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Literacy Teachers Address Broadband Gap Through Broadcast Pedagogy

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Abstract

During emergency remote learning, students affected by the broadband gap were left without teacher-led, standards-aligned reading instruction. To address this inequity, a multi-organizational new literacies Community of Practice (CoP) developed and filmed literacy lessons via public broadcast television. This collective case study addressed two research questions: (1) What are the components of broadcast pedagogy? And (2) how do teachers perceive the value of innovating with new literacies, like broadcast pedagogy? Findings include an original framework for broadcast pedagogy in literacy that can be used to guide instructional innovation. Teachers perceived that innovating with new literacies allowed them to (a) address instructional equity, (b) extend their sphere of influence and (c) revisit their professional literacy content knowledge. The study illustrated how some educators leveraged public television to deliver equitable literacy instruction during the COVID-19 pandemic. The multi-organizational CoP framework has implications for teachers, teacher educators, and industry- and community-based organizations.

Keywords: broadband, equity, new literacies, literacy, Community of Practice

Introduction

COVID-19 and the shift to emergency remote teaching (spring 2020 through early spring 2021) called renewed attention to infrastructure vulnerabilities, like the broadband gap, which refers to inequitable access and use of broadband internet (Castells, 2010). Given widespread and sudden closure of school buildings, the broadband gap exacerbated already existing educational inequities, including access to teacher-led, standards-aligned PreK-5 reading instruction. These inequities are expected to grow larger as a result of emergency remote learning (Aguilar, 2020). Research suggests that disparities in broadband access occur most frequently among historically marginalized populations and negatively affect student outcomes (Cruz-Jesus et al., 2012). During emergency remote learning, an estimated 14% of emergent readers across the United States did not have reliable access to broadband internet, could not consistently connect with their teachers, and did not have access to teacher-led, standards-aligned reading instruction (NCES, 2019). The rates of disconnect were even more alarming in North Carolina, where an estimated 30 percent of K-12 students did not have a reliable internet connection suitable for emergency remote learning and 23 percent did not have adequate devices for remote learning (Chandra et al. 2020).

To address the compounded need for access to teacher-led, standards-aligned reading instruction for students without broadband, seven states, including North Carolina, forged partnerships with public broadcasting stations to produce and broadcast standards-aligned instruction for math and literacy (PBS, 2020). Radio and television have historically been utilized in precarious times to net the attention of youth (Luke, 1990) and have been implemented in various ways within public schools (Fabos, 2008). The Public Broadcasting Station North Carolina (PBS NC) programming analyzed in this study is unique, however, in that

it positions literacy teachers as media producers, providing a window into processes and motivations for pedagogical innovation through a familiar medium, i.e., television.

The purpose of this collective case study (Stake, 2013) is to explore how literacy teachers, involved in a multi-organizational Community of Practice (CoP) (Lave & Wenger, 1991), worked together to adapt formal reading instruction for television during emergency remote learning (spring 2020 through early spring 2021). We draw from teacher-created televised lessons and teacher interviews to (a) propose a framework for broadcast pedagogy, which educators can implement and build upon in their efforts to modify in-person teaching, and (b) to understand teachers' perceptions of the value of innovating with new literacies (Hodges et al., 2020), which can contribute to ongoing efforts to support teachers in ever-changing instructional contexts.

This study serves as a model primarily for teachers who are interested in adapting and innovating with their literacy pedagogy for instructional contexts beyond the classroom. Secondarily, this study serves as a model for teacher educators as they support teachers in the inevitable work of adaptation and innovation, and for industry- or community-based organizations as they partner with teachers to create and deliver innovative literacy content for young learners through broadcast pedagogy.

In the next section, we position the following two research questions within the theoretical frameworks of New Literacies Studies (NLS) and CoP: (RQ1) What are the components of broadcast pedagogy? And (RQ2) how do teachers perceive the value of innovating with new literacies, like broadcast pedagogy?

Theoretical Framing and Relevant Literature

This study is situated in the theoretical traditions of New Literacies Studies (NLS) and Community of Practice (CoP). NLS researchers emphasize that all literacy practices are situated within social, cultural, historical and economic contexts (Street, 1998) and argue that literacies are mediated and transformed through new technologies (Lankshear & Knobel, 2006, 2011; Knobel & Lankshear, 2014). NLS researchers work to "anticipate beyond the present and envisage how best to educate now in order to enhance learners' capacities for effective meaning-making and communication in the foreseeable future" (Knobel & Lankshear, 2014, p. 97). Because youth continually find new ways to engage in familiar literacy practices (Knobel & Lankshear, 2002), much of NLS research centers questions about everyday literacy practices and how popular culture and digital literacy practices influence in-school literacy learning (Davies, 2006; Gee, 2012). Some teacher education researchers who take up NLS posit that addressing new and multiliteracies in teacher preparation programs and via ongoing professional development improves in-school literacy outcomes for learners (Cervetti et al., 2006; Author, 2013). Given the changing landscape of instruction, our study acknowledges that teachers need further opportunities to learn and adapt familiar tools and literacy practices to meet emergent student needs. In the case of this study, emergent student needs include lack of consistent broadband access and, therefore, a disconnection from formal reading instruction.

Television, the instructional medium at the center of this study, has long been leveraged to enhance young learners' literacy skills. *Sesame Street*, for example, emerged in response to longstanding, unmet educational needs of preschool students living in underserved communities. Research on the program quickly proved how formidable a tool broadcasting can be, in particular when it comes to early literacy development, one of *Sesame Street's* five original curricular goals (Palmer & Fisch, 2014; Fisch, 2004). Similar educational programming, driven by explicit

literacy goals (e.g., *SuperWhy*), has returned positive effects on early literacy development, including the ability to decode and comprehend (Fisch, 2004; Linebarger, 2015). We know that such programs can be beneficial for learners and thus indirectly for their teachers, but we know little about teacher motivations and processes for pedagogical innovation via television.

A growing number of teachers, who recognize the value in new literacies and Information and Communication Technologies (ICTs), have worked to innovate and expand their practice (Spires et al., 2012). For instance, teachers are increasingly taking advantage of ICTs in order to create and share content widely [e.g., teachers pay teachers, Pinterest, Open Educational Resources (OERs)]. This content is not always vetted for alignment with best instructional practices and curriculum standards nor is it equitably accessible. A growing body of research has linked new literacies professional development to teacher leadership and teacher advocacy in the United States (Coiro et al., 2008; Lankshear & Knobel, 2011) and globally (Spires et al., 2018; Kerkhoff et al., 2020). Television is not a new technology; however, the manner in which teacher leaders in this study leveraged it during the COVID-19 Pandemic to deliver systematic reading instruction to students without robust access to broadband internet is novel and warrants close study.

The second theory that we draw from is Community of Practice (Lave & Wenger, 1991). We explore how teachers engage new literacies (in this case, broadcast pedagogy) to adapt what they know about good literacy instruction through participation in a multi-organizational CoP. Typically, CoPs are organized dialogic groups in which practitioners share professional insights with colleagues at the school or district levels. In this study, teachers participated in a multi-organizational CoP, composed of literacy researchers, state-level content experts, professional media producers, and other highly-qualified literacy teachers.

In the decades since its original conception, there have been different iterations of CoPs, including job-embedded or informal and inquiry-specific (Smith et al., 2017). CoPs emerge from socio-constructivist ideas about learning—namely that dialogue and knowledge sharing across varying levels of experience contributes to professional identity. Scholars interested in how participation in a CoP influences teacher learning and professional growth have identified important design features of a functioning group, specifically, multiple means of engagement, varied perspectives for knowledge exchange, and opportunities for leadership (Horrocks, 2019).

Taken together, new literacies and CoP form the theoretical base for our research. We use new literacies as a lens to understand teacher adaptation of literacy instruction in an increasingly uncertain and complex world and CoP as a structure and lens to understand teacher collaboration and innovation.

Context of Research Project

In summer 2020, the North Carolina Department of Public Instruction (NC DPI) contacted the Friday Institute for Educational Innovation at North Carolina State University and PBS NC with an idea to provide high-quality, standards-aligned PreK-5 literacy and math instruction via public access television for students learning at home without broadband internet access. The project was funded through the Coronavirus Aid, Relief, and Economic Security (CARES) Act. That fall, a team from the Friday Institute recruited 24 PreK-5 educators, 12 who were literacy-focused and 12 focused on math, through their professional networks to design and film 192 literacy and mathematics lessons. These educators were grouped in grade-level, content-area teams to formulate cohesive lesson sequences for each lesson series, identifying learning goals and state standards with which to align content.

Simultaneously, NC DPI, PBS NC, and Friday Institute teams discussed the instructional format that would best serve students and caregivers across the state, settling on 10- to 12-minute lessons with accompanying extension activities. NC DPI and the Friday Institute worked to secure publisher permissions for high-quality texts to be utilized in the PreK-5 literacy lessons and broadcast on-air and on-demand.

With the guiding structures set, the educator teams began developing engaging, curriculum-aligned lessons for the broadcast format. Three teachers comprised each grade-level, content-area team, including a lead teacher who went through the iterative lesson design process first and then shared lessons learned with their teacher teammates. Each cohort of teachers engaged in multiple rounds of feedback within the multi-organizational CoP, consisting of NC DPI PreK-5 literacy and mathematics experts, University of North Carolina (UNC) System Literacy Fellows, and the Friday Institute's team. These feedback loops provided teachers with support toward strengthening standards alignment, student engagement, and pacing within and across lessons.

Given studio and timeline constraints, teachers were made aware at the beginning of the project that each would have a four-hour session during which all eight 10- to 12-minute lessons needed to be filmed. To meet these filming requirements, the multi-organizational CoP recognized that scripting each lesson would ensure a smoother and more efficient filming process, especially with the scripts being pre-loaded on a teleprompter for teacher use during filming. PBS NC created a studio space at the Friday Institute, where teachers enacted their lessons from December 2020 through February 2021. Lessons began airing on PBS NC in February 2021. As lessons were broadcast on public television, their recordings and extension

activities also became available online through NC DPI's Open Educational Resource (OER) platform.

Methods

Study Overview

The data analyzed in this article are grounded in a year-long collective case study (Stake, 2013) examining teacher engagement with broadcast pedagogy within a multi-organization CoP (Lave & Wenger, 1991). Case study allows researchers to address both "how" and "why" questions within a contemporary, bounded phenomenon. To better understand how and why teachers innovated with new literacies and how they went about engaging in and developing broadcast pedagogy throughout emergency remote learning (spring 2020 to early spring 2021), we conducted qualitative research with seven volunteer literacy teachers, recruited from the larger group of 12 literacy teachers. The participants represented a range of grade bands, experience with reading instruction, and lesson foci. Participants shared common planning parameters (e.g., timing requirements and access to post-production services); therefore, we were able to analyze across cases for comparisons of pedagogical choices unique to the broadcasting context. We employed rigorous study procedures, including sharing a masked manuscript with participants for member-checking, and carefully considered issues of trustworthiness, reliability and validity; however, as is true for all case studies, our findings are not generalizable (Stake, 2013).

Research Team

The team consists of four researchers who contributed to the writing of the research manuscript, all of whom have extensive experience in K-12 literacy and teacher education. Although authors wore multiple hats throughout the project, each had a primary function in the

study. Hiller Spires served as the visionary for the project, the leader for teacher recruitment and originated the concept of broadcast pedagogy. Marie Himes served as the project manager for pre-production, working closely with the teachers and multi-organization partners to prepare television-ready lessons. Erin Huggins led project data collection and data management; while Sarah Bausell led data analysis and manuscript development.

On one hand, Himes' and Spires' close connection to all project participants and involvement with project development allowed them to be immersed in the data. On the other hand, their familiarity with the participants posed some methodological challenges. Given the project duration and the likelihood that participants' interview responses might be affected by these relationships, Huggins and an assistant, unknown to the participants, conducted all interviews. Interviews were transcribed and masked, with direct references to research team members excluded from analysis. Bausell and a research assistant developed the initial codebook and coded all data. Then, Himes, Huggins, and Spires re-engaged with analysis in phases two and three as a "matter of giving meaning to first impressions as well as to final compilations" (Stake, 2013, p. 71).

Participants

We invited the project's twelve, highly-qualified literacy teachers to participate in this study; seven volunteered. For the purposes of this study, we define highly-qualified as an educator with five or more years of experience or at least a master's degree in education. Participants have a range of teaching experience, all at the elementary level. They work in rural, rural-fringe, and urban districts and vary in terms of racial demographics. All participants entered teaching through traditional educator preparation programs, and several have advanced degrees in literacy. See Table 1 for professional demographics. Participants developed and

filmed their lessons over the course of five months while also maintaining full-time jobs as educators. They attended anywhere between 6-15 virtual CoP meetings, each lasting approximately 60 minutes. In between meetings, participants received and responded to written feedback from NC DPI content experts on their lesson plans and scripts. Participants were compensated for their involvement in the project.

Table 1. *Participant Professional Experience*

*Name**	*Position*	*Years of Professional Experience*	*Highest Degree Obtained*
Ms. Link	4th-5th grade	5 years	Master
Ms. Jackson	2nd grade	10 years	Master
Ms. Oldes	Teacher Educator	21 years	Doctorate
Ms. Matthews	Literacy coach	27 years	Doctorate
Ms. Roberts	4th grade	6 years	Master
Ms. Doyle	Literacy coach	16 years	Master
Ms. Alaria	Kindergarten	23 years	Bachelor

*pseudonyms

Data Sources

Data sources for this study include (a) 56 lesson plans, (b) 56 video lessons and (c) seven semi-structured interviews. Given in-person restrictions during the COVID-19 Pandemic, semi-structured interviews were held online and audio recorded via ZOOM. Lesson plans were created using Google Docs, which allowed researchers to see a timeline of changes from each contributor, making it easier to see the evolution of collaboration rather than a singular product.

Given the focus of this project on teacher innovation and the use of a CoP to support the collaborative process, this was an essential quality.

Data Analysis

Our analysis is informed by Stake's (2013) delineations of case study, which emphasize the importance of researchers' impressions in data analysis and call for a commitment to methodological validation procedures, such as data source and investigator triangulation. Progression of our research study hinged on final post-production efforts, and at the onset of our analytic procedures, final products were not yet available. According to Stake (2013), data collection and analysis can occur simultaneously. Given the complexities of timing, our first phase of data analysis responded to RQ2: How do teachers perceive the value of innovating with new literacies in order to engage in broadcast pedagogy? To address this research question, we engaged in three phases of data analysis, using an open coding process. The first author open-coded (Strauss & Corbin, 1990) interview data and developed a preliminary codebook, which focused on how teachers described their process of innovating with broadcast pedagogy and their motivations to engage in the process. A research assistant then independently coded a sample (30% of total sample) of the same data; they met to resolve inconsistencies, collapse codes, and establish trustworthiness of analysis. Initial findings were shared in a larger research team meeting. At this time, themes were defined and researchers collaboratively memoed (Creswell & Poth, 2016) about broadcast pedagogy in relation to these themes.

The second phase of data analysis focused on RQ1: What are the components of broadcast pedagogy? During this phase of analysis, the first author and a research assistant coded the video lessons using *a priori codes* derived from how participants described their shift to teaching on television (e.g., post-production, gestures, wait-time, everyday home items) in

interview responses. See Table 2 for sample codes and definitions. In the final phase of analysis, the full research team worked to triangulate data sources by reading across all data sources and sharing findings in written form for participant member checking. Data triangulation contributes to the reliability and validity of our analysis (Stake, 2013).

Table 2. *Codebook*

	Components	Sample Codes	Sample Definitions	Sample Quotes
Research Question 1: What are the components of broadcast pedagogy?	Coordinating Content Facilitating Teacher Presence Scripting Teacher Talk Leveraging Post-Production Affordances	Post-production	Reference to extending content knowledge via broadcast medium.	"Speaking and collaborating with DPI helped me think more about what my students really need to know from this standard. From our conversations, I was able to snapshot the bits of information they are going to be able to take with them."
		Gestures	Reference to physical/vocal choices via broadcast medium.	"I watched so much. Literally. Like watching Dora the Explorer [and] Blue's Clues and noting how they talked, how they pause, how they ask questions, and wait for, you know, a response and using that as a guide."
		Wait-time	Reference to role of preparing a script in preparation for or via the broadcast medium.	"I realized that writing the script, some of the things that I would say, I'm like, 'Oh, well, that's not important,' or 'that will take up too much time.' So it really, really helped me to be more intentional about what I was saying."
		Props	Reference to any technological affordance specific to the broadcast medium.	"I wasn't really able to envision what that might look like post-production and so, so more of what I might call traditional, you know, having all the prompts and materials in front of me writing things on the board, instead of having it pop up on the screen or whatever"
	Themes	**Sample Codes**	**Sample Definitions**	**Sample Quotes**
Research Question 2: How do literacy teachers perceive the value of innovating with new literacies, like broadcast pedagogy?	Address Instructional Equity	Rural Access Home Resources	Reference to their own innovation with broadcast pedagogy in relation to addressing barriers to instructional equity (e.g., internet).	"during the pandemic, in particular, where some students may not have connectivity or other challenges with missing out on some literacy instruction"
	Extend Sphere of Influence	Colleagues Families Caregivers Published Lessons	Reference to possible future use and prospective audiences for their innovation with broadcast pedagogy.	"from a service perspective, and also to kind of develop some materials as models, perhaps for teachers, either to embed in their instruction or to use as a model for remote instruction. So I thought that the project had a lot of potential to support teachers and kids"
	Revisit Professional Literacy Content Knowledge	Standards Stakeholder Expectations Science of Reading	Reference to their understandings of professional content knowledge in relation to their innovation with broadcast pedagogy.	"We wanted to focus on particular literacy content. So phonological awareness, phonics, vocabulary, fluency, comprehension, and kind of have a predictable sequence in each of our sets of lessons that would build from what we might consider more foundational skills or more constrained skills to unconstrained skills"

Findings

Our findings are organized in two sections. First, we respond to RQ1: What are the components of broadcast pedagogy? Then, we report three salient themes that emerged in

response to RQ2: How do teachers perceive the value of innovating with new literacies, like broadcast pedagogy?

A Framework for Broadcast Pedagogy (RQ1)

In this section, we define broadcast pedagogy as a type of asynchronous teaching, characterized by short-form, standards-aligned, video lessons. We are drawing on data that centers literacy teachers; however, there is utility for a broadcast pedagogy framework across content areas. Broadcast pedagogy utilizes the affordances of the broadcast medium (e.g., accessible anytime and anywhere, visual and aural enhancements, intentionality in scripting and set design) to amplify learners' understandings of key grade-level concepts despite the one-way user interface. There are four components that contribute to a framework for broadcast pedagogy: coordinating content, facilitating teacher presence, scripting teacher talk, and leveraging post-production affordances. Below we examine each of these components within the context of literacy teachers operating in a multi-organizational CoP.

Coordinating Content

Teachers grappled with moving from a classroom setting, with a defined and relatively stable group of learners, to enacting broadcast pedagogy with an unseeable audience. Teachers considered the likelihood that student viewers could be within any grade band and might see any arrangement of the video lessons, including just one. Traditional notions of scope and sequence, across days, weeks and months had to be reimagined to fit 10- to 12-minute lesson blocks.

Target Literacy Skill. Within each grade band lesson sequence, the teachers designed lessons to focus on a primary target literacy skill connected to one of the five pillars of reading (National Institute of Child Health and Human Development, 2000). Teachers could also opt to cover a secondary target literacy skill connected to a different reading pillar. The PreK-K and

grades 1-2 teachers sequenced their lessons to move from foundational to more complex literacy skills. Ms. Oldes, a grades 1-2 teacher, described her team's lesson sequencing process:

> As a team of three, we determined we wanted to focus on particular literacy content–so phonological awareness, phonics, vocabulary, fluency, comprehension. [We] kind of have a predictable sequence in each of our sets of lessons that would build from what we might consider more foundational skills or more constrained skills to unconstrained skills.

When innovating with broadcast pedagogy, it is important to isolate a tangible literacy skill and consider how learners might see the utility of that skill within their home. For example, Ms. Alaria's first PreK-K lesson focused on letter recognition and letter-sound correspondence with Pp /p/. Students kept track of their Pp-word learning through a circle map on which they recorded words that began with the letter Pp and drew a picture to illustrate each word. At the end of Ms. Alaria's lesson, she reminds students to "keep looking for the letter Pp. When you find new Pp words, add them to your circle map." In this way, she is prompting students to continue to practice the skill introduced in the lesson and connect it with the world around them. Bounding the lesson to small timeframes, to account for student attention spans, and locating skill practice within the home environment are unique features of broadcast pedagogy.

Standards Alignment. In addition to designing instruction around a target literacy skill, teachers aligned their lessons to the North Carolina curriculum standards, specifically the 2020/21 English Language Arts priority instructional content (NC DPI, 2020). Aligning lessons with the state's curriculum standards was necessary to meet the grade-level instructional needs of students. Additionally, the standards allowed teachers to draw on a familiar framework during lesson design. Teachers received multiple rounds of feedback on their lessons from literacy

instructional leaders at NC DPI directed toward clear and rigorous alignment with grade-level curriculum standards. Many teachers found this feedback on standards alignment to be key in creating high-quality, grade-level appropriate lessons. Ms. Roberts shared, “speaking and collaborating with NC DPI” helped her think more deeply about what students “really need to know from this standard” in order “to snapshot the bits of information they are going to be able to take with them.”

Key Concepts and Practices. In addition to target literacy skills and standards alignment, teachers focused their instructional design on key grade-level concepts and practices. The identification of these areas was primarily informed by teachers' breadth and depth of teaching experience. For example, Ms. Link designed her lessons to reflect “some of the things that my students struggle with in fourth and fifth grade.” Since the project was intended to amplify and reinforce face-to-face, blended, and/or remote literacy instruction, participating teachers intentionally designed lessons focusing on themes, topics, and competencies that are covered in PreK-5 public education in North Carolina. For some teachers, these concepts and practices constituted areas in which students typically needed extra support; for others, it was important to consider when the lessons would air in order for the concepts and practices to connect with what classroom teachers would typically be covering during a certain point in the school year. Since the episodes started airing in February, Ms. Link’s teams’ lessons focused on concepts and practices "that we would hit later in the school year…to help them for the next year.”

Text Interaction. Many teachers’ lessons center instruction through text. During the early planning stages of this project, the teachers and organizational partners agreed that an important feature of high-quality literacy instruction is students interacting with rich, diverse,

and engaging texts. However, incorporating published works with broadcast pedagogy necessitates copyright permissions. The organizational partners approached the incorporation of texts in the literacy lessons from multiple angles: (a) contact and work with a children's literature-focused publishing company, e.g., Scholastic Inc., to secure permissions for collections of early readers, (b) identify and reach out to community-relevant children's literature authors, e.g., local authors, to make introductions on the project's behalf to the publishing companies that hold the rights to their books, (c) incorporate canonical texts with Creative Commons licenses, and (d) utilize teacher-created texts, particularly for informational works. It is important to note that publishing companies may require a fee in order to grant permission to include text selections in broadcast and online video lessons.

Facilitating Teacher Presence

Participants came to the project with extensive professional experience and knowledge of how students learn to read, but very little experience producing instructional content for wide audiences. To address this gap, participants cast a wide net for exemplars and models. For instance, Ms. Link reflected that she had never equated her everyday work as a second-grade teacher to popular edutainment, but quickly found herself studying popular television characters: "I watched so much. Literally. Like watching *Dora the Explorer* [and] *Blue's Clues* and noting how they talked, how they pause, how they ask questions, and wait for, you know, a response and using that as a guide."

Learning to act and acting to increase learning became a component of broadcast pedagogy. Ms. Link noted that as a result, "a lot of teachers did really cool things like use capes and costumes and things," but that ultimately "the idea was to be a teacher, to just be ourselves." Here, Ms. Link describes a significant tension evident across all data: maintaining teacher

identity while implementing theatrical elements, such as costumes and exaggerated gestures commonly seen on television. While some teachers leaned heavily into story arcs (e.g., quests and mysteries) and kept costumes and props consistent across lessons, others described the dramatological possibilities as daunting and preferred to limit the extent of their acting to exaggerated facial expressions. Thus, broadcast pedagogy approximates traditional in-person teaching *and* edutainment programmatic features.

In edutainment programs, characters periodically break the fourth wall to converse directly with the viewer. In broadcast pedagogy, however, most communication is directed toward the audience with verbal and gestural prompts to generate audience response. In the words of Ms. Doyle, broadcast pedagogy must "get [students] to speak to the screen, and move around, maybe find something they can speak to during the lesson like a stuffed animal or something, just doing any- and everything to make it engaging."

In some lessons, the teachers created dialogue between themselves and a partner teacher, animated character, or stuffed animal. These differing dramatic devices bridge space and time between educator and student audience. A component of breaking the fourth wall with broadcast pedagogy is the teacher posing questions to the audience and then closing the communication loop by providing feedback after allowing time for audience response. Across all lessons, we saw teachers pose questions, offer a way for students to self-assess their responses, and then close the communication loop by offering a model answer. In this way, breaking the fourth wall in broadcast pedagogy serves the dual purpose of eliciting student responses and inviting student self-assessment based on teacher response models.

Scripting Teacher Talk

Early in CoP meetings, teachers wondered how to teach without the benefit of student feedback. Typically, teachers' instructional language evolves with each lesson iteration, in large part from student feedback—teachers get clearer, more precise, and drop phrases and metaphors. But in broadcast pedagogy, teachers engaged in language refinement work ahead of time, using feedback loops with peers and content experts to achieve clarity, coherence, and alignment with standards. Aligned with research on classroom discourse (Nystrand, 2006), teachers reported that they relied heavily on partner work, and often used patterns like recitation and Initiation, Response, Feedback (IRF) while teaching in person—none of these dialogic structures directly transfer to broadcast pedagogy.

In order to adjust to what Ms. Link called the inevitable "*Dora the Explorer* moment, where you feel like you're talking in an abyss," teachers scripted their lessons and used a teleprompter to keep pace. Though creating a script for a 10- to 12-minute lesson was a demanding process, requiring multiple rounds of feedback from CoP members, it was well worth the effort. Scripts allowed teachers to reach an economy and precision of instructional language prior to filming and to anticipate meaningful opportunities for gestures (e.g., squat down with short vowel sounds and stand tall for long vowel sounds). Ms. Roberts reflected that writing a script was "a little stressful" because she had not thought about teaching with that level of detail since her first year in the classroom, but that the practice helped her refine instructional language:

> [Scripting] let me really just sit back and think about what I wanted to say and what I wanted the students to know, versus just standing up in front of my class and teaching. I'm more comfortable with that. But I realized that writing the script, some of the things that I would say, I'm like, 'Oh, well, that's not

> important,' or 'that will take up too much time.' So, it really helped me to be more intentional about what I was saying.

Teachers reimagined classroom dialogue (e.g., "talk to learn") as being responsive to home materials and context. According to Ms. Link, broadcast pedagogy "made us think about how to engage children within this asynchronous kind of format, to be responsive to the materials and context that they might have at home." Scripting allowed participants to reconsider their own discourse in relation to viewers' resources. Ms. Doyle described how scripting helped her consider the luxury of a pause button, "For people that don't have internet, knowing that there's no pause button...the biggest thing was putting in think time for the kids." Through scripting, teachers were able to release expectations related to how and when feedback occurs between teachers and students and instead trust the learner and caregivers to engage post-instruction. As Ms. Roberts noted, hoping to emphasize the transfer of skills:

> I wanted them to continue practicing whatever I'd done in the lesson on their own. The idea was if I've just taught you how to find the main idea, now try doing that with a different text. Any text. So, making it transferable. So, it's not something that you can just do in that one specific lesson. It's something they can do in lots of different contexts.

Ms. Matthews concurred that reimagining literacy dialogue via home materials and "a trusted adult" is a central tenet of broadcast pedagogy. Scripting lessons allowed teachers to build in elements of metacognitive delay, common in many forms of asynchronous learning (O'Byrne & Pytash, 2015). Ms. Jackson emphasized that writing a script helped her reposition students as capable self-assessors, noting that the script provided "space for them [students] to kind of do their own thinking and writing to be able to justify their responses."

Leveraging Post-Production Affordances

Post-production technology—the process of cutting and splicing raw footage, adding sound effects or music, and/or overlaying visual cues or animation to that footage—distinguishes broadcast pedagogy in literacy from other forms of video-based asynchronous teaching. Though participants were familiar with television as a medium, they had never created televised content and were therefore entirely new to the post-production process. In order to make sense of the bells and whistles possible with broadcast pedagogy, they had to depend on media experts at PBS NC. While teachers had the benefit of working alongside professional media producers, they directed both the timing and nature of post-production.

Ms. Matthews explained that she and her CoP members were motivated to "think of what I would be attracted to as a kid looking at the screen." Similarly, Ms. Link described how working in collaboration with PBS NC media producers in the CoP helped her think beyond her long-held beliefs about teaching:

> I wanted students to be able to see different moving things and not just me standing in front of them talking. That's not the way I teach in a face-to-face setting or even in an online setting. I try to be more engaging. So based on that, I was really wanting to take advantage of those features.

Ms. Link knew that she wanted to use post-production to enhance the learning process, but she needed to lean on PBS NC producers to make suggestions:

> They said that we could use a green screen and that they could add things post-production. But I didn't really know what that meant. I know that it's not an area I have a great deal of background in…It was really nice to have that collaborative effort…they were able to provide everything I needed.

Initially, many participants found planning for post-production elusive. Ms. Doyle described her own difficulty moving beyond classroom artifacts:

> I wasn't really able to envision what that might look like post-production and so [my lessons were initially] more of what I might call traditional, you know, having all the prompts and materials in front of me writing things on the board, instead of having it pop up on the screen or whatever.

With valuable feedback from her CoP members, Ms. Doyle began to differentiate post-production affordances from traditional classroom artifacts, like anchor charts, and, importantly, began to think about how visual animations could enhance the reading process. Ms. Doyle and other teachers worked to make streamlined post-production design decisions, aligned with priority content and their knowledge of how children learn to read, including using color coded post-production visual animation to demonstrate phoneme segmentation and populating post-production graphic organizers with segmented phonemes as the teacher said them to help students understand word formation.

Teachers leveraged post-production affordances across their lessons to enhance retention, ensure engagement, organize lesson structure (e.g., an animated timer), and develop continuity. The novelty of the experience, and the ensuing vulnerability, pushed Ms. Link, and others, out of their pedagogical comfort zones. Simultaneously, they began to reconsider and reimagine their own classroom practices, paying specific attention to instructional language and pace, instructional materials, and methods of engaging with families.

Perceived Value of Innovating with New Literacies (RQ2)

In regard to the second research question, three themes emerged. Teachers perceived that innovating with new literacies allowed them to (a) address instructional equity, (b) extend their sphere of influence and (c) revisit their professional literacy content knowledge.

Theme 1: Address Instructional Equity

Across all data, teachers were eager to lean into the particular affordances of broadcasting in order to equitably deliver meaningful literacy content. The CoP created conditions in which teachers from a variety of geographic locations and lived experiences developed and revised lessons for students affected by the broadband gap. Within CoP meetings, teachers encouraged one another to consider what learners might and might not have access to. Ms. Oldes commented that discussions around this topic were important to the development of her lessons, "when we wrapped our minds around it, we wanted to think of what resources might they have at home. Will they have paper and pencil?" Through this dialogic process, teachers moved beyond a school/county-bound understanding of equity issues toward a state-level and intersectional analysis.

In CoP meetings and in interviews, teachers pointed out uneven distribution of resources among teachers, schools, students and their families. Over time they began to talk about confluent equity issues to the broadband gap that might impact students and families, like limited access to PreK, available resources at home, and the need for more bilingual educators. In her role as a state-wide literacy coach, Ms. Doyle observed, "Some [districts] are faring better than others [during remote learning], depending on different resources they have available to them…This project is something that could directly impact the people I work with every day."

Many participants spoke to students' intermittent or lack of access to broadband internet as a key motivator for their participation. Ms. Matthews, a literacy coach working across many

rural counties in North Carolina, described teachers' and students' lack of broadband internet access as "a very serious issue" and a motivator for her to become involved in this project. Prior to engaging in the project, several participants, including Ms. Matthews, had come to the understanding that they needed to "expand what I'm doing to reach students" and had begun using more readily available technologies (e.g., text messaging) to contact families affected by the broadband gap. As participants' critical reflections crystallized into meaningful instructional decisions, they also began to articulate an increased curiosity about family literacy practices (e.g., songs/music) and ways to honor these within classroom practice.

Theme 2: Extend Sphere of Influence

Teacher leadership via CoP. Teachers who joined this CoP were eager to serve as instructional leaders by engaging in broadcast pedagogy. Ms. Matthews explained that she was interested in "pushing herself" professionally and that she saw the multi-role CoP as providing dynamic and reciprocal leadership opportunities:

> I was fully looking for a way to push myself and get something going that could be a passion project…And something I'm really passionate about is developing curriculum, writing lessons, things like that. So, I thought this would be a great opportunity to do that while also being able to grow some skills and coaching.

As mentioned by Ms. Matthews, the CoP was designed to include additional leadership roles to extend teachers' spheres of influence. For instance, teachers were assigned to cohorts with lead teachers. As each cohort progressed in the lesson development and filming phase, they were encouraged to offer suggestions and feedback for the next cohort. Here, Ms. Matthews' articulates her experiences in that role:

> It was nice to be the guinea pig for their [the cohort's] benefit. Because they were able to hear the nitty gritty. But I just told them to relax. They [the producers] have your script up there and you're able to read off of it…So it was really nice for them [the cohort] to be able to have a person to calm their nerves, but also kind of support and think through…how they take lessons from what I did and apply those to their lessons.

Within this dialogic coaching process, teachers communicated their newly formed understandings of broadcast pedagogy and reading instruction. As a result, many participants reflected that one of the benefits of the CoP was a sense of professional connectivity and development of leadership capacities.

Teacher leadership via extended audience. Though the project was funded through the CARES Act and was designed to meet immediate needs of nearly 14% of the State's students without access to the internet (NCES, 2019), participants described teaching to an extended audience that included students, other teachers, and families/caregivers.

Initially, participants engaged in the planning process much as they would in a classroom setting: by thinking about student development and academic needs. Unlike a traditional classroom experience, however, participants had to contemplate how to teach an *invisible* student audience. Teaching asynchronously is one thing, but teaching without any kind of feedback from students seemed insurmountable to participants at first. They reflected that much of their classroom reading instruction was anchored in geographical context (e.g., selecting texts and themes that reflect shared surroundings) and in knowledge of individual students' interests and academic next steps. To navigate this paradigm shift, participants used CoP meetings to plan around children's developmental and academic needs. Ms. Jackson reflected, "I definitely relied on my previous teaching experience with those standards and thought through some

misconceptions that students typically have with those different standards or with that kind of lesson and used those to help guide me." As a CoP, they figuratively sculpted a student audience and leveraged their collective understanding of instructional standards and experiences responding to common student misconceptions.

In addition, participants also planned with other teachers in mind. Noting that the broadband gap has been hard on teachers and students alike, Ms. Oldes, a literacy coach, shared that she

> [was] thinking of this as educative for teachers trying to think through what are some resources to extend that similar type of instruction where teachers could learn more or take or kind of extend that work and put it into practice in their classroom or remote instruction.

Participants frequently referenced the shelf-life of their lessons, identifying the potential value for substitute and preservice teachers. Significantly, within this extended audience construct, some participants noted that they wanted to reach teachers who do not traditionally teach literacy. For example, a participant linked her reading lessons to natural sciences with the hope that science teachers would use it as a model for how to integrate literacy within their own teaching practice. Similarly, a participant who teaches kindergarten in a district with limited PreK classes designed her lessons to be a bridge for private preschool centers and kindergarten.

Participants also involved families in their conceptions of an extended audience. For instance, when describing who they thought might benefit from broadcast pedagogy, participants often used the pronoun 'they' to describe simultaneous benefits for students and caregivers: "[I] just really wanted to make sure that those different families that didn't have reliable internet were able to get everything they could get out of this 10-minute lesson." One other participant

mentioned sharing lessons with families of former students. Across data, families were thought of as instrumental links in maintaining teacher/student relationships despite distance. In teachers' enactment of broadcast pedagogy, families were explicitly addressed in the last few minutes of a lesson, when the teacher instructed the student to share and continue practicing with items and people in their home.

Theme 3: Revisit Professional Literacy Content Knowledge

Research suggests that teachers might cling to ineffective models of teaching reading based on their own personal reading histories (Olsen, 2015), access to instructional materials and other classroom-based contextual factors (Miller & Veatch, 2010), or their teacher training programs (Hikida et al., 2019). According to Bryan et al. (2018), teachers receive fragmented and sometimes conflicting information and directives about how best to teach reading. At the time of this study, the science of reading, a body of research that emphasizes five pillars of systematic reading instruction—phonemic awareness, phonics, fluency, vocabulary, and comprehension—was pervasive in national conversations and gaining significant implementation traction within the State. Participants grappled with evolving expectations of reading instruction and worked to align their broadcast instruction with the science of reading.

The CoP, which included stakeholders from multiple organizations with differing experiences and expertise, created conditions in which teachers could meaningfully examine their instructional practices and beliefs. For many teachers, the targeted feedback from content experts, in particular, helped them identify gaps or misunderstandings in their conceptualizations of how best to teach reading. Ms. Alaria, for instance, noted that state-level experts:

> really focused on the science of reading, which is still kind of a newish term and things that people are still researching about. And I'm still researching about. And so, kind of

> feeling behind the curve on that. They were able to really help me to understand the reason behind it and how we were breaking it down.

While state-level experts initiated this important point of inflection, our analysis suggests that all members of the CoP served as sounding boards and were invaluable supports for collegial growth in content knowledge. Time and time again, participants reflected that practicing lessons alongside their CoP members promoted quality literacy content and pedagogical knowledge. Social learning was instrumental in helping teachers position themselves as researchers, adaptors, and lifelong learners.

It became evident across CoP data that teacher participants did not necessarily agree on the best way to teach isolated reading skills in a short-form lesson. As is often the case with field-wide shifts, professional jargon became a sticking point of this transition. Participants grappled with suggestions from state-level experts related to language. Ms. Alaria commented, "at first I was frustrated a little with the change in terminology, but I understand it's a shifting tide." Though the back and forth on instructional language may have surfaced confusion and frustration for some practitioners, it also served as a fulcrum for professional learning. For example, state-level content experts suggested participants introduce the phrase *heart words* as a subset of irregularly spelled words within the broader category of high frequency words. This shift was far from cosmetic; it galvanized teachers to reconsider the underlying mental processes that emergent readers use to transfer high frequency words to memory. In this way, teachers' uptake of reading language and theory accelerated as a result of the dialogic conditions of the CoP. North Carolina's renewed focus on research-informed reading instruction, in tandem with the public nature of broadcast pedagogy, helped teachers extend their previously held beliefs about reading instruction.

Discussion and Implications

Today more than ever, teachers need to be able to pivot their instruction efficiently and meaningfully without losing sight of how students learn. In order to prepare educators for the flexibility that teaching requires, more and more educator preparation programs are implementing NLS and ICTs. Duke et al. (2018) argued "teachers should learn *about, through* and *with* technology-based media" (p. 384). This study underscores the importance of learning *about*, *through*, and *with* technology-based media experiences for practicing teachers alongside multi-organizational partners in a CoP. To support teachers as leaders and innovators, we define broadcast pedagogy and distill four components, contributing to a framework instructive for teachers who want to use new literacies to design alternative, asynchronous video lessons.

As researchers, we were motivated to document and learn as much as possible about how educators pivoted during the pandemic and leveraged various technologies to deliver equitable literacy instruction. There are several implications that arise through these data across theory, practice, and future research. This study aims to amplify the connection of research to practice and practice to research in broadcast pedagogy. The participants of this study—a cadre of highly qualified literacy educators—tried their hand at teaching in a novel manner through a familiar and popular technology. Like many other teacher leaders across the country, they were motivated to engage new methods of instruction by unprecedented, pandemic-related student needs. This study belongs to a particular time period (i.e., emergency remote learning), but the implications are not confined to it.

NLS scholars argue that social contexts have historically shaped and simultaneously shape the "function and form of literate practices" (Leu et al., 2017, p. 1). Theoretical implications of this study emerge from the novel context—an unprecedented pandemic—and

shared disruption of traditional notions of literacy and literacy instruction. Thus, the study has significant implications for how we utilize new literacies theories as a lens to understand the pedagogical innovation in support of equitable literacy instruction. Just as many NLS theorists have helped us rethink what counts as reading and writing, this study helps us rethink what counts as literacy instruction across different mediums. The study offers a guide for future multi-organizational CoP work that aims to extend the work of teachers. Research, focused on how and when broadcast pedagogy is used by other teachers and peer institutions, will provide further insight into processes of pedagogical innovation, as well as teachers' motivations to do so. Along those lines, efforts to empirically test the framework to determine how effective it is for literacy development will be instrumental in deepening the field's understanding of novel modes of teaching. Although this study is grounded in the work of literacy teachers, the multi-organizational CoP framework, in and of itself, has implications for those utilizing media platforms to engage young learners in vocational, community, and familial contexts.

Moreover, as highly-vetted, engaging, standards-aligned lessons, these resources can be leveraged by peer institutions preparing PreK-5 teachers, as well as for in-service educators pursuing new literacies grounded in professional learning. While the broadcast literacy lessons are reflective of this Study Site's teaching standards, they may have broader applications across the country. Several local affiliate PBS stations have requested permission to air these lessons or use this project as a model for future programming. In order to increase awareness of the project, these lessons could be shared via community and youth organizations to accelerate the project's impact on young learners, especially those without access to reliable internet or digital devices at home.

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