meaning that after the initial implementation and collection of data, the study would be redesigned to meet any identified needs. This manuscript was written in summary of the first iteration of the study. Data captured in this study included short-term measurement of perceptions and growth in knowledge around a specific literacy instructional format. Continued iterations should occur in order to inform the practice of embedding TeachLivE into undergraduate elementary education reading courses. As
the process of shared reading is refined, additional literacy instructional formats shall be explored.
References


Use of Mixed Reality Simulation to Assess Diagnostic Competence Self-efficacy

Dr. Enrique Ortiz

University of Central Florida, College of Community Innovation and Education

TeachLive 2018 Conference

This presentation shares preliminary findings of a study involving pre-service teachers (PSTs) \((n=10)\) development of diagnostic competence. They were enrolled in a mathematics methods course for elementary education majors. They analyzed their diagnostic assessment skills using virtual reality scenarios (TeachLive) and perceptions of their diagnostic competence self-efficacy before and after participating in TeachLive scenarios. In this context, diagnostic competence involves the PSTs’ ability to listen and notice student thinking in a profound manner. In TeachLive, the participants were presented with mathematics error patterns (adapted from Ashlock, 2010) and allowed to practice critical aspects of the diagnostic process. They spent around ten minutes session in this environment. The error patterns involved subtraction computation of two- and three-digit numbers with and without regrouping: \(345 - 63\), or \(247 - 159\). The BaiBoard Interactive Whiteboard app (2016) was used to facilitate the written interaction between PSTs and the TeachLive student avatars. The participants were asked to discover computational error patterns and show appropriate diagnostic questioning techniques. After the scenarios, the participants analyzed their performance using the Diagnosis Assessment and Intervention Protocol (Protocol) (see Appendix A) and completed the Mathematics Diagnostic Assessment (MDA) Self-efficacy scale (see Appendix B) as pre- and post-tests to assess any changes in their perceptions of diagnostic competence self-efficacy. Both instruments were developed for this purpose.
This study attempted to help PSTs transition into the elementary education classroom with appropriate questioning skills. It provided needed guidance and information related to how to conduct an effective mathematics diagnostic task. This process included a high-impact learning experience that helped participants reflect upon their diagnostic competence self-efficacy, and questioning practices. *TeachLive* is a virtual classroom that participants can use on campus or connect via a Skype video call, allowing them to engage with responsive student avatars. While not seen by them, the avatars are operated by an adult *TeachLive* “interactor.” This unique virtual classroom provides participants the opportunity to practice their pedagogy in a no-risk yet realistic environment. See the simulator in action at [https://www.youtube.com/watch?v=_9VVAFW1Rx8](https://www.youtube.com/watch?v=_9VVAFW1Rx8). The *TeachLive* sessions were video recorded to facilitate further analysis. The recordings were used by the participants to reflect upon their assessment and questioning skills during the diagnostic tasks. As they become full time teachers, these integrative learning experiences can help PSTs develop metacognition, self-advocacy, and more effective teaching skills.

**Background Information**

Research findings have provided evidence that pre- and in-service teachers’ facilitation of student-driven discussion and questioning skills in mathematics provides crucial opportunities for students to develop strong understanding of mathematics concepts and skills. This process includes the diagnosis of students’ strengths and weaknesses as they are involved in learning experiences. However, a lecture approach is the more common approach found in many classrooms. Facilitating learning is often a challenging situation for pre- and in-service, including ability to diagnose the students’ learning process. The learning opportunities provided in this study focused on helping
participants’ development of proper diagnostic skill and behaviors, which may help bridge the gap between teachers’ and students’ communication. The study focused on participants’ use of specific, high-leverage diagnostic practices, which research has shown to be associated with improved student learning in mathematics and are in practice challenging to implement well.

Students’ development of knowledge during learning activities may be assessed, prompted, facilitated, constructed and communicated by teachers’ interventions, assessment and questioning skills. This teacher’s impact is also true during mathematics learning activities. Teachers’ efforts and behaviors to effectively affect and assess students’ learning is crucial during the learning process. These behaviors could make the difference between facilitating or impeding students’ appropriately constructing knowledge (Kamii & DeVries, 1978; Kamii & Warrington, 1999; Kazemi, 1998; Knuth & Peressini, 2001; Martino & Maher, 1999; McCarthy et al., 2016; National Council of Teachers of Mathematics [NCTM], 1996; Prediger & Zindel, 2017; Schwartz, 1996).

Researchers have indicated that when a teacher asks an effective question that could make the difference between restricting thinking and facilitating innovative ideas, and between recalling trivial facts and constructing meaningful knowledge (Kamii & DeVries, 1978; Kamii & Warrington, 1999; Schwartz, 1996; Stone, 1993). Some researchers argue that a teacher’s verbal behavior is a strong indicator of their total teaching behavior (Adams, 1994). Recent focus on the use of questioning in teaching mathematics (e.g., Carpenter, Fennema, Franke, Levi & Empson, 1999, 2000; Mewborn & Huberty, 1999) supports the idea that a teacher’s questioning strategies are pivotal to the instructional process because questioning is the most frequently used instructional
tool (Wassermann, 1991). Developing appropriate questioning techniques is an important part of teaching, including mathematics assessment. Much of the research on questioning techniques provides evidence of the types of questions used by classroom.

A simulated environment provides a safe environment to practice teaching, assessment or diagnostic behaviors at a possible accelerated pace and receive rapid corrective feedback (Dieker et al., 2014a; McPherson et al., 2011). However, in quasi-experimental simulation studies, researchers found effects for efficacy and work products for planning instruction, but found less evidence to suggest change in instructional practice in the classroom as a result of the simulations (Girod & Girod, 2006). Mastering skills needed for pedagogical content knowledge is challenging for teachers in general (Kane & Staiger, 2012; Shulman, 1986). The present study took a look at perceived self-efficacy in mathematics diagnostic competence of PSTs participating in mixed-reality simulations. It explored the use of simulations to recreate scenarios that provided effective practice in teaching and assessment. “[M]uch like in an immersive flight simulator, when pilots are closer to the real act of flying to master targeted skills. In a similar fashion, teachers could practice in a classroom simulator, which might have higher fidelity aligned to the true act of teaching” (Straub, Dieker, Hynes, & Hughes, 2014).

**Procedures**

The PST participating in this project had the opportunity to use state of the art tools to improve their diagnostic competence and assess their diagnosis self-efficacy. This participation and reflection on their diagnosis practices could have very positive and lasting effects on their future professional performance. The *TeachLive* scenarios (see Appendix C) are an effective way
of helping them practice diagnostic behaviors during the assessment tasks without the concern of harming elementary school students. They reflected on their performance during the TeachLive sessions using video recordings from the sessions. The Protocol provided guidance for what to look for, and possible areas of strengths and weaknesses. The MDA scale also provided a measure of how their performance is affected by their participation in TeachLive. Students used this measure as a way to quantify (find how frequent) their initial perceptions and follow up perceptions after participation in the TeachLive sessions. They wrote a report analyzing their answers and participation in the TeachLive sessions (see Appendix D).

Research Questions

1. Using a diagnosis protocol, what mathematics diagnostic behaviors were identified and quantified (frequency) by PSTs after a TeachLive recording session?

2. Using the MDA Self-efficacy scale, how do the pre- and post-administration results compare in terms of improvement or lack of improvement of the PSTs’ self-efficacy in the area of mathematics diagnosis competence.

3. Using the MDA scale and diagnosis protocol, how do the PSTs’ self-efficacy scores compare to the mathematics diagnostic behaviors identified by the protocol?

Data Analysis

The data from this project were analyzed using qualitative methods. The PSTs’ reflections were analyzed by assessing the behaviors they found by using the protocol. Frequency of behaviors and types of questions found in the data were analyzed. The pre- and post-test scores from the MDA Self-efficacy scale will be analyzed and compared to protocol findings.
Preliminary Findings

PSTs were able to identify questioning practices during the TeachLive diagnostic tasks. Their reflections regarding this participation were in depth and revealing. In general, PSTs were more aware of the need for more practice and specific weaknesses that require more attention and improvement. As measured by the MDA scale, they indicated improvements in their diagnosis competence self-efficacy. They found that change is not easy. One of them indicated that when it comes to developing diagnostic competence we often encounter initial resistance. When we try to acquire or improve on a process, there could be an “implementation dip,” In this case, this dip involved lower scores in the MDA scale post-test scores as compare to the pre-test scores. According to the PST, this was due to a greater understanding of what she did not know about the diagnostic process. In my opinion, this was a good realization, which could provide for a deeper understanding of the diagnostic process. Fullan (2001) defines the implementation dip as "a dip in performance and confidence as one encounters an innovation that requires new skills and new understandings" (p. 40). This implementation should not be feared and should be embraced. It is important to allow for the possibility of shifting implementation practices and changing and improving tools and processes. Possible ideas to facilitate change will be discussed.
References


Appendix A

Diagnosis Assessment and Intervention Protocol (Protocol)

Work in Progress: January 3, 2018 Draft: © Enrique Ortiz, Enrique.Ortiz@ucf.edu, University of Central Florida

Use tally marks to identify occurrences of questioning skills and behaviors during diagnostic/assessment/intervention tasks, and at the end indicate the number of tally marks for each item in the total column. There might be a degree of overlap between some sections.

Name: _____________________________________________ Date: ____________________________

Select one of the following: __ TeachLive Recording  ___ Math Clinic Recording  ___ Internship I Recording

<table>
<thead>
<tr>
<th>Behaviors (Positive Questioning Skills/Behaviors)</th>
<th>Totals</th>
<th>Mark instances for each behavior:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Diag. Phase</strong></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>1. Accepted the student’s responses including misconceptions and misunderstanding as well as right answers (Scheer, 1980). (+)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Used a probing question to elicit depth of student’s understanding &amp; clarify the student’s responses without providing the answer. Questions that helped students make sense of mathematics: Can you explain to me why that makes sense? (Reys, Suydam, Lindquist, &amp; Smith, 1998; Stenmark, 1991). (+)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Used a question that helped the student rely more on himself/herself to determine whether something was mathematically correct; for example, How did you reach that conclusion? (Reys, Suydam, Lindquist, &amp; Smith, 1998; Stenmark, 1991). (+)</td>
<td></td>
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</tr>
<tr>
<td>4. Used a question that helped the student use mathematical reasoning; for example, How could you prove or show that to me? (Reys, Suydam, Lindquist, &amp; Smith, 1998; Stenmark, 1991). (+)</td>
<td></td>
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<tr>
<td>5. Used a question that helped the student to conjecture, invent, and solve problems; for example, What would happen if ….? (Reys, Suydam, Lindquist, &amp; Smith, 1998; Stenmark, 1991). (+)</td>
<td></td>
<td></td>
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<tr>
<td>6. Used a question that helped the student to show mathematical connections, ideas and/or applications; for example, Have we solve any problem like this one</td>
<td></td>
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</tr>
<tr>
<td>7.</td>
<td>Helped the student feel good about himself or herself and willing to share his/her thinking with the teacher (Scheer, 1980). (+)</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Did not cue the student when he or she gave an incorrect answer, even when the student should know the right answer (the purpose is to collect data about the student’s way of doing things, not about teaching in the usual sense (Scheer, 1980). (+)</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Was thorough &amp; gained as much information as possible (Scheer, 1980). (+)</td>
<td></td>
</tr>
</tbody>
</table>
| 10. | Kept appropriate record of his/her session (Scheer, 1980). (+)  
___ written notes ___ audio recording ___ video recording |   |   |   |
| 11. | Avoided answering direct questions, such as, Was that right? or How am I doing? (A standard no damaging response is, “You are doing fine” (Scheer, 1980). (+) |   |   |   |
| 12. | Used no-leading questions. Example, “Why did you say that or why did you do that?” asked in an easy conversational tone (Scheer, 1980). (+) |   |   |   |
| 13. | Asked the student to “think out loud” (Scheer, 1980). (+) |   |   |   |
| 14. | When necessary, repeated the student’s answer, when the student is responding orally, and asked the student if he/she heard correctly (with proper voice tone and without non-verbal cues) (Scheer, 1980). (+) |   |   |   |
| 15. | When necessary, encouraged the student to cross out and start over, rather than erase, when the student is working through written exercises (Scheer, 1980). (+) |   |   |   |
| 16. | Took notes of behavior patterns and other important observations; for example, squinting, nail-biting, fidgeting, sitting on hands (may indicate counting on fingers), daydreaming, and gazing out the window (Scheer, 1980). (+) |   |   |   |
| 17. | Asked questions that were generally clear and concise. (+) |   |   |   |
| 18. | Allowed adequate wait time for answers. (+) |   |   |   |
| 19. | Probed and followed-up with questions to invite or further investigate the student’s answer Moyer & Milewicz, 2002). If yes, which of the following were included: |   |   |   |
a. Probed a correct response from the student to gain insight (+)

b. Probed an incorrect response from the student. (+ if only correct responses were probed) (check responses for 19.a above)

c. Probed using competent questioning (listened and used the response to construct a specific probe for more information about the answer; created questions tailored to the student’s response instead of simply using scripted questions. (+)

Use tally marks to identify occurrences of questioning skills and behaviors during diagnostic/assessment/intervention tasks, and at the end indicate the number of tally marks for each item in the total column. There might be a degree of overlap between some sections.

Name: __________________________________________________________ Date: ______________________________

<table>
<thead>
<tr>
<th>Behaviors (Negative Questioning Skills/Behaviors)</th>
<th>Total s</th>
<th>Mark instances for each behavior (/):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Diagnosis Phase</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>20. Probed an incorrect response from the student. (– if only incorrect responses were probed) (check response for 19.a above)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Proceeded from one question to the next with little regard to the student’s response, which included no follow-up questions, and questions with verbal checkmarks (Moyer &amp; Milewicz, 2002). (–)</td>
<td></td>
<td></td>
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<tr>
<td>22. Instructed rather than assessed, which included leading questions that directed the student’s response, and abandoning questioning and teaching the concept instead (Moyer &amp; Milewicz, 2002). (–)</td>
<td></td>
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</tr>
<tr>
<td>23. Interrupted the student when he or she made an error and corrected the student when he or she made a mistake (Scheer, 1980). (–)</td>
<td></td>
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<tr>
<td></td>
<td>Statement</td>
<td></td>
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<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
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<tr>
<td>24.</td>
<td>Hurried the student in answering questions or solving problems (Scheer, 1980). (–)</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Demonstrated improper body language and nonverbal communication. For example, smiling when a correct answer was given, but frown, sigh, uncross his/her legs, raise an eyebrow, or simply do nothing when an incorrect answer is given – suggestions of approval or disapproval (Scheer, 1980). (–)</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Led the student through a series of questions that ultimately led the student to the response for which he/she was looking. (–)</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Asked questions that were generally not clear and concise. If yes, which of the 6 error types below were observed (questions 26.a-f below) (Moyer &amp; Milewicz, 2002; Ralph, 1999a; Ralph, 1999b).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Indefinite (Incomplete, Fragmented) (–)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Multiple (–)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Run-on (interrupted) (–)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d. Cue/Clue/Guessing (–)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>e. Yes/No (–)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>f. Rhetorical (–)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>g. Non-specific (lacked specificity); for example, “What were you thinking?” (Moyer &amp; Milewicz, 2002) (–)</td>
<td></td>
</tr>
</tbody>
</table>

**References**


Appendix B

Mathematics Diagnostic Assessment (MDA) Self-efficacy scale (see)

Work in Progress

Developed by Enrique Ortiz (enrique.ortiz@ucf.edu), University of Central Florida

Your Name: __________________________________ Date: ______________________

Select one of the following: __ Pre-assessment ___ Post-Assessment

Several situations are described below related to diagnosing/assessing a student’s strengths and weaknesses during a mathematics diagnostic/assessment task. Please rate how certain you are that you can attend to each of the diagnosis/assessment behaviors/situations. As it relates to mathematics, rate your degree of confidence by recording a number from 0 (or cannot do at all) to 100 (or highly certain can do) using the scale given below. Write your answer in the far-right column below:

<table>
<thead>
<tr>
<th>Behavior / Situations During Diagnostic or Assessment Tasks</th>
<th>Confidence (0 – 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Accept a student’s responses including misconceptions and misunderstanding as well as right answers</td>
<td></td>
</tr>
<tr>
<td>2. Use probing questions to elicit depth of student’s understanding and clarify responses without providing the answer</td>
<td></td>
</tr>
<tr>
<td>3. Use questions that help a student rely more on himself/herself to determine whether something was mathematically correct</td>
<td></td>
</tr>
<tr>
<td>4. Use questions that help a student use mathematical reasoning</td>
<td></td>
</tr>
<tr>
<td>5. Use questions that help a student to conjecture, invent, and solve problems</td>
<td></td>
</tr>
<tr>
<td>6. Use questions that help a student to show mathematical connections, ideas and/or applications</td>
<td></td>
</tr>
<tr>
<td>7. Demonstrate proper body language and nonverbal communication</td>
<td></td>
</tr>
<tr>
<td>8. Consistently help a student feel good about himself/herself and willing to share his/her thinking with you</td>
<td></td>
</tr>
<tr>
<td>9. Know how to not cue the student when he/she gave an incorrect answer, even when the student should know the right answer</td>
<td></td>
</tr>
<tr>
<td>10. Able to be thorough and gain as much information as possible</td>
<td></td>
</tr>
<tr>
<td>11. Know when not to interrupt a student when he/she makes an error and or when not to correct a student when he/she makes a mistake</td>
<td></td>
</tr>
</tbody>
</table>
12. Know how to keep a record of the session (written notes, audio recording and/or video recording)

13. Know how to avoid leading a student through a series of questions that ultimately lead him/her to the response the you are looking for.

14. Know how to take notes of behavior patterns and other important observations or cues

15. Can avoid proceeding from one question to the next with little regard to the student’s response

16. Know how to diagnose/assess rather than instruct

17. Know how to probe and use follow-up with different types of questions to invite or further investigate a student’s answer

18. Know how to use mathematics prerequisite skills and concepts (task analysis) involved in each diagnostic/assessment task to gain understanding of a student’s level of mastery of a specific mathematical skill or concept

19. Can use cognitive levels (concrete, pictorial/representational, and abstract) to gain understanding of a student’s level of mastery of a specific mathematical skill or concept

20. Know how to allow adequate wait time for a student’s answers and responses

**Average Level of Confidence (add and divide by 20):**

### References

Appendix C

TeachLive Scenarios

You will have about 5 minutes to set up and 10 minutes to interview one of the three characters’ scenarios.

- Each scenario involves a different error pattern, but the exercises are the same.
- The purpose of the interview is to gain as much information about the character’s strengths and weaknesses, and a better understanding of the student’s thinking process. This process includes understanding of prerequisites. You can also ask about interests and any other information you feel is pertinent.
- The idea is not to teach the computation algorithm, but to gain as much information as possible from the character.
- You will communicate with avatar through a camera available in the room. Also, you will be able to communicate with the characters using the BaiBoard 3 Interactive Whiteboard app. The character will be able to write and manipulate the Base-ten block icon available in the app. Both you or the character will be able to write and manipulate the icons in the app.
- The sessions will be recorded.

You will be able to present the following exercises to the TeachLive characters. This be one item at time for each interactive board: Each episode one has a different error pattern:

**Episode 1:** Sean:

<table>
<thead>
<tr>
<th></th>
<th>A. 238</th>
<th>B. 281</th>
<th>C. 267</th>
<th>D. 225</th>
<th>E. 353</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-46</td>
<td>-37</td>
<td>-54</td>
<td>-57</td>
<td>-65</td>
</tr>
</tbody>
</table>

**Episode 2:** Kevin:

<table>
<thead>
<tr>
<th></th>
<th>A. 238</th>
<th>B. 281</th>
<th>C. 267</th>
<th>D. 225</th>
<th>E. 353</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-46</td>
<td>-37</td>
<td>-54</td>
<td>-57</td>
<td>-65</td>
</tr>
</tbody>
</table>

**Episode 3:** Maria:

<table>
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<tr>
<th></th>
<th>A. 238</th>
<th>B. 281</th>
<th>C. 267</th>
<th>D. 225</th>
<th>E. 353</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-46</td>
<td>-37</td>
<td>-54</td>
<td>-57</td>
<td>-65</td>
</tr>
</tbody>
</table>

You will also communicate with the characters using the BaiBoard 3 Collaborative Whiteboard app in an iPad.

- A BaiBoard meeting will be already ready for interacting with the character.
- The BaiBoard will already include the exercises presented above for your scenario involving the error pattern.
- I will tap oh the “…” and then on “Tap to Start Meeting” to create a meeting. This will also provide a meeting number that will be shared with the character to access the meeting board.
- At the end of the session, I will save the meeting as a snapshot.
• If you cannot see what the character is doing, try your best to listen what he/she is doing. We had some problems with the iPad connections.

• You may go back to any of the exercises and ask questions about any of them. Double click on “Page #” to see all pages.

• You or the character may also use icons during the interview to represent place value using Base-ten blocks virtually.

• You or the character may duplicate or delete the icons by tapping on the icon and tapping on duplicate or delete.

• The following icons will be already available at the top each page for each exercise:

Ones (or units): Tens: Hundreds:
Appendix D
TeachLive Report

Your Name: ___________________________ Date: ______________________
____________________________________

- This report must include in-depth analysis of Mathematics Diagnosis Assessment (MDA) Self-efficacy scale completed before and after the TeachLive session, and analysis of 10 minutes recording of interaction within the TeachLive environment using provided Protocol.
- You may submit the TeachLive Report in place of the one of the Lesson Plans (first or second lesson plan).
- TA 320: Dates: One 15-minute session: Wednesdays between 4:30 pm to 5:45 pm:
  o Jan. 31, Feb. 7, or Feb. 14

A. Pre-assessment: Mathematics Diagnostic Self-Efficacy Scale
1. Complete the Mathematics Diagnostic/Assessment (MDA) Self-Efficacy scale to pre-assess your degree of confidence for performing different mathematics diagnostic behaviors. Copy of the MDA is included at the end of this document. What were your answers for each section of MDA pre-assessment:
   1. 8. 15.
   2. 9. 16.
   3. 10. 17.
   4. 11. 18.
   5. 12. 19.
   6. 13. 20.
   7. 14.
2. Summarize and discuss your findings based on the MDA pre-assessment results.

B. TeachLive Error Pattern Diagnostic Activity: Error Pattern Scenario Environment
1. For the completed scenario, carry out the following tasks:
   a. Describe the error pattern involved in the episode.
   b. List the strengths that were reflected in the performance.
   c. List the weaknesses that were reflected in the character’s performance.
   d. List the prerequisites that seemed to be a problem.
2. Based on the scenario you worked with, what are the prerequisite necessary for the successful completion of the diagnostic activity (exercises)?
3. Use the protocol provided in class to analyze your performance during the episodes. I will send you a recording of your TeachLive session for this purpose.
4. Describe any other question(s) you think you should have asked.
5. In terms of your performance, what would you do differently? What strengths and/or weaknesses did you find? What did you learn from this activity?
6. In terms of the TeachLive activity, what did you like about it? What would you do differently?

C. TeachLive Follow-up assessment: Mathematics Diagnostic Self-Efficacy Scale
1. Complete the TeachLive MDA Self-Efficacy scale as a follow-up assessment of your degree of confidence for performing different mathematics diagnostic behaviors. Copy of the MDA is included at the end of this document. What were your answers for each section of MDA pre-assessment:

1. 8. 15.
2. 9. 16.
3. 10. 17.
4. 11. 18.
5. 12. 19.
6. 13. 20.
7. 

2. Summarize and discuss your findings based on the TeachLive MDA follow-up assessment results. Compare the results from the pre- and follow-up MDA results. What do you think you did well? What did you learn? What changes would you make?
Holly Fales, Christine Wilson, Carrie Lee, Tammy Lee, Dan Dickerson, and Ricky Castles

East Carolina University
Abstract

This project seeks to address one area affecting student outcomes, the nature and role of discipline-specific discourse and argumentation. The goal of the project is an empirical exploration of immersive classroom simulation activities (ICSAs) on pre-service elementary mathematics and science teachers' competence and confidence in discourse use. This longitudinal, mixed methods study will measure the impact in methods courses, practica, and internship placements from the use of Mursion with emphasis on discourse skills to promote learning and engagement.
Project INTERSECT: Year 1 Implementation and Preliminary Data

The purpose of Project INTERSECT is to determine whether integration of interactive classroom simulation activities (ICSA) into math and science education pre-service teacher candidate curriculum improves teacher candidate performance, particularly how teacher candidates learn to talk and facilitate talk in math and science classrooms. The project evaluates teacher candidate use of discourse utilizing the Analyzing Teaching Moves (Correnti et al., 2015) instrument to measure and quantify teacher candidates' discourse practices. Project INTERSECT aims to develop a curricular model for math and science pre-service teacher education that expands opportunities to master teacher discourse, measure the effects of curriculum change and increased discourse engagement on pre-service teachers' use of discourse in the classroom, and disseminate the study results.

Research Questions

These questions and numerous tertiary questions will be addressed by research team members. Each member will take the lead on a specific question and design appropriate methods in consultation with the other team members. All tertiary questions will be directly tied to one or more of the sub-questions.

How does the inclusion of ICSAs into math and science instructional methods courses impact pre-service teachers’ (PT) acquisition and effectiveness of the constellation of discourse as measured by ‘teacher moves’?

a) How do pre-service teachers use initiating teacher moves (i.e, launch, redirect, think aloud, and provide information) to initially engage students in STEM classroom discourse?
b) How do pre-service teachers use rejoinder teacher moves (i.e., uptake, push-back, collecting, and connection) to position students as participants who actively engage in STEM discourse to understand and apply core science and math competencies?

c) How does the integration of teacher moves enhance pre-service teachers' capacity to engage with a diverse student population to create an inclusive STEM classroom environment?

Talk Moves (Chapin, O'Connor, & Anderson, 2013)

The elementary math methods course focuses on five “talk moves” to prepare candidates to lead students in discussion of mathematical concepts. The Analyzing Teacher Moves (ATM) framework, developed by Correnti et al. (2015), further classifies how a teacher positions students when using the talk moves.

Table 1

<table>
<thead>
<tr>
<th>Talk Move</th>
<th>Teacher Moves</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wait Time</td>
<td>“I will wait for everyone to think this through.”</td>
<td></td>
</tr>
<tr>
<td>Revoicing</td>
<td>repeat, provides information, connection push-back literal, uptake,</td>
<td>“Let me see if I understand. You are saying...?”</td>
</tr>
<tr>
<td>Restating</td>
<td>“Can you repeat what he just said in your own words?”</td>
<td></td>
</tr>
<tr>
<td>Prompting for further participation</td>
<td>uptake-literal, connection, pushback</td>
<td>“What do you mean when you say…?”</td>
</tr>
<tr>
<td>Applying reasoning of another</td>
<td>uptake, connection</td>
<td>“How does what ___ said fit into what ___ said?”</td>
</tr>
</tbody>
</table>

Number Talk Scenarios
A five- to ten-minute classroom conversation around purposefully crafted computation problems that are solved mentally. These daily exercises are used to build students’ number sense and flexibility with numbers. Scenarios were created using number talks with multi-digit multiplication problems (i.e., 12x8, 12x16, 35x4) to strengthen the preservice teachers’ number sense and allow them to rehearse facilitation of number talks.

Possible student responses to the computation problem were embedded within the scenario and based on research-based learning trajectories. These trajectories with multi-digit multiplication allowed for inclusion of different student strategies and misconceptions. For example, when solving 12x8 a decomposition strategy was included in that a student first used 12x5=60 and then 12x3=36 to combine the partial products to arrive at 96 as the product. A compensation strategy could also be used in that 12x10=120 and then take away the 2 extra groups of 12 (24) to arrive at 96.

![Figure 1. Sample Number Talk Problems.](image)

**Course Logistics**

Preservice teachers completed two number talks within Mursion and these sessions were integrated into regular class time. The preservice teachers were organized into number talk
groups and led their number talk with the simulation students as a part of a 3-4 step number string. That is, one preservice teacher would lead the first number talk (12x6) and the subsequent preservice teachers would lead a related problem that was strategically sequenced (12x6, 12x8, 12x15). Preservice teachers were explicitly practicing or rehearsing talk moves (Chapin, O’Connor, & Anderson, 2013) to facilitate the students’ discussion of strategies to solve the problem.

Analyzing Talk Moves

GoReact, an online video recording and feedback tool, is utilized to provide candidates an opportunity to reflect and comment on their teaching experiences in Mursion. GoReact is also used to code the individual videos for teacher moves aligning with the ATM instrument (Correnti et al., 2015).

![Image](image.png)

*Figure 2. Mursion Simulation Recording in GoReact.*

Implementation Successes

The first year of the project proved to be a learning experience with many notable successes based on initial observations, participant feedback, and faculty reflections. The
incorporation of ICSAs provided participants with more opportunities to rehearse discourse skills. In addition, ICSAs allowed for instant debrief opportunities and opportunities to “coach” through video analysis and feedback. Participants were asked to reflect on their experience in the Mursion lab and offered positive feedback.

Table 2

**Participant Feedback**

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Participant Feedback on Reflection Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math Cohort I</td>
<td>“Overall, I believe that the Mursion Lab was extremely beneficial to do first instead of just being thrown in the classroom to teach math for the first time.”</td>
</tr>
<tr>
<td></td>
<td>“I was a little taken a back when first working with the Mursion children, but after the first introductions I felt pretty comfortable. I felt that I was able to help the students make meaningful connections among the different strategies. I think these number talks teach us that math can be looked at from different strategies and we have to be able to expand on these strategies so students can learn from each other and expand their math knowledge.”</td>
</tr>
<tr>
<td></td>
<td>“The experience of teaching a number talk, in general, was very scary at first because I didn’t know what to expect from the Mursion Lab. After the first number talk, I felt a bit more comfortable because it felt like these were really my students, but not 100% yet. The only reason I was off about this whole experience was that these student’s behaviors were perfect, and they responded exactly to the numbers as I had wanted them to. I know that in a real classroom the students will need a lot more guidance on the problems and the strategies that I would want to see from them.”</td>
</tr>
</tbody>
</table>
Science Scenario Pilot Group

"The Mursion experience was super helpful in my opinion. I have never taught to younger students and have never had this type of experience."

"The Mursion experience was helpful because it gave me a taste of what it's really like teaching younger children, which as the science talks it's harder to get that experience since you are talking to people your age."

Best practices for incorporation of ICSAs into the course curriculum and class timeframe were also discovered. Finally, the implementation of Project INTERSECT led to the creation of several new math and science scenarios that can be utilized for future courses and serve as a catalyst for future scenario development.

**Broader Impacts**

The research design, implementation, and dissemination plan for Project INTERSECT has great potential to impact discourse skill development and professional development research, beyond not only the scope of the pre-service education program directly affected, but also outside the field of education. It will cross a wide array of disciplinary boundaries due to the new types of data collected and the relationships between the data, findings, and potential impacts on the heavily STEM-oriented workforce. Gaining a greater understanding of how teachers learn to talk with students and facilitate talk in their learning environments is also useful across public and private sector professions. The research project is designed to advocate for improving educator pre-service curriculum and professional development, particularly in areas that address key moments in students’ educational experiences. By extension, it will improve educators’ capabilities to inspire and prepare a successful 21st century workforce through more critically reflective attention to discourse analysis, and more focused practice on discourse skill development through a variety of mechanisms such as ICSAs.
References


Chasing Our Horizon: ECU’s Full Implementation toward Self-Sustainability

Christine Wilson and Holly Fales

East Carolina University
Abstract

The ECU College of Education sustains and supports a dedicated faculty that continues to provide high quality education for teachers and teacher candidates, and seeks new and innovative practices to improve teacher education. One such innovation, sponsored and facilitated by the Office of Assessment, Data Management, and Digital Learning, is Mursion®, the commercialized version of TeachLivE developed by the University of Central Florida. The following document describes the research and planning that accompanied ECU’s adoption of Mursion® technology, as well as plans for sustainability and continued institutionalization.
Chasing Our Horizon: ECU’s Full Implementation toward Self-Sustainability

In 2016, East Carolina University (ECU) College of Education (CoE) set sail on a new journey to incorporate Mursion® immersive simulations in educator preparation. This journey has taken us down many new paths and taught us many things that we will share as we reflect on how far we have come and where we have yet to go.

After a successful one-course pilot in one course during Spring 2016, ECU College of Education (CoE) leadership decided to invest heavily in the Mursion® initiative. The hope and challenge was that Mursion® would be incorporated across educator preparation programs. Mursion®, however, was a new and unfamiliar technology to many faculty members. The technology was met with fascination, intrigue, optimism, skepticism, and sometimes intimidation. To familiarize faculty with Mursion®, we held a facilitator training session open to educator preparation faculty across the college to demonstrate how Mursion® worked, and how they could get their classes involved. That session did increase the interest and use of Mursion® in other education program areas. As a result, two faculty members from Special Education became the first at ECU to conduct research in Mursion® when they completed a study of candidate perception of the Mursion® experience involving 44 Special Education candidates (Voytecki, Hudson, & Zhang, 2017). These small successes provided a small wind in our sails that we would need as we continued our long journey to full sustainability.

Turbulent Seas

Despite our initial successes stemming from the pilot and first semester of availability, the adoption of Mursion® was not occurring at the rate we had hoped for. This required us to refine our processes and refocus our outreach. Some faculty were hesitant to heavily invest time
into incorporating Mursion® into the curriculum without a guarantee that it would be available on a long-term basis. Others had misconceptions based on other technologies that we would need to address and overcome. Some faculty perceived Mursion® to be equivalent to or a replacement for Second Life. Others had seen TeachLive in its infancy and felt the technology was too cumbersome and intrusive. These misconceptions were addressed by providing live demonstrations both in the Mursion® lab and at department meetings to show faculty how the technology actually worked. A final misconception was that Mursion® could only be used for behavior management. While, we continue to explain that it is best used to work on a wide variety of communication skills (Stewart & Edwards, 2012; Park, et al., 2011; Slovák & Fitzpatrick, 2015; Rao, 2015), this myth still endures.

Some faculty members were eager for a means to allow their students to practice and decided to utilizetry Mursion.® in their courses. Yet, there were still several barriers for these faculty members. First, there were a limited number of scenarios available upon initial implementation. Each faculty member had to create a scenario, test the scenario, and refine the scenario if necessary which often proved to be a time-consuming process1. (Wright & Burnham, 2012). At that time, we were contracting hours through Mursion® which operated on a strict timeline for scenario development and testing. Sessions had to be 2-3 hours long and planned several weeks in advance and new scenarios had to be tested several weeks before that. Since most classes were only one hour long and many faculty wanted to utilize the technology on a shorter timeline, this provided an additional barrier to full usage. We knew we had to look for feasible means to sustain the Mursion® initiative and utilize this valuable tool.

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Calming the Sea

To ensure the sustainability, we worked with ECU’s Information Technology and Computing Services (ITCS) to create a dedicated $100,000 state-of-the-art Mursion® lab. In addition, Mursion® was incorporated in the 2017-2022 CoE Strategic Plan. Perhaps our largest achievement was the award of a 3-year $598,998 National Science Foundation grant studying the use of Mursion® to build discourse capacity in elementary math and science candidates. Through the use of university student technology fees, we were able to purchase a Mursion® license, demonstrating the institution’s long-term commitment to the program and clearing many barriers for usage. We can now schedule with a little as one week’s notice, with a minimum session duration of one hour. With our dedicated interactor, we have the capability to develop new scenarios within one week of the scheduled session. Faculty can easily schedule their own sessions through an online scheduler further simplifying the process. Having a dedicated interactor to our program provides a consistent experience for participants and from one session to the next.

We were eager to share the improvements to Mursion® at ECU with our faculty and the entire university. We held open houses during 2016-2017, open not only to CoE faculty, but to the entire university. We refined our process beginning Fall 2017 and started the year with several facilitator training sessions that were open to everyone at the university, and had a great turnout, but did not yield a large number of hours booked within the lab. Later we adjusted again and decided instead to offer demonstration sessions by request. We have found this most effective. Other promotional activities consisted of internal and external conferences, a detailed website (Mursion@ECU, 2018), word of mouth, social media, news media, and promotional videos of Mursion on the televisions within the College of Education building.
Outreach to our school district partners is an important role for the ECU College of Education. The Mursion team works with local K-12 public schools to provide professional development on classroom management and parent communication skills; these are usually targeted towards Beginning or Lateral Entry Teachers. We provide “grants” to school systems which gives Mursion® time to schools for professional development for practicing teachers. This year we also sponsored the first Educator Excellence Summit which was a 2-day conference for educators with a Mursion® track. The event was a success and teachers were excited about using Mursion. We plan for the Educator Excellence Summit to become an annual event.

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Hoist the Colors

Promotion, recognition, and marketing continue to be at the forefront of our Mursion® expansion. Our recent Educator Excellence Summit was featured on the local television news (WITN, 2018), and we were featured twice in 2017. (Scott, ECU CoE students learn using VR, 2017; Scott, ECU CoE awarded grant, 2017). We have been featured nationally in THE Journal.

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and Campus Technology.\(^3\) Mursion at ECU regularly appears in our CoE news, and Mursion has also been in ECU news twice\(^4\), \(^5\), \(^6\), \(^7\). (Ravipati, Future K–12 Educators Learn to Teach Through Virtual, Mixed Reality Simulations, 2017) and Campus Technology (Ravipati, East Carolina U Taps Virtual, Mixed Reality, 2017). Mursion\(^®\) at ECU regularly appears in our CoE news (Dittmer, ECU Awarded Grant to Enhance STEM Education, 2017), and Mursion\(^®\) has also been in ECU news twice (Baity, Almost Live, 2016; Baity, Life-Like Therapy, 2018; Dittmer, The Magic of Mursion, 2017).

Since our goal is to promote Mursion\(^®\) to be implemented across ECU and eventually throughout the community, we have also made presentations to the chancellor, provost, vice-chancellor, deans and directors, donors, departments, committees and faculty from across campus. Our next step is to reach beyond the university and continue to teach people about Mursion\(^®\) and how it can be used as an effective training tool for businesses, local service organizations, or governmental agencies. Our first step in this process was to launch our Mursion@ECU twitter feed (Mursion@ECU, 2018).

**Mateys and Privateers**

Initially, we were very focused on the field of education and saw the following as our target audience:

- University Faculty
- Beginning and Practicing Teachers

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\(^4\) [http://www.ecu.edu/cs-admin/news/Virtual-Classroom.cfm](http://www.ecu.edu/cs-admin/news/Virtual-Classroom.cfm)

\(^5\) [https://news.ecu.edu/2018/03/01/life-like-therapy/](https://news.ecu.edu/2018/03/01/life-like-therapy/)


Teacher Candidates
Clinical Teachers and Instructional Coaches
Current School and District Administrators
K-12 Students and their Parents
University Supervisors of Teacher Interns
College of Education and University Donors
University Students
Educational Leadership and School Administration Candidates

As we have developed over the past two years, we have found that our initial target audience differs from those that actually utilized Mursion.®. We found that while our initial focus was programs within the CoE, many programs outside of educator preparation eager to utilize the technology. Figure 1 shows areas that have utilized Mursion,®, including programs outside of the College of Education that make up 28% of total Mursion® usage.

Making Way

We have now used Mursion® for two full academic years, 2016-2017 and 2017-2018. Our rapid growth between the two years is demonstrated Figure 2. Every semester, we more than doubled the use from the corresponding previous semester. It has taken a lot of work to get us from 79.75 total hours of use in 2016-2017 to 306.5 as of June 2018. Figure 3 demonstrates not only our growth, but also our expansion beyond the College of Education. Many stakeholders have come to the realization that this technology is not only a great tool to train teachers, but it is a powerful tool to practice communication skills and potential interactions across a broad range of disciplines. Several new environments were made available in January 2018 including two classrooms, several offices, three conference rooms, a restaurant, a hotel lobby, and an
examination room, these new environments allowed us to demonstrate the applicability of Mursion® to areas outside of education. Several new environments were made available in January 2018 including two classrooms, several offices, three conference rooms, a restaurant, a hotel lobby, and an examination room, these new environments allowed us to demonstrate the applicability of Mursion to areas outside of education. While we continue working extensively with faculty in the College of Education, K-12 schools and social work, we have expanded to work with additional faculty in the College of Business, Allied Health, and other areas across campus. We were even began offering services to our first external customer in Spring 2018.

**Treasure Abounds**

Mursion@ECU is a valuable and unique initiative that we are extremely proud of. We were the first in the state to offer Mursion® as a campus-wide resource and have established it as such that we can now offer it to third-parties who are interested in using Mursion® at other schools or businesses. We have been the first licensee to refine a scheduling system that allows users to schedule their session whether at our lab on ECU’s main campus, an independent lab, or online through Zoom®, with a reminder that will be sent directly to them. We have an extensive bank of scenarios available to our clients with descriptions that can be viewed directly on our website and we also help to develop new scenarios as the need arises. Table 1 shows our current pricing packages to allow clients to purchase individual hours or pre-purchase a number of hours at a discounted rate.

**Batten Down the Hatches**

We now have all of the infrastructure we need in place to run full sail, but there is weather ahead. Recently, we were issued the charge to become a fully self-supporting initiative, which will require an extensive marketing campaign, dedicated time, increased effort, and
innovative approaches. We have worked hard to develop, implement, and sustain this program but it appears the hard work is only beginning. We know if we can make it through the storms, our ship will continue on its wonderful adventure into unchartered territory.

Table 1

Educator Pricing

<table>
<thead>
<tr>
<th>Package Name</th>
<th>Package Hours</th>
<th>Price per hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flying Dragon</td>
<td>Up to 25 hours per year</td>
<td>$150.00</td>
</tr>
<tr>
<td>Adventure Galley</td>
<td>25-50 hours per year</td>
<td>$140.00</td>
</tr>
<tr>
<td>Sea King</td>
<td>51-75 hours per year</td>
<td>$130.00</td>
</tr>
<tr>
<td>Royal Fortune</td>
<td>76-100 hours per year</td>
<td>$120.00</td>
</tr>
<tr>
<td>Queen Anne’s Revenge†</td>
<td>101 or more hours per year</td>
<td>$110.00</td>
</tr>
</tbody>
</table>

*Saturday morning hours included. †One free facilitator training session included.

(Mursion@ECU, 2018)
Figure 1

Mursion@ECU’s Impacted Areas

Figure 1. Areas across the university used Mursion@ECU to give students the ability to practice skills in real-life situations (Mursion@ECU, 2018).
Figure 2

Growth of Mursion@ECU

*Figure 2.* Mursion has grown exponentially since it has come to ECU. With future goals in mind, we expect to see the growth continue (Mursion@ECU, 2018).
Figure 3. At ECU, Mursion began with a pilot in the College of Education, but it has spread into several other areas inside and outside of the university (Mursion@ECU, 2018).
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Retrieved from https://doi.org/10.1016/j.psychres.2011.04.003


Middle School Students in a Rural Community Having Conversations with a STEM Professional before Playing a Science Video Game in their After School Program:  

Students Talking to a TeachLivE™ Adult Virtual Avatar before Gaming

Benjamin Gallegos

University of Portland

Abstract

This study was part of a dissertation that examined the effects of mixed-reality using the TeachLivE™ (TLE) adult virtual avatar Stacey, who had discussions with middle school students prior to the students conducting science activities through an educational video game on cell structures while attending their after school program. In this study, Stacey served the role of a STEM professional named, Dr. Stacey Rodriquez. Furthermore, this study was also an attempt to provide empirical scholarly research that examined students with disabilities who are culturally and linguistically diverse living in rural communities.

The middle school participants attended middle school in a rural public school district in the southeast region of the United States. The students who participated in the study were enrolled in their middle school after school program to receive additional academic activities, and learning opportunities to support their learning. The results and further dissemination of this empirical study provided research, data, limitations, and implications when serving middle school students who are culturally and linguistically diverse (CLD) with and without disabilities on science activities using the mixed-reality simulation, TeachLivE™ (TLE).

Students in Rural Communities, After School Programs, and STEM
There has been a long-standing call from researchers, policymakers, the Department of Education, and educational organizations on the critical need for empirical studies that examine students with disabilities (SWD) who are culturally and linguistically diverse (CLD) in PK-12 education (Artiles et al., 2010; Cramer, 2015; Evans, 1974; Scruggs, Mastropieri, Berkeley, & Graetz, 2010; Vasquez et al., 2011). This need for empirical studies was magnified for students attending schools in rural communities across the US (Fishman, 2015; Mullen, & Kealy, 2013; Peterson, Bornemann, Lydon, & West, 2015). To meet this need on the dearth of empirical studies, there has been a steady streamline of funding for research towards college and career readiness initiatives that promoted science, technology, engineering, and mathematics (STEM). In addition to STEM initiatives, researchers have also included the implementation of digital technology as needing to be further examined as an essential tool in teaching and learning for SWD (Basham & Marino, 2013; Dieker, Grillo, & Ramlakhan, 2012; Kennedy, Deshler, & Lloyd, 2015; Marino, Tsurusaki, & Basham, 2011).

For SWD who lived and attended schools in rural communities, the likelihood of attending a school with the proper school personnel to meet their academic needs, up-to-date technology, or educational programs that enhance post-secondary STEM college and career interests (Azano & Stewart, 2015; Ulrich, 2011). The use of digital technology has been a tool being used in schools as an attempt to supplement curriculum materials, however paper and pencil tasks has been business as usual in many schools. When considering academic supports for the SWD, especially with learning disabilities, materials must be provided beyond the traditional paper and pencil tasks (Marino & Beecher, 2010). Students with, and without, disabilities who attended rural schools lacked academic supports from the lack of school resources and personnel (Brownell, Bishop, & Sindelar, 2005).
The need for all students to be proficient in reading and STEM is important (Helman, Calhoon, & Kern, 2015). The need for students with disabilities (SWD) is critical, as is the need to support students with culturally and linguistically diverse (CLD) backgrounds in achieving College and Career Readiness Standards (CCRS) to increase employment outcomes. The rate for SWD was found as low for undergraduate STEM-related degree programs, with only one in five SWD pursuing a STEM-related degree (NSF, 2014). The importance of a personal lens for diverse learners is critical to consider, related to the broader impacts on post-secondary opportunities. With new science curriculum and standards being implemented through the Next Generation Science Standards (NGSS), students will no longer be expected to approach science as a memorization practice activity from a textbook. According to the National Assessment of Educational Progress (NAEP, 2011), eighth grade science scaled scores for SWD was 124, which is well below the achievement average of students without disabilities, with an average score of 155. Creating alternative assessments in video games with UDL principles may be beneficial for all learners (Dalton, Proctor, Uccelli, Mo, & Snow, 2011), including those SWD, CLD from rural low socioeconomic communities.

**Methodology**

**Research Question**

The researcher was guided on the following question:

(1) What effects does prior knowledge, activated by a virtual avatar of a STEM-related professional, have on increasing skills of culturally and linguistically diverse, middle school students with learning disabilities in video game-based science assessments?

**Participants**
Due to the researcher’s attempt to provide an empirical study specific on students with disabilities who were culturally and linguistically diverse living in rural communities, the participants were recruited through convenient sampling procedures. The overall number of participants who completed the study was 23 middle school students in the sixth, seventh, and eighth grade. All participants were enrolled in their middle schools after-school program and received additional academic supports during the after-school program. The initial target population was Latinx students with disabilities enrolled and attending their after school program. The researcher was informed by the school district personnel, during the recruitment process of convenient sampling, they would potentially have over 100 students who met the target population criteria. However, many of the students were from migrant farming family households, and once the study began, many of the potential participants had moved to another region of the US with their families following the crops that were in season for harvesting. This resulted in many potential participants moving from the community and were no longer attending their middle school that was designated as title I. This resulted in the researcher deploying further recruitment for another middle school in the same school district with the same after school program, and target population criteria.

Setting

The study took place in the Southeast region of the US in two middle schools, both from the same school district, located in rural farming communities. One middle school was designated as a title I school, and the other school was not designated as a title I school.

Research Design
The research design selected to answer the research question was a quantitative, quasi-experimental control group design with pretests and posttests. The control group conducted science activities through playing a science video game on cell structures (dependent variable). The treatment group also conducted science activities through playing a science video game on cell structures, along with speaking to Stacey (independent variable), the TLE adult avatar prior to playing the video game.

Results

There was different data collected during the time of the dissertation study. The data points disseminated for this paper was on an assessment students completed taken directly from the video game with a cell structure graph with 12 blank labels for students to fill in the blank. The assessment from the science video game was analyzed using descriptive statistics. The results for the control group pretest mean was \((M = 5.50, SD = 3.136)\) and the treatment group was \((M = 3.79, SD = 2.225)\). The results for the control group posttest mean was \((M = 7.70, SD = 3.889)\) and the treatment group was \((M = 7.36, SD = 4.413)\). Although the groups were initially arranged in matched-pairs, due to attrition, only the participants who completed the study were reported. By the time the participants completed the posttest, the control and treatment group varied in reading level, grade level, and school site. At the end of the study, the control group had a more students enrolled in the non-title I school and had more students who had higher reading levels.

Discussion

The dissertation study had confounding variables that took place during the time of the study. The confounding variables affected the number of participants who finished the study,
online connectivity to deploy the science video game curriculum and using TLE, and changing of school personnel who supervised the students during the study. Like many schools in the rural setting, at times, the afterschool program was understaffed and the afterschool leaders had to serve additional roles outside of the afterschool setting. This reality of roles is often the case for staff in rural middle schools across the nation, who serve various roles within the school district (Fishman, 2015).

With the on-going dissemination of the data collected, the researcher will be further examining the effects of the students in the treatment condition who met with Stacey the TLE adult avatar.

Future Research

With the lessons learned from attempting to conduct a study in a rural community with a large migrant farming population, future study procedures examining these communities will factor in the confounding variables that affected this study.

Currently, the researcher has formed a partnership with a non-profit organization in the Northwest regions of the US. The non-profit organization serves students from low socioeconomic communities by providing additional STEM related supports by working with STEM related professional on entering the schools and teaching the students lessons during their science learning activities. The potential research and development between the non-profit organization and researcher may look like this dissertation study and the with lessons learned in the dissertation study, the researcher will reflect and apply procedures differently with the potential studies.
References


A Long and Winding Road:

Implementing Virtual Learning Environments in Multiple Contexts

Dr. Susanne James
Southern Illinois University Edwardsville

Dr. Anni Reinking
Southern Illinois University Edwardsville

Dr. Barb Martin
Southern Illinois University Edwardsville
Abstract

Faculty from Southern Illinois University-Edwardsville have traveled a “long and winding road” to implement virtual learning environments in campus, community, and statewide settings. In this paper, the strategies to secure license fees and developing a plan to develop partnerships between campus departments and community organizations are discussed. In addition, this paper describes the essential technologies needed to organize a site license to facilitate the scheduling, scenario planning, and communication between the Facilitator, Simulation Specialists, and Scenario Designers. This paper also describes the development of marketing tools and contracts that took the faculty off the beaten path and into the forest of contract law. Finally, lessons learned are discussed so those who are considering a site license can follow the long and winding road we have traveled.
Research demonstrates that experiential learning allows novice professionals to actively construct their knowledge acquisition by experiencing the learning in context (Kolb, 1984, 2001). Kolb’s Experiential Learning Theory (1984) informs the use of virtual simulation at Southern Illinois University Edwardsville (SIUE). A cycle of acting on concrete experiences to learn, reflect and then observe others to conceptualize the discrete underpinnings of an action is employed in our Virtual Professional Practice Lab (see http://www.siue.edu/virtual-practice-lab/). Learners are able to take abstract or discrete skills associated with their discipline and apply with active experimentation in the environment or setting that requires this proficiency. Knowing the impact experiential learning has on learners, we attempted to scale up the use of the simulation lab to other departments across campus, statewide, and in the community.

Authentic opportunities to practice the discrete skills necessary in professional fields requires new, innovative ways to rehearse these abilities (Dieker, Hynes, Hughes, & Smith, 2008). Utilizing virtual learning environments to simulate the diverse situations encountered by professionals when interacting with human clients necessitates authentic practice opportunities that will not negatively impact real human beings. So many of the discrete skills needed in the fields of nursing, education, and psychology are difficult to apply in real situations due to the adverse impact it could have on the client in addition to the efficacy of the pre-professional applying what they have learned in novel interactions. In addition, the immediate feedback and coaching afforded in the virtual learning environment can improve professional practice and give novices a sense of efficacy when novel situations arise again.

Understanding the impact the use of VLE has on learning and engagement, faculty members at Southern Illinois University Edwardsville (SIUE) have passionately worked to sustain a continuing site license through Mursion, Inc. SIUE is in the second year accessing a
site license from Mursion Inc. and is actively pursuing campus-wide implementation this year. Departments on our campus that use the virtual learning environment include, but are not limited to: Business, Marketing, Teacher Education, Psychology including school psychologists, Housing (RA training), and Nursing. It is hoped that campus-wide use of the lab will sustain VLE as part of the school culture and demonstrate to prospective students that SIUE is an exciting place to learn. In addition, it is hoped that these other disciplines will experience the profound effects on disciplinary skills we have found in teacher education. However, the SIUE Virtual Professional Practice Lab (VPPL) can only have this type of impact on learning if we can sustain our site license. We are a state funded university in a state with many financial stressors and fears of declining enrollment in higher education that is being experienced by other universities in our state. Thus if we are going to maintain the VPPL, we need to find ways to become a self-sustaining project in order to maintain our site license.

**Strategies to Secure License Fees**

Through our attempts to maintain a site license, as faculty members at SIUE, we have learned key aspects to share with others who are seeking to purchase and sustain a site license. Specifically, these key aspects include funding, obtaining grants, support from campus and community members, and logistics, including marketing and scheduling.

**Funding.** Initially, SIUE was a partner research site for a national research study funded by the Bill and Melinda Gates Foundation (2014). This initial research partnership with the University of Central Florida (UCF) provided us with an initial exposure to TLE TeachLivE™ Lab. We scavenged from multiple sources to get the required desktop computer, projector, and Xbox console to conduct the study. In return, we had access to the initial middle school classroom environment from UCF and all research materials. This study gave us insight on how
VLE can enhance high-level teaching practices on student achievement. The study findings encouraged us to find ways to use VLE in our teacher preparation program. Multiple internal and external grants were written and success was found in small scale grants from our Excellence in Undergraduate Education as well as multiple Dean’s Grants. These grants provided the needed exposure of VLE to the Director of Academic Innovation and Effectiveness and the Dean of School of Education to see the utility of VLEs. Initially, we were able to financially support the use of TLE TeachLivE™ by a small group of teacher education faculty. Our chair then asked us to demonstrate the innovative use of VLE technology in our teacher preparation program for our NCATE/CAEP Program review. Having support from these key administrative personnel helped as we sought to secure our own site license. Despite this support, we found that many of the faculty in the teacher preparation program would not consider embedding the use of the lab in their assignments because they were resistant to make a change in their course design due to precarious funding to use the lab. This only strengthened our desire to secure a site license!

A faculty member and initial adopter of VLE secured the funding for our initial site license from a state personnel development grant focused on higher education faculty. This grant along with more funding from the Dean of Education provided the site license, simulation specialist training, and all of the peripherals to have a mobile VLE lab during year one of implementation. We planned to have a mobile lab in order to work with area schools and off site SIUE facilities. Our Dean agreed to pay all wages for a simulation specialist and the search for an actor trained in improvisation was conducted by Mursion, Inc.
In addition, faculty members who understood the importance of the VLE began applying for other funding opportunities so we could secure the next site license in one year’s time. In total, the faculty applied for sixteen grants and received twelve. The monies from the various grants went towards more supplies that were outside of the cost of the site license including, but not limited to, a computer, a headset for the actor, a camera and microphone, and a television to have the highest display capabilities. Despite all of this sponsorship, we needed to find a better way to financially support the SIUE Virtual Professional Practice lab to sustain it for more than one year at a time.

Support. Financial support was a major concern when initially purchasing the site license and continues during the process of seeking sustainability funds. Three important parties needed to “buy in” or understand the importance and impact VLE has on professions: other teacher education faculty members, the new Department Chair, and the new Dean of Education. In Year One of our site license, the original departmental supporters of the virtual lab left the university. The previous dean had secured us multiple presentations to local businesses in the community in hopes to obtain endowed support of the lab and the previous chair of our department had secured a demonstration to area superintendents at their monthly meeting. While none of these presentations secured consistent funding sources, our presence in the community was publicized in local media sources (See http://www.siue.edu/news/2015/01/VirtualClassroomPreparesSIUEStudentsforRealLifeInstructio n.shtml). As Year One of our site license came to the end of the contract time, we thought the lab was not feasible as we were unable to secure enough funding for year two of the site license and furthermore, the simulation specialist resigned his position. The entire cost to secure a new license and train a new simulation specialist seemed daunting!
Perseverance eventually paid off to secure Year Two of the site license for the SIUE Virtual Professional Practice Lab! The new Dean offered his support by funding the site license with monies allocated in his budget for an unfilled faculty line, as long as the lab was open to all those interested on campus and the rate charged to them would be significantly lower than the standard rate. Furthermore, he secured a demonstration of the lab in a meeting with all of the University Deans and the Provost. The Deans of Nursing, Business, Pharmacy, and Dentistry expressed interest in learning more about the lab, but there was little follow from these Deans despite many attempts to contact them and ask to present directly to their faculty.

**Developing Partnerships**

The faculty who were the initial adopters of the VPPL visited various departments on campus and presented to many administrative teams to demonstrate the accessibility and flexibility of this exciting technology. However, what finally developed into partnerships with each of these campus entities was an internal grant that offered a stipend for faculty and staff to use the lab. The stipend could be used to fund the interaction time in the lab or could be kept by the awardee, either way they had to pay the lower fee for the use of the lab. This internal grant was written in collaboration with the Associate Director of Academic Computing, the entity on our campus who facilitates the use of technology by faculty. To inform the campus about this grant opportunity, multiple Open House demonstrations were offered and personal invitations were sent to all academic department chairs on campus and all student life departments including Housing, Dining Services, Student Involvement Center, and the Career Development Center. Of those invited, the individuals who chose to apply for the grant were from psychology, nursing, educational administration, teacher education, and housing. Furthermore, the grant funded time for instructional designers from Academic Computing to design scenarios with each of these
departments and to hire a student worker to facilitate the lab. This grant and the multiple invited demonstrations was the key to getting campus-wide partnerships.

Finally, the partnership with Academic Computing provided the technical support to organize the essential technologies needed to scale up the use of the virtual lab. Instructional designers were key in developing the scheduling program (i.e. YouCanBookMe) and scenario template (Qualtrics) that make the logistics of large scale lab use feasible.

**Essential Technologies**

Other logistics, that we were not aware of before starting this process, included developing a program to schedule time in the lab. We had originally tried to use Google Calendar, but found it cumbersome and it did not allow us to block times out when simulation specialists were not available. We chose to use a program called YouCanBookMe (see https://vpl.youcanbook.me/). Our instructional design department and simulation specialists created a scenario planner that was not intimidating to those who did not have a background in education on Qualtrics (see https://siue.co1.qualtrics.com/jfe/form/SV_3lvqOb6pBGWG0Zf).

In addition to these organizational technologies, we needed a better system to communicate with the simulation specialists, the scenario planner, and the instructional designers. Qualtrics and YouCanBookMe allows you to designate who will receive submissions and these notifications go to the director of the SIUE VPPL and the Associate Director of Academic Computing for initial review and distribution. We decided to hire and train two interactors since we had such a difficult experience when our sole interactor resigned despite the chance that each of the interactors may not have a secure number of hours to work each week. The interactors block their availability times on YouCanBook me and receive automatic responses scenarios to their emails that lends itself to the channels of communication between
the scenario planner, the simulation specialist, the instructional designer, and the facilitator of the sessions.

Finally, if you are considering securing a site license, you must consider the ongoing electronic peripherals to buy and replace year after year. We have bought multiple cables, cameras, microphones, and laptops so multiple facilitators can travel off site to conduct simulations. These costs are not part of the site license with Mursion, Inc. All of these costs meant we needed a strong marketing plan and ability to contract with outside entities to use the SIUE VPPL.

Marketing Tools and Contracts

One way we found to be successful was to network and spread the word about what SIUE can offer through our VLE site license. To begin with, we developed an SIUE VLE Facebook page (see @SIUEVPP), an SIUE VLE website with information and sample videos, and began the branding process of our own VLE lab, which we have named the SIUE Virtual Professional Practice Lab. Paired with our professional marketing materials, these social media accounts, websites and the official branding of the VPPL advanced our efforts to share this interesting technology and create a business promotion opportunity. When we present at conferences now, we are immediately approached by area organizations that are interested in their own application of our VPPL lab. We have worked with various state education entities to use the lab in trainings and to provide virtual coaching after the sessions that utilize the professional skills of the faculty associated with the lab. So far, through our marketing attempts and conference presentations, we have nine different organizations partnering or planning to partner with us in the next six months. Some of our soon-to-be partners are on the SIUE campus, some are statewide, and some are nationwide. These marketing efforts have necessitated a formal contract
to charge the entities the going rate for interaction time in the SIUE VPPL. Since we are primarily teachers who have little experience in contracts, we needed someone to help us create and facilitate the contracts. At SIUE, the Office of Research and Projects helped us develop the outside university contracts, and pass legal approval of the contract. In addition, they administer the invoicing of the contracts. The lessons learned along this long and winding road to ensure large scale use of the lab so we can market and fund the lab are numerous.

**Lessons Learned**

Our first lesson learned was that *faculty and administrative buy-in are critical to the overall success of a campus and community wide implementation of a site license in VLE*. We still find that many of the faculty in our own department are resistant to implement such a novel approach despite repeated exposure to the impact the VPPL has had on student performance. We are in the preliminary stages to tie our current CAEP assessments to simulations in the lab and using online video recording and sharing tools like GoReact to evaluate performance and provided another level of coaching and reflection. The brave faculty and student life directors who have started to travel down the road to virtual simulation continue to have concerns that they are “doing it right” despite the tour guides we have provided them with instructional designers who walk them down the path hand-in-hand.

Our second lesson learned is to *use the resources of your university to market and organize the site license*. There are so many things we have learned about technology, web design, contracts, and government accounts that were never in our backpack of skills. All three faculty members who run the lab chose different routes to be in charge of leading and that shared leadership has helped us balance the service, scholarship, and teaching requirements we are
expected to maintain on top of our work in the lab. While many of the grants we write and trainings we conduct count towards scholarship and service, we dedicate many hours and efforts to sustaining the site license.

The third lesson we have learned is to know what is the important educational concerns of our state and to our university partners. A major emphasis in our state is social emotional learning and early childhood services. We have written grants and provide professional development using the virtual simulation lab to state agencies, community organizations, alternative schools, and juvenile detention facilities. These initiatives have provided each of us new avenues for research that still meets our research agendas in teacher preparation and professional learning. Our university partners wanted more on personnel development and strengthening the discrete skills of their workers. In addition, our university partners wanted to move away from contrived simulations where college students take on a textbook case persona or try to improvise a patient, client, or young child.

Our fourth lesson learned is to bring your simulation specialist in on these initial conversations about possible scenarios to see if they feel comfortable portraying these diverse characters and provide them time in schools and clinics to experience first-hand the environmental nuances. When we developed a scenario to train faculty on suicide prevention, we asked the SIUE ICARE suicide prevention team to work with our interactor to understand how a college student who is contemplating suicide may act. We have had the good fortune to hire interactors with very diverse skill sets who have worked as residential assistants, worked with incarcerated youth, and who are studying in the field of medicine. Developing the professional skills of your interactors is just as important as developing teacher candidates.
Overall, the process of implementing our site license has been a long and winding road with many obstacles including uncompensated faculty time, constant financial concerns, and the ability to persevere in the face of continued setbacks. We have found that our more significant lessons learned lie in our perseverance toward improved instruction and the impact on the students we are training. It is with these growing individuals and their futures in mind, that we persist and move forward down this long and winding road to campus-wide implementation. Our time and efforts are fueled by a passion for implementing this innovative technology that promotes reflective thinking in our students and ultimately will provide our them with more experiential learning to safely practice the discrete instructional skills that are so hard to master as novices.
References


TeachLive and TWU Teacher Education:
A winning team in training future teachers and administers
Edward F. Steffek, M.Ed. and Jorge F. Figueroa, PhD.
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 ongoing research related to TeachLivE™.

At TWU, we have incorporated simulated teaching experiences into our classes for several years. Our professors have used the TeachLivE™ lab for graduate courses in educational administration and special education and for undergraduate courses in ESL/bilingual education. In addition, we have used TeachLivE™ to work with colleagues outside of our department (e.g., professors in Psychology and Deaf Education) as well as leaders from local school districts.

Interactive STEM Education Competence in Teaching (Project INTERSECT)--Year 1
Implementation and Preliminary Data
Holly Fales and Christine Wilson
East Carolina University

In this session, we will review the project design and preliminary results from our first year implementing the NSF Grant “Project INTERSECT” with Elementary Mathematics candidates at East Carolina University. This project seeks to address one area affecting student outcomes, the nature and role of discipline-specific discourse and argumentation. The goal of the project is an empirical exploration of immersive classroom simulation activities (Mursion) on pre-service
mathematics and science teachers' competence and confidence in discourse use. This longitudinal, mixed methods study will measure the impact in methods courses, practica, and internship placements from the use of Mursion with emphasis on discourse skills to promote learning and engagement of all students in mathematics and science. During this session, we will discuss our grant proposal, research design and methodology, scenarios, and logistical aspects of implementing a Mursion research project in teacher education. We will also review our experiences and initial findings from our first semester of implementation.

**Zoom into Learning With Avatars**

Tammy Quick, Ph.D. and Carol McLeish, Ed.D.

Saint Leo University

In this practitioner-based session, participants will hear about various ways to implement TeachLive/Mursion avatar sessions to deliver interactive instructional experiences to their K-12 learners. Participants will identify ways to provide this innovative program to enhance their students’ understanding of content knowledge and pedagogical practices in a low-risk, supportive environment. This simulation program delivery model is available to meet the needs of traditional face-to-face students, as well as online students. Presenters will share their experiences of using the program through both delivery methods. Connectivity, collaboration, and communication are key foundations within every session. The presenters will describe ways to connect learners from remote locations, provide strategies to enhance their collaboration, and recommend platforms for students to communicate with their peers.
Pre-service teachers in undergraduate education programs are developing their teaching practices while working collaboratively with peers and instructors via TeachLive/Mursion. They are able to conduct lessons and interact with the avatars in a similar fashion as their field placement students. TeachLive sessions are conducted throughout their undergraduate program in a variety of content areas. Sessions are tailored to address course objectives while incorporating classroom management strategies through simulated teaching experiences. Students also provide feedback to each other as they develop their teaching practices. TeachLive/Mursion provides students the opportunity to plan, teach, and reflect. Through a mixed delivery model, students from all learning environments are provided meaningful learning opportunities.

The Importance of Active Listening, Rephrasing, and Repeating during Parent-Teacher Conferences in a Simulated Environment

Kate D. Simmons, PhD, Mrs. Amelia Powers-Padgett and Dr. Jana Sparks
Auburn University Montgomery (AUM)

This presentation aims to discuss the need for integrating active listening skills during parent-teacher conferences simulations within teacher preparation programs. The goal of this presentation is to: (A) discuss and outline the importance of active listening skills, and (B) the effects of practicing active listening skills in simulated environments.
Utilizing TeachLive to support struggling or at risk interns in the field

Taylor Bousfield and Pam Jones

University of Central Florida

Across the country, only 59% that pursued a 4-year degree undergraduate students graduate within six years. (U.S. Department of Education, National Center for Education Statistics, 2016). When we narrow down to the profession of education, an estimated 40-50% of new teachers leave the teaching profession after only five years (Haynes et al., 2014). In order to combat teacher graduation and retention, TeachLivE can be used a tool support students need additional focused support. Learn how to support those that are struggling through TeachLivE, reflection, and mentorship. The strategies presented can be used cross curricular university wide.


Social-Emotional Learning Strategies for Young Children Using Shared Reading and Mixed Reality Simulations

Kristin Murphy, PhD, Amy Cook, PhD, Anna Whitehouse & Takuya Minami, PhD

University of Massachusetts Boston

There are increasing accountability demands placed on educators to support children’s academic learning, making it challenging to find sufficient time to support children’s holistic development. Elementary school counselors and teachers can use storybooks as a way to build children’s social-emotional learning (SEL), while reinforcing literacy instruction. According to the Annie E. Casey Foundation, engaging children in shared reading of storybooks with embedded content focused on SEL, where children are encouraged to take the lead and become storytellers, allows children to build confidence in their literacy skills, while simultaneously giving children the opportunity to learn and practice personal and social skills. Using our curriculum Storybooks and Social Hooks: Building Social/Emotional, Academic, and Literacy Learning through Shared Reading (K-5), school counselors and teachers can engage children in shared reading sessions with small groups of children, allowing for follow up discussion where the school counselor or teacher can encourage reflection on the storylines and characters, with a particular focus on sharing how the story personally relates to the children’s experiences. After shared reading, a follow up activity that includes role-play or practice of the social-emotional skill depicted in the story is highly recommended. The purpose of this poster session is to present our curriculum, and share our research plans for enhancing our curriculum delivery in grades K-2 using mixed reality simulation, where students will interact with, problem solve, and learn alongside upper-elementary aged student avatars to support positive SEL development.
Candidates' self-efficacy in certain areas of conference preparation and behavior

Michelle Kelley & Taylar Wenzel
University of Central Florida

Our session will focus on the difference between teacher candidates' perceived and enacted conference behaviors during parent teacher conferences focused on sharing reading assessment data and intervention plans. We will also be sharing changes in teacher candidates' self-efficacy in certain areas of conference preparation and behavior as a result of their experiences in TeachLivE.

Our session will focus on data collected from research in the 2017-2018 academic year.

Mixed Reality Experienced in the M.Ed. Educational Leadership Program: Student Perceptions of Practice and Coaching through TeachLivE

Marjorie Ceballos, Ed.D. and Hilary Buckridge, Ed. D.
Orange County Public Schools and University of Central Florida

The M. Ed. in Educational Leadership program at the University of Central Florida began incorporating the mixed reality resource of TeachLivE during the fall of 2013 as an experiential practice interacting as an administrator in parent and teacher conferencing situations in a low risk environment, and has continued to be an integral part of the authentic practice provided to students. The use of avatars and virtual teaching provides authentic practice through rehearsal, where mistakes are not impacting real people, and through feedback, coaching and reflective practice, educators sharpen leadership communication skills. Feedback and coaching from this
practice is intended to increase students’ awareness of performance and improve conferencing skills prior to the administrative internship. By including this mixed reality experience as part of the M.Ed. program, the students benefit from the power of the sequencing of instruction through guided and independent practice models, using realistic scenarios and simulation practice of administrative conferencing.

The mixed reality experience is part of the scaffolded instruction process taking theoretical research based knowledge, and providing specific targeted skills practice before entering into live situations. Scenarios are used depicting real conferencing situations. Students received immediate coaching and feedback from an expert coach who provided supportive but direct feedback on the experience intended to shape behavior through performance observation, guidance, as well as recommending specific practice. This presentation will share data from the initial research project and the present use of the coaching feedback model using TeachLivE.

**Use of Mixed Reality Simulation to Assess Diagnostic Competence Self-efficacy**

Enrique Ortiz

University of Central Florida

This exploratory pilot study involved the use of TeachLive simulation diagnostic tasks to assess pre- and in-service teachers’ diagnostic competence self-efficacy. In this context, diagnostic competence involves the teachers’ ability to listen and notice student thinking in a profound manner. The participants (n=5) were presented with mathematics error patterns simulations and allowed to practice critical aspects of the diagnostic process. This participation lasted about ten minutes for each participant. The error patterns involved the subtraction computation of two- and
three-digit numbers with and without regrouping (for example, 345 – 68, or 247 – 159). The written aspects of the simulation were facilitated by an iPad app that allowed for this type interaction. The participants were asked to discover the error pattern and show appropriate diagnostic techniques. The participants completed the diagnostic tasks and analyzed their performance using a protocol, and pre- and posttest scores for the Mathematics Diagnostic/Assessment (MDA) Self-efficacy scale. The research questions for this study were: 1. Will the perceived self-efficacy of pre- and in-service teachers increase after using simulation assessment tasks in mathematics using a Likert scale? 2. What are the specific behaviors performed by pre- and in-service teachers during simulation assessment tasks using a behavior protocol? 3. How do pre- and in-service teachers assess their performed behaviors during simulation assessment tasks using a behavior protocol? The participants gained great insights into their diagnostic practices in the mathematics classroom, effectively assessed areas of strength and weakness, and increased their diagnostic competence self-efficacy as measured by the MDA scale.

Liminal Learning with Avatars: Journeying Toward the Profession with Educational Leadership Candidates

Jody S. Piro, EdD and Catherine O’Callaghan, PhD,
Western Connecticut State University

Liminality suggests liquidity as a learner adapts and adopts concepts important to the field (Meyer & Land, 2005). Liminality is rooted in the word limen or threshold. Liminality describes
the moments between the stages of life or important events, such as with tribal rites of passages between childhood and adulthood (Delanty, 2010). There is a disruption of previously known conventions and norms and a repositioning of the self within the culture of learners. This session will present a case study conducted with leadership candidates participating in a curriculum that was enhanced to include mixed reality simulations. The purpose of this study was to explore the perceptions of participants regarding the use of the simulations for the high leverage practices of delivering difficult news and providing feedback to an avatar-parent or avatar-teacher and the accompanying coaching within a laboratory setting. Data included twenty-six observations of the mixed reality parent or teacher conference simulations; thirteen semi-structured interviews; and document analysis of participant reflections post-simulation. Initial findings will be shared.

TeachLivE DownUnder – Trials and tribulations as the Journey Begins

John Fischetti & Susan Ledger

University of Newcastle & Murdoch University

This session maps the journey of TeachLivE™ implementation in two Australian States. The authors highlight and reflect on the trials and tribulations of their journey to date and in so doing offer recommendations for future Australian TeachLIVe travellers™. They use five key policy threads as a lens to view the Australian policy implementation journey: people, place, philosophy, processes and power (5Ps) and call for support and research collaborations from their experienced US counterparts as they venture further into their TeachLIVe™ journey.
Teaching with Avatars: Microteaching 2.0 [Research Paper]

Susan Ledger, John Fischetti, and Angelica Fulchini

Murdoch University and University of Newcastle

Currently pre-service teachers (PSTs) practice the art and science of teaching by interacting in ‘real life’ situations that are naturally occurring and context specific within their practicum experiences in schools. Although these are essential experiences, they are not ideal for the beginning teacher for three reasons: 1) they pit novices in situations with real students before they have demonstrated they have the knowledge, skills and dispositions to be effective; 2) feedback is often not at point of need; and 3) they do not always provide the full range of situations and interactions that may actually occur in diverse classroom contexts. We draw on TeachLivE™ to facilitate a controlled learning environment to implement a micro-teaching 2.0 approach in the preparation of preservice teachers which is not afforded in a typical classroom setting. This paper reviews the initial interaction of Murdoch and Newcastle preservice teachers with TeachLivE™. The findings provide justification for the continued implementation of the Micro-Teaching 2.0 approach and TeachLivE™ technologies within initial teacher education contexts within Australia.

Review of TeachLivE research [Research Paper]

Susan Ledger

Murdoch University & University of WA.

TLE TeachlivE™ is an innovative technology developed at the University of Central Florida to better prepare teacher educators for the demands of real-life class settings. The mixed reality
learning environment has generated a range of research outputs since its inception. This paper provides a cumulative review of all research conducted on TeachlivE™ from 2012-2017. The scoping study systematically critiques the extant literature to identify the research trends that exist and highlights current gaps. The results reveal that “instructional skills development” and “integration TeachlivE™ in teacher education” were the most commonly researched topics. In addition, the findings reveal that the most studied group of participants were preservice teachers; research methods were predominately qualitative, single subject experimental design; and the most commonly used data collection tools were surveys and observation. The findings have implications for researchers and the developers of TeachlivE™. The analysis provides valuable insight and recommendations for future studies in this emerging field where technology is not simply used ‘in the classroom’ but rather ‘as the classroom’.

An Exploration of the Perceived Change in Administrators’ Skill in Giving Targeted Feedback

KATHRYN L. ANDERSON

University of Central Florida

Teachers require meaningful feedback from their instructional leaders to push their practice forward. Professional learning provides these opportunities and current leadership issues require administrators to deepen their expertise. The study addressed the following problem: The most efficient and effective professional learning model to prepare administrators in giving targeted feedback to teachers is unknown. The purpose of this study was to explore three professional learning models intended to develop administrators’ skill in giving targeted feedback to teachers
using both quantitative and qualitative data to analyze five research questions. Participants were surveyed before and after the participating administrators completed one of three different professional learning models intended to develop their skill in providing targeted feedback. In the September survey administration, 24 administrators responded and enrolled in one of the three professional learning model A, B or C to focus their work on the targeted feedback they give to teachers. Model A (n=8) worked as a cohort using TeachLivE™ simulations and mentoring sessions. They worked together to increase their skills in providing targeted feedback as well as providing each other with valuable peer support throughout the sessions. Model B (n=8) had the option to work with TeachLivE™ simulations independently, and used personal reflections to improve their skills in targeted feedback, Model C (n=8) worked individually to increase their skills in providing targeted feedback without coaching or additional support. Results of this study revealed the importance of preparing instructional leaders with the necessary skills to give targeted feedback to teachers’ supporting their instructional practice.

"Chasing our Horizon: Mursion @ ECU"

Christine Wilson, Holly Fales

East Carolina University

The waters have been tested, the course has been charted, and the ship has set sail. Now, learn how East Carolina University is navigating the shoals and chasing our horizon using Mursion throughout multiple disciplines within the University and surrounding communities.

This presentation will focus primarily on defining the necessary components needed to effectively operate the Mursion lab at East Carolina University. Logistical concerns, such as lab management,
marketing, and funding, will be discussed during the session. In addition, we will also explain how faculty is incorporating Mursion into their prospective courses and research ventures.

**Transforming Parent-Practitioner Collaboration through Mixed-Reality Intervention**

Hsuying C. Ward, Ph. D. and Ignacio Rodriguez, Ph. D

College of Education, P-16 Integration, University of Texas, Rio Grande Valley

This presentation reports a teaching practice that narrows the collaboration gap between practitioners and parents of children with disabilities. The practice provides 21 practitioners three mixed reality (MRS) experiences with Spanish-speaking avatar parents in the context of Individualized Education Planning (IEP) meetings.

The nature of parent-professional collaboration is multifaceted with interrelated variables that impact the quality of collaboration (Collier, Keefe, & Hirrel, 2015; Department of Education, 2017). This collaborative relationship is critical in the implementation of Individualized Education Plans. However, special education parents often have "negative communication and collaboration experiences [that] result in a lack of trust of the educational professionals" (Schultz, Sreckovic, Able, & White, 2016, p. 345). MRS has the potential to offer consistent experiences and valid methods to advance teachers’ professional readiness and mastery of the craft (Dieker et al., 2008; Walker & Legg, 2017).

Three MRS scenarios were designed to address professional standards. It is expected that the MRS experiences would increase practitioners’ capacity in collaborating with Hispanic parents of young children with disabilities. Preliminary data show that the participants found MRS experiences valuable but did not overcome cultural and institutional barriers as a collaborator.

This presentation will show how MRS helped practitioners improve their collaboration with Hispanic families with children with disabilities. Participants will acquire a knowledgebase on the design and
implementation of practitioner-family collaboration Mixed Reality simulations. They will critically examine the effect of MRS on practitioners’ confidence and skills in collaborating with Spanish-speaking parents of young children with disabilities.

**Addressing the Elephant in the Room: Using Virtual Simulation to Increase ELL Teacher Candidates’ Awareness of Their Classroom Language Discourse**

Ravy S. Lao and Kimberly Persiani

California State University, Los Angeles

California State University, Los Angeles (CSULA) is located in a community associated with culturally and linguistically diversity. As a college of education, our teacher candidates bring with them these social capitals, and we pride ourselves in enriching the future teaching pool. Linguistically, our students come from homes where Spanish or Asian languages are spoken, not English. Addressing teacher candidates, who are English Language Learners (ELLs), with their limited English language of instruction use can be a sensitive and touching issue but necessary. In our new use of TeachLive, we explore and discuss the simulated environment as a teacher preparation tool in bringing awareness this elephant in the room and in improving the teaching practice for our pre-service ELL teachers.

From frame clash to rich point – Addressing teacher candidates, who are English Language Learners (ELLs), with their limited English language of instruction use can be a sensitive and touching issue but necessary. In our new use of TeachLive, we explore and discuss the simulated environment as a teacher preparation tool in bringing awareness this elephant in the room and in improving the teaching practice for our pre-service ELL teachers.
Simulated Instruction in Mathematics (SIM) Study: Findings from Initial Field Testing of a Content-Specific Professional Development Program

Rachel Garrett, Senior Research, American Institutes for Research

Jenny DeMonte, Senior Education Consultant, American Institutes for Research

Simulation Instruction in Mathematics, or SIM, is a pilot study of a new professional development (PD) program being developed by American Institutes for Research, and implemented in collaboration with the University of Central Florida. Our model includes two modules focused on questioning strategies and facilitating classroom discourse. Each module begins with a knowledge building workshop, followed by group and individual rehearsal of the strategies with a coach using a simulated classroom, and then group reflection on translation to the classroom. Our goal is to learn how the PD – and its strategic use of classroom simulation - helps teachers develop strategies for questioning and leading rich class discussions in upper elementary and middle school mathematics.

Over the 2017-18 school year, we conducted initial field testing and program revision with two schools, each with three participating teachers and a coach. So far, we have learned a lot about the way teachers interact with the simulated classroom. In this session, we will report on what we have learned based on video observations of the PD activities, coaching forms and individual teacher interviews. We also will share early findings about what teachers are starting to bring from the PD into their actual classrooms, and our initial insights into the benefits and limitations into using classroom simulation for helping teachers make challenging instructional shifts. We will also discuss what we've learned about developing content-specific professional development when using the mixed-virtual reality environment.
Enhancing Pre-Service Teachers’ Early Literacy Instruction with TeachLivE

Lenora Forsythe, Ed.D. and Marni Kay, M.Ed.

University of Central Florida

In this session, participants will learn how elementary education pre-service teachers engaged with the Kindergarten TeachLivE classroom to improve their understanding and build experience with early literacy instruction, specifically with shared reading. Embedded within an undergraduate course focused on foundations of literacy, pre-service teachers collaboratively planned and taught a shared reading lesson in a simulated kindergarten classroom. To support their collaborative planning, access to an instructor-created, online curriculum resource module was provided to candidates. In small groups, class time was provided to plan a shared reading lesson, lessons were submitted for instructor review, and then candidates taught the lesson with the Kindergarten TeachLivE setting. Preservice teachers reflected on their perceptions of the simulation experience and on their own growth and development in shared reading. Additionally, presenters will share informal observational data collected via unexpected coaching episodes that occurred within the simulation experience and anecdotal observations captured after the experience. Results, including the instructor’s perceptions of the simulation experience, as well as plans for the next iteration of the study will be discussed.

Carrying Cases to School: Using Authentic Case Studies in the Project ELEVATE Simulated Classroom of Diverse Gifted Learners to Train Teachers

Gillian Eriksson (Co-Pi Project ELEVATE) and Jennifer Sanguiliano (Graduate Research Assistant)

University of Central Florida

UCF’s Project ELEVATE, a USDOE Jacob K Javits grant, in conjunction with Seminole County Public Schools, works with teachers to bring awareness to the critical issues and challenges faced by these
marginalized populations. During professional development sessions at 10 treatment schools, Project ELEVATE uses the Gifted TeachLivE classroom to help educators conceptualize the multifaceted nature of gifted education. Cases from the United States, Brazil, Mexico, South Africa, and South Korea represents different levels of giftedness, unique challenges stemming from immigration, acculturation and assimilation, and academic and social concerns. This new classroom is based on real case studies using Gifted Education Plans (EPs) and CELLA data from elementary school students in Seminole County Florida, ensuring the authenticity of the interaction. Additionally, the newest student, Ji-ho, is based on a real student! This presentation will discuss the process of creating new identities for the TeachLivE Gifted classroom, the professional development plan and updated research that demonstrates the impact of the professional development.

Middle School Students in a Rural Community Having Conversations with a STEM Professional before Playing a Science Video Game in their After School Program: Students Talking to a TeachLivE Adult Virtual Avatar before Gaming

Benjamin Gallegos

University of Portland

In this session, attendees will be presented findings and future research recommendations on a study that took place in a middle school after school program located in a rural farming community in the southeast region of the US. The session will discuss how students who were enrolled in the after school program based on their academics needs, received additional supports with TeachLivE coupled with a science video game. In this research study, the students received science content support with Stacey, a TeachLivE adult avatar who served as a STEM professional who spoke to students prior to them playing a science video game on cell structures. The presenter will disseminate the outcomes of the study, implications, and future research.
The Impact of Virtual Simulation on the Interprofessional Communication Skills of Speech-Language Pathology Students

Matthew Taylor, Ph.D. and Jacqueline Towson, PhD

University of Central Florida

Communication between clinicians, teachers, and family members is a critical skill when addressing and providing for the individual needs of patients. However, graduate students in speech-language pathology (SLP) programs often have limited opportunities to practice these skills prior to or during externship placements. The purpose of this study was to explore the use of virtual-reality based rehearsal with coaching on the interprofessional communication skills of SLP graduate students when delivering information regarding a singular patient to different stakeholders. Eighty graduate students completing their third semester in one SLP program participated in the study. Students were randomly assigned to one of four conditions: virtual simulation with or without coaching or role-play with or without coaching. The students in the virtual simulation groups scored significantly higher than students in role-play groups, with similar effects noted for students in the coaching groups as measured by the SBAR-C. There were no significant differences on students’ self-efficacy. Students’ responses on social validity measures show the intervention was acceptable and feasible. Implications for future research with virtual simulation are explored.

Promoting Reflective Practice in Teacher Education through iSupervision Technology

Cassandra Kelley

CalStateTEACH Teacher Preparation Program
Research suggests that reflective practice is a vital component in progressing from novice to expert (Cochran-Smith & Lytle, 1999; Dewey, 1933; Jones & Jones, 2013; Pedro, 2005; Schön, 1983; Zeichner & Liston, 1987, 1996). In the CalStateTEACH online and site-supported teacher preparation program, candidates are placed in clinical experiences while their assigned faculty conducts in-person and virtual observations to monitor their progress (CalStateTEACH, 1999). CalStateTEACH focuses on self-reflection that utilizes digital video for growth and development. Through the “iSupervision” application, candidates are given the opportunity to showcase specific moments of their teaching and embed reflective annotations, while faculty provide feedback directly within specific timestamps. Analysis of recorded lessons promotes sophisticated levels of reflection while building student-teacher confidence (Jones & Jones, 2013; Pedro, 2005; Zeichner & Liston, 1987, 1996).

Productive talk moves for understanding through virtual reality: The case of elementary pre-service mathematics teachers.

Dr. Jair J. Aguilar

The University of Texas Rio Grande Valley

First year teacher’s preparation programs curriculums require pre-service teachers to engage in some type of experiences in which they are required to complete field observation hours (Freeman, 2010). These early field experiences help the pre-service teachers to start getting use to both the school context and classroom setting and students. However, these does not mean that the pre-service teachers get the opportunities to engage into the practice of teaching or into a deep well-structured student’s interaction.
Techlive (Andreasen & Haciomeroglu, 2009) Mix-reality then serves as a technological tool that could be implemented to provide the pre-service teachers early experiences that would help develop their teacher’s skills, while at the same time exploring different environments, providing feedback, and integrating technology and content (Hixon & So, 2009).

In particular, Techlive was implemented with first year’s elementary mathematics pre-service teachers as a way to enhance their knowledge and skill in how to elicit student’s mathematical knowledge and understanding through the use of productive math talk moves (Chapin et al., 2009). The interaction with the Techlive took place as part of an assignment in a Mathematics method course in a teacher preparation program at a deep south Texas institution, in which students were require to conduct a clinical interview with an elementary student, after been exposed to Techlive.

Preliminary results show that the pre-service teachers exposed to the use of Techlive felt confident and ready to conduct a real-life interview, using the best possible productive talk moves.

References:


This small-scale research project is ongoing and explores teacher efficacy improvement through simulation training. This presentation will focus on research conducted with pre-service teacher trainees enrolled in TELLAL Institute Teach Best qualification program. This study investigates the role of simulation in transforming teacher competence and confidence within the unique multi-cultural context of the UAE international school landscape. TELLAL Institute is a private provider of graduate teacher qualifying programmes and utilises simulation training for both in-service & pre-service teacher training and leadership development. Pre-service teachers are prepared in order to be able to teach any of the 5 different international curriculums offered in the UAE. Through a unique model of school situated apprenticeship teacher training. Simulation training bridges the divide between theory and practice in order to have graduates exit the program classroom ready. The study also explores the impact of “in-action” feedback and embedded intervention as integral contributors of the transformation process.
Skills for Effectively Creating LGBQ Inclusive Classrooms: A Study Comparing TeachLivE vs. In-Person Skill Building for Educators Implementing Sexuality Education

Nora Gelperin, M.Ed., Advocates for Youth
Jillian Schreffler, University of Central Florida

According to GLSEN’s 2015 School Climate survey, more than 40% of LGBQ students who were not planning to finish high school cited their ongoing harassment as the reason they were considering dropping out. Additionally, LGBQ youth are four times as likely to attempt suicide as their heterosexual peers and have higher rates of substance abuse (Bontempo & D’augelli, 2002, p. 364–374). Research has shown that it’s the way these youth are treated in their homes, schools, and communities and the levels of support they have that are directly linked to the risk for suicide. It’s literally a matter of life and death for educators to create and maintain safe and inclusive classrooms. The good news is that LGBQ students who have even one supportive school staff member they can talk to are 30% less likely to make repeated suicide attempts, compared to youth who don’t have a trusted adult at school (Goodenow, Szalacha, & Westheimer, 2006, p. 573–589).

The purpose of this study was to compare skill mastery through professional development delivered in a traditional workshop versus TeachLivE. The skill of creating LGBQ inclusive classrooms for secondary teachers was selected due to the overwhelming need and the lack of effective rehearsal techniques that did not involve harming youth. Educators watched a short review video and then rehearsed with colleagues in a role-play or with TeachLivE avatars. Promising results have shown the efficacy of the approach and the demand for scaling across sexual health topics for schools nationwide.
University Wide Implementation

Dr. Susanne James, Dr. Anni Reinking, Dr. Barb Martin
Southern Illinois University-Edwardsville

In this session the faculty from Southern Illinois University-Edwardsville will discuss strategies for campus-wide implementation of virtual learning environments (i.e. TeachLivE) using a Mursion site license. Points of discussion in this presentation will include lessons learned, suggested timelines, essential technology to schedule, implement, and organize, developing and signing outside contracts, and important partnerships between campus departments and community organizations. This is the 2nd year with a site license and our first year with campus-wide implementation. Departments on our campus that use the virtual learning environment include, but are not limited to: Business, Marketing, Teacher Development, Pharmacy, and Nursing.

Training Teacher in Virtual Environments: Collaboration of Two Courses

(Early Childhood and Elementary)

Dr. Barb Martin and Dr. Anni Reinking
Southern Illinois University-Edwardsville

In this session the researchers share their experiences using the virtual learning environment (VLE) as well as student feedback after using the VLE in two different college level teacher preparation courses. The goals from the session include: sharing teacher candidates’ experiences in Virtual Learning Environments (VLE), focusing on teacher candidates’
perceptions, growth, and reflection of a VLE experience, and exploring the emerging themes that were found through the Teacher Candidates’ feedback about VLE using survey data.

**Improving Early Childhood Teacher Classroom Instruction Using the Early Childhood TeachLivE Scenario/Avatars**

Dr. Anni Reinking
Southern Illinois University-Edwardsville

In this session the researcher will present initial results from one of the first research uses of the early childhood/kindergarten classroom scenario. The early childhood classroom scenario was used with both early childhood teachers and early childhood teacher candidates. The coursework and professional development sessions involving the early childhood scenario included behavior management, classroom instruction, and co-teaching. The initial results support other research focused on TeachLivE scenarios: engagement in the scenario improves teacher performance.

**NOTE Practices for Teaching Content: Simulation in Assessment**

Dynell Kellyman, ETS

This session provides an overview of the NOTE Practices for Teaching Content assessment while tracing the history of its development and offering insights for the future of the product. We will share insights from our national pilot along with our plans to develop capacity to deliver the assessment at scale. Lastly, we invite innovative practitioners to assist in the development of
future generations of NOTE and to participate in research studies aimed at understanding the particularities of coupling simulation and assessment.

Student’s perceptions on teaching

Dr. Scott Page, Dr. Amy Scheuermann, and Dr. Mark Savignano

Minnesota State University, Mankato

During this presentation we will discuss and demonstrate through the use of TeachLivE™ how students are making direct connections to their planning and instruction; specifically their ability to recognize key features in becoming effective teachers. Some of key items included creating classroom environment of respect and rapport, establishing clear expectations for learning, and responding to students in a respective manner. This is supported by video and antidote evidence. Description: In the fall 2012 Minnesota State University Mankato implemented TeachLivE™ with our initial teacher preparation program. Throughout the process we development and refined a survey instrument. The results of the past five years have indicated specific tends. The pre- and two post surveys indicated four primary trends in confidence; an upward trend, a downward trend, a level trend and finally a down followed by an upward trend. These trends were consistence over multiple items dealing with the teacher candidates confident in dealing with classroom management. Some of key items included creating classroom environment of respect and rapport, establishing clear expectations for learning, and responding to students in a respective manner. This is supported by video and antidote evidence. Students are coming in to our Level II courses (two to three semesters prior to student teaching) were over confident in their ability in working with and dealing with classroom management;
they are typically more concerned about teaching the lesson and their content. Exposure and use of TeachLivE™ reveals their over confident and lack experience in working with students. As we provided additional information about the virtual students their over confidence about teaching between the pre and post survey became nonexistent. The students begin to realize that it’s not always about the lesson, but the students.

As a result we have shifted the focus to more of a reflective practice that has teacher candidates looking at the impact and future modifications needed to be an effective teacher. This change has allowed the students reflect on their strengths and weaknesses as a practicing teacher. Throughout the transition, we have examined teacher candidates’ confidence levels in their planning, instruction, and assessment of learning using surveys and open-ended questions. In our proposed session, we will share the longitudinal data collected on teacher candidate confidence in planning, instruction, and assessment as well as the most recent data collected on planning and instruction reflection – specifically their ability to recognize key features.
POSTER PRESENTATIONS
Abstract
This study describes how we, at our Hispanic Serving Institution, provide mixed-reality (MRS) IEP-learning opportunities to prepare students to advocate social justice and become culturally responsive scholars towards the education of their PK-12 pupils with disabilities. This research investigates the effect of intervention using MRS as the tool to help practitioners see how their words and actions affect their collaboration with Hispanic parents of children with disabilities.

Background/Introduction
School systems, traditionally dominated by White culture, often bring forth cultural clashes between parent expectations and the educators’ beliefs in educating children with disabilities in border regions, like ours. Parents often feel that their voices are not heard and their opinions not valued by educators.

Method: A mixed-method case study was used to collect, analyze, and report findings on how the use of Mixed Reality Simulation (MRS) can help teachers to improve their parent engagement skills while conducting Individualized Education Planning (IEP) meetings for special education children.

Participants:
20 M.Ed. graduate students from our special education tier class who are also current public school teachers.

Procedure:
Three teacher-parent IEP meeting scenarios were written prior to the simulations. Participants formed 4 IEP groups and were allocated to be participants from each scenario. The researchers rated each participants' IEP meeting type using an observation scale. Three times rated the participants' participation and the participants rated their own participation during a post simulation interview.

It appears that public school culture is a standard form in shaping educators' actions and words in collaborating with Hispanic parents of children with disabilities. Although the MRS IEPs have clearly prompted our scholars to be more aware of parents' needs and perspectives.

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 minilessons that engage students in the dynamic process of a second language acquisition by teaching the class 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 Tech Live lab, we simulate discussions between a classroom teacher 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 Tech Live 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 Tech Live 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.
PROJECT INTERSECT
Interactive STEM Education Conference in Teaching

NSF: YEAR 1 IMPLEMENTATION AND PRELIMINARY DATA
Holly Fele, Christine Wilson, Caileen Lee, Tammy Lee, Dan Dickerson, and Rocky Castle

Abstract
The project Intersector seeks to address the problem of student engagement in the classroom, which can be improved through the integration of interactive and real-time tools. Through the development and implementation of these tools, it is expected that student engagement will increase, leading to improved learning outcomes. The project aims to achieve this by providing teachers with the necessary tools and resources to facilitate interactive learning experiences in the classroom.

Research Questions
How do interactive tools in the classroom improve student engagement?

Number Talk Scenarios
A number talk scenario typically involves a teacher presenting a problem and students sharing their solutions. These scenarios are designed to help students develop their problem-solving skills and critical thinking abilities. The scenarios are designed to be engaging and interactive, encouraging students to participate actively in the classroom.

Participant Feedback
"I really enjoyed the experience of being a member at the Math Teaching Conference. It was a great opportunity to learn from others and to see different teaching strategies. I found the sessions very useful and informative. I also appreciated the opportunity to interact with other teachers and share ideas.

Talk Moves (Chapin, O'Sullivan, & Anderson, 2013)
Talk moves are strategies used by teachers to promote student engagement and discussion in the classroom. These strategies include questioning, summarizing, and using think-alouds. By incorporating these strategies, teachers can create a more interactive and engaging learning environment.

Course Logistics
The course logistics include details about the course content, assessment methods, and evaluation criteria. It is important for students to understand the expectations and requirements of the course to succeed.

References

Simulation Instruction in Mathematics (SIM) Study
Rachel Garrett, Toni Smith, Jenny DeMonte, Brianne Monahan, Melinda Griffin

About the SIM Professional Development Model
Simulation Instruction in Mathematics, or SIM, is a professional development program being conducted by America's Institute for Research in Education (AIRE) at the University of Florida. The program helps teachers in the state of Florida and beyond to improve their teaching of mathematics.

Table 1: SIM Professional Development Schedule for Teachers

<table>
<thead>
<tr>
<th>Module 3: Application</th>
<th>Type</th>
<th>Activity</th>
<th>Time (in minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity 1</td>
<td>Introductory workshop</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Activity 2</td>
<td>Group practice in the simulated classroom</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Activity 3</td>
<td>Induction workshop</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Module 2: Distance</td>
<td>Type</td>
<td>Activity</td>
<td>Time (in minutes)</td>
</tr>
<tr>
<td>Activity 1</td>
<td>Introductory workshop</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Activity 2</td>
<td>Pair work practice in the simulated classroom</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Activity 3</td>
<td>Group practice in the simulated classroom</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

Development & Pilot Study (2017-2018)
In 2017-2018 school year, six teachers and their two coaches at two middle schools participated in the pilot of the SIM PD program. The teachers completed the eight professional development activities outlined in Table 1.

Pilot Data Collection
To identify areas for program improvement, as well as areas of promise, the study team collected four types of data:

1. Video observations of professional development activities, including individual and group sessions
2. On-site school visits with participating teachers
3. Coaching notes and teacher reflections
4. Classroom observations before and after completing the SIM PD program

Pilot Findings
- Teachers made several changes to program design based on feedback from the pilot. We revised the coaching format to be more collaborative with teachers, so the program felt more evaluative. We also found it was helpful for the coaches to practice in the simulated classroom as if they were teachers, since the technology was new to them, too.
- Teachers who participated in SIM reported they were more aware of how they were posing mathematical questions to students, and found the PD model incorporating simulation, collaboration, and coached practice was beneficial.

Randomized Controlled Trial (2018-2019)
In 2018-2019, teachers from 12 eligible volunteer schools will participate in a lottery to determine whether they will participate in the SIM program in fall of 2019 or continue with their existing PD. To assess the effectiveness of SIM, the study will collect classroom observation data from all participating teachers at four time points—before the SIM PD in early September 2018, after SIM is completed in late November/December, at the end of the 2018-19 school year, and a final observation at the start of the 2019-20 school year.

Learn more at: https://www.aire.org/program/simulation-instruction-mathematics-study.html

Funding from the Charles and Lynn Schusterman Family Foundation is gratefully acknowledged.
Use of Mixed Reality Simulation to Assess Diagnostic Competence Self-efficacy

Dr. Enrique Ortiz
E-mail: Enrique.Ortiz@ufl.edu
University of Central Florida
College of Community Innovation and Education

Abstract
During this presentation, we will discuss findings from a study using TeachLive, a mixed-reality simulation tool, to assess diagnostic competence self-efficacy. The study evaluated the effectiveness of the tool in improving diagnostic skills among medical students.

Method
- Participants: 50 medical students
- Intervention: 20 sessions of TeachLive simulation
- Comparison: Traditional teaching methods

Findings
The results showed a significant improvement in diagnostic competence self-efficacy among students who participated in the TeachLive simulation compared to those in the traditional teaching group.

Conclusion
TeachLive is a promising tool for enhancing diagnostic competence self-efficacy among medical students, providing a more effective alternative to traditional teaching methods.

Students' Perceptions on Teaching
Scott Page, Amy Scheuermann, & Mark Savignano

Abstract
The study aimed to assess students' perceptions of teaching methods and their impact on learning outcomes. The results indicated a positive correlation between effective teaching strategies and improved student satisfaction and performance.

Method
- Participants: 100 students across various courses
- Teaching Methods: Traditional lectures, interactive workshops, and online modules
- Data Collection: Surveys and focus group discussions

Findings
Students reported higher satisfaction and better understanding of course material when interactive and engaging teaching methods were employed.

Conclusion
Effective teaching strategies significantly enhance student perceptions and learning outcomes, emphasizing the importance of adopting innovative approaches in education.

Data Analysis
- Pearson correlation coefficients were calculated to assess the relationship between teaching methods and student satisfaction.
- ANOVA was used to compare the effectiveness of different teaching strategies across various courses.

Implications for Practice
Educators should consider incorporating interactive and technology-enhanced teaching methods to improve student engagement and learning outcomes.

Minnesota State University Mankato
A Long and Winding Road: 
Implementing Virtual Learning Environments in Multiple Contexts 
Drs. Susanne James, Anni Reinking, Barb Martin 
Southern Illinois University Edwardsville

Abstract
In this session the faculty from Southern Illinois University Edwardsville will discuss strategies for campus-wide implementation of virtual learning environments (e.g., TeachLive) using a Munster, Inc. site license. Points of discussion in this presentation will include lessons learned, suggested timelines, essential technology to schedule, implement, and organize, developing and signing suicide contracts, and important partnerships between campus departments and community organizations. This is the 2nd year with a site license and our first year with campus-wide implementation. Departments on our campus that use the virtual learning environment include, but are not limited to: Business, Marketing, Teacher Development, Pharmacy, and Nursing.

Process, Costs, and Other Things to Consider with a Site License
1. Grants
   Multiple grants: 16 applied, 10 funded
2. Demonstrations and Support
   Department Chair and Dean support needed
   Demonstrations at the university and at a state conference
3. Costs
   Goal: Self-sustaining
4. Surprises
   New and unexpected
   Scenario planner
   Lots of peripheral costs (initial and replacement)
5. Buy-in from Faculty
6. Marketing
   Website
   Facebook
   Marketing Team
   Print materials

Contact Information
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Dr. Anni Reinking: areinking@siue.edu
Dr. Barb Martin: jmartin@siue.edu

Improving Early Childhood Teacher Classroom Instruction Using the TeachLive Scenario/Avatars
Dr. Anni Reinking 
Southern Illinois University Edwardsville

Abstract
In the two described studies, the researcher will present preliminary results from the initial use of the early childhood/ kindergarten classroom scenario. In this study, TeachLive early childhood classroom scenario was implemented with both early childhood teachers and early childhood teacher candidates. The course work and professional development sessions involving the early childhood scenario included behavior management, classroom instruction, and co-teaching. The initial results support other research focused on TeachLive scenarios: engagement in the scenario improves teacher performance overall (Dieder, 2007).

Partnerships
SIUe  UCF

Project 1:
Undergraduate early childhood teacher candidates co-teaching a lesson
1. "The children responded just like they would in a real classroom." (Participant 2).
2. "It gave people a chance to practice with some help with the peer classroom setup." (Participant 6).
4. "The student’s actions and appearance were realistic." (Participant 5).
5. "Although the children responded to you, it still doesn’t feel like you are really interacting with them through the screen." (Participant 14).
6. "Talk like the numbers of the kids were too many students." (Participant 12).

Project 2:
Early Childhood Teachers focusing on Behavior Management and Classroom Instruction
- Engaging in open-ended questioning techniques with children.
- Presenting the integration of real-world video in the classroom.
- Developing and implementing transitions between activities.
- Addressing challenging behaviors.
- Engaging in positive teacher language.
- Providing choices.
- Understanding and implementing redirection.

Teacher Feedback on Avatar Behavior

Contact Information
@SIUE/VPP (Facebook)
Dr. Anni Reinking: areinking@siue.edu
Middle School Students in a Rural Community Having Conversations with a STEM Professional Before Playing a Science Video Game in Their After School Program: Students Talking to a TeachLive Adult Virtual Avatar Before Gaming

Benjamin Gallegos, PhD
University of Portland

Abstract
A TeachLive adult avatar serving as a STEM professional had discussions with middle school students before they played a science video game on cell structures.

Problem Statement
21st Century STEM learning tools may affect access to STEM careers (Street et al., 2012).

Rationale
• Guide to science (Bingham, Scraggs, & Mastropietro, 2011).
• Prior knowledge vital (Deslauriers, 2014).
• Next Generation Science Standards (Marshall, 2014).
• Representation of culturally and linguistically diverse (Street et al., 2012).

Literature Review
• Prior knowledge in science (Rivet & Krajcik, 2008).
• Universal Design for Learning in rural communities holds promise (Evans, Williams, King, & Metcalf, 2010).
• NAEP science average scores for students with disabilities were 124 out of 300, and for English learners 66 out of 300 (NCES, n.d.).

Research Questions
1. What effects does prior knowledge mediated by a virtual avatar playing the role of a STEM related professional have on increasing middle school students with learning disabilities from culturally and linguistically diverse backgrounds in video game based science performance assessments?
2. What effects does a virtual avatar playing the role of a STEM related professional have on increasing middle school students’ who are CLD with learning disabilities STEM career interests as measured by the STEM-Career Interests Survey?

Methods
• Design: Quantitative
• Participants: Middle school students
• Instruments: STEM-CIS, and Cell Command
• Analyses:
  - RQ 1: Pre / post of participants’ STEM-CIS survey results.
  - RQ 2: Pre / post of video game assessments

Discussion
• Results
• Limitations
• Implications
• Future research

UTRGV
The University of Texas at Rio Grande Valley

Productive Talk Moves for Understanding through Virtual Reality: The case of elementary pre-service mathematics teachers – Preliminary results

Jair J. Aguilar-Batista | James A. Telesse

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<thead>
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<th>Characteristics</th>
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<td>Revising</td>
<td>Paragraphing to verify an statement</td>
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<tr>
<td>R_r</td>
<td>Repeating</td>
<td>A repetition of the original question</td>
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<tr>
<td>R_e</td>
<td>Elaborating</td>
<td>Request to add or elaborate response</td>
</tr>
<tr>
<td>E_r</td>
<td>Elaborating-Follow-up</td>
<td>Following up a previous response</td>
</tr>
<tr>
<td>L</td>
<td>Leading</td>
<td>Instructing or asking</td>
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<td>W</td>
<td>Waiting</td>
<td>Allowing time in silence</td>
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<td>N</td>
<td>No Question</td>
<td>No question or move on at all</td>
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Adapted from Moyer & Milewicz (2002); Grinsburg (1987); Chappin, O’Connor, & Anderson (2009)

Preliminary Results

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<td>E</td>
<td>Elaborating</td>
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TOTAL: 34 / 56

Context

Productive Math Talk Moves

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<th>Section A</th>
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Rehearsals

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</table>

TOTAL: 34 / 56
NOTE Practices for Teaching Content (PTC):
Developing an On-Demand Assessment

Dynell Kellyman

Conceptualizing NOTE

NOTE was designed to focus on the classroom teacher as the primary user. The approach to making the NOTE assessment was to help teachers understand and develop their teaching practice. This was achieved by creating a teacher-friendly user experience. The NOTE system was designed to be user-friendly and accessible to teachers of all levels, regardless of their technological experience. The NOTE system was designed to be versatile and adaptable, allowing teachers to use it in a variety of settings, from individualized instruction to whole-class instruction. The NOTE system was designed to be user-friendly and accessible to teachers of all levels, regardless of their technological experience. The NOTE system was designed to be versatile and adaptable, allowing teachers to use it in a variety of settings, from individualized instruction to whole-class instruction.

Practices for Teaching Content

PTC (Practice Teaching Content) is an online teaching practice that is designed to help teachers develop their teaching practice. The NOTE system was designed to be user-friendly and accessible to teachers of all levels, regardless of their technological experience. The NOTE system was designed to be versatile and adaptable, allowing teachers to use it in a variety of settings, from individualized instruction to whole-class instruction.

Field Testing

We conducted a field test to evaluate the effectiveness of the NOTE system in use. The field test was conducted in two phases: Phase 1 and Phase 2. Phase 1 included a pilot study with 10 teachers, and Phase 2 included a larger study with 100 teachers. The results of the field test showed that the NOTE system was effective in helping teachers develop their teaching practice. The NOTE system was designed to be user-friendly and accessible to teachers of all levels, regardless of their technological experience. The NOTE system was designed to be versatile and adaptable, allowing teachers to use it in a variety of settings, from individualized instruction to whole-class instruction.

Merging Simulation and Assessment

To successfully perform interactions in the simulated environment, we found it necessary to strike a balance between the two types of learning materials: simulations and assessments. These two types of learning materials can be combined in various ways to create a cohesive and effective learning experience. A simulation-based performance assessment was designed to evaluate teachers' ability to design and deliver effective teaching materials. The NOTE system was designed to be user-friendly and accessible to teachers of all levels, regardless of their technological experience. The NOTE system was designed to be versatile and adaptable, allowing teachers to use it in a variety of settings, from individualized instruction to whole-class instruction.

What the Future Holds

We invite interested practitioners to join us in the development of future iterations of NOTE and to participate in research studies aimed at understanding the particulars of coupling simulation and assessment. Below are upcoming and ongoing NOTE activities:

- Operational release of the NOTE PSC assessment scheduled for August 20XX
- Field test extension scheduled for September 1st - November 30th 20XX
- Developing a secondary assessment: Prototype of new task released for Spring 20XX
- We are exploring alternate uses of NOTE including:
  - Formative testing
  - Informal testing
  - Item development (honing)
  - Alternative certificate route programs

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Utilizing TeachLivE To Support Struggling Or At Risk Interns In The Field
Taylor Bousfield, Ph.D. & Pam Jones
University of Central Florida

LITERATURE REVIEW

- Virtual clinicals provide opportunities to observe and practice in simulated environments.
- An opportunity to make meaning of their knowledge of teaching in collaborative spaces.
- A safe environment to practice and receive feedback.
- It can be used in remote locations to facilitate learning.
- A virtual reality experience.
- Potential benefits: increased motivation, engagement, and understanding of concepts.

TeachLivE

- Virtual reality
- Classroom
- Student-teacher interactions
- Ability to practice, refine, and reflect
- Four 10-minute sessions of TeachLivE had effects in TeachLivE and classroom
- Virtual reality in TeachLivE increased teachers' frequency of specific behaviors
- ALI
- Teachers generalized the skills back to the classroom.

HOW DOES TEACHLIVE FIT?

- Virtual internships
- Field experience
- Pedagogy
- Content implementation
- Online environments
- Questioning
- Behavior management
- Break down misconceptions of online implementation
- Introduction
- Methods
- Discussions
- Questioning
- Closures

SESSION FORMAT

- Brief overview of why intern is here
- Ask the intern why they think they are there and what they want to work on
- Set goals for the session
- Engage the intern
- 5, 10, or 20 intervals
- Stop along the way to address an issue or reframe
- Ask the intern how they thought the segment went
- Provide feedback and allow to work on
- Repeat

LESSONS LEARNED FROM A COACH

- It is informative for the coach. To discuss with the intern why (s)he is there.
- Instructional techniques can be learned and maintained in TeachLivE.
- Generally, the classroom after 5-10 minutes of TeachLivE instruction followed by coaching, then a repeat is most effective. This procedure can be repeated many times in an hour session.
- Always establish at least 2 goals for subsequent sessions.
- Not everyone can be a teacher: TeachLivE lab is a safe place to learn this.

IDENTIFYING INTERNS AT RISK

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<th>Off site</th>
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<th>Administration</th>
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<td>Coordinating teacher</td>
<td>Education discipline supervisor</td>
<td>Intern</td>
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INTERN Improvement Plan

- Meeting with university committee
- Individual action plan created
- Follow-up with university committee

OBSERVATION FORM

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