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Lunetta M. Williams
University of North Florida

Katrina W. Hall
University of North Florida

Nicholas Eastham
University of North Florida

Wanda B. Hedrick
University of North Florida

Danielle Boller

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Providing Preservice and Inservice Teachers with Virtual Field Experiences Using Interactive Videoconferencing

Lunetta M. Williams, Katrina W. Hall, Nicholas Eastham, Wanda B. Hedrick, and Danielle Boller

As literacy professors, naturally we support providing high quality literacy field experiences to preservice and inservice teachers in our university courses. Field experiences can increase preservice and inservice teachers' abilities to apply class content to the real world, awareness of diverse backgrounds and needs of students, and cooperative teaching skills (Johnson, Maring, Doty, & Fickle, 2006). Most importantly, the virtual field experiences we describe in this article allowed students enrolled in a reading practicum course to embed technology into lesson plans, preparing them to teach in a digital age (Larson, 2008). Additionally, field experiences at a distant site can cause hardships, particularly if the preservice or inservice teachers have a class at another site immediately before or after the session. A virtual field experience such as this can alleviate some of the hardships associated with traveling to schools located some distance from the university, providing instructional benefits to the elementary students attending those schools. While not always true, many universities are not located in areas convenient to schools serving low-income neighborhoods.

The virtual field experiences allowed the preservice and inservice teachers and the professor to be in one location so that the professor could monitor and coach as necessary. Debriefing and reflection could occur immediately after tutoring. Further, each preservice and inservice teacher's session was recorded so that the professor could view the sessions at a later time and provide thorough feedback. This article provides information on implementing virtual field experiences for preservice and inservice teachers so that they can offer individualized instruction to elementary students.

Theoretical Framework

Our theoretical framework draws heavily on the ideas of John Dewey and Lev Vygotsky with regard to providing learning events that include social interaction, scaffolding, and mentoring for students at all levels, from elementary to graduate school. Dewey believed that teachers should plan learning experiences that are based on students' interests and their experience (Tanner, 1997). Similarly, Vygotsky noted that teachers should plan lessons that are challenging and will stretch students' learning and competence, asserting that interactive situations allow students to "stretch and grow mentally" (Mooney, 2000, p. 91). Specifically, Vygotsky highlighted the importance of social interaction and problem solving with adults or with more capable peers on cognitive learning. Connecting this with virtual experiences, researchers have found that the "scaffolding or mediated learning from those more knowledgeable is important in helping these preservice teachers achieve these cognitive understandings and is an essential component of the cybermentoring learning experience" (Johnson, et al., 2006, p. 60).

In our project, Vygotsky's theories were also evidenced through the preservice and inservice teachers' learning. The

professor was onsite with the teachers and was not only able to help the teachers plan, she also coached during the sessions, scaffolded their teaching, and provided immediate feedback. The preservice and inservice teachers were able to provide suggestions and feedback to each other during their class sessions, which provided the social interaction that Vygotsky noted was necessary for deep learning. As such, the teachers were able to develop their own competency in providing literacy instruction to their students in a safe and nurturing environment.

Background

In our review of the literature, we found that videoconferencing has had a positive impact on students' motivation for reading, which aligns with Vygotsky's idea of social interaction (Mooney, 2000). Houge and Geier (2009) studied the impact of videoconferencing on struggling readers. A main finding indicated that the social nature of tutoring offered an atmosphere that prompted the students to be active learners and motivated them to want to participate during tutoring sessions.

In the remainder of this section, we share previous studies that have used virtual field experiences with preservice and inservice teachers, particularly focusing on the technology set up and instructional framework used during sessions. Kent and Simpson (2010) used interactive videoconferencing (IVC) with preservice teachers participating in interactive field experiences. Candidates met in an auditorium to observe an elementary classroom with a camera positioned so that they could see and hear the classroom teacher and elementary students during regular classroom instruction. In order to further bridge theory and practice, the preservice teachers purposefully observed during IVC, completed guided reflections, and discussed the lesson with the university professor and classroom teacher.

Johnson et al. (2006) focused on cybermentoring collaborations using high-end video conferencing. Two preservice teachers were paired with a first grader and used video conferencing as well as a tutorial guide to increase the student's reading fluency. Also focusing on oral reading fluency, Vasquez, Forbush, Mason, Lockwood, and Gleed (2011) used Adobe Connect Internet Protocol Video software to allow undergraduate college tutors and elementary students to see one another and practice reading. Real-time communication and document sharing as well as the ability to write on documents digitally occurred within the virtual tutoring room. During each session, tutors established rapport by discussing average words read daily at home, assessed oral reading fluency using Dynamic Indicators of Basic Early Literacy Skills (DIBELS), provided reading instruction at the child's reading level, completed Corrective Reading program activities, and conducted comprehension checks.

In 2007, Houge, Peyton, Geier and Petrie found that the use of webcam technology with preservice teachers paired with adolescent readers did not sacrifice the integrity of regular reading and writing tutoring sessions. In later studies, the researchers continued their exploration of one-to-one literacy instruction using webcamera technology (Houge & Geier, 2009; Houge, Geier, & Peyton, 2008). Preservice teachers delivered literacy instruction to adolescent participants in their home or school settings using videoconferencing. During each session, pairs used two copies of the same contemporary Young Adult Literature, and the instructional framework consisted of fluency and vocabulary instruction, guided reading with direct and explicit comprehension instruction, writing activities, and read-alouds.

Our project differed from the aforementioned studies in a number of ways. First, we used a videoconferencing application, Blackboard Collaborate, during the virtual field experiences. Second, we encouraged the preservice and inservice teachers to provide an informal atmosphere during sessions by being more of a book buddy who facilitated discussion and deeper understanding of text than a tutor who followed a scripted program. Last, nonfiction e-books were used in each session.

Context

In this section, we discuss our project participants, implementation of the virtual field experiences, and the instructional framework used during sessions.

Participants.

There were two sets of participants involved in this project: the university students and the elementary students. The 10 university participants were enrolled in a reading practicum course and were practicing full-time classroom teachers (inservice teachers) or preservice teachers. Prior to enrolling in this course, the preservice teachers had recently completed a Bachelor's degree in elementary education, which included 12 credit hours of literacy coursework.

The elementary school participants included 10 students in third through fifth grade who attended an urban, public charter school with a free and reduced lunch population of 87%. Students were selected for the project based on the following criteria: 1) regular attendance in the after school program, 2) knowledge that the student's parents typically picked him or her up from the program later in the day, and 3) the classroom teacher's judgment that the student was a strong reader. Because the sessions took place in the late afternoon, during the university's class meeting, we needed students who would be reliably present from week to week. Our choice to select students who were considered strong readers was because our primary goal was to test the functionality of the technology. It would have been too difficult to work with struggling readers while working out the technology application. Since the preservice and inservice teachers were completing their requirements for a reading endorsement, they had already gained extensive experience with struggling readers. As such, this course could in part focus on advancing the reading skills of the strong readers, giving the preservice and inservice teachers a broader range of experience while mastering the use of the technology.

Sessions.

The first session was conducted face-to-face at the charter school to allow each preservice or inservice teacher to meet the randomly assigned elementary student. During this visit, each determined the student's instructional level when reading informational text in the Basic Reading Inventory (Johns, 2012), and discovered nonfiction topics for the student, based on interests reported in a reading interest survey (Johns & Lenski, 2012). The remaining sessions were each 45 minutes in length and conducted online using an interactive videoconferencing program, Blackboard Collaborate (referred to as Collaborate in the remainder of the article), which is discussed in the next section. In the elementary school's computer lab, the students used microphone headsets and webcams to videoconference about e-books with the preservice and inservice teachers, who used the same technology in the university computer lab.

Videoconferencing Technology.

We used Collaborate, a browser-based system that allows university students and instructors to meet and collaborate with a web camera and microphone. We explored the option of using other videoconferencing applications for the project, including Skype and OoVoo. Those applications would have required creating user accounts for all participants, and lacked several tools available in Collaborate, including a text chat area, an interactive whiteboard, application sharing and website sharing. Users can meet in the main room of a Collaborate session, or move to break out rooms in small, assigned groups. Collaborate is integrated with the Blackboard Learning Management System, where the preservice and inservice teachers had existing accounts. Activity in the main room can be recorded for asynchronous delivery. We opted not to use every feature for various reasons discussed below.

For safety and logistical reasons, we opted not to use the website sharing tool and the application sharing tool. While instructors can take participants to a website by entering a URL in the web sharing tool, once the participants arrive at the site, the instructor has no control over what they do. Participants are able to click on links within the site, or leave the site altogether. This made the option of sharing existing e-books available on a number of websites impractical. The application sharing tool could have been used to deliver the book content, but the tool required more bandwidth than was available for a satisfactory experience.

The Collaborate Interactive Whiteboard seemed to be the best feature available for the delivery of content because it allowed us to show pages of e-books and check for understanding. Pages could be marked up with shapes, text or the freeform drawing tool.

On several occasions, elementary students were not able to attend their reading sessions. In these cases, the preservice and inservice teachers who had absent buddies were able to unobtrusively join another reading session as an observer, and later provide constructive feedback to the peer they joined.

The participating university professor was able to effectively assess and assist with lesson adjustment by watching individual session recordings, which included all video, audio and text interactions, as well as the PowerPoint screen mark ups created during the sessions. The preservice and inservice teachers benefited from this individualized feedback which may not have been possible in a larger, face to face group setting. Acting on the feedback ultimately resulted in richer reading experiences for the elementary students.

Logistical Considerations.

In order to make sure that there was enough bandwidth at both sites to conduct multiple Collaborate sessions synchronously, we conducted a practice session. Several adults were in the university and charter school computer labs to turn on computers, plug in web cameras and headsets, and practice using Collaborate. During the initial test session, we discovered that some of the webcams we had were not compatible with Collaborate, so we had to purchase a set of cameras that we knew would work. The elementary school's bandwidth nearly reached the maximum amount, so we determined that only 10 Collaborate sessions could occur at the same time. We also found that some web browsers worked more smoothly with Collaborate. Browser updates either improved or diminished Collaborate functionality, so it was useful to launch Collaborate prior to the sessions to make sure all the features worked properly. If one browser did not work, invariably, another could be used.

Our next step was introducing the preservice and inservice teachers enrolled in the practicum to Collaborate, as only one student had previous, limited exposure to it. One of the coauthors whose specialty is educational technology provided an introductory session to Collaborate, and some of this information is provided in the next section of the article. Another coauthor presented a PowerPoint displaying an example of a lesson that could be completed during a tutoring session. Using information from both sessions, the professor paired the preservice and inservice teachers and let them role-play as tutor and tutee to practice for future sessions.

Initiating a Collaborate Session.

Prior to initiating a Collaborate session, we made sure that the computers were powered on, both the microphone headset and webcam were plugged in, and that all equipment was functioning properly. Once the physical equipment was set up, preservice and inservice teachers followed a set of procedures to enter Collaborate and begin the session. As session moderators, the preservice and inservice teachers would be in control of all content and accessibility of features, but they first needed to open the computer's web browser and log in to their course Blackboard site. From there, they selected the Collaborate Sessions tab from the left side menu and clicked on their previously assigned Collaborate session (e.g., Student 4). If the computer's Java application was not current, the computer prompted them to update it before running the program. Once Java was operating correctly, Collaborate opened and prompted them to select their desired Internet speed. In our case, they selected "Local Area Network." After officially entering the session as the moderator, they uploaded their slide presentation containing

the e-book and activities, clicked the "Load Content" icon near the top of the window and selected their document from the hard drive. Once they enabled audio and video permissions for their child, they were ready to begin the lesson. These steps were necessary for every new Collaborate session.

Entering a Collaborate session as a participant followed nearly the same procedures but rather than logging in through Blackboard, the child clicked a hyperlink that automatically started the Collaborate application. Once Collaborate was open, the student would not be able to interact with the features until their university monitor gave them permission. It is important to note that both participants had to go into the Collaborate settings menu and ensure that the headset microphone was selected as the audio input before initiating communication. Often the computer would automatically set the webcam's microphone as the default audio input, which we learned would lead to problems with background noise.

Instructional Framework for Sessions.

In response to the recent state endorsement of Common Core State Standards (CCSS) we offered the elementary students a selection of high-interest, nonfiction e-books and focused lessons on the expository reading skills described in the CCSS for Reading. While the sessions involved reading strategies that will be further discussed, the primary goal was for the participants to spend a majority of the allotted time reading and engaging in authentic discussions about informational texts (Allington, 2013). Our goal was for the student to view the preservice and inservice teacher as a book buddy or fellow reader rather than a teacher or tutor, which created a more relaxed atmosphere where conversation flowed naturally. Our choice to promote this type of learning environment is supported by findings from previous book club studies which reported positive effects on students' reading attitudes (Whittingham & Huffman, 2009) and critical thinking abilities (Moreillon, Hunt, & Ewing, 2009).

Taking the student's assessment data and e-book selection into account, each preservice and inservice teacher selected before, during, and after reading strategies to use during sessions. They were encouraged to select one strategy or method for each section so as to not disrupt the continuity of the reading experience. The instructional framework can be found in Figure 1.

Figure 1. Instructional Framework

Lesson Plan			
Student Name			
Instructional Reading Level			
Area(s) of need based on BRI data			
Text Selected by Student	Title	Author	Reading Level
Description			
Before			Source:
During			Source:
After			Source:
Three book choices for next session		Title	Author

Examples of some activities included graphic organizers to learn about new vocabulary, higher-order questions, content-related videos, and partially completed diagrams. A particularly effective strategy was using an anticipation guide to check understanding before and after reading (see Figure 2).

Figure 2. Screenshot of Anticipation Guide

What do you know?		
Question	Before Reading	After Reading
There are animals who don't have eyes.	TRUE I'm not sure FALSE	TRUE I'm not sure FALSE
Each cave has 4 zones.	TRUE I'm not sure FALSE	TRUE I'm not sure FALSE
Adaptation means that the animal never changes.	TRUE I'm not sure FALSE	TRUE I'm not sure FALSE
Some fish have vibration sensors on their bodies.	TRUE I'm not sure FALSE	TRUE I'm not sure FALSE

The preservice and inservice teachers selected an e-book for the first session based on student responses to a reading interest survey. (E-book resources are provided in the Appendix.) At the conclusion of the remaining sessions,

students were given a choice of three nonfiction e-books (tailored to the individual's instructional reading level and reading interests) to read the following week. We found the most compatible digital format to use with Collaborate to be PowerPoint presentations. Therefore, the preservice and inservice teachers imported their e-book selections into PowerPoint as slide presentations, placing one page on each slide. (A photograph of a Collaborate session can be found in Figure 3.) Using this format allowed them to easily add in blank slides at strategic points throughout the book for their before, during, and after reading strategies. Additionally, for the first session, the preservice and inservice teachers inserted a few slides at the start of the lesson to give the students a brief orientation to the Collaborate interactive tools. After completing their PowerPoints, the preservice and inservice teachers shared their presentations on the university's Sky Drive with the professor, who could provide feedback on the lesson design prior to the live session.

Figure 3. Photo of Collaborate Session (Photo courtesy of Tiger Academy—permission form received by The Reading Professor.)

This instructional framework not only allowed the preservice and inservice teachers to model effective reading of nonfiction texts and overall enthusiasm for reading, it gave them hands-on experience with more pedagogical skills such as planning and executing lessons, utilizing technology for literacy purposes, and using assessment data to inform instruction.

Successes

Based on the feedback from the elementary students and the preservice and inservice teachers, the virtual experiences were successful. Both groups liked the e-book format so that they could draw or highlight sections of the text. They also enjoyed seeing the book and being able to make eye contact with their partners at the same time. Perhaps because it was a novel experience, the elementary students remained engaged and focused, even when there were technical glitches or problems. Finally, the preservice and inservice teachers liked learning a new technology that they could use in their current and future classrooms.

Future Considerations

In this section, we discuss some of the challenges of implementing videoconferencing as well as potential solutions. First, we noted that the elementary students' keyboarding skills varied, and struggling students took longer to complete typed responses, which affected the pacing of the lesson. More time was spent searching for and typing letters than reading, discussing, and thinking about text. An informal assessment of the elementary students' keyboarding skills might be conducted during the first session to determine if accommodations are needed such as dictating answers and limiting activities that require the young students to type.

The teachers mentioned that some students seemed more interested in adjusting the camera than on reading. In most cases, this adjusting was prompted by the cameras sliding on the monitor. The students felt that they had to adjust the camera lens to keep their image from being off-kilter. During the last session, we responded to this distraction by limiting the use of video to a brief hello in the beginning and good-bye at the end. The preservice and inservice teachers provided mixed feedback on this final session, however. While some said that their students seemed more focused on reading, others reported a decrease in their own engagement because they could not see the students, which limited their ability to view and interpret their nonverbal behaviors. We wondered if the students' increased focus on reading was a result of eliminating video distractions, which research has shown can cause a split attention effect, ultimately resulting in increased cognitive load and less learning (Mayer & Moreno, 1998). In addition, we wondered if the fidelity offered by the small video screen was sufficient for the teachers to reliably and consistently interpret the students' understanding of the reading. As such, video use might be an optional tool, based on individual preferences.

Finally, some preservice and inservice teachers felt rushed to discuss an e-book and implement before, during, and after reading strategies in 45-minutes. Shorter e-books or articles from websites such as newsela.com might assist in providing a balance between reading time, discussion, and the use of reading strategies.

Final Thoughts

The virtual field experiences allowed preservice and inservice teachers to receive immediate feedback from the professor and offer individualized instruction with elementary students who attend a school in a challenged area of poverty located some distance from the university. The social interactions during the individualized instruction provided the opportunity for the child and preservice or inservice teacher to personally connect and further engage in text (Coffey, 2012; Day & Kroon, 2010; Houge & Geier, 2009). Additionally, the virtual field experiences allowed the preservice and inservice teachers to move beyond the notion of using technology for free time or centers (Larson, 2008) and integrate technology in instruction.

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Appendix

Resources for E-books

<http://www.wegivebooks.org>

<http://www.amazon.com/kindle-ebooks/>

<http://magickeys.com>

<http://freekidsbooks.org>

<http://oxfordowl.co.uk>

<http://epubbud.com>

<http://mycapstonelibrary.com/login/index.html>

<http://store.scholastic.com/microsite/storia/about>

Dr. Lunetta Williams, Associate Professor of Literacy, was an elementary classroom teacher and returned to graduate school to study effective instruction for struggling readers. Her overarching research interest is minimizing the reading achievement gap among economically disadvantaged and economically advantaged children. Research areas include reading motivation, independent reading time, and children's book selections. She has written book chapters as well as articles in journals such as *Journal of Educational Research*, *Reading Psychology*, *The Reading Teacher*, *Journal of Language and Literacy Education*, and *Childhood Education*.

Dr. Katrina W. Hall is an associate professor of literacy and early childhood. Her research interests encompass how children learn within the framework of literacy, including how children learn through play, literature, and social interaction.

Dr. Nicholas Eastham is the Coordinator of Academic Support Services for the University of North Florida College of Education and Human Services. In addition to supporting the staff and faculty of the college with technology and instructional design, he teaches graduate and undergraduate courses in Educational Technology. His primary research interests include collaborative applications, digital text, and other technology that supports the educational process, including 3D printing and cloud-based computing.

Wanda Hedrick taught middle school in North Carolina for seven years. After receiving her Ph.D. in Education from the University of North Carolina-Chapel Hill she began teaching literacy courses at the University of Texas at San Antonio and moved to the University of North Florida in 2003. Her research interests revolve around understanding how to help students with reading difficulties. She has published a book, *Instructional Strategies for Teaching Content Vocabulary Grades 4-12*, authored and coauthored several book chapters, and co-written articles in such journals as *Journal of Adolescent and Adult Literacy*, *Reading Teacher*, *Middle School Journal*, *Reading, Research and Instruction*, and *Reading Psychology*.

Danielle (Boller) Simone is a fifth-grade teacher in Jacksonville, Florida. Her primary research interests include effective practices in reading instruction and motivating students to read deeply and widely.