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Pedagogies of Possibilities: (Re)designing Teacher Professional Learning to Support the Use of Digital Technologies in Multimodal Pedagogies

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Abstract

Digital technologies have the potential to expand communication opportunities (Walsh, 2011), but challenges exist in including these technologies in early literacy instruction (Flewitt, Messer, & Kucirkova, 2015). The literature explains that teachers identify a need for support in using digital technologies in their teaching (e.g., Hill, 2010) and professional learning activities are herein key. Still, the research offers differing advice about the formats these activities should take and the types of literacy digital technologies can support. This exploratory multiple-case study was designed to create teacher professional learning (TPL) opportunities to support early primary teachers (kindergarten-Grade 2) in creating and enacting multimodal literacy pedagogies that include digital technologies. Participants included 4 teachers and 38 children from their classes. It used ethnographic and narrative methods to document the processes of pedagogical design and implementation. The goals of the study were to produce knowledge about multimodal literacies, multimodal pedagogies, and the ways TPL activities can support each.

The study conceptualized TPL activities within an instrumental (McDonald, 2015) Community of Practice (Lave & Wenger, 1991). In each case, 2 teachers collaborated to create literacy lessons that included digital technologies, which the study then documented as they were being taught. The study found that the teachers' pedagogical practices, children's literacy practices, and TPL activities were interconnected and expanded. The teachers designed unique pedagogies even when they included the same technological application. There were parallels between the pedagogies or structures that supported teachers' learning about multimodal literacy and pedagogy in TPL activities and the pedagogies that supported the children's multimodal literacy learning.

The study recommends that the design of learning activities in TPL activities and classrooms recognizes teachers and young children as capable meaning makers and extends from their funds of knowledge. The study recommends that TPL activities support teachers to grow as pedagogical designers, explore the ways they can include digital technologies to support children's learning, and connect professional learning to classroom practice and

programmatic curricula. The study recommends that teachers design multimodal pedagogies to connect to existing classroom practices and include opportunities for children to use digital technologies in tandem with print resources.

Keywords

multimodal literacy; multimodal pedagogy; digital technology; placed resources; early primary school classrooms

Acknowledgments

As I was in the process of writing the last pages of my dissertation draft, I was exhausted. I went out with my family and when we arrived at our destination, I looked down at my feet and realized that I was wearing sandals that didn't quite match. Once I announced my mistake to the family, we all laughed and my teenaged children teased, "Mom is probably going to write a paper about this!" (So, Kayla and James, this one is for you.)

My PhD journey has involved change, redefining my professional practice, and finding different ways to contribute to teaching and learning. I am so thankful for my mentors, colleagues, friends and family who have supported me. Thank-you for understanding how hard it was for me to step away from my classroom, supporting me through the challenges, and loving me even when I wore mismatched shoes.

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Prologue

Journal, February 15, 2017

> *I can't shake the feeling that things are coming full circle. It might sound corny, or overly dramatic, but I feel like everything in my teaching career and past study has prepared me for this research. I see that what I have learned from different children at different times…and my collaborative experiences with teachers… [and] my very first year as a teacher in a Christian school…have all informed my work.*
>
> *As I… go to the research site today, I am thinking about how I am returning to a place that is very similar to where I began my practice, and it makes me feel like I am closing the circle of my elementary classroom teaching practice. That's a scary feeling, but exciting at the same time…*

My own stories of teaching and learning are woven throughout this dissertation, which is an exploration of including technologies in classroom literacy stories.

Chapter 1

1 Introduction

"What did you do at the teacher meeting?" asked one of my students in my combined Grade 1 and 2 class. That morning, I had attended a professional development workshop with the other primary teachers (i.e., teachers of Grade 1-3) in my school while substitute teachers taught our classes. Though professional development activities within the workday were not commonplace at our school, on this occasion, the school had received funding to enable us to meet together to plan literacy lessons to respond to our school goal of improving reading comprehension. When I returned to teach the afternoon classes, my students were curious about what teachers did in "teacher meetings".

As we began our afternoon classes I explained to my students, "the teachers worked together to plan activities that can be used in all of the classes to help the children read and understand stories." I noticed that my young students were not particularly impressed with my answer, and so I relayed a conversation I had with another teacher during the workshop. I explained, "I want to tell you something interesting that happened…. Miss R. said that she has noticed how special our class is and that being with *you* makes *me* happy."

The children were excited with this news and one of my students jumped up from her seat in cheerleader style and started to sing the chorus of the popular song, "Happy" by Pharell Williams (Williams, 2013). At the time, this song was featured in the popular culture and was a favourite in our class. As my student started to sing, other children started to sing, and I joined in singing as well.

In the midst of the singing, I laughed and joked, "Well, I suppose that *could* be our theme song because *this* is a class full of happy people!" In all of my years of teaching, this class stood out for being comprised of particularly joyful children who loved to play and learn together. My announcement sparked another round of giggles. As the laughter waned, I thought the conversation was over and prepared to begin the afternoon instruction, but the children had other ideas.

"I have never been in a class with a *theme song* before, have you?" whispered one of the girls to her friend.

The other little girl turned to the class and replied excitedly, "*No*!" This response was filled with anticipation and seemed like a proclamation that finalized that the "Happy" song was *our* theme song for *our* class.

One of the boys piped up and said, "Well, if we are going to have a theme song, don't you think we should have a music video?"

In that moment of playful classroom conversation, I knew that I had an opportunity to realize the potential of multimodal literacies (e.g., Walsh, 2011). I was familiar with concepts of multimodal literacy from my Master's work and I understood that multimodal literacy curricula could expand learning opportunities for children (McKee, 2013). However, I was unsure if I *could* or *should* make a music video with my students as I had never made a music video before, let alone with twenty 6- and 7-year-olds as co-designers and co-producers! My mind flooded with questions: *How could I start a project like this? Did I have the necessary digital technology*[1] *to complete such a project? Did I have the technological skill to use the technology to support literacy learning? How could this project respond to the expectations in the Ontario programmatic curriculum (e.g., OME, 2006) that I was responsible for teaching?*

I spent the rest of the afternoon contemplating *if* I could do the project and *how* I could include the project within literacy instruction. In addition to considering how the project could fit within my classroom curriculum, I also weighed more personal factors. At the same time as this classroom conversation that sparked the video idea, I was considering if I would continue my studies at the PhD level. Though I had enjoyed my Master's work, I was cautious of continuing my studies because I believed that completing a PhD could result in me leaving my position as an early primary teacher, a position I have held for almost 20 years. As I considered my options, I decided that I had to see if the potential of

[1] I use the terms technology and digital technology interchangeably.

multimodal pedagogies and literacies could be realized in my own pedagogies as I designed literacy activities for my students. After an afternoon of contemplation, I decided to try to make the music video.

I designed the music video project as an interrogation of the literature on multimodal literacies and pedagogies and the ways I could apply these these concepts in my own practices to support my students. I applied a multimodal literacy framework that defines literacy as a process of meaning making which occurs when people combine multiple modes or ways to communicate (Walsh, 2011). I focused the project around supporting children's meaning making through modes of printed text, image, sound, and movement using print-based and technological resources (e.g., Walsh, 2011). As I designed my pedagogy, I positioned technologies as resources for meaning making (Jewitt, 2011a) and provided children with opportunities to use and combine a variety of different resources (e.g., print-based, digital, and artistic) in meaning making activities.

Within the music video activities, the children had opportunities to communicate meaning by layering different resources. For example, we wrote narrative responses to the question, *What makes you happy?* (See Figure 1.1 for my text that appeared within the completed video). After a child drafted her/his response, s/he rewrote it in bold print, and we took pictures of each child holding their text in a mug shot style. Then, the child used an iPad app called Photo Editor (Axiem Systems, 2015) to create a frame around their text. Next, we imported the text into the computer program Windows Movie Maker (Microsoft, 2012), and each child chose the frame transition (e.g., pixelate, flip, windmill) which led into their text. The children selected particular transitions for different reasons, including that they thought it "looked awesome", that it supported the meaning in their message, or that it matched a message in the song. As the children used technologies to add layers of meaning to their texts, they enriched the meaning communicated. The multilayered texts represented much deeper meaning than could be realized through using only one medium, and the ways the children used the resources informed the creation of other multimodal texts featured in the video.

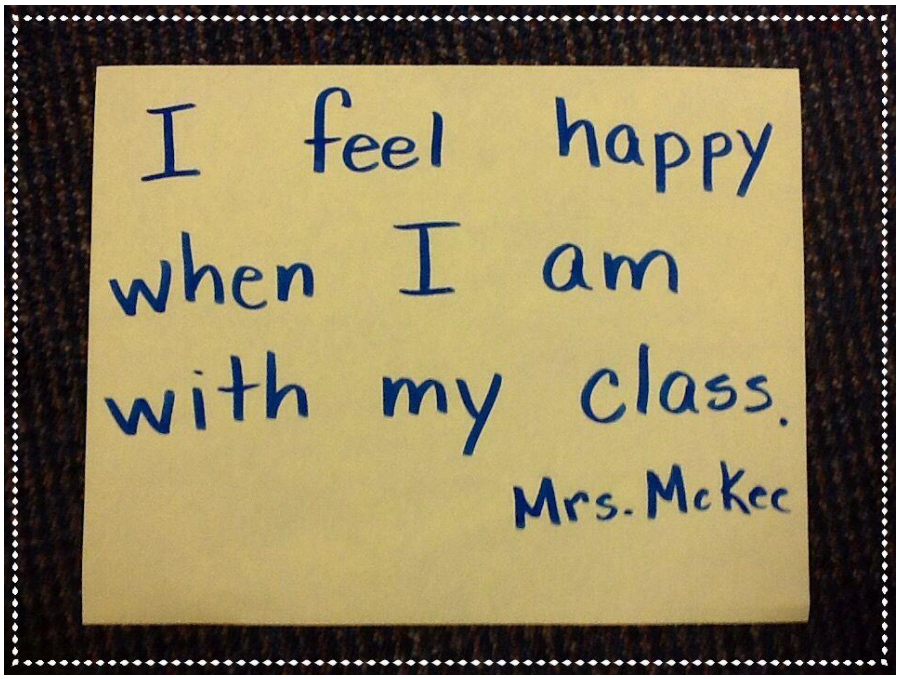

Figure 1.1. My text that explains what makes me happy that appeared in the video.

As we created multilayered texts, we addressed challenges of incompatible technology and strengthened cross-curricular connections due to the time investment required in the project. The completed video highlighted our joyful, collaborative, multimodal meaning making and included stilled images of written texts, artwork, and children working together as well as embedded videos of children playing, dancing, clapping, and working together. Although our final product had many technological blips and errors, it highlighted the processes and products of our multimodal meaning making.

We showed our completed video to the other students and teachers in the school during a school-wide assembly. My teaching colleagues were surprised to discover I had created a video with my young students and even more surprised when they recognized the ways the video responded to the Ontario programmatic curriculum for Language (e.g., OME, 2006) and the depth of the meaning making activities completed by 6- and 7-year-olds. One of my colleagues said, “You sure hit a lot of expectations with that video!” and another colleague explained, “I didn’t know you knew how to do that. Can you show *me* how to do that?” The sharing of the video provided opportunities for me to engage in professional discussions about multimodal literacies and pedagogies.

These professional discussions caused me to reflect more deeply about my pedagogical design in the music video project. Though my design had supported meaning making opportunities for my students, I recognized that I had engaged in a solitary and isolating process of pedagogical design as I planned lessons on my own and spent most of my lunch hours in my classroom learning how to use the technology or editing the video. I wondered how the process of multimodal pedagogical design could be supported and/or enhanced through an element of collaboration with my colleagues. These reflections form the foundation for the exploration which is the subject of my dissertation.

1.1 Background and Research Focus

The communication landscape in contemporary society continues to rapidly change. The terms digital technologies, tools, and resources abound in the literature. Conceptualizations of these terms are not always clear, but what is clear is that the creation of digital texts and technologies has provided expansive opportunities for meaning making in classrooms (Walsh, 2011) and teachers must adapt their pedagogies to respond to these changes (Owen, 2015). While digital technologies have the potential to positively contribute to literacy learning in classrooms (Tierney, Bond & Bresler, 2006; Rowe & Miller, 2016), the literature explains that "there is ambivalence toward incorporating new technologies into early literacy education" (Flewitt, Messer, & Kucirkova, 2015, p.290). As a result, technology uses in early primary classroom settings lag behind uses of technologies with older children (Flewitt et al., 2015; Wohlwend, 2009), with many teachers of young children only tentatively including technologies within instruction (e.g., Flewitt et al., 2015; Lynch & Redpath, 2014; Wohlwend, 2009). The tentative inclusion of digital texts and resources in early primary classrooms may be justified as "there is…. uncertainty among researchers, parents and early childhood professionals about how technological, electronic and screen-based tools can best coexist in children's daily lives" (Alper, 2011, p. 175). The literature explains that teachers identify a need for support in using technological resources to support students' literacy learning (e.g., Hill, 2010) and offers that professional learning activities can provide this support. However, the literature differs in advice about the formats these activities should take and the types of literacy digital technologies can support (e.g., D'Agostino, Rodgers,

Harmey & Brownfield, 2016; Sofkova Hashemi & Cederlund, 2017). My own experiences as an early primary teacher in Ontario echo the tensions described in the literature of having access to digital tools for use with my students (e.g., interactive white boards, desktop and laptop computers, tablets, and green screen technology), but not understanding how to integrate these tools into literacy lessons to realize their meaning making potential (e.g., Tierney et al., 2006), or having access to ongoing pedagogical and technological supports that might enable the design of pedagogies that used technologies. The literature identifies a need for more information about the ways teachers of young children can use technological tools to support meaning making in classrooms (e.g., Alper, 2011), the types of pedagogies that can support the uses of these tools (e.g., Owen, 2015; Wohlwend, 2010), and the implications for children's literacy learning and teacher professional learning. My study resides in this gap. Specifically, this is a study of (re)designing teacher professional learning to support the use of digital technologies in multimodal pedagogies in early primary classrooms. As I will discuss, the framework of multimodal pedagogy provides the structure for conceptualizing how digital tools can be used in ways that are contextually valuable.

My research is timely on a regional and international level. For example, the provincial government in Ontario, Canada has recently invested in "technology… [and]…in innovative teaching practices and instructional methods enabled by technology" (Ontario, 2014, p. 6). This newly implemented $150 million technology and learning fund

> will give kids more opportunities to become technologically savvy with tools, such as tablets, netbooks, cameras and software, while preparing them for success in the global economy…[and] strengthen professional learning for educators who will use technology and digital resources to enhance student engagement, learning and achievement. (OME, 2014, Sept.4, n.p.)

The recent funding in Ontario appears to reflect a global trend of increasing availability of digital technologies in classrooms and supports in how to use the technologies. For example, in the United States (US), the Los Angeles Unified School District spent $30 million as the first phase of a plan to provide each student with a tablet computer for use within schools, and also hire facilitators to provide training and support for teachers and students in using the tablets (Jones, 2013). At a national level, in 2014, the US

government announced a $3 billion investment designed to help "close the technology gap" in schools by providing greater access to hardware, software, and internet networks and "provide professional development for teachers to ensure they know how to properly use the technology in their classrooms" (Bidwell, 2014, para. 7). Though these funding initiatives identify the importance of providing funds for hardware and software as well as professional learning opportunities for teachers, they do not identify the forms these professional learning activities will take.

Research initiatives reflect the increased availability of technology in classrooms and the need for professional learning to support teachers' uses of technology in literacy instruction. For example, Simpson, Walsh and Rowsell (2013) designed their international study in the US, Australia, and Canada "to examine tablet pedagogy, assumptions, epistemologies and their implications for reading policy and practice" after "noting the burgeoning use of iPads across schooling contexts" (p. 123). In a related study, Rowsell, Saudelli, McQuirter Scott, & Bishop (2013) designed an inquiry "to expand and refine professional knowledge related to the use of digital tools in the school" (p. 353) within a community of practice of educators when iPads were introduced into the teachers' classrooms. Other studies in the literature show interest in professional learning activities designed to support teachers in using technologies in literacy instruction, but these studies differ in many ways, including the structure of the teacher professional learning activities (e.g., Desimone, 2009; Opfer & Pedder, 2011) and in the types of literacy they are designed to support (e.g., Murphy, 2015; Hill, 2010). I will discuss these variations in greater depth in Chapter 2. As digital technologies are increasingly available for use in classrooms worldwide and teachers learn more about these tools and the pedagogies that support their use, it is likely that literacy practices will change.

Responding to calls in the literature for additional information about how teachers of young children can use digital technologies to provide expansive opportunities for literacy learning, my study is designed to produce knowledge related to digital technologies and pedagogies within a multimodal literacy framework. I document attempts to create professional learning opportunities to support teachers of kindergarten to Grade 2 in creating and enacting multimodal pedagogies using digital tools in their

classroom literacy practices. My research goals and aims are reflected in my research questions:

1. What are the multimodal literacy and pedagogy learning opportunities afforded to teachers by teacher professional learning activities that include the digital?
2. In what ways, if at all, can such opportunities support teachers to enact multimodal pedagogies that include digital technologies and what are the enablers and barriers to such pedagogies?
3. What do the children do and produce within this curriculum and what multimodal literacy learning opportunities are afforded to them?
4. What is the classroom literacy curriculum that is enacted as teachers participate in teacher professional learning activities? (e.g., How do teachers combine digital and traditional resources when planning literacy lessons?)
5. What are teachers' perceptions of the experienced curriculum and of the implications for students' multimodal literacy learning opportunities and literacy practices?
6. What are the implications for teacher professional learning in multimodal literacy pedagogy that includes digital technologies?

To respond to these questions, I employed an exploratory multiple-case study design with ethnographic (Dyson & Genishi, 2005) and narrative methods (Clandinin & Connelly, 2000). I worked with 4 early primary teachers (2 teachers per case) to design and implement literacy lessons that included digital technologies. Data collection was focused around documenting the processes of designing and implementing multimodal pedagogies. Data were collected in the teachers' lesson planning meetings as well as in the teachers' classrooms. I worked as a participant observer with the teachers in a collaborative process of multimodal pedagogical design where we created a lesson for each teacher that responded to the literacy goals they identified and included available digital technologies, reflected on the implemented lesson, and identified opportunities for lesson extension and re-design. At the close of the classroom-based data collection, I conducted semi-structured interviews with the participants.

I next turn to exploring understandings of literacy in the literature, and in the programmatic curriculum for the early primary grades (Kindergarten to Grade 2) that can inform the ways teachers use technologies in early literacy instruction.

1.2 Understandings of Literacy that Can Inform Uses of Digital Technologies in Early Primary Contexts

This study focuses on the ways early primary teachers can include digital technologies in literacy instruction. Sefton-Green, Marsh, Erstad, & Flewitt (2016) explained that a "key trend affecting the use and understanding of digital technologies in young children's lives relates to controversy about the changing nature of literacy – or literacies" (p. 12). The academic literature on literacies as well as the programmatic curriculum for literacy instruction in Ontario, Canada where this study is located (e.g., OME, 2006) reflect different understandings of literacies which can inform the ways teachers can include digital technologies in early literacy instruction. To situate the study in both the academic and professional literature contexts, in this section, I outline different ways the literature defines what literacy is and the ways that young children can acquire literacy and use digital technologies in classrooms. Then, I outline the ways that the Ontario programmatic curriculum documents for The Kindergarten Program and for Language in the primary grades suggest that technologies can be used in literacy instruction in the research context.

1.2.1 Understandings of literacy in the academic literature that can inform the ways digital technologies can be used in early primary classrooms

Traditionally, literacy in classrooms has been associated with reading and writing print-based texts (Purcell-Gates, Jacobson, & Degener, 2004). The literature explains that in early primary classrooms, learning to read and write is of prime importance in literacy instruction and is often tied to understandings of emergent literacy (Stooke, 2010) that recognize that reading and writing "[develop] slowly over a long period of time as very young children experience purposeful literacy activity with more experienced others" (Flewitt, 2013b, p. 2). The literature explains that traditional definitions of literacy are built upon an *autonomous* model (Street, 1995) that "conceptualizes literacy as discrete

'in-the-head skills' that are the same for all, regardless of language background, identity, social status, or purpose" (Stooke, 2010, p. 39). Though many contemporary classrooms have a variety of resources available for use, Hassett (2006) explained that early literacy curricula and assessments continue to emphasize print-based skills even when technologies are present in classrooms.

Contemporary definitions of literacy recognize the changing ways people communicate in current times (e.g., NLG, 1996). These definitions acknowledge that literacy is not a singular entity, and can be termed *literacies* (e.g., Lankshear & Knobel, 2003). Understandings of multimodal literacies are of prime importance to this study as they recognize the changing ways that people can communicate meaning using the traditional (e.g., pencil, paper, printed texts) and multimodal resources (art materials, digital technologies) that are available in many classrooms (e.g., Walsh, 2011). For example, Walsh (2011) explained that multimodal literacies include reading and writing print-based texts as well as "reading, viewing, writing, designing and producing digital and multimodal texts" (p. 13). Multimodal literacies include print literacies that focus on reading and writing (e.g., Purcell-Gates et al., 2004) as well as newer communicative practices associated with producing and consuming multimodal texts (e.g., Stooke, 2010) that are increasingly created using digital technologies (Rowsell, 2006). In contrast to traditional models of literacy that emphasize print literacy skill development (e.g., Stooke, 2010), multimodal literacies, draw on an *ideological model* of literacy which conceptualizes literacies as social practices that are variable across contexts (Street, 1995). I will expand my discussion on multimodal literacies in Chapter 2.

1.2.2 Understandings of literacy in the programmatic curriculum documents that guide the ways teachers use digital technologies in early literacy instruction

Teachers' practices within literacy instruction can be guided by programmatic curriculum documents (Deng, 2009). Programmatic curricula are curriculum documents and materials created by governments or institutions and reflect the norms and beliefs of the dominant culture (Doyle, 1992a). To provide a curricular context for the uses of technologies in literacy instruction in early primary classrooms in the region where the

study is located, I next review Ontario's curriculum documents related to Language and Literacy instruction in the early primary grades (Grades 1-2) (OME, 2006) and kindergarten (OME, 2016a).

1.2.2.1 Programmatic curricula in the primary grades.

The programmatic curriculum for Language in the elementary grades (Grades 1-8) in Ontario reflects a multidimensional view of literacy and guides language instruction in the areas of "listening and speaking, reading, writing, and viewing and representing" in different text forms (OME, 2006, p. 4). The document includes information about the foundational principles of the literacy curriculum, as well as guidance for teachers in planning for literacy instruction and assessing student achievement (OME, 2006). In addition, the document identifies expectations for student learning, including "overall expectations" that "outline standard sets of knowledge and skills required for effective listening and speaking, reading and writing, and viewing and representing" (OME, 2006, p. 8), as well as "specific expectations" for each grade that reflect a "progression in knowledge and skills from grade to grade" (p. 8). The document includes examples and teacher prompts that are designed to "clarify and suggest the intended depth and level of complexity of the expectations… [and] have been developed to model appropriate practice for the grade and are meant to serve as illustrations for teachers" (p. 8). The curriculum explains that teachers are not obligated to use these prompts and examples, and are invited to select approaches they believe are most appropriate for their students (OME, 2006).

The curriculum document recognizes that "information and communications technologies (ICT) provide a range of tools that can significantly extend and enrich teachers' instructional strategies and support students' learning in language" (OME, 2006, p. 30). More specifically, the document explains that digital technologies have the potential to support students in collecting, organizing, and communicating information, and can also be used to connect students with others within the global community (OME, 2006). Recognizing the potential of technologies to support student learning, the document explains that "whenever appropriate…students should be encouraged to use ICT to

support and communicate their learning" (p. 30) within any component of language and literacy instruction (e.g., oral communication, reading, writing, and media literacy). The document supports the uses of digital technologies within language instruction, but it also identifies causes for concern when using internet technologies and explains "all students must be made aware of issues of privacy, safety, and responsible use, as well as of the ways in which the Internet can be used to promote hatred" (p. 30). The programmatic curriculum for Language in Ontario supports thoughtful uses of technologies to support the teaching and learning of literacies (OME, 2006).

Though the document explains that teachers can choose to use digital technologies to support instruction in oral language, reading, writing, and media literacy, the document provides few examples and teacher prompts that specifically suggest the uses of digital technologies to meet "overall" and "specific" learning expectations in reading and writing in Grades 1 and 2 (OME, 2006). For example, in the learning expectations for writing, digital technologies are specifically identified as a resource that can aid students in sorting and classifying ideas for writing within Grade 1 and in Grade 2 as a resource that can help students extend vocabulary. In Grade 2 reading expectations, electronic texts are included in the list of informational text forms that students may access to help them read and understand a variety of text forms. The examples and teacher prompts within the curriculum expectations for reading and writing in Grades 1 and 2 highlight very few suggestions of ways that technologies can be used to support reading and writing.

The curriculum document specifically identifies more opportunities for the inclusion of technologies within media literacy expectations in Grades 1 and 2 (OME, 2006). The document explains that "media literacy focuses on the construction of meaning through the combination of several media 'languages'- images, sounds, graphics and words" (p. 13). Within the curriculum document, media texts include digital texts as well as other text forms including cartoon strips, posters, images, and music. The media literacy expectations for Grade 1 specifically highlight the importance of digital technologies in "understanding media forms and techniques" and give an example of addressing this expectation as understanding the meaning of computer icons, which are used "instead of

words to help users locate computer functions" (p. 46). Further, the curriculum suggests that digital technologies can be used to produce media texts, and to "identify some of the elements and characteristics" of animated texts (p. 46). The media expectations for Grade 2 include digital technologies in identifying the elements of different media forms including television commercials and video clips, and responding to and evaluating information in different text forms including video formats, and producing texts illustrated with digital images. The media literacy expectations in the programmatic curriculum suggests uses of digital technologies that provide opportunities for children to learn technical skills related to operating digital technologies as well as creating digital texts (OME, 2006). As with other forms of literacy previously discussed, there are many more opportunities for teachers to use technologies to support media literacy teaching and learning than are specifically identified in the examples and teacher prompts within the Ontario curriculum document (OME, 2006).

1.2.2.2 Programmatic curricula in kindergarten.

Ontario has recently released new programmatic curriculum documents for kindergarten. The newly revised Kindergarten Program emphasizes the importance of "play-based learning" (OME, 2016a) and identifies four learning frames, defined as "broad areas of learning" (p.13). These frames include "Belonging and Contributing, Self-Regulation and Well-Being, Demonstrating Literacy and Mathematics Behaviours, and "Problem Solving and Innovating" (p. 13). The curriculum document recognizes that literacy learning occurs throughout the child's day at school and can be expressed through different media:

> Children will represent their thinking in various ways – for example, by writing or drawing on paper, by using materials such as blocks or sand, or by using electronic media such as applications on tablets where they can take photos and add their own text to accompany them. (p.72)

The document further explains that digital technologies "[provide] a range of tools that can significantly extend and enrich the educators' instructional strategies and support children's learning" and suggests that "the integration of information and communications technology [ICT] into the Kindergarten program represents a natural

extension of the learning expectations" and encourages educators to include digital technologies in instruction "whenever appropriate" to support student learning (p.105).

Though The Kindergarten Program identifies the importance of digital technologies and invites educators to identify different ways where they can use digital technologies to support literacy learning, there are relatively few examples for how technologies can be used to help students meet overall and specific literacy learning expectations (OME, 2016a). For example, the document suggests that students can create "a greeting card made on a computer" as one way children can "write simple messages" (p.198). In addition, the document suggests computerized interactive texts in a list of reading materials that students may select when identifying "personal preferences in reading materials" (p.203). The Kindergarten Program also states expectations for children to "demonstrate understanding and critical awareness of media texts" (p. 213) by responding to media works through various formats. These expectations hint at the affordances of technology for supporting reading and writing acquisition, and reflect the importance of teaching young children to actively and critically engage with media texts.

The programmatic curricula in Language for Grades 1 and 2 (OME, 2006) and for kindergarten (OME, 2016a) suggest some ways that technologies can be used to help students meet learning expectations. However, the curricula highlight many more ways that traditional tools can be used in language and literacy instruction (OME, 2006; OME, 2016a). The imbalance of suggestions that favour traditional tools over technologies within the curricula may raise questions about the frequency technologies can or should be used in literacy instruction in spite of the provision in the curricula for educators to use technologies "whenever appropriate" (OME, 2006, p. 30; OME, 2016a, p. 105). Though there may be questions about the ways technologies can be used in early literacy instruction, the programmatic curriculum in Ontario provides space for educators to include technologies in innovative ways to support language and literacy instruction.

The tensions related to understandings of literacy and the ways digital technologies can be used in literacy instruction in Ontario are also recognized in international contexts. For example, reporting on the United Kingdom context, Flewitt et al., (2015) explained

"although the educational curricula may nod toward the need for innovative use of technologies in the literacy classroom (Department for Education, 2012), there remains a dominant focus on print-based alphabetic skills" (p. 292). In the Australian context, Lynch and Redpath (2014) identified similar findings that suggest the educational curriculum and policy "is potentially at odds" (p. 147) with innovative pedagogies that include digital technologies in early literacy classrooms. In the American context, researcher Wohlwend (2009) identified that standardized assessment measures that privilege performance on print literacy skills influence teachers' curricular decisions. Internationally, teachers confront challenges in including digital technologies in early literacy instruction. More information is needed about the ways teachers can negotiate tensions between understandings of literacy in the academic literature and in the programmatic curricula.

1.3 Dissertation Organization

This dissertation is organized into 6 chapters. The first chapter introduces my own story of designing multimodal pedagogies that include digital technologies and introduces the study and research questions. Then, I discuss understandings of literacy that influence the ways teachers can use digital technologies in early childhood literacy curricula.

In Chapter 2, I review the literature related to teachers' access to digital technologies in early childhood classrooms and identify concerns voiced in the literature about the uses of digital technologies with young children. I further survey the literature related to multimodal literacies that are premised on sociocultural theories of literacy and highlight the different uses of technologies within literacy instruction. Next, I review the literature on multimodal pedagogy and highlight studies that show the ways multimodal pedagogies can expand literacy learning opportunities. Then, I survey the literature on teacher professional learning (TPL) and identify different approaches for supporting TPL in literacy. Finally, I situate my study in the literature.

In Chapter 3, I outline my theoretical framework comprised of theories of curriculum, multimodal literacy, placed resources, and a social theory of learning. I then outline the

methodology for my qualitative multiple-case study and identify the data sources and methods used.

In Chapter 4, I describe the contexts for curriculum-making in the schools within each case. I further explain the ways that I moved between the position of insider and outsider in the study.

In Chapter 5, I respond to the research questions and show the findings about the ways we designed and implemented literacy lessons that included digital technologies.

In Chapter 6, I discuss the findings and identify some implications and recommendations for teacher professional learning in multimodal literacy pedagogy.

Chapter 2

2 Literature Review

In this chapter, I review literature related to multimodal literacies that include digital technologies, multimodal pedagogies, and teacher professional learning related to the ways teachers provide opportunities for young children to use digital technologies in classroom literacy lessons.

Given the rapid change and growth in technology, I began my literature search by surveying the last 5 years of articles published in the *Journal of Early Childhood Literacy* (*JECL*). I selected *JECL* as my starting point because of its international reach and its focus on young children's (ages 0-8) literacy uses in naturalistic settings that include classroom environments (*JECL*, n.d.). In my initial survey of the literacy literature, I recognized, through citations in the literature, that this topic is informed by a variety of disciplines including psychology, neuroscience, and education. I located additional literature for review through searches of databases such as *Summon*, *ProQuest Education*, and *Google Scholar*, using various combinations of search terms to identify different ways teachers provide opportunities for their young students to use digital technologies in classrooms, the pedagogies that can support young children's uses of digital technologies, and the processes that can support teachers' learning and innovation of teaching practices. In my searches, I included primary and secondary sources as well as policy documents, opinion papers, and professional resources designed for use by practicing teachers.

I focused my search on sources published in the last 5 years that concentrated on digital technology uses in early childhood classroom literacy lessons. When my searches returned limited literature, I expanded my search to include uses of technologies in elementary school literacy lessons, and/or uses of technologies in other subject areas in early childhood classrooms. I examined this literature and identified sources that were cited frequently, and further explored the reference sections to identify additional literature for review. Many of the articles returned through the literature searches

highlight children's uses of technologies in early childhood classroom settings. Given the focus of this study, I searched these sources to identify the teachers' roles in guiding the ways children use digital technologies in their classrooms.

In my review, I found that the literature recognizes that technologies can be used in a variety of ways in classrooms and recommends technology integration as the preferred use of technology in classrooms (e.g., Ertmer, 2005; NAEYC, 2012). The National Association for the Education of Young Children (NAEYC) (2012) explained that "true integration occurs when the use of technology and media becomes routine and transparent—when the focus of a child or educator is on the activity or exploration and not on the technology or media being used" (p. 8). Since it can be difficult to ascertain if the technology uses meet the NAEYC criteria of "true integration" (p. 8), I focus this review on literature highlighting technology uses in classrooms, and employ the term "use" rather than "integration" in my discussion.

This literature review is divided into three sections that correspond to intersecting bodies of literature. In the sections that follow, I first consider factors that influence the ways teachers provide opportunities for young children to use digital technologies in their classrooms, including issues of access to digital technologies, and teacher beliefs that are informed by standards and policies, and highlight research studies of digital technology uses in early primary literacy instruction. Then, I explore multimodal pedagogy literature that examines the constituents of the design of multimodal pedagogies and highlight studies that examine the ways teachers can design learning opportunities to support students' uses of digital technologies in classrooms. Finally, I examine the teacher professional learning literature that highlights the processes that can support teachers' learning and innovation of teaching practices and explore studies of teacher professional learning and literacy.

2.1 Factors Identified in the Literature as Potentially Influencing Technology Use in Early Primary Classrooms

As previously introduced, the literature recognizes that many educators of young children tentatively include technologies within instruction (e.g., Flewitt et al., 2015; Lynch & Redpath, 2014) and young children's technology uses in classroom settings lag behind older children's technology uses at school (Flewitt et al., 2015; Wohlwend, 2009). The literature identifies many interrelated factors that can influence the ways teachers provide opportunities for their students to use digital technologies, including policies (created at government, school district, and school levels), access to and availability of technologies, teacher beliefs and established classroom practices, and teacher training in technology uses (e.g., Blackwell, Lauricella & Wartella, 2014; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur & Sendurur, 2012).

The literature identifies many factors that may influence the ways teachers integrate digital technologies into their teaching practices (Ertmer, 1999). These factors may be extrinsic to the teachers and include issues "of access to technology, time to learn and use technology, training and support, and professional development" (Blackwell et al., 2014, p. 83) or intrinsic to the teachers and include the teacher's beliefs about teaching, learning, and the value of technology use (Ertmer, 1999). These factors can both enable and constrain the ways teachers provide opportunities for their students to use technologies (Ertmer et al., 2012). Next, I explore literature that examines teachers' access to technologies and teachers' beliefs about technology use in the classroom and where possible, highlight studies of the ways teachers include technologies within literacy instruction in early primary classrooms.

2.1.1 Access to Technologies

As previously explained, recent funding initiatives have increased the availability of digital technologies in classrooms. Recently, the Canadian Teacher's Federation initiated a Canada-wide study designed to help understand "how technologies are impacting teachers and their teaching practices" (Johnson, Riel, & Froese-Germain, 2016, p. 3). In

this study, Johnson et al. (2016) surveyed 4,043 classroom teachers (kindergarten - Grade 12) across Canada (including 333 kindergarten and 2,242 elementary teachers). Johnson et al. found that 97% of teachers surveyed reported having access to networked devices in their classrooms. Teachers reported that in kindergarten, school districts supplied tablets and desktop computers more frequently, and laptops and notebooks less frequently than at the other levels. Relatedly, tablets were used more frequently in kindergarten classrooms than in elementary and secondary classrooms.

The teachers in the study claimed a need for greater support to use the available technologies in their classrooms (Johnson et al., 2016). For example, 44% of kindergarten teachers surveyed agreed with the statement, "I have sufficient support in my school/district to enable me to use various kinds of networked technologies to meet curricular goals" (p. 44). This finding may help explain why 71% of kindergarten teachers reported having tablets supplied by their school district in their classroom, but only 39% of these teachers reported that they used the technologies "significantly" (p. 6). The findings reveal that teachers require access to digital technologies as well as support in using the technologies to support student learning.

Within literacy instruction, teachers reported particular difficulties with accessing technologies. For example, Hutchison and Reinking (2011) explored "literacy teachers' perceptions of integrating information communication technologies (ICTs) into literacy instruction" (p. 312) through a survey of 1441 literacy teachers (Grades K-12) within the US. Within the study, teachers identified several "prominent obstacles" to integrating technologies into literacy instruction, including a lack of "access to technology and technological support", "professional development in how to integrate technology", and "time to prepare for lessons" due to "the amount of time that must be devoted to high stakes testing" (p. 328). The "most prominent" obstacle identified by teachers within the study for integrating technologies into literacy instruction was "a lack of time to integrate ICTs during a class period" (p. 328), a finding that the authors explained may indicate that teacher participants believed that uses of technologies in literacy instruction were supplemental rather than integral parts of literacy instruction. Hutchison and Reinking's findings highlight the "importance of addressing teachers' beliefs and perceptions in any

effort to increase the integration of ICTs into literacy instruction" (p. 330) and suggest that teachers' beliefs are closely connected with their perceptions of access to technological resources.

2.1.2 Teachers' Beliefs About Technology Use in the Classroom

The literature reports that access to hardware, software (e.g., Blackwell et al., 2014; Kucirkova, 2014), and professional learning does not guarantee the meaningful inclusion of technologies in classrooms (e.g., Ertmer, 1999; Ertmer, 2005). For example, Ertmer (2005) noted that "high-level technology uses" lagged even when teachers had access to technologies and training (p. 25), and highlighted the importance of considering "the relationship between teachers' pedagogical beliefs and their technology practices" (p.27). Ertmer explained that "we need to examine teachers themselves and the beliefs they hold about teaching, learning, and technology" because "the decision of *whether* and *how* to use technology for instruction rests on the shoulders of classroom teachers" (p. 27, emphasis in original).

The literature explains that teachers' beliefs and attitudes about technology uses with young children can influence the opportunities they provide for children to use technologies in classrooms (e.g., Blackwell et al., 2014; Ertmer, 2005). With this in mind, Blackwell et al. (2014) investigated "the relationship between extrinsic and intrinsic factors that influence early childhood educators' digital technology use" (p. 82) through a path analysis of survey results from 1234 early childhood educators in the US. The study found that teacher attitudes about the perceived value technologies hold for supporting student learning had the "strongest direct effect on technology use" (p. 87), followed by "teacher confidence using technology in developmentally appropriate ways" (p.84) and teacher perceptions of the availability of technological support. The study found a "dynamic relationship" (p. 89) between access to technologies, teacher attitudes and beliefs influenced through policies, support in using technology, and teaching experience. This study highlights the complexity of understanding the relationships between technology uses and teacher beliefs as teacher beliefs are multi-faceted and connected to broader discussions of policy and practice.

The literature highlights examples that show that even when teachers believe that it is important that children have access to, and learn about technologies at school, they can feel constrained by the curricular context (e.g., Flewitt et al., 2015; Lynch & Redpath, 2014), confidence in their own abilities to use technologies to support learning (e.g., Johnson et al., 2016), and/or understandings of "the place of technology in young children's lives" (Blackwell et al., 2014, p. 83). I next explore literature that discusses theoretical perspectives and research that may influence teachers' beliefs about the uses of technologies in early primary classrooms.

2.1.3 Concerns voiced in the literature about young children's technology uses

Studies within the literature agree that children's uses of technologies in early childhood impact children's learning and development, but disagree about whether the impact is positive or negative, and about the strength of these effects. Researchers from many disciplines, including medicine, psychology, and education, have contributed to this discussion, with researchers from medicine and psychology identifying the greatest causes for concern about the ways young children's technology uses influence children's brain, physical, and social development (e.g., Dodge, Husain, & Duke; Lentz, Seo, & Gruner, 2014). These conflicting opinions raise questions about the ways teachers can use technologies to support children's healthy development (e.g., Lentz et al., 2014; NAEYC, 2012).

2.1.3.1 Time with technologies.

Research indicates that many young children use digital technologies outside of school. Recently, Rideout, Saphir, Pai, Rudd, and Pritchett (2013), conducted a large scale "nationally representative survey of 1463 parents of children age 8 and under" (p. 13) in the US to document the ways young children use media at home. The findings suggested that young children use various media technologies for significant amounts of time each day. For example, parents reported that older children used media for more time each day than younger children, with children ages 2-4 years spending 1.58 hours per day, and children ages 5-8 years spending 2.21 hours per day. Children used computers, game

consoles, tablets, televisions, and other mobile electronic devices for various purposes including watching television or videos, reading/listening to e-books, using educational software, listening to music, and playing video games.

The amount of time young children use technologies at home may influence the ways teachers use technologies in their classrooms. The American Academy of Pediatrics (AAP) (2011) takes a strong stance for limiting screen time (including computers, tablets, and televisions) in early childhood education and care settings due to the amount of time children use screens at home. The AAP suggests that educators inform parents/guardians if media is used within the early childhood education and care facility. The AAP recommends that screen time for children age two and above "should be limited to not more than thirty minutes once a week, and for educational or physical use only" (p. 67) while in childcare and "should be free of advertising and brand placement" (p. 67). Further, the AAP recommends limiting children's computer use to 15 minutes/use except when the computer is being used for homework or when the computer is used as an assistive or adaptive device. These recommendations reflect concern in the amount of time children use screens, the content the children are viewing, and the impact on children's health and wellbeing. The AAP continues to revise their policies as more information becomes available.

The literature identifies concern for the content young children access through technologies (e.g., Ernest et al., 2014). These concerns include that media technologies designed for young children are "commercially driven" and use children's "beloved screen characters" to "market products and more media to young viewers—to the detriment of their health and wellbeing" (Campaign for a Commercial-Free Childhood, Alliance for Childhood, & Teachers Resisting Unhealthy Children's Entertainment, 2012, pp. 8-9). In addition, there is concern that the content of some technologies promotes gender stereotypes (Lentz et al., 2014) and aggressive behaviours (Howard-Jones, 2011). The literature also identifies concern for the safety of young children who access internet resources (Dodge et al., 2011). This literature explains that these concerns provide an impetus for caregivers of young children to critically consider the content of technologies that young children access (e.g., AAP, 2011), and highlights the need for caregivers to

support young children in developing a "cautious and critical stance" toward technologies (Dodge et al., 2011, p. 96).

2.1.3.2 Influence of technology uses on young children's brain development.

The literature highlights concerns about the influences of young children's technology uses on brain development. The literature explains that young "children's brains and bodies are going through critical periods of growth and development" (AAP, 2011, p. 67) and within these periods, "the developing brain of a child is more plastic, and responds more malleably to experience than an adult's brain" (Howard-Jones, 2011, p. 5). As a result, the Campaign for a Commercial-free Childhood et al., (2012) explained that a child's early experiences with technologies may influence brain development which can "have important lifelong ramifications" (p. 7).

In his literature review, Howard-Jones (2011) explained that research within the neuroscience field can provide helpful information about the "implications of using interactive technologies on young people's brains, behaviours and attitudes" (p. 2), but cautioned that this information has often been misunderstood in the popular culture. Howard-Jones identified studies in the field of neuroscience that have found a positive association between videogames/computer uses with addictive behaviours, aggressive behaviours, sleep disruption, attentional difficulties, and vision problems. However, he explained that in video gaming, technologies affected "the same neural mechanisms… in both constructive and destructive ways" (p. 66). Though the neuroscience literature identifies concerns about the ways technologies can influence brain functioning, more information is needed to understand the relationship between technology uses and brain function (Howard-Jones, 2011).

The literature review by Howard-Jones (2011) provides a helpful overview of some studies within the neuroscience literature. However, it is important to identify some considerations that may influence the interpretation of his review because these considerations help to identify the complexity of interpreting literature within a contested space that is closely connected with commercialized interests (e.g., Campaign for a

Commercial-free Childhood et al., 2012). First, Howard-Jones' (2011) literature review was funded by the United Kingdom based internet registry, Nominet Trust (e.g., Nominet Trust, 2015). Since the funding agency was tied to an internet based company, the funding agency could have had a vested interest in positioning uses of technologies in a more positive light. In addition, Howard-Jones (2011) was not explicit in his methods for selecting studies for inclusion/exclusion in the review, nor was he explicit about the journals he reviewed or his analytical methods. In spite of these considerations, this review can be helpful when considered as part of a larger body of literature that highlights the complexity of understanding the ways technologies may influence learning and behaviour. In addition, the inclusion of this study highlights the need to critically consider the potential bias of studies, as many studies within this body of literature are sponsored by corporations, associations, and activist groups with particular stakes in research results (e.g., Campaign for a Commercial-free Childhood et al., 2012; Johnson et al., 2016; Rideout et al., 2013).

2.1.3.3 Influence of young children's technology uses on health and wellbeing.

The literature raises concerns about the effects of young children's technology uses on health and wellbeing. Studies have shown a link between screen use and childhood obesity. For example, Cox et al. (2012) analyzed data about children's screen time, food intake while using screens, and children's physical activity (reported by the children's mothers) and found a relationship between preschoolers' weight and the amount of time they spent watching screens. Cox et al. attributed this relationship to an increase of snacking and a decrease in activity level while watching screens. Other studies have shown the predictive effects of technology use on health problems. For example, Rosen et al. (2014) found that media use was associated with "ill-being" defined as "psychological issues, behavioral problems, attention problems and physical health" (p. 364) in children, preteens, and teenagers. In this study, parents of children ages 4-18 (n=1030) completed a survey about daily technology use, food consumption, exercise, and health, and a path analysis was conducted. The study found that "daily technology use predicted total ill-being, attention problems and physical problems" (p. 370) in

children ages 4-8 even when the study controlled for physical activity, unhealthy eating, and demographics. Studies such as these raise concerns about the relationship between young children's technology uses and overall health and wellbeing.

2.1.3.4 Developmentally appropriate uses of technologies in early childhood classrooms.

The literature's concerns about the potential effects of children's technology uses on their development and the introduction of digital technologies into early childhood programs raise questions about how teachers of young children can include technologies within their practices to support healthy child development (e.g., NAEYC, 2012). The literature often connects these questions to discussions of what is considered *developmentally appropriate* or *developmentally inappropriate* for young children (e.g., Ernest et al., 2014; Paciga, 2015), and teachers' *developmentally appropriate practices* (DAP) in early childhood settings (e.g., Lentz et al., 2014; NAEYC, 2012). In response to these questions, NAEYC issued position statements to guide its 60,000 members (NAEYC, n.d.a, para. 3) on DAP in early learning programs (2009), as well as a position statement designed to guide educators in developmentally appropriate uses of technologies (2012). To understand more about the constituents of DAP, I explore each position statement in turn.

NAEYC (n.d.b) explained that principles of DAP are "the foundation for all of NAEYC's work" (para. 3) and thus influence the beliefs and practices of many educators of young children. In 2009, NAEYC issued a position statement that defines DAP as "practice that promotes young children's optimal learning and development…[and] is grounded both in the research on child development and learning and in the knowledge base regarding educational effectiveness in early care and education" (p.16). The principles of DAP recognize that children's learning and development occur in cognitive, physical, social, and emotional domains and that development in each of these domains follows a "relatively stable, predictable sequence of growth and change" (p. 11). Though a DAP framework views the sequence of developmental stages as predictable, the NAEYC statement acknowledges that children may progress through the stages at varying rates, and a particular child may experience uneven rates of development in different areas.

Within the DAP framework, early experiences, whether positive or negative, influence the ways a child learns and their motivation to learn. Within the position statement, DAP principles position learning and development as a product of "the interplay between the growing, changing child and the child's experiences in the social and physical worlds" (p. 12).

The NAEYC (2009) position statement recognizes literacy learning as complex processes that can be facilitated through thoughtful and knowledgeable educators. Like learning in other disciplines, DAP views literacy learning as following a predictable, developmental sequence. Within DAP, teachers plan curriculum for literacy instruction by identifying what the child knows (based on understandings of child development and observations of what the child can do) and identifying the next step for instruction (based on the educator's knowledge of the next stage in the developmental sequence). DAP recognizes that teachers can facilitate children's learning through a variety of teaching methods and materials.

The inclusion of digital technologies in early childhood classrooms has raised questions about the ways technologies can be used within DAP (NAEYC, 2012). In response to these questions, NAEYC issued a position statement designed to guide educators of young children "about the use of technology and interactive media in ways that can optimize opportunities for young children's cognitive, social, emotional, physical, and linguistic development" (p. 2). NAEYC takes the position that "technology and interactive media are tools that can promote effective learning when they are used intentionally by early childhood educators, within the framework of developmentally appropriate practice" (p. 5). The statement explains that when teachers position technologies as "tools—not as ends in and of themselves—teachers can avoid the passive and potentially harmful use of non-interactive, linear screen media that is inappropriate in early childhood settings" (p. 8). Further, the statement recognizes that technologies have the potential to support learning. To realize the learning potential, NAEYC recommends that educators "select, use, integrate, and evaluate technology and interactive media tools in intentional and developmentally appropriate ways, giving careful attention to the appropriateness and quality of the content, the child's experience, and the opportunities

for co-engagement" (p. 11) with other children and adults. To that end, the position statement favours uses of interactive technologies that provide opportunities for playful, collaborative exploration over technologies that promote passive uses (e.g., watching videos), and recommends that technology use should not replace other forms of creative and outdoor play.

The NAEYC (2012) position statement was designed to be a resource for guiding teachers of young children in using technologies intentionally to support student learning in their classrooms. The statement recognizes the importance of teachers' knowledge in creating learning activities that include technologies and calls for educators to have access to ongoing, accessible, and affordable professional learning opportunities. The NAEYC statement recognizes that technologies are an important part of young children's daily lives, but identifies a need for further research to better understand the ways technologies can be used with young children and the effects of technology use on child development and learning.

2.1.4 Optimism for the ways technologies can support learning and development in early childhood

Although the literature raises strong concerns for the ways technologies influence young children's learning and development, the literature also shows optimism for the ways technologies can support learning and development in early childhood (e.g., Bavelier, Green, & Dye, 2011). For example, in their case study of 14 preschool children, Plowman, Stevenson, Stephen and McPake (2012) found that technologies supported children's dispositions to learn within socio-emotional and cognitive domains by providing opportunities for the expansion of knowledge. In addition, Howard-Jones (2011) found that the multimodality inherent in digital media has the potential to stimulate the brain in ways that may support memory. The literature also highlights the affordances that touch-screen technologies have for supporting young children's engagement and literacy learning (e.g., Flewitt, Kucirkova & Messer, 2014). Additional studies that express optimism for technology uses in early literacy learning will be highlighted later in the literature review.

"Teachers, parents, health providers, and child development experts all agree that the media children use can have a profound impact–both positive and negative–on learning, social development, and behavior" (Rideout et al, 2013, p. 7). The literature recognizes that people use technologies in diverse ways and suggests that a dichotomy between good and bad uses of technology does not reflect the multidimensionality of technologies or of human experiences (Bavelier et al., 2011). Howard-Jones (2011) explained that the value of any type of technology "depends upon how it is used (by who, when and what for)" (p. 65). Thus, the literature identifies reasons for concern and optimism related to the effects of children's technology use on their learning and development (e.g., Bavelier et al., 2011). I next review literature on reconceptualist perspectives of childhood and curricula to consider alternate views of childhood, learning, and the ways technology can be used in early childhood classrooms.

2.2 An Alternate View: Reconceptualizing Childhood, Learning, and Curricula

The concerns and promises voiced in the literature about the ways technologies can be included in early childhood classrooms might be otherwise viewed when considered through the lens of reconceptualist approaches to early childhood. These perspectives raise questions about developmentalism and DAP and offer alternate ways to conceptualize childhood, learning, curricula, and the ways technologies can be used by young children. Iannacci and Whitty (2009) define reconceptualist perspectives of childhood as approaches that "act as counter narratives to dominant ECE [Early Childhood Education] discourses such as developmentalism, economic investment, and the universal child" (p. 10) and draw on "socio-cultural, feminist, critical, postmodern and decolonizing understandings" (p. 9). Iannacci and Whitty explained that reconceptualist perspectives are not fixed and continue to change and provide opportunities for "a reconceptualization of what is and what can be" (p. 22) in early childhood curricula.

According to Iannacci and Whitty (2009), reconceptualist theorists reject ideas of normative childhood development that assume that development follows predictable stages and unfolds naturally. Iannacci and Whitty explained that reconceptualists oppose

views of child development that understand learning as an "inevitable", "developmental progression" (p. 12), neglect the importance of social interactions on learning, and fail to appreciate the diversity of children and how they learn. These normative views of child development influence early childhood pedagogies and practices as the norms for an age group are the "primary pedagogical focus of programming and instruction for that age group, with little room for variation" (p. 12).

Reconceptualist approaches to curricula recognize the diversity of children and the ways they learn within particular environmental and cultural contexts. Iannacci and Whitty (2009) explained that these approaches "invite educators to act in ways that are responsive to children's and educator's socio-cultural contexts and their 'funds of knowledge' (Moll, 1992)" (p. 9), where *funds of knowledge* refers to the resources acquired outside of the classroom context (e.g., Moll, Amanti, Neff & Gonzalez, 1992). Iannacci and Whitty explained that reconceptualist perspectives view curricula as flexible and evolving, and "[hold] that educators be in a constant state of (re)learning what they know so that curriculum is constantly being reconceived" (p. 22).

Gillen and Hall (2013) explained that understandings of how young children learn are closely connected with conceptions of literacy, and these conceptions provide different ways to understand the role technology can play in young children's literacy learning in schools. The literature within sociocultural perspectives of literacy is consistent with the reconceptualist goals of recognizing the importance of the cultural and social context and dismantling views of universal child development (Iannacci & Whitty, 2009). I next explore literature that highlights sociocultural approaches to literacy, including a curriculum framework designed for use in early childhood settings.

2.2.1 Sociocultural perspectives of literacy

The literature grounded in sociocultural perspectives of literacy provides different ways to view young children's uses of technologies in classrooms, and the ways teachers can include technologies to support students' literacy learning than developmentalist models of literacy that views literacy learning as following a set developmental sequence. Sociocultural perspectives of literacy include "a collection of related theories that include

significant emphasis on the social and cultural contexts in which literacy is practiced" (Perry, 2012, p. 51). Sociocultural understandings of literacy understand literacy learning in ways that have implications for the positioning of the teacher, child, and digital technologies.

2.2.1.1 Literacy as a social practice.

The theory of literacy as a social practice is built upon an *ideological model* of literacy that conceptualizes literacy as a set of practices that are variable across contexts (Street, 2003). This view is in contrast to the *autonomous model* of literacy introduced in Chapter 1 that conceptualizes literacy as "a technical and neutral skill" (p. 77) that can be universally applied across contexts. Street describes literacy as a social practice that is embedded within a particular social and cultural context; as such, literacy learning is locally situated, context specific, and "rooted in conceptions of knowledge, identity, and being" (p. 78). Thus, literacies are multiple, variable, purposeful, shaped by institutions and power relationships, and situated within time and sociocultural contexts (Barton & Hamilton, 2000).

Central to understanding literacy as a social practice are understandings of literacy practices and literacy events. Barton and Hamilton (2000) explained that "the basic unit of a social theory of literacy is that of literacy practices" (p.7), defined as the ways that people use literacy. Literacy practices cannot always be observed as they include "values, attitudes, feelings and social relationships" (p.7). Literacy events are "observable episodes which arise from practices and are shaped by them" and include "activities where literacy has a role" (p. 8). Barton and Hamilton explained that within literacy research, observations of people engaged in literacy events with various text types can be helpful in understanding more about people's literacy practices.

The literature that views literacy as a social practice recognizes the variability of literacy events and the multiplicity of literacies. Barton and Hamilton (2000) explained that within literacy events, people combine written language with other meaning making systems (e.g., images, graphs, numerical equations) in different ways according to the context or place where literacy is learned and used. Barton and Hamilton explained that

different literacy practices may be valued in the home and school, and identify that schools "tend to support dominant literacy practices" (p. 12). Though the literature that views literacy as a social practice recognizes literacies as multiple and that people use a variety of resources in literacy events and practices, this body of literature "tends to focus on practices that surround *print* literacy [e.g., reading and writing]" (Perry, 2012, p. 58, emphasis in original). To further understand the ways people use different resources for meaning making within sociocultural theories of literacy, I next explore conceptions of multimodal literacy.

2.2.1.2 Multimodal literacy.

In this dissertation, digital tools are understood within the context of multimodal literacy. Multimodal literacy recognizes the myriad modes and channels people use to communicate in contemporary times (NLG, 1996). As a sociocultural theory of literacy, multimodal literacy recognizes that the social context envelopes meaning making practices (Walsh, 2011). As previously introduced, Walsh defines multimodal literacy as "the simultaneous reading, processing and/or writing, designing, producing and interacting with various modes of print, image, movement, graphics, animation, sound, music and gesture" (p. 106). Multimodal literacy values both traditional print literacies that focus on reading and writing (e.g., Purcell-Gates et al., 2004) as well as newer communicative practices associated with producing and consuming multimodal and digital texts (e.g., Walsh, 2011).

The literature on multimodal literacy explains that people combine different modes and media in meaning making practices. Here, the term *mode* refers to "a regularised organised set of resources for meaning-making, including image, gaze, gesture, movement, music, speech and sound effects" (Kress & Jewitt, 2003, p. 1), and the term *media* refers to "the means of communicating a message, e.g., paper, computer screen, phone screen, television, IWB [interactive white board], film, camera, musical instrument" (Walsh, 2011, p. 105). Walsh explained that in classrooms, children may collaborate and/or negotiate with others as they produce and/or interpret multimodal texts that include a range of modes and media to make and communicate meaning.

In this study, multimodal literacies include digital literacy. The term digital literacy is used in various ways in the literature (Lankshear & Knobel, 2015). For example, Walsh (2011) explained that digital literacy includes "reading and writing with digital texts" as well as "the technical skills required to operate the computer or mobile device" (p. 105). Sefton-Green et al. (2016) position digital literacy as a social practice "that involves reading, writing and multimodal meaning-making through the use of a range of digital technologies" (p. 15). In her definition, Jewitt (2011b) recognized that digital literacies are multiple and include "literacy practices within digital contexts, using contemporary forms of communication such as text on screens, weblogs, text messaging, virtual worlds and gaming" (p. 295). Lankshear & Knobel (2015) also highlighted the importance of understanding digital literacies as multiple, and argue that "we should think of digital literacy as shorthand for the myriad social practices and conceptions of engaging in meaning making mediated by texts that are produced, received, exchanged, etc., via digital codification" (p. 13). Collectively, these definitions of digital literacies place the emphasis on social practices of meaning making as multiple modes coalesce within diverse forms of digital media, rather than on the particular technology or digital tool used.

Young children have access to different types of digital technologies compared with older children (e.g., Johnson et al., 2016), and in many cases, digital technology uses in early primary classroom settings lag behind uses of technologies with older children (e.g., Flewitt et al., 2015; Wohlwend, 2009). To understand more about sociocultural views of literacy in early childhood, and the ways digital technologies can be a part of young children's meaning making practices, I next examine early childhood literacy literature.

2.2.1.3 Early childhood literacy.

The field of early childhood literacy has emerged over the last century, and researchers from different disciplines have contributed to, and continue to influence this "distinctive and dynamic research area" (Gillen & Hall, 2013, p. 3). Gillen and Hall explained that "the relationship between early childhood and literacy" has become increasingly "complex and problematic over time" (p. 14) and that conceptions of childhood and how

children learn are closely connected with understandings of literacy. Gillen and Hall explained that *early childhood literacy*

- is "a social construct" that "has evolved out of contestation, innovation, and reconceptualization" (p. 14). The field continues to be scrutinized and will continue to grow and change;
- values the "literacy practices and products of early childhood…as valid in their own right" rather than as steps to achieving adult forms of literacy (p. 14); and
- embraces the multiplicity of young children's expressive and receptive literacy practices enabled through multiple modes and media.

These conceptions of early childhood literacy highlight a need to closely examine the meaning making practices of young children and hold implications for the opportunities teachers provide for their young students to use technologies in the learning of literacies in their classrooms.

Literature within the field of early childhood literacy positions children as strategic, creative, flexible, and capable meaning makers. For example, Gillen and Hall (2013) drew on Flewitt (2013a) to explain that very young children "utilise a rich range of ways to make meaning and while they might not be able to distinguish between them as forms, they utilise whatever they feel as appropriate in whichever ways they want to intend a meaning" (p. 12). Gillen and Hall (2013) further explained the flexibility of young children's meaning making practices by citing Rowe (1994) who attributed young children's abilities to "move across" multimodal communication systems to the belief that "young children do not feel excessively constrained by society's distinctions between communication systems" (p. 12). Gillen and Hall (2013) added further support to their positioning of the child by drawing on the work of Kress (1997) who suggested that "young children choose what they want to represent and then select the best possible means to do it" (p. 12). These understandings of the ways children create multimodal texts recognize children's texts as valid forms of communicating meaning instead of solely precursors to print literacy acquisition (Gillen & Hall, 2013).

Within the early childhood literacy literature, understandings of the child as a capable meaning maker extend to literacy practices that include digital technologies. Gillen and Hall (2013) explained that in contemporary times, "literacy practices necessarily involve technologies" (p. 13). However, drawing on research from Marsh (2010), Flewitt (2013a) and Palmer (2006), Gillen and Hall (2013) identified a paradox in early childhood education where learning with digital technologies "is emphasized in education, with a commensurate hype that an early a start as possible can increase advantage. Yet simultaneously a kind of moral panic surrounds their use in early childhood" (p. 13). How can teachers of young children negotiate this paradox and include opportunities for their students to use technologies in literacy learning? Gillen and Hall explained that opinions in the field of early childhood literacy are shifting toward a "more balanced position" (p. 13) as literature documents different ways children can include digital technologies within their meaning making practices. I next highlight an empirical example to understand more about how teachers of young children can support their student's multimodal meaning practices.

2.2.1.4 Social practices of multimodal meaning making in early childhood classrooms.

The literature identifies examples of the ways teachers can support children's multimodal meaning making practices. For example, Stooke (2009) identified ways that interactive storytelling activities could be multimodal resources for literacy teaching and learning in a kindergarten. In this study, Stooke used felt board pieces to support the telling and retelling of stories from children's picture books. She employed an interactive, playful pedagogy that invited children to move felt board pieces, predict story events, and suggest alternatives to the story plot. Stooke found that "storytelling with traditional materials such as puppets and flannel boards can be a resource for multiliteracies pedagogy" (p. 254) as children collaborated with one another, and combined different modes to make meaning of a text.

Stooke (2009) considered the multiplicity of communication resources (e.g., multimodal resources as well as digital technologies) available to young children and the implications this communication repertoire might have for the ways children acquire literacies in

contemporary times. Stooke suggested that children who live in worlds with a multiplicity of available multimodal resources may find that "language alone cannot fulfill their communicative intentions" (p. 266). The changing communication landscape and meaning making practices of children may challenge the positioning of traditionally privileged print literacies in classrooms, as well as beliefs about the ways children acquire literacies. Stooke explained this repositioning may create tensions in light of policies and evidenced based standardized assessments that privilege the measurement of print literacy skills in early literacy learning.

In consideration of the multimodality of children's meaning making practices that include the digital, Stooke (2009) posed the question, "How, then, should teachers of young children navigate these radically changed communicative spaces?" (p. 266). This is a complex question, and the literature explains that there cannot be a singular answer, given the continuously changing communication environment (e.g., Walsh, 2011). However, Stooke (2009) predicted that young "children will need greater access to new technologies than is currently available in many early primary classrooms" (p. 266) but that the instruction of print literacies will continue to be important. Drawing on her findings of the rich meaning making opportunities afforded to children during interactive, multimodal storytelling, Stooke suggested that print literacies and multimodal literacies practices need not be viewed as competing interests. Stooke agreed with Mackey (2006) that, when selecting resources for literacy instruction, educators should consider the affordances (i.e., meaning making potential, Rowsell, 2006) of print and other modes for meaning making. I next highlight ways technologies can be used within curricula guided by sociocultural, multimodal approaches to literacy and pedagogy.

2.2.1.5 Early childhood curriculum frameworks built upon sociocultural approaches.

According to Whitty (2009), The New Brunswick Curriculum Framework (NBCF) (University of New Brunswick Early Childhood Research and Development Team, 2008) is an example of a framework informed by sociocultural approaches for use in early childhood settings. Whitty explained that the NBCF outlines broad areas of teaching and learning for early childhood classrooms and recognizes the child as a capable meaning

maker and the importance of the social contexts for learning, and rejects developmental norms. The framework identifies four learning goals of early learning programs: "well-being, play and playfulness, communication and literacies, [and] diversity and social responsibility" (p. 39). To facilitate this learning, the framework identifies reflective questions designed to encourage educators to engage in reflective practice.

2.2.1.5.1 Uses of technologies in the New Brunswick Curriculum Framework.

The NBCF (UNB, 2008) includes technologies as part of the communication and literacies learning goal. The framework recognizes that "technological innovations are shifting the meaning of being literate from a dominant focus on language and print to a multimodal literacies approach" and includes technologies within an array of examples that highlight multimodal literacies including reading texts in book formats as well as "singing, painting, dramatic play, block building, photography, television, and computers" (p. 40). To help cultivate literate identities, the framework suggests that "children use the literacy tools of digital technologies" in ways that "[represent] their experiences with technologies in everyday life" (p. 46). The framework positions children as capable communicators whose "learning requires that educators listen for and learn the range of experiences children bring with them, to ensure that children have opportunities to use their knowledge as they access multiple texts from a range of sources" (p. 46). The framework does not impose imperatives for the ways technologies must be used in practice, but instead poses the following questions for the educator's reflection:

> What new technologies are available for use in your centre? How is this technology used to document children's learning as a way to communicate thinking, interests, and growth between home and centre? How do teachers, families and children use technologies in and beyond the centre? (p. 46)

The reflective questions provide a catalyst to consider the different ways technologies are used in home and school contexts, suggesting that technologies have utility for documenting the ways children learn, and facilitating communication between home and the classroom (UNB, 2008).

2.2.2 Studies of uses of digital technologies in early primary literacy instruction

The literature shows diversity in the opportunities early primary teachers provide for their students to use technologies in literacy learning activities. These studies differ in the ways they conceptualize childhood, literacy, and the ways pedagogies can support young children's literacy learning. Some studies reflect developmentalist perspectives of childhood and emphasize print literacy skill development. In this body of literature, teachers' pedagogies often focus on teaching print literacy skills within a specific sequence. Other studies reflect reconceptualist perspectives of childhood that reflect the social nature of literacy practices. In this body of literature, teachers' pedagogies focus on expanding meaning making practices. Thus, the literature shows variation in foci between literacy development and literacy as meaning making, literacy skills and literacy practices, and the pedagogical processes that can support each. However, in spite of these apparent differences, these bodies of literature are not discrete as researchers do not always clearly define their theoretical frameworks.

To understand more about the ways technologies are used in early literacy instruction, Burnett (2010) conducted a review of the empirical research from 2003-2009 at the intersections of early childhood (birth-age 8), literacy, and digital technologies. Burnett's searches of the literature yielded 36 studies that met the selection criteria of empirical studies with clearly stated methodologies from peer reviewed journals and books. Burnett found that the studies included in the study were "methodologically diverse" but that the majority of the studies (19) were quasi-experimental studies with low sample sizes designed "to gauge the impact of particular approaches" of including technologies in literacy instruction (p. 253).

Burnett (2010) identified three ways that researchers "[characterized] the role of technology within literacy" (p. 254). First, Burnett found that a large majority of the studies reviewed positioned "technology as deliverer of literacy" (p. 254) where technologies supported the development of print literacy skills, focused "on a relationship between child and computer" (p.259), and were situated within a psychological cognitive model of literacy. Second, Burnett found that a few studies positioned "technology as a

site for interaction around texts" (p. 256) where children interacted with one another while also engaging with onscreen texts. Burnett identified these studies as sociocultural studies of literacy learning that reflect the importance of the classroom culture in influencing the ways children use technologies, and locate "literacy firmly in the classroom context" (p. 259). Finally, Burnett identified that about one quarter of studies reviewed positioned "technology as a medium for meaning-making" (p. 258). Burnett explained that in studies where technology was used as a medium for meaning making, the technology "moves out of focus and the emphasis is on using technologies to make and engage with meaning through digital texts" (p. 258). Studies within this group situated literacy within the classroom context that was connected to "broader social, cultural, [and] political contexts" (p. 260). Burnett identified a need for studies that further investigate classroom digital literacy practices and connect these practices to the broader social context.

In my review of the recent studies of uses of technologies in early primary literacy instruction, I build upon Burnett's (2010) findings and note areas of similarity and difference in the ways the studies position technology within literacy instruction. The literature continues to show an interest in using technologies to support print literacy acquisition (e.g., D'Agostino, et al., 2016; Sofkova Hashemi & Cederlund, 2017) and continues to highlight uses of technologies designed to expand meaning making opportunities (e.g., Flewitt et al., 2015; Räisänen, Korkeamäki, & Dreher, 2016). In my review of the literature, I identified a recent interest in the literature of using technologies to extend play and inquiry (e.g., Harwood et al., 2015; Rowsell & Harwood, 2015). In contrast to Burnett (2010) who found "no studies of mobile technologies" (p. 254), I note that recent studies in the literature show particular interest in using tablets in early literacy instruction (e.g., D'Agostino et al., 2016; Flewitt et al., 2015). Kucirkova (2014) explained the trend toward using tablets with young children may be due to the device's portability and lightweight design, touchscreen interface, and the availability of "child-friendly" and "intuitive" apps (p. 1). In the discussion that follows, I highlight studies that show different uses of technologies in early primary literacy instruction.

2.2.2.1 Uses of technologies to support print literacy acquisition.

There are many recent studies that position technologies as tools to support the acquisition of print literacy skills. These studies show particular interest in studying the effects of using technology with child participants who are considered to be at-risk (Paciga, 2015) or struggling with learning to read (D'Agostino et al., 2016). These studies are situated within cognitive approaches to literacy, use quantitative methods within their study designs, and position digital technologies as digitally enhanced substitutes for traditional resources. For example, D'Agostino et al. (2016) examined the effects of substituting a letter recognition app on an iPad for the magnetic letters traditionally used within the letter recognition activity of Reading Recovery lessons. This mixed methods double random assignment experimental study incorporated quantitative analysis of pre- and post-test scores of children's achievement on standardized literacy assessments measuring particular literacy skills and qualitative analysis of teachers' interviews about their perceptions of their uses of the iPad app. The study found that students using the iPad app had significantly higher scores on letter recognition assessments, but the teachers in both the control and experimental groups preferred the use of magnetic letters over the use of the iPad app despite knowing the benefits of the app for children's increased skill development. Teachers within the control group explained that they preferred the traditional tool over the iPad app because they "perceived misfits between their theories of teaching and learning and the tool" (p. 538). Within this study, the technological tool was positioned as means for achieving print literacy objectives and replaced a non-digital multimodal tool "without making deep changes to pedagogy or thinking" (p. 543). Though the study identified that the use of the app supported children's achievement on literacy skill assessments, teachers did not embrace the use of the tool. The study highlighted the importance of teacher beliefs when incorporating new technologies and suggests that professional learning communities could provide opportunities for teachers to "interrogate the nature of the technology and how it fits with their current practice" (p. 544).

2.2.2.2 Uses of technologies to expand meaning making opportunities.

There are many recent studies that highlight attempts to integrate technologies into literacy instruction to expand meaning making opportunities. This body of literature highlights the complexities of integrating technologies into literacy lessons and shows diversity in the ways technologies can be used to expand meaning making opportunities within different contexts and recognizes that uses of technologies are influenced by the availability and affordances of digital tools, as well as pedagogical choices that respond to curricular mandates (e.g., Lynch & Redpath, 2014; Sofkova Hashemi & Cederlund, 2017).

The research shows the diverse ways that technologies can be used in early primary classrooms, with uses of technologies to support print literacy acquisition and uses of technologies to expand meaning making opportunities highlighted in the same study. For example, Sofkova Hashemi and Cederlund (2017) conducted a multi-case study using ethnographic tools to illuminate the "challenge of coping with the old and new in literacy teaching in the context of technology-mediated instruction in the early years of school (7-8 years old children)" (p. 221). The study reported on three cases of classroom literacy learning in Sweden where each classroom had a tablet or laptop computer for each student.

The study found variability in the ways technologies were used in literacy activities across cases (Sofkova Hashemi & Cederlund, 2017). For example, in "South" school, digital text production and print based text creation were treated as separate and sequential practices, where print based practices were prerequisites for digital writing. In addition, there was a clear division between school subjects and modes of expression as "the teacher instructed students to use one modality at a time, i.e. solely writing first and then adding pictures" (p. 237). In this school, digital skills were taught as separate from print literacy skills, and the teacher's primary focus was on print literacy development. In contrast, the study found that in the "North" and "West" school classrooms, the students composed their writing using digital technologies before demonstrating proficiency in print. In these "infused" models of writing instruction (p. 238), the teachers viewed

language instruction as connected to different subjects, and the teacher's focus was on supporting communication through the uses of digital technologies.

In this study, the school in each case had similar access to technologies, but they differed in the ways they positioned technologies, which had implications for the students' literacy learning opportunities (Sofkova Hashemi & Cederlund, 2017). The study recognized the complexity of designing literacy pedagogies that include digital technologies and identified that the teachers' pedagogical choices were influenced through the curriculum documents, availability of and access to digital and non-digital resources, and the needs of the particular students in each classroom. Thus, the authors suggested that teachers would benefit from "ongoing professional development with pedagogical discussions addressing purpose, pedagogy and organisation around technology" (p.247) as well as clearly defined curricular frameworks guiding uses of technologies in literacy instruction.

The literature shows that integrating digital technologies into early literacy instruction can be a complex process even when the mandated curriculum supports expanded understandings of literacy. For example, Räisänen et al. (2016) explored how a Grade 1 teacher in Finland intentionally disrupted her print-centric literacy practices to embrace a national curriculum built upon expanded understandings of literacy that include print and digital literacy practices. Data were collected over one school year and data sources included the "teacher's diary and videos of classroom learning events" (p. 201).

The study found that over time, the teacher expanded her pedagogies to include opportunities for the children to compose and animate stories. Räisänen et al. (2016) found that the multimodal nature of digital texts helped children engage with the content before they were able to decode the text. The study identified a "tension" between the teacher's pedagogical innovations designed to expand meaning making and "the prevailing pedagogy" of print-centric practices (p. 203). Though the teacher intentionally shifted her pedagogies, the process was gradual and was influenced by the teacher's past pedagogical practices. Räisänen et al. highlight the complexities of innovating pedagogies and exposes tensions between past and new pedagogical practices and

traditional and multimodal definitions of literacy. The study showed how transformations of pedagogies unfold in a nonlinear manner within the particular social context of a classroom.

2.2.2.3 Uses of technologies to extend play and inquiry.

The literature highlights uses of technologies to extend play and inquiry. These studies showcase the flexible ways children can move between modes as they use different media for meaning making. For example, Harwood et al. (2015) conducted a multisite (5 classrooms), ethnographic study (7 educator participants) designed to explore the meaning making activities of young children (ages 2.5-6 years) as they "interacted with a range of communication and literacy tools, both traditional mediums as well as digital modes" (pp. 57-58) within their kindergarten and day care classrooms. Harwood et al. (2015) analyzed the data to understand more about the ways that teachers can use tablet computers to support inquiry-based learning and respond to "children's interests and burgeoning questions" (p. 54). Harwood et al. found that within the classrooms, the tablet was positioned as one tool within an array of resources that were available to support meaning making, and teachers and students used multiple tools (print and digital resources) to support their inquiries. In this study, the child's interests and questions were the sources of meaning making and the teachers responded by using the available resources.

Rowsell and Harwood (2015) drew on the same data set as Harwood et al. (2015) to show the flexible ways children move between modes of expression when using technologies in meaning making activities as part of playful inquiry. Rowsell and Harwood highlighted examples of children remixing modes and media as the children included components of the popular culture through the lyrics of a popular children's movie within classroom meaning making practices and found that the inclusion of digital technologies provided children with "exponentially more options" (p. 141) for meaning making. Rowsell and Harwood called teachers to adapt pedagogies in response to children's meaning making practices:

> young children are dynamically interpreting the world around them on a daily basis, making and remaking texts, blending and converging texts as active producers, consumers, and inventors. As educators…it is about sitting back, letting it go, and radically changing our ways of teaching and learning. (p. 145)

To understand more about the ways pedagogies can expand meaning making opportunities for children through the inclusion of multimodal resources, I next discuss multimodal pedagogy.

2.3 Multimodal Pedagogy

Literature that recognizes the communicative potential of multimodal texts and tools (that include the digital) within a changing communication landscape calls teachers to adapt their pedagogies to reflect new forms of texts and practices (e.g., Ryan, Scott, & Walsh, 2010; Walsh, 2011). The New London Group (NLG) (2000) explained that "pedagogy is a teaching and learning relationship that creates the potential for building learning conditions leading to full and equitable social participation" (p. 9). To create this potential in contemporary classrooms, pedagogies must recognize the changing communication needs and channels in present times (Cope & Kalantzis, 2000). Multiliteracies pedagogy represents an expanded view of pedagogy that recognizes "the context of our culturally and linguistically diverse and globalized societies" as well as "the burgeoning variety of text forms associated with information and multimedia technologies" (NLG, 1996, p. 61). Multimodal pedagogy is part of a larger multiliteracies pedagogical framework and focuses specifically on the multiple modes through which teaching and learning occur and the ways that teachers and students can combine and recombine these modes in meaning making (Cope & Kalantzis, 2000). Given the complexity of multimodal meaning making, the literature suggests that multimodal pedagogies cannot be universally applied and must take on a flexible structure to reflect the different ways people combine communication modes for meaning making through emerging technologies (e.g., Cope & Kalantzis, 2000).

In their seminal work, "A Pedagogy of Multiliteracies: Designing Social Futures," the NLG (1996; 2000) created a pedagogical model to recognize meaning making through different modes and media. Within this model, multimodal pedagogy is a process of

design and is comprised of four related components: *situated practice*, *overt instruction*, *critical framing*, and *transformed practice*. *Situated practice* refers to the ways teachers plan their lessons to respond to the needs and interests of their students; *overt instruction* refers to the particular interventions teachers utilize to support the learning of their students; *critical framing* includes connecting meaning making to social and historical contexts; and *transformed practice* relates to the ways the teacher and student apply what they have learned across contexts.

More recently, Cope and Kalantzis (2009) reframed the pedagogy of multiliteracies to translate the pedagogical components identified above into "pedagogical acts" (p. 184). Cope and Kalantzis identified these "pedagogical acts or knowledge processes" as "*experiencing, conceptualizing, analysing and applying"* (p. 184, emphasis in original). *Experiencing* builds on notions of *situated practice* and involves the learners' previous knowledge as well as new learning opportunities that extend meaning making opportunities. *Conceptualizing* builds on *overt construction* and "is a knowledge process in which the learners become active conceptualizers, making the tacit explicit and generalizing from the particular" (p. 185). *Analysing* extends the concept of *critical framing* and includes deductive and inductive reasoning as well as critical reflection. *Applying* builds on *transformed practice* to creatively apply "knowledge and understandings to the complex diversity of real world situations" (p. 186). All of these pedagogical acts are woven together in particular ways; as such, they cannot be followed in a predetermined sequence. Instead, they provide "a map of the range of pedagogical moves that may prompt teachers to extend their pedagogical repertoires" (p. 186).

The NLG (2000) explained that multimodal pedagogy positions teachers as "designers of learning processes and environments" (p. 19). In this way, teachers can "activate" the "learning potentials of teaching materials" (Jewitt, 2008, p. 242) that include digital technologies, provided they understand how to use the technology, recognize the meaning making affordances of particular technologies (Ryan et al., 2010), and understand the affordances of particular modes (Stein, 2008a). The teacher's pedagogical choices can provide opportunities for students, as designers of meaning, to select and configure modes to communicate their understandings (Stein, 2008b). Multimodal

pedagogy challenges traditional models of knowledge transmission that position the teacher as the source of information (e.g., NLG, 2000). Multimodal pedagogy that includes digital technologies may further reposition the teacher and student, as students may have more experience than their teachers with using new technologies (Ryan et al., 2010). The literature documents emerging understandings of multimodal pedagogies that include digital technologies (Walsh, 2008) and calls for further innovations in pedagogy to reflect the changing communication landscape (Yelland, Cope & Kalantzis, 2008).

2.3.1 Studies of multimodal pedagogy

Many studies of multimodal literacy identify the importance of multimodal pedagogy in supporting expansive meaning making opportunities in classrooms, yet few studies are identified as studies of multimodal pedagogy, or list multimodal pedagogy in the key terms. This body of literature identifies a need to reconfigure pedagogies to realize the meaning making potential of digital technologies but recognizes that traditional pedagogies are often employed when using digital technologies and print literacies are often privileged (e.g., Lynch & Redpath, 2014). In these cases, Lynch and Redpath explained that "the new gadget [e.g., digital tool] is assimilated into the old, inscribed with institutionalized practices" and the meaning making potential of multimodal literacies is limited (p. 170). In this section, I highlight studies of multimodal pedagogy that include the digital within early primary classrooms.

2.3.1.1 Pedagogies designed to transform meaning making opportunities.

The literature explains that teachers can adjust their pedagogies to include digital technologies in ways that can expand young children's meaning making opportunities. For example, in their qualitative case study, Flewitt et al. (2015) introduced iPads into three classrooms and interviewed teachers "about their beliefs and practices regarding literacy and new technologies" (p. 294) and video-recorded students and teachers using the iPads during literacy lessons. The study found that teachers expressed concern that technologies may be addictive, and/or passive, lead to attention difficulties, and may inhibit opportunities for children to develop oral language skills as they spend time in

front of a computer screen rather than talking, but these concerns were balanced with "a strong consensus amongst practitioners" that using technologies would "help prepare children for life in a digital world" (p. 295).

Flewitt et al. (2015) found that well-planned activities, including digital technologies supported children's motivation, collaboration, and expanded opportunities for meaning making. Flewitt et al. identified the importance of pedagogies that connected the use of the digital tools within the classroom curriculum and cautioned that "unless 'new' digital devices are woven innovatively into the fabric of classroom practice, then their potential could all too easily be reduced to being no more than a device for delivering repetitive curriculum content, albeit with added interactive multimedia" (p. 303). Flewitt et al. found that realizing expanded learning opportunities through digital technologies required teachers to invest time in selecting technologies and "developing a local curriculum that supports their creative use" (p. 305).

Rowe and Miller (2016) explored the "instructional conditions supporting emerging, bilingual/biliterate, four year olds' digital composing" (p. 425) in a culturally and linguistically diverse classroom in the US. In this two year qualitative study, children were invited to use technologies to create digital books in both of their languages. Of the 37 child participants who participated in the study over two years, the majority, 26 students, spoke Spanish at home. Data were collected through ethnographic methods, including participant observation and audio and video recording of text creation and completed artefacts.

Rowe & Miller (2016) reported that children created eBooks in English and in their heritage language using an iPad and several apps for composing. The researchers designed the eBook activities around Cambourne's (1995) conditions of literacy learning, including "expectation, engagement, responsibility, approximation and response" (Rowe & Miller, 2016, p. 440). In the first year of the study, the researchers found that the "instructional conditions" employed within the eBook activities "successfully supported children's multimodal composing" (p. 453) as the children used the digital cameras to photograph personally significant images which enhanced the children's eBooks. The

researchers found that only Spanish-English students consistently included oral texts in both languages in their eBooks, which prompted the researchers to redesign the digital text activities in the second year of the study.

In the second year of the study, Rowe and Miller (2016) redesigned the digital text activities to support the creation of multilingual digital texts in all languages. In the second year of the study, the teacher created an eBook that reflected the languages used by all of the children in the classroom. Rowe and Miller found that the redesign of pedagogy supported young children's compositions of multilingual digital texts. Within the revised activities in the second year, though Spanish-English multilingual digital texts were more prevalent, children with other heritage languages included their heritage language more frequently.

Rowe and Miller (2016) identified implications for teaching and learning with digital technologies. The study recognizes digital technologies as placed resources; as such, "iPads and apps are not generic tools with fixed affordances for composing" (p. 461). When Rowe and Miller recognized that children with different heritage languages responded differently to opportunities to record oral messages, they redesigned the pedagogies and digital text activities and as they "revised the instructional conditions…[they] also revised the affordances of the iPads and apps" (p. 461). Thus, the study showed that teachers/researchers reflected on children's literacy practices to inform their redesigned multimodal pedagogies to expand multimodal, multilingual meaning making opportunities.

Lynch and Redpath (2014) explored the integration of iPads to support literacy learning within a curricular context that both challenges and supports technology uses in early primary classrooms. Lynch and Redpath explained that the curricular context in Australia has curriculum standards that recognize the importance of digital technologies in the early years, but "mandated standards-based curriculum frameworks composed of stipulated 'essential' knowledge and skills…are enforced by regimes of teacher in-service training, teacher administered assessment and external testing and reporting" (p. 149). Lynch and Redpath described a curricular context where "technology usage is generally

restricted to the familiar territory of entrenched and closed literacy methods designed for passive recipients" (p. 151).

Lynch and Redpath (2014) found that teacher participant Monique's reflection of her practice reflected the tensions within the curricular context. Monique expressed a desire to use technology as an integral tool for instruction, but she felt "constrained by, and dissatisfied with, her classroom practice" (p. 160). In particular, Monique explained that she wanted to teach students to use digital technologies to create texts "*rather than just using it as, like a listening and looking tool*" (p. 161, emphasis in original). Further, Monique felt constrained by the school's practices of storing the iPads away and having children ask to use them. Though Monique had a vision to use "new technologies as an opportunity for innovation" in ways that would position the children as "active stakeholders in their learning" (p. 163), she tended to use technologies as digitally enhanced tools to support print literacy objectives.

Monique took steps toward attaining her vision for classroom technology use and produced a digital alphabet book with her students (Lynch & Redpath, 2014). Though the alphabet book responded to print literacy objectives, the ways the students used the app expanded communication opportunities. Rather than using "closed" apps designed to help students practice rote literacy skills, the children used "open" apps where children could design different ways to represent their learning. Though Monique recognized the value of the alphabet book project, she admitted that she felt "a bit naughty" (p. 170) in using technology to expand communication opportunities within the curricular context and established school practices that privileged print literacy. Lynch and Redpath summarized their work with Monique:

> The story told here suggests that…transformative work is possible, despite a broader context that requires teachers to be 'a bit naughty' in order to realize this vision. But there is a real risk that the iPad and technologies like it will instead emerge as tools to be put to the service of already-established dominant classroom literacy practices (p. 170).

Lynch and Redpath highlighted the tensions of navigating a curricular context that acknowledges technologies as a communication tool but privileges print literacy objectives.

In her book, *Multimodal Literacy*, Maureen Walsh (2011) reported on her mixed methods, multiple case study that investigated literacy practices and pedagogies in Australian Primary Schools (Kindergarten to Year 6). The study aimed to investigate "the literacy strategies needed for reading, using and producing multimodal texts" as well as "the relevant, explicit pedagogy appropriate for integrating literacy learning within both print-based and digital communication environments" (p. 2). Within the study, teachers participated in professional learning activities with members of the research team, where "they were presented with theories of literacy within new communicative, multimodal environments and encouraged to reflect on the classroom implications of these" (p. 2).

Within Walsh's (2011) investigation, 50 primary teachers from 23 schools took part in the study over two years. The teachers worked together with a small team of other teachers and a researcher within a participatory research design to develop cross-curricular, integrated lessons that presented opportunities for students to combine digital and print based texts. Data were collected through an online questionnaire completed by teachers about the students' uses of digital technologies at the beginning of the study. Qualitative data were collected through observational methods, lesson plans, student work (print and digital texts), and discussions with students and teachers about their learning. Data were analyzed to identify themes related to literacy learning and were compared against the mandated program of study in the region.

Walsh (2011) identified "specific examples of ways in which teachers and students were engaging with digital communication for language and literacy learning and shaping future classroom practice" (p. 3). Within these examples, teachers designed pedagogies that embedded both digital communication technologies and print literacy resources. The pedagogies designed recognized the particular literacy practices required when making meaning with print and digital media. For example, Walsh highlighted a case where a kindergarten and Year 1 teacher from the same school provided opportunities for the

students to acquire print literacy skills while concurrently investigating scientific concepts relevant to their classes. Though the subject of their inquiries differed, students in both classes followed similar lines of inquiry as they observed the phenomena, used traditional and digital tools (e.g., magnifying glasses, digital cameras, and digital microscopes) to support and document their observations, and consulted print and digital texts to gain information about their topic. The students created online diaries and journals that included digital images and voice annotations of their observations. The online diary and journals formed the basis for the creation of Claymation videos where the students represented their investigations by creating and animating clay figures. As the children used print and digital texts, they explored the affordances of the different resources.

The teachers, through their pedagogical choices, created opportunities for children to use print and digital resources to support their inquiries. Here, literacy was embedded within the scientific investigation, as students "engaged in various aspects of literacy - reading and writing - along with other practices enabled and enhanced by digital communications technology" (Walsh, 2011, p. 27). Literacy instruction was interconnected as the teachers instructed students about vocabulary and phonetic skills within the context of accessing and synthesizing information from print and digital sources. One of the teachers explained that this cohesive learning environment that integrated different texts and tools enabled the young children "to transfer their skills to unfamiliar technologies and applications" (p. 27). The integration of multiple texts and tools was facilitated through the collaborative planning of the teachers through professional learning activities.

The study found that the pedagogies that included opportunities for children to use technologies supported children's literacy learning opportunities. A teacher within the study explained that "a new language occurred through the integration of new technologies and the analysis and creation of a range of multimodal texts" (Walsh, 2011, p. 83). These new ways of communicating created different ways for children to collaborate with each other and with their teacher, thus repositioning the teacher as a facilitator and co-learner within the classroom. The inclusion of technologies enhanced opportunities for assessment as "the incorporation of digital technologies allowed

teachers to maintain evidence of students' work progressively" (p. 89). Though multimodal pedagogies and resources supported expansive meaning making, Walsh identified "a tension between the requirements of national testing and creative pedagogy" (p. 95), and calls for mandated curricula to reflect the changes in literacy practices.

Walsh's (2011) findings identified the importance of thoughtful pedagogies in positioning technologies within classrooms. Walsh recognized that while multimodal texts and resources can support learning, "it is not the technology itself that will create a vibrant, engaging learning environment but the way that teachers plan and structure the learning experiences with rich language, literature and literacy practices" (p. 101). In Walsh's study, teacher professional learning activities supported teachers in designing multimodal pedagogy. I next examine studies of teacher professional learning and literacy.

2.4 Teacher Professional Learning

The literature shows agreement that practicing teachers need to continually acquire new skills and practices to prepare students for success in a rapidly changing world (e.g., Owen, 2014, 2015). The literature shows interest in the learning of practicing teachers due to the links between teacher knowledge, teaching practice, and student achievement (e.g., King, 2016; Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). Given these links, King (2016) identified that internationally, countries "invest significant amounts of money in teacher PD [professional development]" (p. 576) to support school improvement (King, 2016) and reform (e.g., Darling-Hammond & Richardson, 2009). Studies within the literature vary in definitions of professional learning, the processes/structures identified as supporting teacher professional learning, and the ways they measure the impacts of teacher learning activities (e.g., Avalos, 2011). I next review the literature on teacher professional learning (hereafter called professional learning) to understand more about the range of teacher professional learning activities available to teachers, and I highlight studies of professional learning and literacy in early primary classrooms where possible.

2.4.1 Defining teacher professional learning

The literature uses the terms *professional development* and *professional learning* to describe the learning activities and processes of practicing teachers. These terms are used in different ways within the literature. Reutzel and Clark (2014) explained that "professional development is the means by which teachers receive continuing education to update and refine the knowledge and skills they acquired in their initial training" (p. 67). Traditionally, the "means" of professional development has been characterized by short workshops (Sjoer & Meirink, 2015), aimed at improving specific teacher practices (Musset, 2010), and delivered to large groups of teachers by curriculum experts (Sithamparam, 2015). These models have been criticized for their decontextualized (e.g., Sjoer & Meirink, 2015) deficit-oriented approaches that position teachers as passive receivers of information (Sithamparam, 2015) and neglect the knowledge and experience teachers gain though practice (Taylor, 2013).

Reutzel and Clark (2014) explained that due to these criticisms, "the term 'professional development' has become passé at best or closely associated with inadequate outcomes at worst. It has been largely replaced by the less pejorative term 'professional learning'" (p. 68). Opfer and Pedder (2011) agreed that the term professional development has negative associations and note that "the use of the term *professional development* has reinforced the focus on individual programs, activities, or individual teachers in the research literature at the expense of context and the situatedness of teacher learning" (p. 396, emphasis in original). The use of the term *professional learning* is gaining popularity in the literature, and with it, an increasing interest in collaborative and situated models of teacher professional learning (Mulcahy, 2012).

Though the terminology within the field is changing and many contemporary studies focus on collaborative models of learning, the use of the term *professional learning* does not guarantee that studies employing this term include collaborative, participatory, and situated models of professional learning. Some authors use the term *professional development* to describe participatory models of professional learning (e.g., Sithamparam, 2015), while others use the term *professional learning* to refer to similar professional learning activities (e.g., Mulcahy, 2012; Kooy & Colarusso, 2014). Still

other researchers appear to conflate the terms and use them interchangeably (Avalos, 2011). Thus, the diversity of the uses of terminology within the literature highlight the need to closely examine studies to identify the nature of professional learning activities studied, the types of interactions they support, and the particularity of the context. In this review, I use the term *professional learning* as an expanded definition of the ways practicing teachers continue to learn about and within their practice (e.g., Mulcahy, 2012). When reporting on particular studies, I use the terms employed by the authors of each study.

2.4.2 Approaches to teacher professional learning

The literature explains that teacher professional learning activities (hereafter called TPL activities) can take on many forms and vary in structure and formality, embeddedness, initiators, and prescriptiveness. For example, Darling-Hammond et al. (2009) explained that TPL activities vary in structure and "can include workshops, study groups, mentoring experiences, opportunities to view other teachers' classrooms, and numerous other formal and informal learning experiences" (p. 7). Desimone (2009) agreed and explained that TPL activities can range from "formal, structured topic-specific seminars given on in-service days, to everyday, informal 'hallway' discussions with other teachers about instruction techniques, embedded in teachers' everyday work lives" (p. 182). Opfer and Pedder (2011) also recognized the difference between embedded approaches to professional learning that are connected to teachers' practices, and mandated initiatives that are perceived as external to, or as an add-on to classroom teaching. TPL activities can be initiated by teachers in bottom-up approaches, or by administrators and/or policy makers in top-down approaches (e.g., King, 2016), and can be compulsory or voluntary (EU, 2010). The literature identifies wide variation in TPL activities designed to support professional learning.

In addition to the diversity of formats and structures of TPL activities, the literature is filled with competing advice about the ways the effectiveness of TPL activities can be measured. Many studies explore the relationships between professional learning and student outcomes on standardized measures of achievement (e.g., Althauser, 2015;

Trivette, Raab, & Dunst, 2012). However, the literature suggests that these models may not appreciate the complexity of professional learning (Biesta, 2007), and research that recognizes the social interactions within teaching and learning processes are emerging in the literature (e.g., Owen, 2015; Sjoer & Meirink, 2015). Next, I explore literature related to different approaches to professional learning.

2.4.2.1 A technical training approach.

The literature within a technical training approach highlights the effectiveness of professional development initiatives on improving student outcomes (e.g., Wayne, Yoon, Zhu, Cronen, & Garet, 2008). Within this approach, TPL activities are sometimes referred to as "training" (e.g., p. 476) and are designed to build teachers' knowledge of content, pedagogy, and best practices with the goal of increasing student learning, often measured through standardized measures of student achievement (e.g., Althauser, 2015; Wayne et al., 2008). The particular professional development activities vary widely, with many studies including collaborative activities as part of their initiatives, but studies within this body of literature emphasize "evidence based" approaches to professional development that can be widely implemented with similar effects (e.g., King, 2014; Trivette et al., 2012). Within these studies, the teacher is positioned as an agent of achievement (Wayne et al., 2008) and school reform (Sithamparam, 2015).

Many studies within a technical training approach are quantitative studies designed to improve teacher skills and practices with the goal of increasing student outcomes. For example, Trivette et al. (2012) studied the relationships between an evidence-based participatory professional development (PD) model and teachers' practices identified as supporting children's learning outcomes. In this study, 18 Head Start teachers and teacher assistants (of children ages 3-5) met with an instructional coach[2] once a week for 4 months and had opportunities to learn about research-informed teaching strategies,

[2] The definition of "instructional coach" varies between studies, but is generally understood to be an educator with specialized skills (in content, pedagogy and/or professional learning structures) who works as a mentor or guide with a teacher or a small group of teachers to support professional learning.

practice the strategies, receive evaluation, engage in self-evaluation, and connect this learning to their existing instructional practices. Data were collected through forms and checklists completed by the teacher participants and observational outcome measures. Data were analyzed using statistical methods.

The study found a positive correlation between the implementation fidelity of the coach's work [e.g., "the extent to which provision of technical assistance and training was provided as planned," (Trivette et al., 2012, p. 50)] and the outcome scores on teacher's implemented practices (e.g., measures on scales of child learning practices, instructional practices, and teacher-learner relationships). Teachers reported that the training was helpful because it was connected to their classroom context, and provided opportunities for them to observe the coach's modeling of unfamiliar practices. Trivette et al. used these findings to highlight the importance of using evidence-based PD methods that are connected to classroom contexts to train teachers, and the importance of implementing PD models in consistent ways.

The literature also highlights mandated PD activities that aim to improve teachers' knowledge of curricular content and pedagogical strategies with the goal of improving student achievement. For example, Althauser (2015) conducted a quantitative study to "investigate the impact of a district-wide job-embedded mathematics professional development program" (p. 210) on elementary teachers' beliefs about the ways students learn mathematics and about their personal effectiveness in teaching mathematics (that they term *efficacy*). This study is built upon assumptions that there are links between teachers' beliefs, practices, and student achievement.

Within Althauser's (2015) study, 35 Grade 3 teachers participated in a PD program that was mandated due to declining student achievement levels on standardized mathematics assessments, which the school district attributed to low quality teaching. The teachers participated 4 times each year for 2 years. The first year of the study focused on "curriculum alignment and formative assessment" (Althauser, 2015, p. 216), and the PD program consisted of full-day, school-based training sessions where teachers worked together with a curriculum specialist, and used curriculum resources and scores on

standardized assessments to "build their grade level curriculum" (p. 216). During the second year of the project, "the training included activities that engaged teachers in re-examining and deconstructing the standards on their curriculum map" and provided opportunities for the teachers to incorporate technologies into Math instruction (p. 216). Data were collected through surveys completed by the teachers at the beginning and end of the program, and student achievement data were collected from standardized state mathematics tests. Data were analyzed through multiple statistical analyses. Althauser found positive relationships between teacher efficacy and student achievement. Althauser recommended that PD activities should be job-embedded, provide opportunities for teachers to learn about subject content as well as pedagogical strategies, and sustained over time.

2.4.2.2 Alternate views of professional learning.

The literature presents alternative views to approaches that privilege evidence-based studies employing randomized controlled trials for informing educational policy and practice. In his critique of the research movement that views education as an evidence-based practice, Biesta (2007) questioned the appropriateness of applying a medical model to the professional actions of teachers. Biesta explained that a central tenet of evidence-based practice is that it "conceives of professional action as an intervention" in which teachers "administer a treatment, [or] they intervene in a particular situation in order to bring about certain effects" (p.7). As a result, many research studies within the evidence-based movement position teaching as the "means" to reach the "ends" (pp. 9-10) of student learning.

Biesta (2007) rejected an interventionist medical model of education and calls for a model that appreciates the complexity of teachers' professional action. Within such a model, he suggested that knowledge is gained within a process of deliberate experimentation that is facilitated through reflection. Thus, models of professional learning within this view recognize that professional action is "about addressing concrete and, in a sense, always-unique problems" (p. 16) and do not emphasize prescriptions or recipes that can be implemented universally. Biesta positioned the teacher as a

knowledgeable decision maker who engages in reflective practices and draws on technical knowledge as well as practical wisdom to make instructional decisions to support student learning in their particular context. Building on Biesta's position, I review teacher professional learning literature that moves beyond interventionist approaches.

2.4.2.3 Collaborative learning approaches.

The literature that views professional learning as collaborative learning processes highlights participatory, learner responsive structures including Communities of Practice (CoP) (Wenger, 1998), Professional Learning Communities (PLC) (e.g., Owen, 2014; Sjoer & Meirink, 2015), Lesson Study (e.g., Dudley, 2014), and Action Research (Mockler & Groundwater-Smith, 2015; Taylor, 2013). These collaborative professional learning structures tend to be closely connected to, or embedded within classroom practices, and may be initiated by teachers (e.g., King, 2016), or by organizations (e.g., Curtis, Lebo, Cividanes, & Carter, 2013; Wenger, McDermott, & Snyder, 2002). This body of literature positions the teacher as a capable and knowledgeable meaning maker (e.g., Clandinin & Connelly, 1992). As teachers learn through collaborative, participatory processes (Wenger, 1998), they draw on their "personal practical knowledge" (PPK) (Connelly & Clandinin, 1998, p. 25), which includes knowledge gained from practical experience (Clandinin, 1992) as well as formalized content knowledge (Wenger, 1998). In contrast to traditional, passive models of PD that favour knowledge transmission processes, collaborative, participatory models of professional learning seek to transform teacher practice through the teachers' active constructions and negotiations of meaning (e.g., King, 2016).

Collaborative professional learning structures are built upon complex, situated views of learning (e.g., Edwards, 2013; Opfer & Pedder, 2011) that view teaching and learning as interconnected processes (Mockler & Groundwater-Smith, 2015; Owen, 2014). This body of literature is informed by social theories of learning, with the work of Wenger (1998) being particularly influential. Within Wenger's (1998) social theory of learning, learning is a meaning making process that happens within the context of relationships, and has

implications for the identities and practices of people. (Wenger's social theory of learning will be discussed in greater depth in Chapter 3). Social theories of learning recognize that professional learning is a collaborative, participatory process that occurs within the context of relationships.

Barton and Tusting (2005) explained that collaborative, participatory structures are not immune to discussions of power. Kooy and Colarusso (2011) agreed with this position and expressed that "current professional learning community models in schools often replicate and perpetuate top-down models inherited from the traditional workshop approach, in which teachers are assigned or form a group to complete a defined task… with a deadline for completion" (p. 839). Thus, participatory models of professional learning must be understood within the cultural contexts of the school and society.

2.4.2.3.1 Supporting pedagogical knowledge and practice.

Professional learning can be supported through learning communities comprised of teachers and school staff working together (e.g., Curtis et al., 2013) as well as learning communities that include teachers, students, and their families (e.g., Kooy & Colarusso, 2011). For example, Kooy and Colarusso explored the learning of teacher Evelyn as she implemented a learning community in her school that was designed to extend her professional learning. In this qualitative phenomenological case study, Kooy and Colarusso found that Evelyn and a colleague extended their professional learning through the design and implementation of an after-school mother-daughter book club in their high school that lasted four years. The study found that the teachers' professional learning was supported through many factors including sustained time investment which supported interpersonal relationships, as well as the teachers' positioning as co-learners with the students. Kooy and Colarusso explained that the participants' interactions within the afterschool book club prompted teacher Evelyn to reconsider her beliefs about her students' capabilities within her classroom. Kooy and Colarusso suggested that the learning within the book club, and the conditions that supported it, "provide a way to make sense of the ways professional learning leads to pedagogical knowledge and practice" (p. 849).

2.4.2.3.2 Supporting curriculum design, implementation, and innovation.

Learning communities can support curriculum design and implementation. For example, Edwards (2012) facilitated a learning community formed of principals and teachers from 9 faith-based schools in New Zealand that was designed to support teachers in developing and implementing curricula for their schools based on a new curriculum framework. Edwards participated in the learning community as a participant observer. In this Action Research study, data were collected over two years and included documents and artifacts from meetings, written communication with participants, and Edwards' results and findings were comprised of her reflections of the interactions within the professional learning community.

Edwards (2012) found that members of the learning community formed relationships quickly, a finding she attributed to the shared focus of developing curriculum. Further, Edwards found that collaboration within the community was enhanced by the diversity within the community (of teachers from different schools) as well as the shared values of teachers working within faith-based schools and the coherence between the program documents and school mission statements. Edwards found that the learning community was a dynamic structure that changed over time in response to the learning priorities of the teachers. This dynamism caused Edwards to change her facilitation style to suit the needs of the learning community; initially, Edwards assumed the role of instigator, leader, and encourager, but over time, the teachers took more of an active leadership role and the focus of the community shifted from "a need for knowledge and know-how" to "their own personal curriculum leadership roles" (p. 39). This study highlights the dynamism of professional learning, the need for responsive professional learning structures that allow a learning community to grow, and the ways that a responsive facilitator can support professional learning as educators collaborate to design curriculum.

The literature also shows how learning communities can support teachers' innovations of curriculum. In their qualitative case study, Sjoer and Meirink (2015) highlighted the complexities of teacher interactions as primary school teachers worked together to form a school based Science and Technology curriculum while supported by an instructional

coach. Data sources included observations and videotapes of five after-school meetings. Data were analyzed through a grounded theory approach.

Sjoer and Meirink (2015) found that teachers' sharing of classroom stories promoted the collaborative creation of a school curriculum. The study found that teachers readily shared stories from their practice that highlighted teaching method and materials, but they shared their rationale for their design choices less frequently and rarely asked questions to deepen understandings of pedagogical practices, which, the researchers suggest may inhibit reflective practice. Sjoer and Meirink suggested that facilitators thoughtfully probe the stories of teachers by asking in-depth questions to encourage deeper reflection. Though the learning community in the project did not produce a curriculum at the end of the research, Sjoer and Meirink viewed the project as successful as the first stage of an iterative process of curriculum innovation. This study highlights the complexity of interactions within professional learning communities and reinforces the importance of thoughtful facilitation to support collaboration.

2.4.2.3.3 Supporting reflection.

The literature highlights the importance of reflective practice within participatory models of professional learning. For example, Geiger, Muir and Lamb (2016) compared two qualitative studies that focused on elementary teachers implementing "new teaching ideas within the context of their own classrooms" (p. 462) and reflecting on their teaching as they viewed videotapes of their implemented lesson. The first study invited a participant that was recommended by the principal for being an effective teacher of mathematics. The study employed participatory action research (PAR) over a period of 5 weeks. Teacher Jim collaboratively worked with the researcher in a cyclical process of observing, analyzing, planning, and teaching math lessons. In contrast, the second study included teachers Julie and Stephanie, who worked at a school whose scores in standardized achievements of literacy and numeracy were "disappointing" to the school's administration (p. 464). In this "design-based research approach" (p. 465), the teachers worked together with 2 researchers to collaboratively design lessons over 4 months. In

both cases, the implemented lessons were videotaped and discussed by the teachers and researchers.

The study found that the teachers' reflection was facilitated through watching a videotape of their implemented lesson(s), and discussion. Teacher Jim explained that the video served as a "powerful medium for revealing aspects of his practice he had not previously considered" (Geiger et al., 2016, p. 471). The researchers found that Julie and Stephanie's professional learning was facilitated by viewing videos of their own lessons as well as videos from the other teacher's classroom. Though the learning communities were different and formed for different reasons, the study shows the ways reflective practice can be supported through video-elicited reflection and collaborative discussion.

2.4.2.3.4 Supporting teacher professional learning in particular learning contexts.

The literature shows that there are many factors that can support teachers' learning within collaborative professional learning structures. For example, in her mixed-methods comparative case study, Owen (2014) explored the learning experiences of teachers within professional learning communities (PLCs) at 3 schools in Australia. Data collection methods included interviews, focus groups, and surveys. Looking across cases, Owen found that the PLCs were situated within particular school cultures and grew and changed over time. Owen found that PLCs that were nurtured through supportive leadership, a unified focus on learning, and funding (that enabled teachers to collaborate within the school day).

The literature identifies that TPL activities are situated within a culture that favours student achievement measured through standardized assessment measures. For example, Heineke (2013) explored the discourse of 4 instructional coaches working one-to-one with kindergarten-third grade teachers in the US to support increased student achievement in literacy. In this mixed-method study, interactions between the coach and teacher were audio-recorded, and these data were combined with the researchers' field notes, and semi-structured interview data. Data were analyzed through a structural analysis designed to identify the quantity of speech utterances as well as the quality of

discourse. Heineke found that a positive teacher-coach relationship facilitated professional learning over time. In addition, Heineke found the teacher-coach interactions were dominated by discussions of mandated standardized assessment measures while a minority of coaching episodes focused "on literacy instruction or the practice with the goal of teacher learning" (p. 420). The study highlights the importance of relationships within professional learning and the influence of early literacy high-stakes accountability measures on teacher professional learning.

2.4.2.4 Studies of teacher professional learning and literacy.

Recent studies at the intersection of teacher professional learning and literacy explore sustained, collaborative, participatory models of professional learning, but these studies differ in the ways they define literacy. There are recent studies of professional learning and literacy that are based within cognitive approaches to literacy and seek to promote literacy skill development while fewer studies are based in sociocultural understandings of literacy and are designed to expand multimodal literacies. I explore each in turn.

2.4.2.4.1 Professional learning activities designed to support literacy skill development.

The literature explains that collaborative learning communities can support teachers in adjusting their practices to support students' development of literacy skills. For example, in her comparative case study, Murphy (2015) worked as a participant observer "with a group of teachers who participated in a collaborative learning community devoted to improving their literacy teaching for students with characteristics of ADHD [Attention Deficit Hyperactivity Disorder]" (p. 83). The study employed qualitative methods including observations of 5 primary teachers (Kindergarten-Grade 3) participating in learning community meetings and working within their classrooms. Data were analyzed with an open-coding method to identify emerging themes and grouped into categories. Murphy found that "the participants' literacy teaching, particularly for students with characteristics of ADHD, was positively influenced by their participation" within the learning community (p. 90). Murphy found that the collaborative processes of the learning community enabled the teachers' learning about the cognitive processes affected

by ADHD (e.g., working memory and processing speed) that can influence children's abilities to acquire reading and writing skills and supported the teachers in implementing new teaching practices that could better support their students (e.g., providing opportunities for children to create comic strips with pictures and words instead of print-only texts).

The literature explains that teachers differ in the ways they integrate their learning gained within collaborative professional learning contexts within their practices. For example, Brownell et al. (2014), studied the ways that the teachers' "individual qualities and contextual factors" (p. 31) influenced the professional learning of 5 elementary school special education teachers. These teachers were involved in a yearlong PD initiative designed to increase the teacher's knowledge about literacy skills and strategies with the goal of improving student achievement in decoding and fluency skills. The TPL activities included a 2.5-day workshop designed to increase teachers' knowledge of reading skills and teaching strategies to support the development of these skills as well as videotaped classroom observations and debriefing (with a member of the research team who assumed the role of coach). This mixed-methods study combined qualitative methods of observation, field notes, and teacher reflections with quantitative methods of pre- and post-test Likert-scale observational assessments that were analyzed through a grounded theory approach.

Brownell et al. (2014) found that all teachers learned within the TPL activities, but differed in their abilities to integrate what they had learned within their practice. Brownell et al. explained that teachers' integrations of new strategies were supported by their abilities to analyze students' needs, identify an instructional strategy to support those needs, and reflect on the effectiveness of their instructional choices. Further, Brownell et al. explained that contextual factors, such as competing mandates of schools, sometimes interfered with teachers' abilities to implement the learning from the professional development component. The study highlights some factors that influence the ways particular teachers integrate knowledge gained within professional learning into their classroom practices to support the teaching and learning of particular literacy skills (e.g., decoding and fluency).

2.4.2.4.2 Professional learning activities designed to support multimodal literacies.

Within the literature, there are few studies of teacher professional learning that are based within sociocultural approaches to literacy. For example, Hill (2010) studied a collaborative teacher-researcher project built on a multimodal literacy framework and explored the ways young children (ages 4-8) used new technologies in home and school contexts in Australia. Hill worked "alongside the teacher-researchers" who were participants in the study (p. 315). Twenty-five teacher-researchers and 50 focus children participated in the study. Data were collected through ethnographic methods.

The project had three phases that included documenting the ways young children used technologies at home, developing a "responsive literacy framework" (Hill, 2010, p. 321) to enable teachers identify and extend children's technological funds of knowledge, and documenting the ways children used technologies at school. In the first phase, the teacher-researchers found that young children had access to, and used a variety of digital tools at home. In the second phase, teacher-researchers developed a pedagogic framework to support teachers in analyzing "what children knew about multiliteracies" and identifying "the next steps in planning for learning" (p. 322). Within the third phase of the project, the teacher-researchers extended their pedagogies and explored the ways they could include digital technologies in their classroom to support student inquiries. The teacher-researchers found that young children appeared to easily move between digital and print resources and that reading and writing print-based texts were "vitally important for success in digital contexts" (p. 325). The study found that as teachers studied children's literacy worlds, the children "became informants in social practices of literacy, and the representational resources that they are competent in using (Hill and Nichols, 2009)" (Hill, 2010, p. 327). These findings highlight the ways that collaborative, participatory models of teacher professional learning can support and extend the teaching and learning of multimodal literacies.

Research by Lotherington (2011) also highlights collaborative approaches to professional learning designed to support teachers' multimodal literacy pedagogies. Lotherington's research took place in an elementary school in Toronto, Canada. In this action research

study that aligned with the school's goal of creating innovative pedagogies that include digital technologies, Lotherington worked with teachers to design pedagogies that invited children to adapt a traditional story to fit within the contemporary context. In the pilot study, Lotherington worked with "a few" Grade 1 and 2 teachers (p. 50) in 2 after-school workshop sessions per term to design lessons to support students in adapting a traditional story using digital technologies. Though Lotherington described the workshops as "haphazard and poorly attended" (p. 59) due in part, to a lack of funding that meant that professional learning workshops had to take place afterschool, two teachers implemented the lessons they had designed for their students in the workshops. Lotherington found that the Grade 1 and 2 students adapted their stories in different ways. The Grade 1 students inserted themselves in the story as they substituted their physical characteristics, preferences, and aspects of their narrative worlds for traditional story elements, and also inserted elements from other traditional stories into their revised plot lines. In contrast, the Grade 2 students inserted characters from the popular culture in their stories. Lotherington found that the Grade 2 examples of digitally rewritten narratives went beyond substitution of story elements to a retelling of the entire story using personally relevant concepts.

In the follow-up phase of the research, Lotherington (2011) worked with a small number of teacher participants to plan lessons to support children in digitally rewriting a traditional story that included their community language. The teachers' lesson planning activities were supported through after school workshops designed to support the formation of a community of practice. The workshops provided opportunities for teachers to learn about multiliteracies and technologies and the ways they could incorporate theory in practice. In these workshops, teachers collaboratively planned lessons that invited children to digitally rewrite traditional stories using technologies to support meaning making, reflected on the children's learning, and supported one another in troubleshooting issues with technology. Though the TPL activities were interrupted by a labour injunction, many teachers implemented the lessons created in the workshops.

Lotherington (2011) found that the teachers designed diverse lessons to support young children in rewriting stories using digital texts in ways that extended from their existing

classroom practices. For example, a kindergarten teacher supported a playful adaptation of a traditional story by placing the story within the setting of the school and designing activities (using concrete materials and digital technologies) that mirrored the plotline of the original story. To support the retelling of the story, the teacher digitally documented the children's activities, and provided the children with opportunities to become part of the story and explore the story by tracing the actions of the main character in the physical as well as digital space. Within this multimodal project, children had "multiple avenues for accessing a text" including their prior understandings of the storyline, school setting, printed clues, and "complicit helpers in real and digital space" (p. 89).

Lotherington's (2011) findings have implications for teacher professional learning as well as literacy teaching and learning. The findings suggest that learning communities can support teachers' collaborative planning and expand teachers' multimodal pedagogies. Further, the findings suggest that collaborative teacher practices can promote collaborative learning opportunities for students and expand children's literacy options. Collaborative learning opportunities that include the digital can provide young children with opportunities to compose "dynamic multimodal texts" (p. 183) even before they have acquired proficiency in print literacies and can concurrently support children's print literacy acquisition.

2.5 Summary of Chapter 2

In this literature review, I reviewed three intersecting bodies of literature: 1) factors that can influence the opportunities early primary teachers provide for their students to use digital technologies in their classrooms, 2) multimodal pedagogy literature that examines the constituents of multimodal pedagogy design and the ways teachers can employ pedagogies to support literacy learning, and 3) the teacher professional learning literature that identifies the different structures and processes that can support teachers' learning and innovation of teaching practices. The literature reviewed is filled with competing and conflicting advice about the ways that early primary teachers can include digital technologies in literacy instruction. The literature calls for more research in the areas of early literacy curricula that includes digital technologies (e.g., Alper, 2011) and multimodal pedagogies that can provide opportunities for children to use and combine

digital and print resources (e.g., Walsh, 2011). The literature suggests that collaborative professional learning models hold great potential for supporting professional learning (Owen, 2014; Wenger, 1998), but more information is needed about the ways that these models can support professional learning in multimodal literacy pedagogies that include digital technologies.

In light of the literature reviewed, I situated this study within sociocultural understandings of literacy that recognize the diverse and particular ways people make meaning and in multimodal literacy that recognizes young children as capable meaning makers who can use and combine print-based and digital resources to expand meaning making in literacy learning. I drew from understandings of multimodal literacy pedagogy that appreciate the teacher as a knowledgeable designer of classroom activities and recognize the tension between traditional print literacy pedagogies and multimodal pedagogies that exists in classrooms. I drew on understandings of participatory models of teacher professional learning that emphasize the importance of responsive TPL activities. In the next chapter, I lay out my theoretical framework and methodology.

Chapter 3

3 Methodology and Methods

The purpose of this study is to create professional learning opportunities to support early primary teachers in creating and enacting multimodal pedagogies within their classroom literacy practices. This exploration was designed to produce knowledge related to the use of digital technologies in multimodal pedagogies in early primary classrooms, and the processes that can support teachers' innovations of multimodal literacy pedagogies and practices that include digital technologies. To explore this phenomenon, I ask

1. What are the multimodal literacy and pedagogy learning opportunities afforded to teachers by teacher professional learning activities that include the digital?
2. In what ways, if at all, can such opportunities support teachers to enact multimodal pedagogies that include digital technologies and what are the enablers and barriers to such pedagogies?
3. What do the children do and produce within this curriculum and what multimodal literacy learning opportunities are afforded to them?
4. What is the classroom literacy curriculum that is enacted as teachers participate in teacher professional learning activities? (e.g., How do teachers combine digital and traditional resources when planning literacy lessons?)
5. What are teachers' perceptions of the experienced curriculum and of the implications for students' multimodal literacy learning opportunities and literacy practices?
6. What are the implications for teacher professional learning in multimodal literacy pedagogy that include digital technologies?

The study is comprised of two components: a program development component and a research component. The program development component included the design of the literacy lessons and the research component documented the program development component, including lesson design and implementation. These components required interrelated frameworks.

In this chapter, I first define the theoretical framework for the study. Then, I build upon the theoretical framework to detail the study's methodology and methods, participants, recruitment procedures, research design, data analysis procedures, ethical considerations, issues of trustworthiness, and considerations.

3.1 Theoretical Framework

The literature review highlights the complexity of the teaching and learning of literacies in contemporary classrooms (e.g., Walsh, 2011; Wohlwend, 2010). To appreciate this complexity, I have built the theoretical framework for this study on complementary theories of curriculum, multimodal literacy, placed resources, and a social theory of learning. I drew on theories of curriculum to understand the complexity of creating and implementing classroom curricula (Doyle, 1992a; 1992b; Eisner, 2002) [i.e., the experienced curriculum (Connelly & Clandinin, 1988)]. I drew on multimodal literacy to conceptualize literacy (Walsh, 2011) and placed resources theory (Prinsloo, 2005) to situate my study in time and place and appreciate the particular ways people use digital technologies in different contexts. I drew on Wenger's (1998) social learning theory as one theory within a larger group of social learning theories to understand the conditions that can support the collaborative learning processes of teachers. In the discussion that follows, I examine each theory and explain how each theory focuses the lens for the program development and study components, and guides the selection of methodology and methods.

3.1.1 Theories of curriculum

There are many conceptions of curriculum within the literature (e.g., Doyle, 1992a; 1992b; Eisner, 2002). The term curriculum derives from the Latin word "currere, which means a "course to be run" (Eisner, 2002, p. 25). Traditionally, this "racecourse" has referred to "a course of study…that specifies what is to be taught" (Doyle, 1992b, p. 486). Though this definition refers to a particular type of curriculum, it does not completely account for the various meanings associated with the term or the complexity of curriculum-making (Eisner, 2002). In the following discussion, I explore notions of curriculum in relation to curriculum-making to lay the foundation for this study, which is

designed to support early primary teachers in a process of curriculum-making as teachers work together to create and enact multimodal pedagogies within their classroom literacy practices.

3.1.1.1 Curriculum-making.

Building on the work of Doyle (1992a; 1992b), Deng (2009) explained that curriculum-making occurs at three levels: the *institutional*, the *programmatic*, and the *classroom*. Curriculum-making at each level produces particular types of curriculum associated with corresponding curriculum discourses (Deng, 2009). These levels of curriculum are interrelated and influence teachers' curriculum-making processes (Doyle, 1992a). I next describe curriculum-making at the institutional and programmatic levels to provide context for a more detailed examination of curriculum-making at the classroom level, which is the focus of this dissertation.

According to Deng (2009), "the *institutional curriculum* is represented by curricular policy at the intersection between schooling, culture, and society" (p. 589). This curriculum reflects the norms and beliefs of the dominant culture and "is a tacitly understood and shared conception or paradigm of schooling" (Doyle, 1992b, p. 487). The curriculum discourse at the institutional level "serves primarily to define or typify schooling" and "serves as a normative framework for defining and managing the work of teachers" (p. 487). Doyle (1992b) explained that "at the institutional level, curriculum and pedagogy easily become separate domains, and the relationship between them is construed as linear" (p. 487), with pedagogy viewed as a vehicle for delivering the ideals of the institutional curriculum.

The *programmatic curriculum* "is contained in curriculum documents and materials *for* use in classrooms" (Deng, 2009, p. 589, emphasis in original) and is created by governments or institutions (Doyle, 1992a). At the programmatic level, curriculum-making "bridges the gap" between institutional and classroom curricula (p. 71) as it "transforms the institutional curriculum" into subject content for use in schools (Deng,

2009, p. 589). Within publicly funded schools in Ontario[3], programmatic curricula designed to inform literacy instruction in early primary classrooms include curriculum documents produced by the Ontario Ministry of Education, stating the overall and specific expectations for each subject area by grade (e.g., OME, 2006; 2016a). Independent schools in Ontario[4] are not mandated to follow the Ontario programmatic curricula and each school can generate their own programmatic curriculum documents to guide classroom instruction (OME, 2016b).

The *classroom curriculum* is created through interactions between the constituents in a classroom (e.g., a teacher and her/his students). Whereas the institutional curriculum seeks to "typify" schooling (e.g., Doyle, 1992b, p. 487), the notion of the classroom curriculum recognizes the diversity and particularity of curriculum-making in classrooms (Doyle, 1992a). Deng (2009) explained that "classroom curriculum-making involves transforming the programmatic curriculum embodied in curriculum documents into instructional events" (p. 589). This process is guided by programmatic curriculum, influenced by the institutional curriculum (Deng, 2009) and "shaped in powerful ways by local factors in classrooms" (Eisner, 2002, p. 72). Since the classroom curriculum is locally constructed, wide variations may exist between the ways curriculum is experienced within classrooms even when classrooms respond to the same programmatic and institutional curricula (Eisner, 2002).

Eisner (2002) explained that classroom curricula "*can be conceived of as a series of planned events that are intended to have educational consequences for one or more students*" (p. 31, emphasis in original). This conception recognizes that there is intentionality behind designing educational activities for classrooms, but that these "educational events or activities do much more than what is intended; they influence people in a wide variety of ways" (p. 31), some of which may be unpredictable. Eisner's

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[3] In Canada, schooling is a provincial responsibility, with rare exceptions. In Ontario, publicly funded schools include "public" schools that have no faith-based affiliation as well as "Catholic" schools that include religious instruction that follows the faith tradition of the Catholic church (OME, 2017).

[4] In Ontario, independent schools can be faith-based or have no religious affiliation (OME, 2016b).

notion of curriculum indicates that curriculum at the classroom level is planned (usually by the teacher), but the way that it is experienced in classrooms may depart from those plans. Recognizing the "differences between what is planned in the way of aims, content, activities and sequence and what actually transpires in the classroom can be formalized into a distinction between *the intended* and *the operational* curriculum" (p. 32). I explain each of these terms in turn.

The *intended curriculum* is "that body of material that is planned in advance of classroom use and that is designed to help students learn some content, acquire some skills, develop some beliefs, or have some valued type of experience" (Eisner, 2002, p. 34). The intended curriculum can include mental plans created by the teacher as well as plans documented through different textual forms including "designed materials of various sorts, created learning activities to be used in the classroom, and prepared visual and audio resources" (p. 32). Eisner argued that though the mental plans created by a teacher may effectively support learning in the classroom, they cannot be shared and/or scrutinized for the ways they support learning. The value in documenting the intended curriculum through textual forms is that the curriculum "is embodied in a set of materials" that can "be inspected, critiqued, revised, and transported to a multitude of locations" (p. 32).

The *operational curriculum* "is the unique set of events that transpire within the classroom. It is what occurs between teachers and students and between students and students" (Eisner, 2002, p. 33). Eisner found that since classrooms are comprised of different people who have access to particular resources, the operational curriculum will be different across classrooms even when similar or identical intended curricula are introduced. Further, he stated that unlike the intended curriculum, the operational curriculum cannot be observed through physical texts; instead, the operational curriculum must be observed as it unfolds. The operational curriculum is closely related to Connelly and Clandinin's (1988) conception of "*curriculum as experience* [emphasis added]" (p. 6) that conceptualizes curriculum as a temporally located set of experiences "*composed of persons, in an environment of things, interacting according to certain processes*" (p. 6, emphasis in original). The experienced curriculum is connected to past experiences and

informs future experiences (Connelly & Clandinin, 1988). I next examine the constituents of curriculum-making.

3.1.1.2 Curriculum commonplaces.

To frame curriculum-making at the classroom level, I drew on Schwab's (1973) notion of the five interrelated curriculum commonplaces: *teacher*, *learner*, *subject matter*, *milieu*, and *curriculum-making*. In this study, the curriculum commonplaces are useful for examining the constituents and supporting the design of the intended curriculum, as well as analyzing the operational curriculum as it is experienced (Connelly & Clandinin, 1988). I first describe the commonplaces of subject matter, teacher, learner, and milieu and then describe how they coalesce in classroom curriculum-making.

Schwab (1973) explained that the *teacher commonplace* includes the teacher, the knowledge a teacher is likely to possess, as well as the teacher's teaching practices and beliefs. According to Ricketts (2013), understanding the teacher commonplace is essential as "regardless of how a curriculum is written, teachers make the final decision about how to enact it" (p. 33). The *learner commonplace* refers to the child or student (Schwab, 1973). The learner commonplace includes generalized information about what children of a particular age are likely to understand and what they may be ready to learn as well as specific knowledge about particular children gained through "direct involvement with them" (p. 502). The teacher and learner commonplaces are the people involved in classroom curriculum-making.

Simply stated, the *subject matter commonplace* refers to the content of curriculum or what is taught (Schwab, 1973). It includes "the scholarly materials under treatment and the… discipline from which they come" (p. 502). The subject matter commonplace accounts for "the curriculum content" (Reid, 2010, p. 55) as well as the "learning expectations" identified by programmatic curriculum documents (e.g., Doyle, 1992a; 1992b) for students at a particular grade level. The subject matter commonplace influences the selection and uses of tools in classrooms (Reid, 2010).

The *milieu commonplace* refers to the "context" for curriculum-making (Ricketts, 2013, p. 32). The milieu includes the physical and social spaces "in which the child's learning will take place and in which its fruits will be brought to bear" (Schwab, 1973, p. 503). Ricketts (2013) explained that the milieu includes

> the relationships among the children and with the teacher, between teachers and administrators, and the power structure within the school, as well as religious, economic, cultural, political, historical information of the individual families and community at large, and their relationships with each other and the school. (p. 33)

Thus, the milieu encompasses the physical space for learning as well as the social spaces for learning. The social spaces for learning are impacted through relationships, policies, and practices that may not be overtly observable in classroom spaces. The interrelationships between physical and social spaces for learning *within* the milieu commonplace foreshadow the intricacy of interactions *between* commonplaces in curriculum-making.

The *curriculum-making commonplace* is "the curriculum-making process itself" (Schwab, 1973, p. 504) and "focuses on the process required to create and then use curriculum" (Reid, 2010, p. 55). Within this commonplace, the other four commonplaces coalesce to create the curriculum that is experienced (Connelly & Clandinin, 1988). In the process of curriculum-making, Schwab (1973) emphasized that each of the commonplaces should have "equal rank" (p. 508) and be coordinated, rather than subordinated. Schwab (1983) later clarified this position and explained that though each commonplace should have "theoretically equal importance," there are occasions when a commonplace becomes the "fountainhead" (p. 241). In this study, the teacher commonplace is the "fountainhead" (p. 241) as it focuses on teachers' roles in creating and enacting multimodal pedagogies within their classroom literacy practices. From this vantage point, I explore the role of the teacher in curriculum-making and examine the relationship of the teacher in this role to the other commonplaces.

3.1.1.3 The teacher as curriculum-maker.

In this study, I view the role of the teacher as curriculum-maker (Clandinin & Connelly, 1992). Positioned this way, the teacher is more than a "curriculum transmitter or implementer" (p. 366) or a "mediator between the curriculum and intended outcomes" (p. 367). Rather, teachers as curriculum-makers "pay attention to a broad range of potential influences in curriculum enactment, not the least of which is their own sensibilities informed by their students' perceived needs and interests" (Craig, 2009, p. 1041). As curriculum-makers, teachers are positioned as capable, knowledgeable, and reflective inquirers of practice (Connelly & Clandinin, 1988).

Teachers draw from their *personal practical knowledg*e (PPK) in curriculum-making (Connelly & Clandinin, 1998, p. 25). The term PPK is a teacher's way of knowing defined as "a moral, affective and aesthetic way of knowing life's educational situations" (p. 59). Teachers' PPK includes the teacher's formalized content knowledge as well as knowledge gained through practice that may be tacitly held (Wenger, 1998). The use of the term PPK positions "teachers as knowledgeable and knowing persons" (Connelly & Clandinin, 1998, p. 25) and places value on the teacher's knowledge gained within the classroom. The PPK of teachers "determines all matters of significance relative to the planned conduct of classrooms" (p. 4). Thus, the PPK of teachers is an important source of information when teachers make decisions in planning the intended curriculum and enacting the operational curriculum.

Within curriculum-making, the teacher, as a knowledgeable curriculum-maker, interacts with the learner commonplace. Ciuffetelli Parker, Pushor, and Kitchen (2011) summarized Connelly and Clandinin's (1988) understanding of the ways the teacher "makes curriculum *alongside students*"; they explained that curriculum "is made through an intertwining of the teacher's life course of action with the students' life courses of action. Curriculum, then [is] expressed not just as curriculum of *life*; it [is] simultaneously understood as *curriculum of lives*" (p. 10, emphasis in original). This is a relational view of curriculum-making that positions children in particular ways. In his work on the commonplaces, Schwab (1973) positioned learners as the intended "beneficiaries of the curricular operation" (p. 502). Pyle and Luce-Kapler (2014)

suggested that this positioning of children as passive beneficiaries of curriculum-making is insufficient in present times in light of contemporary understandings of young children as capable learners. This assertion resonates with the current programmatic curriculum document (Doyle, 1992a) for kindergarten in Ontario (OME, 2016a) that recognizes that views of young children have shifted to recognize young children as "competent and capable" (p. 11) and promotes responsive, reflective pedagogical approaches that "nurture and support learning and development" (p. 11) through "responsive relationships" between students and teachers (p.11), and inquiry-based learning experiences that respond to children's interests. Within these pedagogies, teachers continue to take an active role in planning learning activities, but take the position of a co-learner with her/his students (p. 24). Within this contemporary position of the learner within the commonplaces, the learner is still the intended beneficiary of the curriculum, but is also an important informant in curriculum-making (e.g., Pyle & Luce-Kapler, 2014).

The teacher, positioned as curriculum-maker and drawing on her/his PPK also interacts with the subject-matter in particular ways. In this form of curriculum

> teachers do not transmit or teach a curriculum and objectives; nor are they and their students carried forward in their work and studies by curriculum of textbooks and content, instructional methodologies, and intentions. An account of teachers' and students' lives over time is the curriculum, although intentionality, objectives, and curriculum materials do play a part in it. (Clandinin & Connelly, 1992, p. 365)

This is the type of curriculum that is lived and experienced. Ciuffetelli Parker et al. (2011) credited Connelly and Clandinin (1988) with "foregrounding how classroom teachers *experienced* and *made* curriculum from their personal and professional knowledge, rather than through the top-down conduit of policy, documents, and standardized measures" (p. 4). This bottom-up or emergent view of curriculum-making is supported to some degree in programmatic curriculum documents of Kindergarten in Ontario that characterize educators as "knowledgeable, caring, reflective, and resourceful professionals" (OME, 2016a, p. 112) who respond to children's interests and needs. However, this programmatic curriculum exists at a time where there are increasing

academic demands on young children, even those in Kindergarten (Pyle & Luce-Kapler, 2014). Therefore, a tension may exist as the teacher navigates the need to address mandated curricular standards while honouring her/his PPK within a high-stakes accountability culture.

The teacher as curriculum-maker interacts with the milieu in curriculum-making. Craig (2009) explained that Clandinin and Connelly (1995) used the term *professional knowledge landscape* to refer to the milieu. For Clandinin and Connelly

> a landscape metaphor…allows [for] talk about space, place, and time. Furthermore, it has a sense of expansiveness and the possibility of being filled with diverse people, things and events in different relationships…Because…the professional knowledge landscape is composed of relationships among people, places and things….it is both an intellectual and moral landscape. (pp. 4-5)

This landscape is mapped through the "*personal and social* (interactions); *past, present, and future* (continuity); combined with the notion of *place* (situation)" (Clandinin & Connelly, 2000, p. 50, emphasis in original). The PPK of teachers is shaped by, and shapes the context for learning (Craig, 2009).

I examine the multiple definitions of curriculum discussed above and the position of the teacher as curriculum maker (Clandinin and Connelly, 1992) within curriculum-making in relation to the curriculum commonplaces (Schwab, 1973) to highlight the role of the teacher in curriculum-making and to illustrate the complexity of classroom curriculum-making. Curriculum-making in contemporary classrooms are complex processes as curriculum is "entangled" (Ball & Cohen, 1996, p. 7) within "dynamic" (Doyle, 1992a, p. 67) relationships of interrelated commonplaces (e.g., Pyle & Luce-Kapler, 2014). As the commonplaces coalesce in curriculum-making, they have the potential to support student learning, although learning cannot be guaranteed (e.g., Schwab, 1973). I drew on curriculum theories to help understand and guide the particular processes of planning and implementing literacy lessons that include digital technologies for each teacher.

3.1.2 Multimodal literacy

I drew on a multimodal literacy framework to conceptualize the place of the digital in meaning making. This framework recognizes the expansive meaning making potential of combining multiple modes (e.g., "the way the message is communicated" including written language, image, sound) using diverse media (e.g., "the means of communicating a message" including paper, iPad screen) (Walsh, 2011, p. 105) within multimodal ensembles. The term multimodal ensemble refers to the ways the resources of different modes combine in meaning making (Jewitt, 2011b). Within multimodal ensembles, meaning is "materialized", shaped, and expanded within the interrelationships and interactions of co-present modes (Kress, 2011, p. 64). Within the ensemble, modes are combined according to the materiality, or physical features of the mode (Kress, 2011) as well as the social or historical factors guiding their use (Jewitt, 2011a).

Multimodal literacy has the potential to provide expanded communication opportunities, but the communicative potential of multimodal literacies is not always realized in classrooms (Wissman, Costello, & Hamilton, 2012). For example, tensions exist between programmatic curricula (Doyle, 1992a) in Ontario that acknowledge that literacy includes "listening and speaking, reading, writing, and viewing and representing" through different modes and media (OME, 2006, p. 4) and standardized assessment measures that privilege print-based literacies (Stooke, 2010). The discrepancy between the programmatic curricula and what is tested promotes a feeling that the "core" of literacy learning is "tied to traditional teaching objectives rather than the new literacies and multimodal and media based learning technologies" (Tierney et al., 2006, p. 360). These tensions are not limited to Canada and exist in classrooms around the world (e.g., Stein, 2008a; Tierney, 2006; Walsh, 2011). Classroom practices that privilege print literacies can create barriers for realizing expanded communication opportunities through multiple modes and media.

To realize multimodal literacies as meaningful options for literacy learning in classrooms, the uses of multimodal tools and resources must be reimagined as "interchangeable resources" (Walsh, 2011, p. 12) in meaning making activities. An enacted classroom curriculum that embeds digital texts and tools into everyday meaning making activities

legitimates the use of these tools as relevant options for meaning making while also addressing curricular demands and assessment measures (Walsh, 2011). More importantly, an enacted classroom curriculum that embraces multimodal literacy provides students and teachers with opportunities for expanded communication through the expression of multiple modes (Walsh, 2011).

3.1.3 Placed resources

I drew on the theory of placed resources to understand the situated and particular ways that people draw on digital technologies in classrooms. Although studies of multimodal literacy recognize that meaning making activities take place within a particular social context (Walsh, 2011), "space, place, and social practices are at times disconnected from research on new and digital literacies" (Rowsell et al., 2013, p. 351). Multimodal and digital tools can be understood as placed resources, "placed within specific contexts, by particular individuals, to achieve predetermined goals; as such they cannot be severed from local contexts" (Rowsell et al., 2013, p. 351). Through a placed resources lens, meaning making with multimodal tools is "fettered to local context" (p. 352) and "inseparable from the social practice" (Prinsloo, 2005, p. 93).

In this study, placed resources theory provided a construct to examine how meaning is locally constructed through the use of tools or resources through "place-based practices" (Prinsloo & Rowsell, 2012, p. 275). Placed resources theory posits that meaning making potential derives from the ways people draw on these resources for meaning making in a social context; meaning making potential does not reside within the tool itself (Prinsloo, 2005). This is especially salient since "there is a tendency in media and in literature to romanticize technologies like iPads as a panacea, an answer to the challenge of 21st century education" (Rowsell, et al., 2013, p. 351). I drew on placed resources theory to focus my lens, not on technologies, but on the ways people "mediate tools and technologies during social practice" (Prinsloo & Rowsell, 2012, p. 275).

3.1.4 A social theory of learning

Social Learning theories encompass a range of theories, with each theory making contributions to understanding the ways social relationships support learning. "Though there are clear differences among variations of social learning theories, they share a powerful central premise: that learning is most readily accomplished through engagement with more knowledgeable other people and with objects in authentic practical settings" (Polin, 2010, p. 165). In this dissertation, I drew on Wenger's (1998) social theory of learning to inform the structures that can support collaborative teacher professional learning. In the discussion that follows, I explain the central tenets of Wenger's social theory of learning (1988) to lay the foundation for the methodology of my study.

In the introduction to his book, *Communities of Practice: Learning, Meaning and Identity*, Wenger (1998) explained that the primary focus of his social theory of learning, "is on learning as social participation" (p. 4). To Wenger (1998), social participation is more than passive engagement in events and refers "to a more encompassing process of being active participants in the *practices* of social communities and constructing *identities* in relation to these communities" (p. 4, emphasis in original). According to Wenger, social participation is central to learning as it "shapes not only what we do, but also who we are and how we interpret what we do" (p. 4). This perspective "locates learning, not in the head or outside it, but in the relationship between the person and the world, which for human beings is a social person in a social world" (Wenger, 2010, p. 179). Within his social theory of learning, Wenger (1988) explained that learning happens within the context of relationships, and has implications for the identities and practices of people.

To further delineate what the term learning means within Wenger's social theory of learning, I draw on Wenger's summary of the principles that define learning within a social perspective. Wenger explained that "*learning is first and foremost the ability to negotiate new meanings*" and is therefore "not reducible to its mechanics (information, skills, behavior)" (p. 226, emphasis in original). Within this view, learning is embedded within human experiences, situated in time and place, and builds on the personal and collective histories of the people involved. Wenger further expressed that the process of

learning is dynamic and meaning must be continually renegotiated through social experiences. As a result, learning requires opportunities for people to actively participate in, and reflect on activities they personally value. When this occurs, learning has the potential to transform the identities and practices of people (Wenger, 1998). Wenger's social theory of learning is built upon a recognition of learning as a meaning making activity that is complex, dynamic, and situated.

Within Wenger's (1998) social theory of learning, learning is surrounded by community, practice, identity, and meaning. The components of this model are deeply "interconnected and mutually defining" (p. 5) as learning "shapes who we are (identity), what we do (practice), how we interpret what we do (meaning), and how we belong (community)" (Adams, 2010, p. 24). Wenger (1998) defines each of the components of his theory:

1) *Meaning*: a way of talking about our (changing) ability – individually and collectively – to experience our life and the world as meaningful.
2) *Practice*: a way of talking about the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action.
3) *Community*: a way of talking about the social configurations in which our enterprises are defined as worth pursuing and our participation is recognizable as competence.
4) *Identity*: a way of talking about how learning challenges who we are and creates personal histories in the context of our communities. (p. 5)

Wenger used the structure of Communities of Practice to integrate all of the elements in his social theory of learning. I next describe the dimensions of Communities of Practice in greater detail.

3.1.4.1 Communities of Practice.

"Communities of Practice [CoPs] are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger, et al., 2002, p. 4). Though the term community of practice (CoP) is relatively new, CoPs, as structures that support learning, have been in existence throughout history and continue to be part of the daily lives of

people informally or formally in work, school, and leisure contexts (Wenger et al., 2002). The term CoP emerged from Lave and Wenger's (1991) work that found that "it was a complex set of social relationships within the whole practicing community that supported learning and membership of the knowledge domain and practice field" (McDonald, 2015, p. 328).

All CoPs have three fundamental structural elements: the *domain*, which is the common interest that unifies the participants; the *community*, who are the people unified through their common interest in, and knowledge about the domain (Wenger, 2000); and the *practice* that emerges from participation within the community (Snyder & Wenger, 2010). These elements interact in unique ways to support the construction of knowledge (Wenger et al., 2002). "The effectiveness of these communities [of practice] depends on the strengths of their structural elements of domain, community and practice" (Blackmore, 2010, p. 205). I describe each of these structural elements in turn.

The *domain* in the CoP "is its *raison d'être"* (Wenger et al., 2002, p. 31, emphasis in original). Otherwise stated, the domain is "the area of knowledge that brings the community together, gives it its identity and defines the key issues that members need to address" (Wenger, 2004, p. 3). In this way, the domain both provides a "sense of common identity….inspires members to contribute and participate, guides their learning and gives meaning to their actions" (Wenger et al., 2002, p. 29). The domain is more enduring than what can be understood or resolved by completing a simple task; rather, the domain is a broader "'area' that needs to be explored and developed" (Wenger, 2004, p. 3). Wenger et al. (2002) explained that "a well-defined domain legitimizes the community by affirming its purpose and value to members and other stakeholders" (p. 29). The domain unifies members of the community (Wenger, 2000).

The *community* is comprised of people who share a common domain interest (Wenger, 2004). The community "creates the social fabric of learning" (Wenger et al., 2002, p. 29) and the strength of this fabric and of the community corresponds to "the quality of the relationships among members" (Wenger, 2004, p. 3). The community is not just a group of people who spend time together; instead "it involves people who interact and who

develop relationships that enable them to address problems and share knowledge" (p. 3). Within the community, "learning is a matter of belonging as well as an intellectual process, involving the heart as well as the head" (Wenger et al., 2002, p. 30).

The term *practice* refers to "a set of frameworks, ideas, tools, information, styles, language, stories, and documents that community members share" (Wenger et al., 2002, p. 30). The practice created within the CoP is shared, developed through a common domain interest and forged in the relationships amongst community members (Wenger et al., 2002). Communities design ways of developing and sharing resources that are consistent with the "socially defined ways of doing things in a specific domain" and reflect "both the tacit and the explicit aspects' of a community's knowledge" (p. 38). Practice grows as community members share and develop domain knowledge (Snyder & Wenger, 2010). Within the CoP, the shared practice is meaningful to community members because the resources produced "are not just objects by themselves but are part of the life of the community" (Wenger et al., 2002, p.10).

CoPs can provide opportunities for learning through the interplay of the dynamic structural elements of domain, community, and practice (Wenger et al., 2002). However, these learning opportunities are not guaranteed, and the quality of learning cannot be predetermined (Wenger et al., 2002). Further, the literature cautions that these structures are not immune to discussions of power, and hierarchical social structures can influence the ways meanings are negotiated (Barton & Tusting, 2005). Given the complexity of "learning as a living experience of negotiating meaning", Wenger (1998) cautioned that "*learning cannot be designed*: it can only be designed *for* – that is, facilitated or frustrated" (p. 229). Therefore, I draw on the CoP model to help understand the constituents that can support teacher professional learning and as a structure that has the potential to facilitate learning (Snyder & Wenger, 2010). I used select structural elements of CoPs to inform my study design; I used the domain to focus the research study, and identify the members of the community as my research participants. I drew on the structural element of practice to identify the boundaries of the research study and to inform the data collection methods. In recognition of the potential that power relationships have for influencing the negotiation of meanings within CoPs, I positioned

the study as voluntary for teachers and separate from mandated school district professional development initiatives.

3.1.5 Summary of the theoretical framework

I drew on theories of curriculum, multimodal literacy, placed resources, and a social theory of learning to lay the foundation for my study design. Each theory makes a particular contribution to understanding the phenomenon under study and coalesce through a common interest in meaning making and unified recognition of the complex, dynamic nature of meaning making in a social context. On this foundation, I built the study design.

3.2 A Qualitative Exploratory Multiple-Case Study with Ethnographic and Narrative Methods

I employed qualitative case study methodology with ethnographic and narrative methods. Cases were two attempts to create professional learning opportunities to support teachers to use digital technologies in multimodal pedagogies. Yin (2014) explained that a case study is “a study that investigates a contemporary phenomenon in depth and in its real-world context” (p. 237). Case study methodology provides a way to examine the complex, situated nature of lived experience within a dynamic social setting (Cohen, Manion, & Morrison, 2011) and represent "what some phenomenon means as it is socially enacted within a particular case" (Dyson & Genishi, 2005, p. 5).

When designing a qualitative case study, Yin (2014) explained that the researcher must align the case study design with the research purposes and goals, identify the case, and define its boundaries. The *case* is defined as the particular phenomenon or social unit under study and is situated within the physical locations or *sites* where the study takes place (Dyson & Genishi, 2005). With the case identified, the researcher must then determine the boundaries for study. This is called *bounding the case* and helps the researcher focus the lens for study, decide what is included and excluded from the case, “determine the scope of… data collection,” and distinguish data that is part of the phenomenon or case under study from “data external to the case (the ‘context’)” (Yin, 2014, p. 34). Yin explained that bounding the case may be challenging as “the boundaries

between phenomenon and context may not be clearly evident" (p. 16). Though the process of constructing a case study can be complex, Yin explained that a carefully constructed, well-bounded case can produce "insightful understanding of a case and its internal as well as external complexity" (p. 209).

I identify this study as an exploratory multiple-case study. As an exploratory case, this study was designed to "identify the research questions or procedures to be used in a subsequent research study" (Yin, 2014, p. 238). An exploratory case study design was fitting for use in my study given that the literature recognizes that many teachers of young children tentatively include technologies within instruction (e.g., Flewitt et al., 2015; Lynch & Redpath, 2014) and identifies the need for further discovery on this topic (Alper, 2011). Further, an exploratory case study design was fitting given the literature's clues that standardized assessments that privilege print are prevalent in classrooms (e.g., Hassett, 2006) and can influence teachers' conversations in TPL activities (e.g., Heineke, 2013). In this study, a multiple-case design provided opportunities to explore the phenomena under study in greater depth (e.g., Yin, 2014) as I considered the imperatives and constraints in the different cases, and the types of learning that can be possible within each case and across cases.

This multiple-case was comprised of two cases, with each case bounded by the shared practice of the teachers working together within the TPL activities, and included the co-creation of lessons and the enactment of the co-constructed lessons in classrooms (e.g., Wenger, 1998). One case was situated within a community of practice that was located in a publicly funded elementary school site and the other was situated within a community of practice that was located within a privately funded independent school.

I next introduce the research design, introduce the participants and lay out the data collection methods, and analytical procedures. Then, I identify ethical considerations of confidentiality, assessment, relationships, and memberships. Finally, I identify issues of trustworthiness and identify considerations for the study.

3.2.1 Research design

The study was designed to explore attempts to create professional learning opportunities to support early primary teachers in creating and enacting multimodal pedagogies within their classroom literacy practices. My desire to support early primary teachers was foundational to the study; in all areas of the study design, I sought to be flexible and responsive to the teachers. Thus, while I employed similar methods in each case, the particular processes and products of the teacher professional learning meetings were specific to each case.

3.2.1.1 Cultivating communities of practice to support teacher professional learning.

The study conceptualized TPL activities within an instrumental (McDonald, 2015) community of practice (CoP) (e.g., Lave & Wenger, 1991). I drew on the CoP model, as a structure that has the potential to support collaborative, participatory TPL activities (e.g., Wenger et al., 2002) to inform the research design. Following Wenger's (1998) work, I recognized that I could not guarantee that collaborative professional learning would take place within the research study TPL activities. Instead, I drew on the model to create the conditions that had the potential to support teacher professional learning.

As previous discussed, CoP have three fundamental elements that support learning: the *domain*, the *community*, and the *shared practice* (Wenger, 2000). I was intentional in defining these elements prior to the study because the literature suggested they could be useful in creating conditions that could promote the growth of the CoP in each case. Within this study, I understood these elements as "triggers to catalyze evolution" of each CoP rather than the complete design of the TPL activities within the community (Wenger et al., 2002, p. 73). As I sought to cultivate the CoP, I did not attempt to create identical CoPs in each case. Instead, I drew on the elements of the CoP to provide a flexible structure and provided opportunities for the communities to grow in response to the needs and curricular goals that each community of educators identified.

In this study, I defined the structural elements of the CoP for each case in the same ways. In this study, the *domain* was defined as the common interest that the teacher participants

had in creating and enacting multimodal pedagogies that included digital tools to support the literacy learning of young children in her/his classroom. The *community* was defined as the group of early primary teachers (one group per site) who worked together to design lessons within each school. In my role as participant observer and as an early primary teacher who shares the domain interest, I also claimed membership within each community (Snyder & Wenger, 2010). I assumed the role of "community coordinator" and scheduled and facilitated meetings in a way that was responsive to the teacher participants (Wenger et al., 2002, p. 80). As community coordinator, I was often asked for suggestions of what technologies we could use, or how the technology might support literacy learning. In this study, the *shared practice* of each community was created through the collaborative interactions between teachers and included "its repertoire of tools, frameworks, methods, and stories, as well as activities related to learning and innovation" (Snyder & Wenger, 2010, p. 110). Although all teachers in the study shared a common domain interest, the cases were parallel and teachers did not interact, form a community, or share practices across sites. As a result, I define each CoP as a case in its own right.

I drew on Lesson Study (e.g., Stigler & Hiebert, 2009; Dudley, 2014) to provide a flexible structure for the TPL activities (Curtis et al., 2013). Lesson Study is a collaborative professional learning process that was designed to support the refinement of teachers' pedagogical practices with the goal of enhancing student learning (Dudley, 2014). In my own teaching practice, I have participated in Lesson Study and found it to be a supportive, collaborative professional learning structure. However, I was frustrated that the model required that each teacher implemented the same lesson in her/his class, because the model did not adequately recognize the particularities of classroom curricula. I adapted the Lesson Study Model (e.g., Dudley, 2014) to provide teachers with opportunities to create lessons that were specifically designed for their students within a community of educators. In this study, to differentiate between Lesson Study and the model used in this study, I refer to the modified Lesson Study structure used in this study as a *Lesson Cycle*.

In each case, the teacher participants elected to participate in the Lesson Cycle (Figure 3.1) until both teachers in the CoP had an opportunity to complete the Lesson Cycle. The cycle began as one teacher identified a learning goal in her/his classroom that could be supported through the use of multimodal pedagogies and include the use of digital tools, and the teacher participants collaborated to design a lesson to respond to the learning goal identified. The teacher decided how to implement the lesson in her/his classroom. The teacher implemented the co-constructed lesson in her/his classroom, and the lesson was documented through photographs, audio recordings, and field notes to facilitate sharing with the other teacher participants. The educator team viewed lesson artifacts and made suggestions for follow-up lessons. Following this feedback, the cycle began again to support the other teacher's learning goal. Though the goal identified by the second teacher was different than that of the first educator, the experience of collaboratively designing the lesson in the first Lesson Cycle, and experiences with implementing the lesson and using different digital technologies informed the subsequent lesson design.

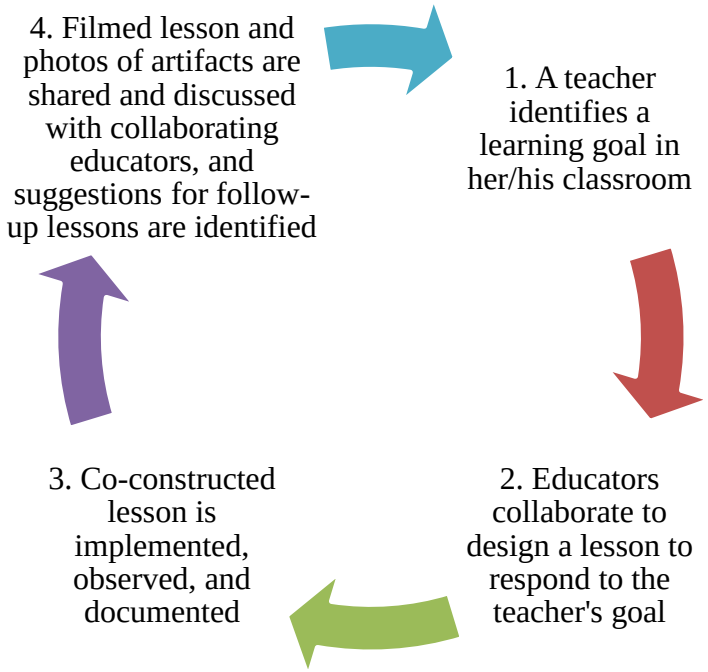

Figure 3.1. Lesson Cycle adapted from Lesson Study Model (e.g., Dudley, 2014)

3.2.1.2 Participant observation.

I positioned myself within the inquiry as a participant observer, that is, an observer who is an active participant in the phenomenon under study (Yin, 2014). Cohen et al. (2011) explain that the researcher, working as a participant observer, negotiates her/his role with the participants along a continuum of insider, where the researcher is a "complete participant," to outsider, where the researcher is "detached as observer" (p. 233). This positioning can change over time and varies according to the situation and context for study (Cohen et al., 2011).

In this study, I negotiated my role as participant observer with the participants and renegotiated my role as needed to support the community of educators in the TPL activities and the teachers and students in the classroom observations (e.g., Wenger et al, 2002). My positions as a practicing early primary teacher and a researcher informed my role as a participant observer, and were a part of the ways in which I interacted with the participants. Though "role negotiation, balance and trust are significant and difficult" (Cohen et al., 2011, p. 233), the position of participant observer provides opportunities to explore the case from an emic perspective (Yin, 2014). I recognize that the knowledge produced through my inquiry is an interpreted account that bears traces of my prior knowledge and experiences and was impacted by my position to the subject and location under inquiry (Creswell, 2007).

3.2.2 Data collection methods

I collected data for each case within the same window of time (starting in February and ending in April). I had not initially planned to overlap the data collection timeframes in the cases, but I scheduled the cases this way to respond to the timing requests of the teacher participants. In both cases, the teachers wanted to begin the study after they had completed writing report cards and complete the study around the Easter break.

In each case, data were collected at different sites and in different types of meetings, with each meeting designed to yield different types of information. (See Table 3.1 for a summary of types of professional learning activities, data collection goals, data collection

methods used, and participants involved). All meetings were scheduled at the convenience of the teachers. In each case, teacher professional learning meetings took place 4 times over 3 months (See Appendix A for timelines of professional learning meetings and classroom observations, including goals for meetings).

Table 3.1. Summary of Methods

Type of professional learning activity	Aims of Data Collection	Methods	Participants
Teacher Professional Learning meetings	• Construction of intended classroom curriculum • Debriefing of enacted curriculum • Multimodal literacy pedagogy • Collaborative TPL activities	• Participant observation • Artifact creation	• Both teacher participants in each case
Classroom Observation #1	• "Casing the joint" (Dyson & Genishi, 2005, p. 19) • Observation of classroom curriculum	• Participant observation	• Each teacher participant • their students
Classroom Observation #2	• Observation of the operational curriculum • Effects of pedagogy on children's literacy learning	• Participant observation	• Each teacher participant • their students
Teacher interviews	• Experienced curriculum • Collaborative TPL activities • Multimodal literacy pedagogy	• Teacher interviews	• Each teacher participant

In each case, the professional learning meetings were most frequently held in the teachers' classrooms. When the classrooms were unavailable (e.g., when the children were inside the classroom during recess time) we also met in staff rooms and/or meeting rooms in the schools. We found that meeting in the teachers' classrooms was convenient for the teacher participants as it allowed ready access to the digital technologies in each teacher's classroom as well as the curriculum resources that teachers routinely used in

planning for literacy instruction. Most meetings took place after school or at lunch time. However, in Case 2, at the request of the teacher participants, the school's principal allocated money designated for "professional development in literacy" to hire substitute teachers so that the teacher participants could be released from their teaching responsibilities and meet within the school day for one meeting. The data collected within each meeting focused on creating the intended curriculum as well as reflecting on the operational curriculum (Eisner, 2002) through the structure of the Lesson Cycle (e.g., Figure 3.1). The professional learning meetings were documented primarily through digital audio recordings and field notes. Photographic data were also collected when I believed it would not interfere with the collaborative learning of the teachers. These methods were designed to help answer research questions related to TPL activities, construction of intended curriculum, enactment of classroom curriculum, and multimodal literacy pedagogy.

Data collection also took place twice within each teacher's classroom over 3 months. Each classroom visit was designed to yield particular types of information. The first classroom visit took place before the lesson was co-constructed for the class and was designed to help the children become accustomed to having an additional person in the classroom (e.g., Yin, 2014). The length of the classroom visit was determined in consultation with the classroom teacher, and lasted about an hour. In the first classroom visit, data collection was a part of "casing the joint" (Dyson & Genishi, 2005, p. 19) and consisted primarily of field notes related to the physical set up of the class, photos of the physical classroom environment, and my journal.

Data collection took place a second time in the teacher's classroom when the co-constructed lesson was implemented. On this visit, the lesson was documented through photographs and audio recordings as students participated in the lesson with their teacher. During this visit, students were asked to comment about their work through informal conversations as they were working. Data collected also included photos of students working and completed student artifacts, descriptive and reflective field notes, and my journal. Data collected within the second classroom visit focused on observing the operational curriculum and how the co-constructed lesson unfolded (Eisner, 2002).

Within each case, data collection methods at the classroom sites were designed to help answer research questions about the classroom curriculum, multimodal literacy pedagogy, and the effects on children's literacy learning.

3.2.3 Participants

This multiple-case included 2 pairs of early primary teachers (n=4) interested in creating and implementing multimodal pedagogies to support student's literacy learning, their students (with 38 students participating out of 70 students in the classes), and educational support people who typically work with the children to support the children's learning with 1 Educational Assistant participating. In Case 1, one pair of teachers worked (n=2) within one publicly funded Catholic elementary school located in a small city in Southern Ontario. Twenty students (out of 36 students in the class) participated, as well as 1 Educational Assistant. In Case 2, the other pair of teachers (n=2) worked within an independent faith-based school in a mid-size city in Southern Ontario, and 18 students participated (out of 34 students in the classes). All of the teacher participants' students could participate in the co-constructed literacy lessons even if they were not participants in the research study.

3.2.3.1 Teacher participants.

In each case, teacher participants included 2 early primary teachers who shared a common interest of creating and implementing multimodal pedagogies that included digital tools to support young children in the learning of literacies. In this study, the term *early primary teachers* refers to educators who have responsibilities to plan and implement literacy lessons in a classroom at the early primary level (junior kindergarten-Grade 2, serving children aged 3.8-8 years).

Teacher participants in each case worked within the same school. This design aspect reflected a recognition that the schools were part of different educational systems that responded to different institutional and programmatic curricula, and this could potentially frustrate collaborative lesson planning as institutional and programmatic curricula are a part of planning for the classroom curriculum (e.g., Deng, 2009). In addition, the research

design was built upon established working relationships in schools and recognized that the teacher participants in each case were working toward common school district and school-based goals. As teacher participants worked within the same educational system, this alleviated potential ethical concerns that school administrators and parents of child participants might have about sharing images of students and student-created artifacts outside of the system, and I hypothesized that the freedom to share images and artifacts of student learning would facilitate collaboration and lesson planning within TPL activities.

Though the study design reflected the importance of shared understandings within each case, it also sought to incorporate the importance of diversity in supporting "divergent thinking and activity" (Wenger et al., 2002, p. 61) within each case. In Case 1, teacher participants had both been teaching for about the same number of years, were both new to teaching Grade 1, and were licensed to teach JK-Grade 12, however, Fireball received his Teacher Education training in the US, and Esther received her teacher training in Ontario. Both teachers had taught in many different schools and grades. In Case 2, both teacher participants completed their initial degrees and teacher education programs at the same institution, graduated at about the same time, but taught different grades. Teacher participant Angela had previously taught at 2 other independent Christian schools in Ontario, while Grace was hired at the school where she did her teaching practicum within her teacher education program.

Table 3.2. The Teacher Participants at St. Nicholas Catholic School

Pseudonym	Grade taught	Year completed teacher education program	Number of years teaching this grade	Other pertinent information
Fireball	1	2008	1	• Qualified[5] to teach in primary, junior, intermediate and senior divisions (JK-12) • Had taught several different subjects/ grades in many different schools within the school district
Esther	1	2007	1	• Qualified to teach in primary, junior, intermediate and senior divisions (JK-12). • Had taught several different subjects/ grades in many different schools within the school district • Had previously taught in a different publicly funded school district in Ontario

[5] The term qualified refers to the subjects and or grades for which the teacher holds qualifications recognized by the Ontario College of Teachers (OCT). The OCT is responsible for licensing, governing and regulating teachers in Ontario (OCT, 2017).

Table 3.3. The Teacher Participants at Cornerstone Christian School

Pseudonym	Grade taught	Year completed teacher education program	Number of years teaching this grade	Other pertinent information
Angela	2	2010	15	• Began teaching in an independent private Christian school before she completed her teacher education training and completed qualifications while working • Graduated from teacher education program in 2010 and registered with OCT in 2014 • Qualified to teach JK-Gr. 6
Grace	Senior Kindergarten	2009	8	• Hired at the school where she did her practice teaching • Qualified to teach JK-Gr. 6

I used purposive sampling methods (Cohen et al., 2011) to access early primary teachers who were interested in creating and enacting multimodal pedagogies and willing to participate in TPL activities outside of regular school hours (Curtis et al., 2013). Purposive sampling of knowledgeable participants provided opportunities to study each case in depth and in detail (Teddlie & Yu, 2007). The number of teacher participants in each case was small to enable me to generate a detailed, contextualized description of this multiple-case (Yin, 2014). Given the close interactions and the small number of teachers within the learning community in each case, only teachers who were participants in the research study were part of the TPL activities, and only teachers who consented to be audio recorded and photographed were able to participate in the research study.

3.2.3.2 Child participants.

Child participants were students in each teacher participant's classroom (n=38). Though the primary focus of the study is on the teachers, including child participants was essential so that the children could comment on their perceptions of the implemented lessons and what they were learning. I used convenience sampling to access the students within each participating teacher's class (Cohen et al., 2011). All students in each teacher's class were able to participate in the co-constructed lessons regardless of whether they were participants in the research study. In Case 1, 20 children participated out of 36 children in the classes. In Case 2, 18 children participated out of 34 children in the classes.

3.2.3.3 Other adult participants.

Other adults who were typically present in the classroom during literacy lessons were invited to participate in the research study as they supported children in completing learning activities. I accessed these participants through convenient sampling methods (Cohen et al., 2011). In Case 1, 1 "other adult" participated. In Case 2, no "other adults" were present in the classroom or participated in the study.

3.2.4 Recruitment

Following approval from the research ethics board at Western University, I submitted a request to conduct research to the gatekeepers of the publicly funded school district and the independent school. In my request to the publicly funded school district, I highlighted how the study supported the school district's initiatives that were highlighted on the district's website of collaborative teacher professional learning, literacy, and technology. In my request to the independent school, I highlighted how the study was designed to support teachers in designing lessons using any available digital technology in ways that responded to the programmatic curriculum in place at the school. In both cases, the gatekeepers were enthusiastic about the ways the study aligned with the current goals of their system and school. The principal of the independent school explained that, just a

few weeks before my request, the primary teachers had identified a goal of including technology in their literacy instruction.

Within the publicly funded school district, I followed the existing protocol, and school district personnel forwarded a recruitment email describing the research study to school principals who then forwarded the email to early primary teachers [junior kindergarten (JK)-Grade 2] in her/his school. In the independent school, the school principal forwarded the study information to the early primary teachers (JK-Grade 2) in his school. In both settings, interested teachers contacted me by email. I met with interested teachers and explained the study's goals and procedures, including my positioning in the TPL activities, and proposed structure of TPL activities. We discussed the Letter of Information (LOI) and Consent Form (Appendix B), Photographic Release forms (Appendix C), and I determined if the teacher met the inclusion criteria. I invited each teacher who met the inclusion criteria to participate in the study. The principals of the schools were not present when I met with teachers and invited them to participate. After the teacher agreed to participate in the research study, the teachers sent the LOI and Consent forms and the Photographic Release forms home with the children in her/his class (See Appendices D and E) and collected the signed letters from the parents. I asked the teachers if there was a need for translating the letters in other languages for the families in their class, but the teachers did not believe translation was necessary. Following ethics protocols, children in Grades 1 and 2 whose parents had given consent for participation in the study were also asked to give assent for their participation in the study (Appendix F). Once I had visited the teacher's classroom, I determined if there would be other adults in the classroom during data collection. If "other adults" were present, I presented the LOI and Consent Form (Appendix G), and Photographic Release forms (See Appendix C) to the "other adults" and invited the other adults to participate in the research study.

3.2.5 Data sources

I collected qualitative data through multiple data sources (Yin, 2014) to help account for the dynamism and complexity of interactions in a multimodal environment (Jewitt &

Kress, 2003). The uses of particular data sources varied according to site and were selected according to their "fitness for purpose" in documenting the interactions at the site (Cohen et al., 2011, p. 235) (see Table 3.4 for a summary of data sources used in each meeting). The data set included audio recordings of interactions; transcriptions of the recorded interactions; descriptive and reflective field notes (including reflective field notes structured as letters to my supervisor, Rachel); my researcher journal; photographs of the Lesson Cycle; the texts created by educators as we collaborated to co-construct the lessons; and the products of the implemented lesson [e.g., photos and observations of implemented lesson, student work from the implemented lesson, and feedback from educators about possible innovations of the lesson for the future (e.g., Dyson & Genishi, 2005)]. Throughout the study, digital communication with educator participants was also included as a data source (e.g., emails to reschedule TPL meetings and observations). At the end of the study, data were collected through semi-structured interviews with each educator participant (See Appendix H for interview protocol).

Table 3.4. Data Sources Used in Each Meeting

Type of professional learning activity	Data collection tool
Teacher professional learning meetings	• Audio recordings of meeting (transcribed) • Informal conversations • Documents used to create lessons • Photos of process of creating artifacts and of constructed artifacts (when not disruptive to lesson design process) • Field notes • Journals
Classroom visit #1- "casing the joint" (Dyson & Genishi, 2005)	• Field notes about physical environment and mapping of the physical space • Photos of physical environment • Audio recordings of informal conversation with teacher (transcribed)

Classroom visit #2- documenting the co-constructed lesson	• Audio recording of lesson (transcribed) • Audio recording of informal conversations with teacher and children about their perceptions of the lesson (transcribed) • Photos of implementation of lesson and artifacts constructed • Field notes • Journals
Semi-Structured Interviews	• Audio recordings of interview (transcribed) • Field notes

In all aspects of data collection, I attempted to balance the need to document the study in a rigorous and trustworthy manner without interrupting the learning in the meetings with the teachers or the learning in the classrooms. Within the study, my data collection methods overlapped and documented particular interactions through multiple data sources.

3.2.6 Data analysis

Analysis was inductive and on-going, mediated by my own experiences and guided by the research questions (Clandinin & Connelly, 2000). In the initial stage of analysis, I archived the field texts (e.g., data from different sources) and annotated the data with information including the date, context, people involved, and brief summary of content (Clandinin & Connelly, 2000). Following this archival stage of analysis, I categorized the data according to the units of analysis (e.g. Dyson & Genishi, 2005), which were defined as the Lesson Cycle for each teacher participant. I read and re-read the data looking for the "patterns, narrative threads, tensions and themes" that emerged (Clandinin & Connelly, 2000, p.132). I focused on identifying themes that responded to the research questions *within* each of the Lesson Cycles. I compared the emerging themes to stories from my own experience (Clandinin & Connelly, 2000). This process of *nesting* recognized the interrelationship of my own experiences as a teacher and researcher with the experiences of the teacher participants (Clandinin & Connelly, 2000).

Following the analysis within each Lesson Cycle, I reanalyzed data to respond to research questions *across* Lesson Cycles within each case (i.e., school site) following the

processes outlined above. After analyzing data within each case, I read across the data from both cases, following the processes outlined above to identify answers to the research questions. This analytical process enabled me to explore each Lesson Cycle as its own story (e.g., Stigler & Hiebert) that is nested within collective stories of experiences within each CoP. This process also allowed me to understand the nested stories of experience (Clandinin & Connelly, 2000) within a larger community of educators. Figure 3.2 shows the analytical procedures.

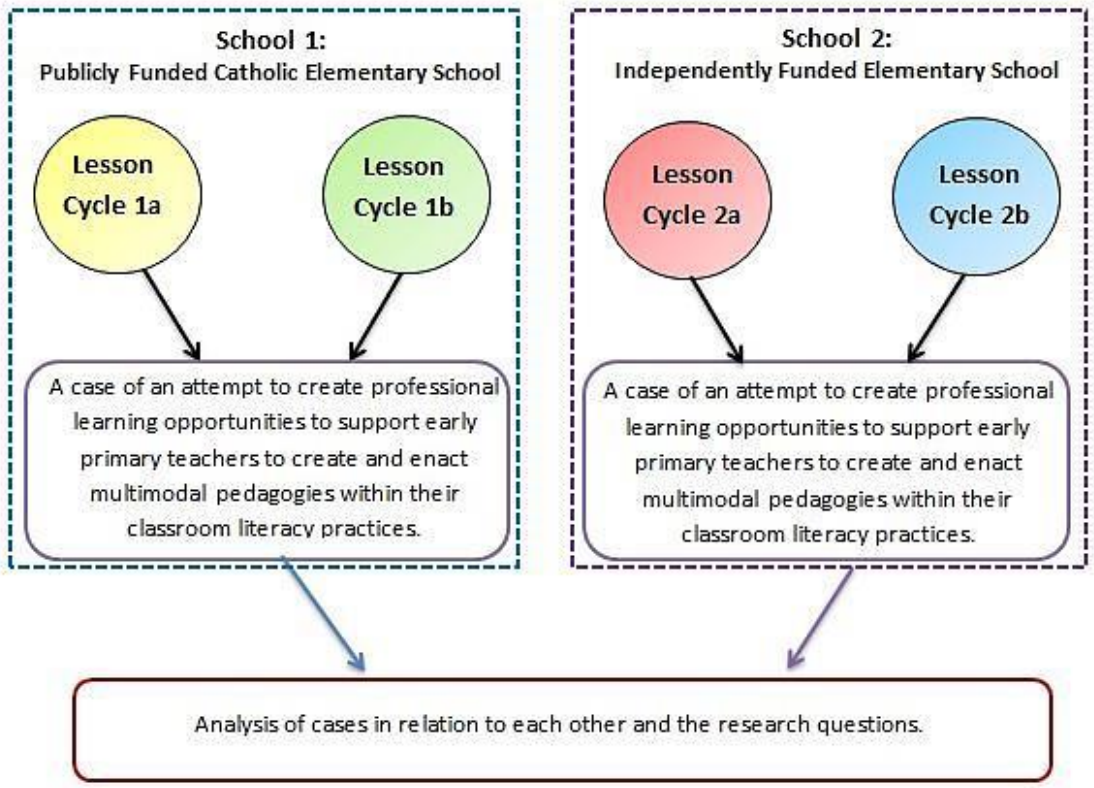

Figure 3.2. Diagram of Analysis Procedures

I wrote interim texts to mediate the field and research texts and located the texts in time, space, and place (Clandinin & Connelly, 2000). I verified emerging themes with teacher participants and further reflected on my interpretation of field texts (Clandinin & Connelly, 2000). Following the member checks, I composed narratives that chronicled the experiences of the educators as they collaborated within the TPL activities to create and enact multimodal pedagogies into their classroom literacy practices (Clandinin & Connelly, 2000).

3.2.7 Ethics

This study was subject to ethical review by the University (see Appendix I for approval notice from University) and the participating School Board and independent school. Adult participants and parents of child participants were informed of the nature and scope of the study and invited to participate (Appendices B, C, D, E, G), and children in Grades One and Two were asked to give assent (Appendix F) for their participation in the study. Data were confidential. The names of participants, the names of the communities, school districts and schools were kept confidential and self-selected pseudonyms have been used. Where identifying information of the site appeared in the photos, it was removed (e.g., blurred, blocked, or erased).

3.2.8 Trustworthiness

To strengthen the integrity of my study, I drew on qualitative measures of trustworthiness. The discourse related to trustworthiness continues to evolve in the qualitative research community (e.g., Clandinin & Connelly, 2000; Denzin, 2009). In this study, I drew on measures of credibility, transferability, dependability (Schwandt, Lincoln, and Guba, 2007). To promote credibility, I used a reflexive journal (Guba & Lincoln, 1998) to help me consider my positioning as an insider/outsider and how my experiences, beliefs, values, and biases shaped my inquiry (Creswell & Miller, 2000); I sustained engagement with the study participants over time and conducted member checks with teacher participants to verify emerging themes and clarify their perspectives (Schwandt et al, 2007). In my analysis and construction of narratives, I triangulated data from multiple data sources and included data that challenged my theoretical assumptions and practical experiences (Schwandt et al., 2007; Yin, 2014). As I constructed narratives of experiences, I wrote with a desire to honour the collaborative relationships I formed with participants, and ensure that the voices of teacher participants were heard above my own story (Clandinin, 1992), and allow the data to speak in response to the research questions.

To promote transferability, I documented detailed contextual information in my field notes and included these thick descriptions in the findings (Cohen et al., 2011; Schwandt

et al, 2007). To promote dependability, I documented all data collected on an audit trail and provided detailed information about data collection and analysis procedures (Lincoln & Guba, 1985; Schwandt et al., 2007). Given the complexity of using multiple methods and in studying multiple cases concurrently, to further promote dependability, I focused each observation through a similar process. Before I entered each site, I reminded myself of the research goals of the meeting and of the particular process of the teacher(s). During the meetings, I focused on the current observation, and did not attempt to make connections between cases. Following each meeting, I summarized what I had observed. A research study that has a high degree of trustworthiness requires the researcher to be "wakeful and thoughtful about all…inquiry decisions" (Clandinin & Connelly, 2000, p. 184).

This study is designed to explore attempts to create professional learning opportunities to support early primary teachers to create and enact multimodal pedagogies within their classroom literacy practices. Each case is designed as a subjective, situated, and interpreted account of meaning making (e.g., Creswell, 2007). It is "a collaboration between researcher and participants, over time, in a…series of places, and in social interaction with milieus" (Clandinin & Connelly, 2000, p. 20). Though I have incorporated methods to expose my subjectivities (e.g., reflexive journal), this inquiry is "nested" within my experiences (Clandinin & Connelly, 2000, p. xvii).

3.3 Summary of Chapter 3

In this chapter, I have highlighted a theoretical framework comprised of theories of curriculum (e.g., Connelly & Clandinin, 1988; Deng, 2009; Doyle, 1992a; 1992b; Eisner, 2002), multimodal literacy (e.g., Walsh, 2011), placed resources (e.g., Prinsloo, 2005), and Wenger's (1988) social theory of learning. The tenets of these theories appreciate the complexity, particularity, and situatedness of classroom curriculum-making, and inform my research design. My research, as an exploratory multiple-case seeks to document a case of multiple attempts to create professional learning opportunities to support early primary teachers (i.e., teachers of kindergarten–Grade 2) in creating and enacting multimodal pedagogies within their classroom literacy practice. This multiple-case provides opportunities to understand the phenomena under study in greater depth (e.g.,

Yin, 2014) and consider what kinds of pedagogies could be possible when different programmatic curricula are in place. Within the study, I drew on different data sources to collect and triangulate data (e.g., Yin, 2014). Analysis was inductive and ongoing and followed a process of analyzing each unit of analysis (i.e., each Lesson Cycle), the data from each case, and then the data from both cases (e.g. Dyson & Genishi, 2005). This study is nested within my relationships with the participants within each case and within my own experiences as an experienced early primary teacher and novice researcher (Clandinin & Connelly, 2000).

In the next chapter, I describe the context for curriculum-making in each case.

Chapter 4

4 The Contexts for Curriculum-Making

In this multiple-case study, I aimed to cultivate a community of practice (CoP) in each of the cases designed to support early primary teachers in designing and implementing multimodal pedagogies within their classroom literacy practices. In both cases, the CoP was comprised of early primary teachers that held a common interest in creating and enacting multimodal pedagogies that include digital tools to support the literacy learning of young children in her/his classroom. However, each community was unique as it included teachers with diverse experiences and was situated in a school community that was located within a particular educational system that responded to the programmatic curricula from the Ontario Ministry of Education in different ways. These contextual elements shaped the shared practice and the lessons that were constructed in the TPL activities. In this section, I map the curricular context in each case and the technological resources available for use. Then, I describe each CoP and the classroom settings. Finally, I define how I worked as a participant observer in each case and negotiated my role as an insider/outsider.

4.1 The Cases: Embedded in Different Educational Systems

Each case was located within schools that were part of different educational systems. In Case 1, the school was part of a publicly funded Catholic elementary school district, and in Case 2, the school was an independently funded, tuition-based Christian elementary school. I describe each school site in turn.

4.1.1 Case 1: Located in St. Nicholas Catholic School

St. Nicholas Catholic School is a publicly funded Catholic elementary school that serves students from junior kindergarten-Grade 8 (ages 3.8-14 years old). The school has been open for more than 50 years and is located in a small city in Southern Ontario, Canada.

At the time of the study, the school's website[6] explained that 350 students attended the school, with more than half of the students taking the school bus to and from school each day. According to the school website, most of the students in the school were born in Canada and spoke English as their first language. As a publicly funded school, the school was mandated to follow the programmatic curricula outlined by the Ontario Ministry of Education and the teachers were certified and registered through the Ontario College of Teachers. As a Catholic school, St. Nicholas promoted the faith tradition of the Catholic Church. I observed the emphasis on the Catholic faith tradition immediately when I entered the school foyer and viewed the artifacts displayed (e.g., crosses, pictures representing Jesus Christ, and a Bible). I continued to recognize the school's faith tradition as the school prayer was read over the public address system following the singing of the national anthem.

In our CoP, I suggested the school pseudonym "St. Nicholas" to represent the Catholic faith tradition of the school. The name further signified St. Nicholas Day, the date that the teachers agreed to participate in the research study. As I entered a Catholic school on the morning of St. Nicholas Day, I observed a teacher hiding gifts in her students' shoes, and I reflected that the teachers' participation in the study was a gift. I shared this reflection with the teachers and they affirmed the choice of the pseudonym.

At St. Nicholas, the children received dedicated instruction in "Religion", but faith-based instruction was connected to all curricular areas including literacy. I observed the Grade 1 children reading their prayers as one child pointed to the words while the rest of the class read along in a choral reading style. Figure 4.1 shows the school prayer written out on chart paper for the students to read together. The ways the teachers connected curricular areas to religion were mentioned in our TPL activities. For example, as we brainstormed ways we could connect curricular areas in our lesson designs, Grade 1 teacher Fireball explained that he had designed an activity to help children pray for their community through a picture book and visual art response.

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[6] References to the schools' websites and school district websites have been omitted to maintain confidentiality of the schools.

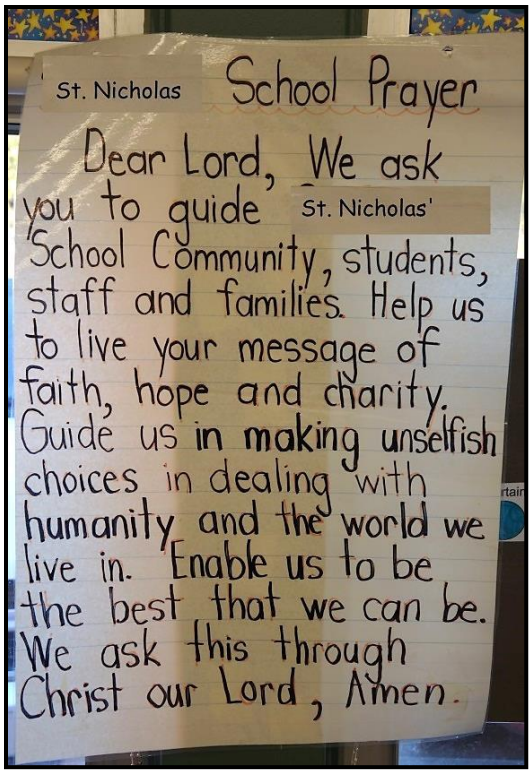


Figure 4.1. St. Nicholas school prayer that the children read each day.

4.1.2 Case 2: Located in Cornerstone Christian School

Cornerstone Christian School is an independent Christian elementary school that serves students from junior kindergarten-Grade 8 (ages 3.8-14 years old). The school is located in a mid-sized city in Southern Ontario, Canada. At the time of the research, the school's website explained that the school has been open for more than 40 years and had almost 200 students enrolled. The school did not represent one specific Christian denomination and students came from numerous Christian churches. Many students travelled quite a distance to school (e.g., across the city or from nearby communities), and travelled to and from school in private vehicles as school bus services were not available. As an independent school, the school receives no public money and, as a result, the families pay tuition for their children to attend Cornerstone. The school is incorporated and is locally governed by a board of directors. As an independent school, the school is not mandated to follow programmatic curricula outlined by the Ontario Ministry of Education, or employ teachers that are members of the Ontario College of Teachers (e.g., OME,

2016b). However, the school's website explained that Cornerstone Christian School follows much of the programmatic curriculum that is outlined by the Ontario Ministry of Education, and integrates the curriculum in all subject areas with a Biblical perspective. Further, the school's website explains that all of the teachers are "certified, Christian teachers." The website does not clearly define what is meant by these terms. However, it appears that the term "certified" reflects membership in the Ontario College of Teachers as the teachers' biographies on the website highlight Ontario Teaching Certificates within their credentials and they are listed in the Ontario College of Teachers publicly available registry. Further, the term "Christian" is not clearly defined, though the website highlights "faith in Jesus Christ" as "foundational to everything we do" and explains that the school community is "represented by many different Christian denominations who are like-minded with our statement of faith" that is built from Biblical concepts.

As I met with Grade 2 teacher, Angela, following her classroom observation, she explained the ways the teachers at Cornerstone use the programmatic curriculum documents from the Ontario Ministry of Education:

> Lori: Angela, can you explain… how you and the other teachers in the school use the Ontario curriculum?
>
> Angela: We use it as a guideline… We stick with it as best we can using resources of our own choosing. We…choose things from a range of…online resources to printed documents. We follow the Ministry [of Education] guidelines as long as it is fitting with our Christian perspective and Christian values. (February, 23, 2017).

At Cornerstone, though the teachers were not obligated to follow the Ontario programmatic curriculum, they used it as a resource to guide and support their curriculum planning.

I noticed the school's foundation of faith as I entered the school. In the foyer, there was a large display of the students' artwork that reached from the floor to the ceiling and announced the reasons the children love God. The artwork included children's handwritten messages stating Bible verses and prayers. As I met with the teachers for our first lesson planning meeting, I suggested the pseudonym for the school as Cornerstone

Christian School to reflect the importance of the faith foundation, and Grace and Angela affirmed the choice of pseudonym.

At Cornerstone, the children received dedicated instruction in a subject called "Bible", but as in St. Nicholas, the faith-based practices were embedded in all subject areas. As I looked around the classrooms, I saw connections between the Christian faith and different subject content. For example, Figure 4.2 shows the Science curricular content in the Grade 2 classroom that is framed as "Caring for God's Animals". Within our TPL activities, the teachers referenced the different activities that they were doing in their classes, including how they connected prayers and Bible stories to other subject areas. For example, Kindergarten teacher Grace had a bulletin board about "The Lord's Prayer" (See Figure 4.3) in her classroom. The prayer was an important part of the faith-based practices in the classroom and school, and Grace explained that she used the written text of the Prayer with accompanying pictures as a sequencing activity to support retell in Literacy instruction. As we planned together, I recognized that faith-based practices were embedded in all subject areas, even when they were not specifically identified.

Figure 4.2. Bulletin board that shows the Science curricular content as connected to faith-based practices.

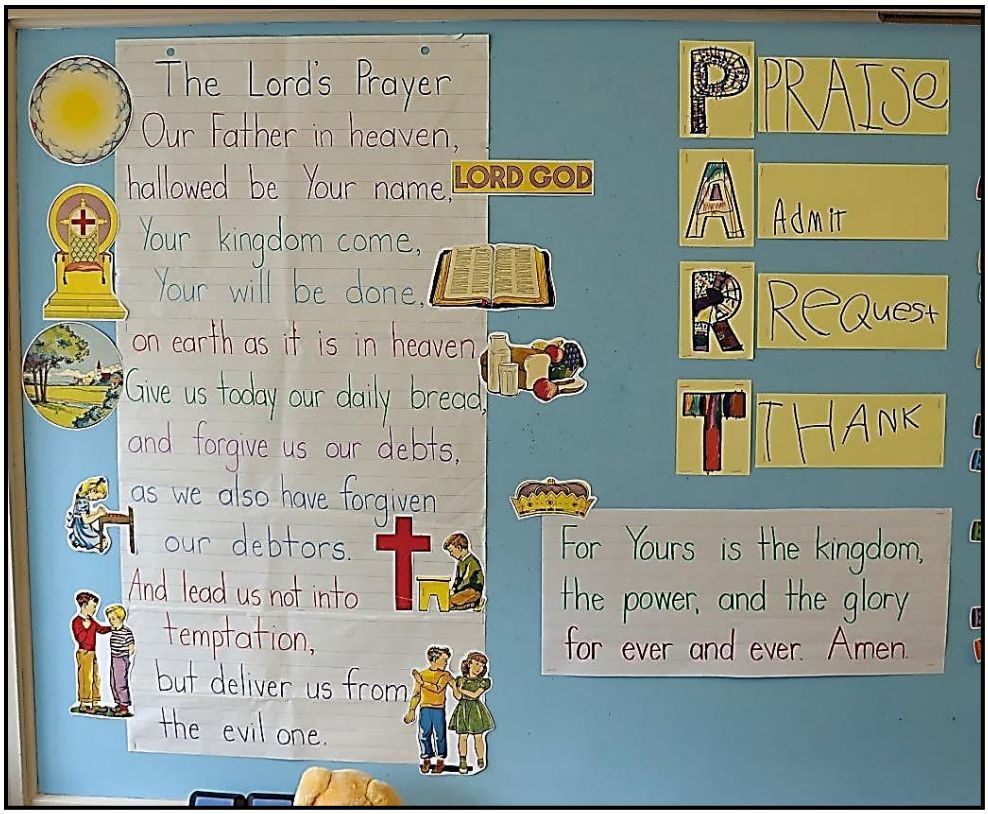


Figure 4.3. Lord's prayer bulletin board in the kindergarten classroom used for prayer and literacy retell activities.

4.1.3 "A…part of the literacy story" (Lori, February 17, 2017): The inclusion of faith-based instruction across curricular areas

Faith-based instruction and practices were integral to instruction in each of the schools. Though the particularities of faith-based practices were different and the ways each school followed programmatic curricula were diverse, the teachers viewed faith as part of daily school life in all areas of instruction. In my journal, I reflected, "in both of the cases, I am seeing how faith and religious practices are a…part of the literacy story, and the professional learning story. These practices are inseparable to the meaning making" (February 17, 2017). The role of religious practices is not always explicit in the data, but I recognized faith as an important sub-text that was always present in our stories. Though the lessons we planned did not specifically include religious content, faith-based practices

were part of our discussions in the TPL activities and informed the ways the teachers planned lessons for their classes.

4.2 Available Digital Technologies

St. Nicholas and Cornerstone had different technologies available for use. Within the schools, each of the classrooms had access to different technological resources. In all of the classrooms, the teachers used their own personal technological resources to supplement what was available in the classrooms. The amount and type of digital technologies that were available influenced the lessons we planned.

4.2.1 Digital technologies available at St. Nicholas

St. Nicholas school had a computer lab that serviced the whole school, and the computer lab was tightly scheduled so that all of the 350 students had opportunities to access the lab. Esther explained that her students used the computer lab with another teacher for 40 minutes per week. Though teachers could schedule their class to use the computer lab more frequently in the periods that were not already assigned, Esther explained that this was challenging as a part-time teacher as there was high demand for the space, especially during her scheduled teaching time in the mornings:

> There are a few spots that are open, I can count three that are available in the morning that we could do and that's it, and that's a 40 minute slot and most of those times other teachers have scooped up. (April 20, 2017)

Due to these constraints, Esther explained that she rarely used the computer lab with her students. In addition to the computer lab, the school owned a class set of 20 iPads that the teachers could sign out for use in their classrooms.

Esther and Fireball had access to some of the same digital technologies in their classrooms. For example, both Esther and Fireball had a data projector and screen that did not have interactive touch capability. In addition, both teachers had a document camera and a desktop computer in their classrooms that was connected to a data projector.

Each classroom also had access to different technologies and it appeared that Fireball had more digital technologies available for use in his classroom than did Esther. Fireball explained that he had two iPads stored in his classroom—one was his own personal iPad and one was provided by the school for use in his classroom to support pedagogical documentation. Though she taught the same grade as Fireball, Esther explained that she did not have any iPads stored in her classroom, as she began teaching at the school after the iPads for documentation had been purchased and distributed by the school district. In her interview, Esther explained,

> Esther: I know that the other teachers have an in-class iPad…to use for assessment.
>
> Lori: Yeah.
>
> Esther: I don't have one.
>
> Lori: Because?
>
> Esther: I'm new. (April 20, 2017)

Esther explained that as new staff entered the school, they did not always receive the digital technologies that were provided to other teachers during different funding initiatives.

Fireball explained that he created a poster about the technology available in his classroom to cue the substitute teachers that taught in his classroom about what technologies could be used. He said, "I have a poster over there about using technology in my room. It's for people coming in to show them this is what I have available" (March 2, 2017). Figure 4.4 shows the poster Fireball created about the technology that was available in his classroom including a desktop computer, data projector, wireless keyboard and mouse, and an iPad. Though the data are not definitive, it is possible that Fireball's creation of the poster also signals an understanding that different classrooms had different technological resources available.

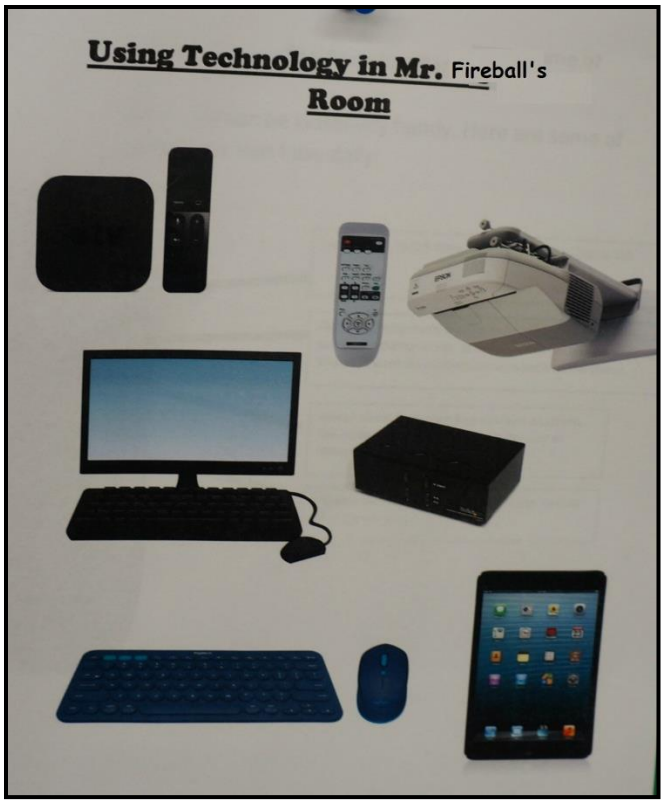


Figure 4.4. Technology available in Fireball's classroom.

4.2.2 Digital technologies available at Cornerstone

Cornerstone had a computer lab that serviced the almost 200 students in the school and an iPod that could be shared between classrooms. At the time of the research, the teachers explained that they had different technological resources available in their classrooms. Angela explained that she had a laptop provided by the school to run the SmartBoard (i.e., interactive whiteboard) in her classroom. She also had two computers in her classroom, a CD player she had donated to the school, and her own personal iPad mini that she brought to school from time to time for use with her students. Angela's students used the computer lab with a different teacher.

Grace's classroom was equipped with a single classroom computer that did not have access to the internet and an old iPod that a member of the school community had donated. Grace's classroom had a Smart Projector (i.e., an interactive projector) in her classroom. She controlled the projector with her personal laptop that she brought to

school daily. Grace also used her own cellphone to take pictures to document learning and to search for information with her students. Grace explained that her students did not access the computer lab in the school, citing difficulties that the young children would have with entering complicated alphanumeric login codes and passwords.

Each of the teachers had access to different technological resources in their classrooms. We planned lessons to use the available digital technologies in each of the classrooms. The availability of resources affected the ways we designed literacy lessons that included digital technologies. I will further elaborate on the ways the available digital technologies affected the design and implementation of literacy lessons in the next chapter.

4.3 Our Community of Practice at St. Nicholas

I worked with Grade 1 teachers, Fireball and Esther, at St. Nicholas Catholic School. Both teachers were experienced teachers and had worked in several different grades previously, but were new to teaching Grade 1 this school year. Fireball and Esther had some experience working together as Fireball served as Esther's mentor as she was newly hired on a permanent contract in the school district.

The teachers at St. Nicholas identified different reasons for participating in the research study. Fireball explained that he participated because he was interested in learning more about the ways he could include digital technologies in his classroom:

> Lori: What made you want to participate in the research?
> Fireball: For me, I have always had a strong interest in technology and I think that coming into this digital world, this technological world, I need to be more open…and my students need to be ready. So I want to see what is out there and what can help my students and if there is something that is going to make my job easier…bring it on! I will take it! I will try it… and whatever I can do to help… my students, then that's good enough for me. (interview, April 20, 2017)

Fireball expressed that he thought the research study could help him prepare his students for success in a world with changing digital technologies. Esther also explained that she participated in the research study because she felt it would complement her other TPL activities as she was working at obtaining qualifications to become a school principal.

From the moment I met the teachers, we connected easily. After our first meeting together, in my reflective field notes structured as letters to my supervisor, I explained to Rachel that I was “encouraged by how we were able to come together and have a meaningful professional dialogue so quickly” (February 7, 2017), and I reflected on the easygoing tone of the meeting in my journal:

> I find myself thinking about the really positive and collegial tone that was established immediately. There is a lot of joking around and laughing in this planning meeting! There was such a feeling of community even though I am not a teacher in this Board. (February 11, 2017)

Over the course of the study, we maintained our collegiality and laughed together about the daily life of being early primary teachers. For example, in my reflective field notes, I explained to Rachel how Fireball, Esther, and I connected over the smallest instances of shared understandings:

> I walked into the school and [Fireball] met me at the door at noon recess. It was pouring rain outside and I said, "I brought coffee AND treats because it is an inside recess day." He said, "thank God!!" And "it's so great to work with someone who actually knows what it [indoor recess with young children] is like!" That's how we started our meeting. (April 6, 2017)

Within the community of practice at St. Nicholas, our shared practice grew within this casual and collegial atmosphere.

4.3.1 Fireball’s classroom

Fireball volunteered to be the first focal teacher in our lesson planning cycle at St. Nicholas. When I visited the classroom, he welcomed me with the same collegiality as I experienced in our planning meeting. As I observed Fireball’s class, I quickly recognized the inviting and playful atmosphere in the classroom. Figure 4.5 shows the view of Fireball’s classroom from the door. The children have desks at the front of the classroom, and there are areas for casual sitting and reading and a carpeted area at the back of the classroom for instruction. In my journal, I reflected, “This class has a beautiful, peaceful tone. Fireball has a wonderful rapport with students and he jokes with them, but also holds them to a high standard of behaviour in a very gentle way” (February 16, 2017).

The warm welcoming tone in Fireball's classroom paralleled the collegial tone in the professional learning meetings.

Figure 4.5. A view of Fireball's classroom from the door.

4.3.2 Esther's classroom

Esther worked part time at St. Nicholas. She worked part days with her Grade 1 students and also taught in a kindergarten class in the afternoon to provide planning time for the kindergarten teacher. Esther's classroom was arranged so that the carpeted area for instruction was at the front of the classroom under a chalkboard and the desks were positioned in groups behind the carpet (see Figure 4.6). In my observations, I noted that Esther appeared to enjoy working with her students and as she talked with her students, they seemed to share "inside jokes" with shared meanings. In my field notes, I documented that "the class …has a different dynamic than some of the other classes" (March 23, 2017). I noted that some of the children appeared "unsettled" and I observed the children receiving "mindfulness training" from a school district social worker to support the students in becoming more aware of their behaviour. In my first classroom visit, I documented in my field notes that in spite of some unsettled behaviour during

instruction, the children appeared to enjoy their writing activity about “Robots” and worked independently at their desks. As the children worked on their writing, I documented that Esther encouraged her students by calling out “awesome” and affirming the students’ hard work and the children basked in this praise.

Figure 4.6. A view of Esther's classroom from the door.

4.4 Our Community of Practice at Cornerstone

At Cornerstone, I worked with Kindergarten teacher, Grace and Grade Two teacher, Angela. Both Angela and Grace were experienced teachers, had taught the same grade for several years, and were established in the school community. The teachers explained that they were friends, and this was apparent as they worked together in the TPL activities as they shared their ideas in an open and easy way with one another. In addition to being teaching colleagues, Angela and Grace also connected daily as Angela’s daughter was a student in Grace’s class.

The teachers shared their reasons for participating in the research study in their interviews. Angela explained that she participated because she felt that the study aligned with a school goal of including technology in literacy instruction. She explained that a parent of one of her students questioned her about her decision to participate in the research study:

> Angela: I did have a parent who is a retired teacher ask me if this was something *that I initiated* because I wanted to improve my language program…. or, if I was approached by someone… who was doing a study…and I just agreed to it. I said, "actually, both."
>
> Lori: Yeah, it kind of worked out that way, right?
>
> Angela: Yeah! We're already working on our language program here, and it was just nice. (February 10, 2017)

The compatibility of the research goals with the school goals supported the teachers' involvement in the research study at Cornerstone. Grace explained that in addition to helping her to respond to the school goals, she was interested in finding ways that she could use the technology in her class and that she also participated in the study to work with her friend and colleague.

Within the learning community at Cornerstone, I felt immediately welcomed and encouraged by the warm and collegial tone. After our initial planning meeting, I recorded in my field notes that "This was… a different kind of awesome I think! We were able to jump right in… and start to plan" (February 10, 2017). I understood that the dynamics within each community were different, and I celebrated the diverse ways we could work together. After I observed Angela's class, in my field notes, I documented the ways the relationships in our community had forged so quickly:

> As I was packing up my things Angela said… "thank-you for coming. I'm really excited about this"…I said… "I felt like… there was an immediate camaraderie, and I didn't think it was going to happen that fast….did it feel like that for you too?" And she did. So that was really quite powerful, I think. We had a little bit of a time of just connecting, not on the tape, but just connecting as human beings, as educators, as mothers, and …yeah, it was a really special time. (February 23, 2017)

Within the CoP, our relationships continued to grow as we learned together and planned literacy lessons.

4.4.1 Angela's classroom

Angela volunteered to be the first focal teacher at Cornerstone. Angela's classroom was set up with a SmartBoard at the front of the room and a carpeted area where children could sit for instruction. The desks were setup behind the SmartBoard, and over the course of the research, the desk arrangement changed a few times to support the different activities of the classroom (see Figure 4.7 for an image of Angela's classroom). As in each of the classrooms, I was warmly greeted by the teacher and students each time I entered the classroom. On my first classroom visit, I observed Angela interacting with her students during literacy instruction. The children moved about the classroom and decided whether they would complete their activities at their desks or in different locations around the room. As the children worked on their literacy activities, Angela invited me to listen to some children read. The children appeared excited to share their work with me.

Figure 4.7. A view of Angela's classroom from the door.

4.4.2 Grace's classroom

Grace's classroom was tucked away at the far end of the school, around a corner and down some stairs. In my field notes, I described the classroom as being spacious and bright. At the front of the classroom, there was a whiteboard equipped with a Smart Projector and a carpeted area for the children to sit during instruction. Below the whiteboard, there was a set of steps that allowed the smaller children to reach the whiteboard more easily. The perimeter of the classroom was set up in centres, including a creative centre where children could make different arts and crafts, the blocks centre, a sand table, and a house centre (see Figure 4.8 for an image of Grace's classroom). In my first classroom visit, I observed the kindergarten students taking part in a variety of activities and I documented the openness and creativity that was evident in the children's explorations during playtime.

Figure 4.8. A view of Grace's classroom from the door.

4.5 "Open to Possibilities" (Lori, February 10, 2017): Appreciating Diversity

In both cases, I recognized the diversity of the settings and of the ways the teachers worked as they configured their literacy lessons. I planned to be responsive to the teachers and recognized the teachers as experts in their own classrooms. I met with the St. Nicholas teachers first to schedule our meetings, and before I met with the teachers at Cornerstone, I reflected on the importance of appreciating the diversity between the cases and of each classroom in my field notes:

> It's just kind of feeling my way through there…and being open to possibilities [in a] different school, different curriculum, different teachers, different grades, and really embracing the diversity of this site and … and the opportunities that can come within diverse situations. (February 10, 2017)

In addition to appreciating the differences between the ways teachers wanted to plan for their classroom in each case, I also recognized that the teachers planned in different ways than I would have in my own practice. In my journal, I reflected:

> Within both sites, I have experienced so much collegiality. We laugh, we have fun, we plan, and we learn. It seems like finding the time to collaborate can be so meaningful. I know I am learning from the different ways that teachers envision a lesson and design a pedagogical sequence. From my years in the classroom, I have a particular rhythm with lesson design, but as I see others adopt different practices, it challenges me to consider other possibilities. (March 12, 2017)

The diversity of the teachers' experiences and classroom and curricular contexts expanded possibilities for pedagogical design.

4.6 Who Am I?

Throughout the research study, I negotiated different identities as each teacher introduced me in different ways to their students. For example, Fireball told his students that I was "a student, but not a Grade 1 student" (February 23, 2017), and Esther explained to her students that Mrs. McKee is another teacher and is going "to hang out with us for a while" (March 23, 2017). Grace introduced me as a volunteer to her students and explained that I was "from the university" (March 6, 2017), and Angela "introduced me

as a teacher who sometimes works with kids, but is really a teacher for teachers and she explained that I was studying to be a 'Doctor of Learning'" (February 15, 2017). All of these introductions were accurate, and I found myself navigating through my different identities of being a teacher, facilitator, student, researcher, and colleague throughout the different TPL activities.

Within the CoPs, I worked as a participant observer. I worked as a facilitator and took a leadership role in initiating the scheduling of our meetings. In my journal, I reflected on my positioning within our CoP at St. Nicholas early in the study:

> I…wanted to spend a couple of minutes thinking about my position in the community at St. Nicholas. In my methodology, I had considered myself to be a facilitator in the community of practice and I think that that's what the teachers are thinking of as well….I feel like the teachers are looking at me as a resource which is a really great feeling. (February 13, 2017)

My role as a facilitator and a resource grew over time and changed within the different CoPs. As a facilitator, I did not impose a particular lesson design, but instead listened to the teachers' goals and suggested possibilities, or asked questions as needed. In my journal, I also considered the ways I worked in a leadership role within our CoP at Cornerstone as we planned a lesson for Grace:

> I feel like I am being called into this leadership role, and that is not my most comfortable place…. I think that this reluctance is that I don't want to take over. So within this role of leader, I want to make sure that I catch Grace's vision. (February 28, 2017)

As I negotiated my different identities, I considered the importance of maintaining my focus on supporting the teachers' learning within their particular context. In my journal, I reflected:

> I think that it comes down to remembering core values about learning; that learning is not a singular process that everyone undertakes in the same way. Rather, learning is comprised of diverse practices that are situated in time and place, within a community of people. (February 28, 2017)

At every stage of the research study, I endeavoured to maintain my focus on supporting the teachers and adapt my role in the CoP to respond to the ways the teachers wanted to work.

4.6.1 "I am feeling more like an insider than an outsider" (Lori, February 23, 2017): Negotiating my researcher role as insider and outsider

In each case, we formed our CoP as early primary teachers with a common interest of including digital technologies in literacy instruction. As we worked together in the TPL activities, we found that this interest was the starting point for our relationships and that we had much more in common. These connections strengthened our relationships. For example, at St. Nicholas, in my journal, I considered that our relationships were enhanced through our common experiences in being teachers of Grade 1:

> So when I think about the domain in this community, it is exactly what I have outlined in the methodology, but it goes even deeper than that as we have so much more in common. In this community, we are all Grade 1 teachers and I think this will have an impact on our shared practice—we are familiar with the same curriculum and have to address the same programmatic curricular expectations. (February 13, 2017)

These commonalities strengthened the ways we worked together.

Likewise, at Cornerstone, as we worked together, we uncovered connections beyond the common domain interest of using technologies to support literacy instruction identified in the methodology, and these common interests influenced our shared practice. For example, we connected through our common experience of teaching early primary grades in independent Christian schools in Ontario. Though I am currently employed as a teacher in a publicly funded school district, I taught in an independent Christian school in Ontario for my first year of teaching. While the independent school where I worked was different than Cornerstone and governed by a different board of directors with particular policies, I was familiar with some of the practices and curricula used in this independent faith-based context.

Our growing relationships within each CoP influenced my positioning as an insider and outsider. There were times when I was an outsider in both of the schools. For example, in my initial visits to each school, I was recognized as being "new" and though members of the school staff greeted me warmly and children seemed to intuitively know that I was a teacher, I was an outsider. In addition, I was an outsider in each of the school systems as I work in a different education system. Within our professional learning meetings, I was an outsider when the teachers referenced particular meetings, practices, or interactions that were unfamiliar to me. However, most of the time, I was overwhelmed with a feeling of being accepted as an insider by the teachers and their students in both of the cases. In my journal, I wrote, "I think that the feeling of being an insider will impact how I tell this story" (April 2, 2017).

I uncovered insider connections during the recruitment for the study. For example, when I spoke with the principal at Cornerstone during recruitment, I realized that I had a connection with the school's principal as we had worked together in a different school in a different community almost 20 years before.[7] As I spent time at Cornerstone, I realized that I had connections with people who were members of the school community. In my field notes, I explained, "Here we have this [school] community that I am not really a part of, and yet I am discovering that I AM a part of that community with these connections that I never knew existed" (February 23, 2017). As I considered these surprising interpersonal connections, in my reflective field notes structured as letters to my supervisor, Rachel, I explained, "I am feeling more like an insider than an outsider" (February 23, 2017).

Likewise, during recruitment at St. Nicholas, I realized that I had met the school's principal during my graduate studies when we were both doing our Master's Degrees. In addition, as I worked at St. Nicholas, staff members in the school recognized me as a teacher through our common involvement in previous TPL activities. As I worked in

[7]Though I had connections with the principals of the schools, the data were kept confidential, and I did not discuss the lesson designs or the ways we worked together in the TPL activities with the principals. The teachers were aware of my relationships with the principals, and I assured them of my commitment to confidentiality.

Fireball's class, one of the children told me that his grandmother knew me. I was surprised at this connection, and when I investigated, I realized that I knew his grandmother from being part of a community group more than 15 years prior to the study and in a location more than 100km away. As I uncovered these connections during the process of research, this strengthened my feeling of belonging as an insider. I was aware of the ways that this insider status at both sites heightened the importance of my ethical responsibilities as a researcher, and I used my journal as a resource to act reflexively in my roles as participant observer.

The teachers treated me as an insider in their classrooms and invited me to participate in their classroom activities as a member of their classroom community. For example, when I entered Grace's classroom for the lesson observation, she was finishing reading her Bible story. As she greeted me, she invited the children to sing a song with her and said, "Let's sing our song and Mrs. McKee can join in because I am pretty sure she knows this one" (March 31, 2017). Since I knew the song, I joined the children and their teacher in singing their song and doing the actions as a member of their classroom community. I participated in the different classrooms according to their established practices as invited.

The children treated me as an insider when I was working in their classes. As I worked within the schools, the children interacted with me as they might with another teacher in the school. For example, each time when I entered Cornerstone for afterschool meetings with Grace and Angela, Grade 2 student Pegasus greeted me and updated me on the work that his class was doing with the digital technology and explained, "It was my turn to do it (i.e., use the technology) today" (April 5, 2017). Similarly, when I entered the kindergarten classroom, child Spiral asked me to pray for his sick classmate. At St. Nicholas, the children also recognized me and greeted me in the hallway and interacted with me in easy ways and asked me when I was coming back to their classes. In my journal, I reflected,

> I also see that the children were willing to include me as part of their classroom community. I became fast friends with these children. When I was in the other class in the morning, children from this class asked me when I was coming to them. I was included as a character in some stories as well (I got a picture of one of the stories) [see Figure 4.9]. I had no idea that I was being photographed as I

> worked with children. If that's not insider status, I don't know what is! (March 10, 2017)

My insider status was confirmed when I was included as a character in Sophia's digital story she created. Figure 4.9 shows the picture of me that Sophia took to use as a character in her story as I worked with her desk partner, Spiderman.

Figure 4.9. Sophia including Lori as a story character as she works with Spiderman.

The ways I moved between my different identities as I negotiated and renegotiated my role as participant observer supported our collaboration within the CoPs as we developed our shared practice. For example, in his interview, Fireball explained to me that that the exploratory nature of the study and my positioning as an insider and member of the CoP was a catalyst for his further professional learning and discovery:

> I think that the openness and sincerity in which you have approached this has allowed *me* to feel free to make my own decisions rather than perform… I think that has been wonderful. I think that this has opened up my eyes as well as we have tried out some new things and I will be spreading my wings a little bit more. (April 20, 2017)

The explorations within the TPL activities served as a catalyst for the teachers to continue their learning.

At the close of the research, I reflected on the ways I moved between insider and outsider, participant and observer, and teacher and researcher roles:

> As I think about my positioning… in some ways, my teacher and researcher roles were inseparable as my teacher role was important in gaining access [to the research sites], informed how I interacted with kids, how I documented the study, and sometimes influenced what I saw, but I never lost sight of my role as a researcher. I knew that I was there to document, and the teachers recognized that I had a different knowledge base that I was tapping into. I think I would say that I researched with the eyes and the heart of a teacher. (journal, April 21, 2017)

My different roles and identities shape my positioning as participant observer.

4.7 Summary of Chapter 4

The cases within this multiple-case study were located in different contexts for curriculum-making. In each case, the teachers worked in schools that were embedded in different educational systems that responded to the programmatic curricula in particular ways. The teachers all had different digital technologies for use in their classroom. The ways the teachers responded to the programmatic curricula, using the available digital technologies, shaped the ways we planned literacy lessons. In each case, I negotiated my position as a participant observer as I considered some of my different identities in the study.

Chapter 5

5 Findings: Designing and Implementing Multimodal Pedagogies in Early Primary Classrooms

The exploratory nature of this multiple-case study invited the community of teachers in each case to collaboratively discover how we could design lessons that included digital technologies, examine the ways each teacher could include these technologies in her/his classroom setting, reflect on the learning opportunities that were afforded to the children, and the implications for our pedagogical practices. In this chapter, I tell the stories of the cases through the lens of the research questions. Specifically, I narrate the data related to 1) the multimodal literacy and pedagogy learning opportunities afforded to the teachers within the TPL activities, 2) the ways the teachers combined traditional and digital tools in literacy lessons, 3) the children's responses to the literacy lessons, and 4) the teachers' perceptions of the experienced curriculum and the implications for multimodal literacy and literacy learning opportunities.

5.1 What Were the Teachers' Opportunities to Discover and Explore Multimodal Literacies and Pedagogies?: Planning Meetings

Within each of the CoPs, the teachers and I collaboratively planned literacy learning opportunities for the children through lesson cycles (referred to by the teachers as "lessons") that included digital technologies and reflected on the implemented lessons. Specifically, we planned lessons to respond to the goals identified by each teacher using the available digital technologies, viewed images and artifacts from the implemented lessons, and identified options for further lesson designs.

Within the lesson cycles, the teachers had many opportunities to explore and discover multimodal literacies and pedagogies within the TPL activities. In this section, I describe the activities that were designed to support teacher professional learning and highlight the ways that their responsive and flexible structure provided opportunities for the teachers to

explore literacies, digital technologies, and pedagogies. These explorations were interconnected and mutually supportive.

5.1.1 "It's about being responsive, and seeing where this takes us" (Lori, March 2, 2017): The flexible structure of the teacher professional learning activities

The TPL activities were designed to be flexible in format and resources used and responsive to the ways the teachers wanted to work. I use the term "TPL activities" to include lesson planning meetings, classroom observations, interviews, and informal conversations with the researcher as well as the continuation of lesson planning that the teacher did outside of the observed activities. As I entered Cornerstone for our first lesson planning meeting, I reminded myself of my positioning in the study and of my goal to be responsive in light of the literature's guidance of the importance of responsive TPL activities. In my field notes, I recorded:

> In some ways [it's] very exciting because I can't go in there with a huge agenda… and on the other hand, that same excitement is a little bit daunting… because…I can't go in there with an agenda! And I need to make sure that I am being responsive, make sure that I am remembering this is not *my* class, these are not *my* students, and I need to honour the teachers' knowledge. So, Angela's knowledge of these students, Angela's knowledge of the curriculum, and the school's expectations, Grace's knowledge of the students—she has taught them before, and her knowledge as well…of the curriculum and the school…. My job is to fit in with them in whatever way I possibly can. (February 24, 2017)

I recorded similar field notes when preparing to enter St. Nicholas for our first planning meeting a few days later:

> I did some reflecting on the way that we planned the lesson at Cornerstone. We followed a particular process, and I am *not* feeling like we need to follow that process here. I want the lesson design process to be emergent and responsive…. I do think that it needs to start though with the focus teacher, so Fireball talking about his vision and… what he wants to do in his classroom. And then, we will…go from there… It's about being responsive, and seeing where this takes us. (March 2, 2017)

As we planned together, we adjusted our lesson planning activities to respond to what each teacher wanted to plan and the ways the teacher wanted to plan.

We used a variety of digital and print based materials in the planning meetings. I arrived at each meeting equipped with a variety of print based resources (e.g., paper, markers) and digital resources (e.g., iPad, laptop, electronic curriculum documents) and the teachers contributed other resources to support the planning. In some meetings, we used an array of print and digital resources, while in other meetings we used only digital resources. Figure 5.1 shows the variety of resources (e.g., iPads, laptop computers, cellphones, paper and pencils, completed student work, and teacher manuals for the computer application).

Figure 5.1. The variety of resources used in planning meetings.

We used the planning resources in different ways following the lead of the focus teacher. For example, when planning with Angela for her classroom, we looked up specific

learning expectations in the Social Studies and Language Programmatic Curriculum documents (e.g., OME, 2006; 2013), and Angela sketched out her lesson plan. We identified green screen technology as potentially supporting Angela's curricular goals, and viewed the tutorial on the Do Ink application (DK Pictures, 2016). Do Ink is a green screen application designed for use with iPads that allows the user to superimpose images on the green screen application and video record an oral text. In my journal, I documented our planning process:

> - Angela did some vision-casting and explained what she wanted for the kids.
> - Grace and I listened and asked clarifying questions to understand the vision and also Angela's pedagogical design. As we were planning the intended curriculum, some of our questions were about considering how the lesson could be enacted and experienced based on our diverse pedagogical experiences.
> - Then, as a team we had a really collaborative discussion about refining the design, layering the resources, and worked through some logistics of timing and filming conditions.
> - Finally, we identified the steps that needed to take place before the green screen filming would be introduced. (March 2, 2017)

Angela recognized the ways the lesson could respond to programmatic curricular expectations, and we helped define how the technology could provide additional ways to respond to those expectations. Figure 5.2 shows Angela's planning notes from the meeting, outlining the homework assignment that was designed to prepare her students for the lesson with technology and what Angela needed to do to prepare for the lesson. In her planning notes, Angela identified the "highlights" of her lesson as 1) the opportunities for the children to video-record, 2) the ways that the lesson connected to her classroom practice of using "success criteria," and 3) providing "kind, specific, and helpful" critique.

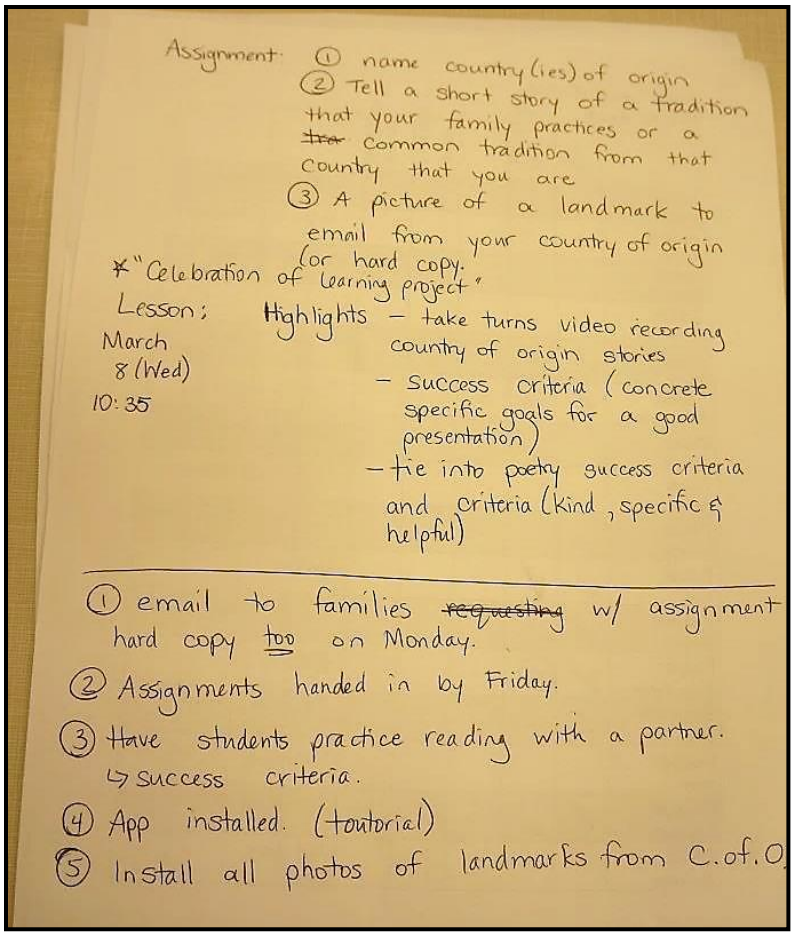


Figure 5.2. Angela's handwritten lesson planning notes prepared in the planning meeting.

Similarly, during our planning meeting for Grace's lesson, she described her curricular goals, and we identified a digital application to respond to Grace's curricular vision. We discussed general curricular expectations for kindergarten at Cornerstone, but did not refer to any programmatic curriculum documents in planning. As we designed a lesson for the kindergarten children to create video stories with the web-based version of Adobe Spark (Adobe Systems International, 2017), we considered how we could connect the content of the story to activities already taking place in the classroom, and we played with the technology to discover how we could use it to support student learning.

At St. Nicholas, we adjusted the structure of the meeting when Fireball shared his tentative plan to use a digital application called Puppet Pals (Polished Play, 2016) to

support his students in creating animated stories. Puppet Pals is a storytelling application for use on iPads that allows the user to compose animated stories. During our planning meeting, he explained that our initial discussions encouraged him to explore the different applications that the school district personnel had preloaded on the school's iPads and he discovered the Puppet Pals app. Since the app was new to all of the teachers, we focused much of our planning meeting on playing with the app to discover its affordances and suggesting ways to introduce the app to the children. Following the planning meeting, I questioned whether Esther and I had supported Fireball in his lesson design:

> I initially felt that Fireball had the lesson planned, and we didn't really contribute. As I reflect, I don't think that's true. Both Esther and I did make suggestions to how to develop the lesson. So, why might I have misinterpreted? This meeting was so casual, and it just unfolded very naturally. It didn't seem like hard work at all. (journal, March 5, 2017)

As I reflected further in my journal, I considered the lesson planning process that we used for Fireball's class:

> I would say that Fireball did the vision-casting, but his vision included the technological tool as well as the curricular vision… Then, we offered suggestions to refine, and we talked about steps to implementation. In this lesson planning sequence, we also talked about how we could potentially follow up, or extend. (March 5, 2017)

As we planned for each teacher using a responsive structure, we created lesson plans according to the vision of each teacher.

We planned lessons in particular ways to support the focal teacher even when the teachers wanted to use the same technology to support similar programmatic curricular goals. For example, Esther planned to use the same digital application as Fireball (e.g., Puppet Pals, Polished Play, 2016) to support story composition and modify the structure of his lesson to support her students. As we planned for Esther's adaptation of the lesson, we asked Fireball for advice. As we adapted the lesson, Esther invited Fireball to demonstrate the app to her students and show the stories Fireball's students had created. Fireball explained that a demonstration could limit the children's exploration:

Esther: I want you to come and teach my kids this, to show them this [the digital stories created by Fireball's students]… They would love that!

Fireball: No—here is the thing about that though. If the kids were to see this…, that would take away *their* creativity, right?

Esther: Ohh!

Fireball: Because that is the whole idea behind this. The kids were seeing what *they* could do. (April 6, 2017)

As we continued to plan for Esther, we discussed what young children were capable of when using the digital technology. Esther considered asking older students in the school to demonstrate the app to her Grade 1 students as she believed that the older children could support the younger students in exploring the app. In our planning activities, we drew on Fireball's experience with his class:

Lori: You could do that. Do you think that they need that, Fireball? Having had experience with this?

Fireball: Just maybe, just see what they can come up with on their own. Even as the initial time, have a play and see what happens. Stay within the app, try out some different things, and see what they come up with, see what they share with each other. Some of the older students might already know what to do, and then they would be telling the kids what to do as opposed to the children taking ownership over that. That's my thinking on that. (April 6, 2017)

As we explored ways to adapt and extend Fireball's lesson for use in Esther's class, we considered the ways that the pedagogical design could open opportunities for young children to discover how they could use the digital technology. The responsive structure of the TPL activities invited the teachers' exploration and discovery.

5.1.2 "The lesson cycle is very fluid and feels almost continuous" (Lori, March 6, 2017): The continuation of learning beyond formally scheduled meetings

The teachers' professional learning and lesson planning activities extended beyond the time and space of scheduled meetings. I recognized the fluidity of the lesson planning

process early in the study as I reflected in my journal following a planning meeting with Angela and Grace:

> This lesson planning is not encapsulated in a one hour planning session... When we met together in the community of practice, it was like a continuation of a discussion already started and there was some momentum from the previous meetings and from our own individual reflection. (March 2, 2017)

In my reflective field notes structured as letters to my supervisor, I further explained, "The lesson cycle is…fluid and feels almost continuous as we touch base in very informal ways as we see each other" (March 6, 2017) between planned meetings and classroom observations. Although our informal conversations were sometimes unrelated to the particularities of the lesson design and were social in nature, these interactions supported our interpersonal relationships within our learning communities.

The fluidity of the lesson planning and the flexibility in the TPL activities supported the teachers' gradual design of literacy lessons that responded to the goals identified by each teacher. All of the teachers continued to develop their lessons following the scheduled planning meetings. As I entered the schools to observe the lessons, I recognized that the lessons were a part of a growing classroom curriculum and that the lessons, as a part of this curriculum, needed to grow in response. As I entered Fireball's classroom to observe his lesson, I considered the ways the lessons might unfold and how I could adapt:

> I wonder if Fireball is going to give me a group of kids to work with…that was suggested at one time, but we are just going to have to see…and I will follow the lesson as it unfolds. (field notes, March 9, 2017)

As I will show in the remainder of the chapter, the responsive, flexible structure of the TPL activities invited the teachers to explore literacies, technologies, and pedagogies in ways that they found meaningful.

5.1.3 "They started seeing possibilities" (Lori, February 7, 2017): Commonalities in teachers' multimodal literacy and pedagogy learning opportunities

Though each lesson cycle unfolded in particular ways, there were commonalities in the multimodal literacy and pedagogy learning opportunities afforded to the teachers. In both cases, brainstorming for lessons started in initial scheduling meetings. As we scheduled the timing of the study, the teachers considered different possibilities for the ways they could include technologies in their literacy lessons. The possibilities were expansive and it was almost overwhelming to select an idea at the outset. For example, as I scheduled the meetings and observations for the study with Fireball and Esther and we brainstormed curricular goals and supportive technologies, Esther explained, "I guess like some guidance would be good. Like, what have you done? What have you seen done? What ideas do you have?" (February 7, 2017). In my reflective field notes, I explained to Rachel that this invitation to share ideas helped the teachers to envision what could be possible:

> One teacher asked me to show her what I had on my iPad, and then they started seeing possibilities…. And then the conversation took off… I showed them an app I have that is like making a video book…. from there, it just went on and we had a skeleton idea of a lesson that crossed Language, Social Studies, Math, and Art curriculum documents, and literacy was central to the whole thing. This was just supposed to be a scheduling meeting, but it ended up being more than that. By the end of the meeting, everyone was pumped about the possibilities and [Esther] was literally giving me and [Fireball] high fives. (February 7, 2017)

Throughout the study, we continued to explore how we could work together to design literacy lessons that included digital technologies. The teachers explored interconnected understandings of literacies, technologies, and pedagogies within collaborative practice.

5.1.4 "Do you think I should know more before we do this?" (Esther, April 6, 2017): Exploring pedagogies throughout the lesson cycles

The research study invited teachers to explore pedagogies at all stages of the lesson cycle. At times, this exploration related to planning the scope and sequence of the lessons. For

example, as we planned Angela's lesson, we considered the preparation required for the teacher and the students before the green screen could be introduced. We recognized that the timing of the tentatively planned lesson placed heavy demands on the Grade 2 children as they had to research their countries of origin with their parents and complete a written homework assignment before filming with the green screen. We also understood that there were additional demands on the teacher to learn how to use the digital application, and we reconsidered the scheduling of activities leading to the green screen filming and lesson observation:

> Lori: Do you want to change the date?
>
> Grace: Because you want them to be able to have enough that it is successful, so that they don't critique it and it's like, "that was horrible." (February, 24, 2017)

Following this discussion, Angela explained, "I do think we need to change the date," (February 24, 2017) and we supported Angela in refining her plan and rescheduling the lesson sequence to better support her students.

The teachers explored the ways they had configured their lessons. For example, as previously explained, Esther adapted Fireball's lesson with Puppet Pals (Polished Play, 2016) to support digital storytelling in her class. Esther's lesson was designed to introduce the children to the application and invite the children to play and explore with the app. During our planning meeting, Esther considered the openness of the lesson and decided to introduce the lesson in the afternoon classes immediately after our lunch hour planning meeting. As we planned for Esther, she questioned her pedagogy and wondered if she understood enough about how to use the technology:

> Esther: I don't even know how to use [the app]! So maybe this is a bad idea! But I don't like the idea of waiting until next week.
>
> Fireball: All you are going to do with it is play with it. (April 6, 2017)

Fireball explained that Esther could learn the basic functions of the app during our meeting so that she could support her students in their own playful discovery of digital story creation. Esther continued to express some uncertainty about her lesson:

Esther: Do you think I should know more before we do this, Fireball? Or, do you think this is okay?

Fireball: I think you should be fine.

Esther: Okay. (April 6, 2017)

During the planning meeting, Fireball showed Esther what he had learned about the app with his class and Esther's confidence grew.

Fireball: Okay, so when you record it, [the characters] are off screen and they will not be in the video. Okay, so this is the stage area and this is offstage. Now she comes in and if you want her bigger…smaller…turn her…double tap….so if you pull down the rope up here, you change your setting. You got it!

Esther: So then you start?

Fireball: So now it is recording. [in silly voice with British accent] *Hey there, I am just walking down the road and I am looking for a zombie and what can I find when I am walking down the road? I don't see one anywhere that I look. Oh no! I want to find a zombie! What's that?* (April 6, 2017)

As Fireball's tutorial ended, the school bell rang, signalling the start of afternoon classes, and Esther exclaimed, "I can do this!" (April 6, 2017), and she left the meeting and prepared to introduce her lesson. Throughout the lesson cycles, the teachers had many opportunities to explore their pedagogies. These explorations were not limited to planning the sequence of lessons, and deepened as they considered literacies and technologies.

5.1.5 "Anything to do with those is fair game" (Grace, February 10, 2017): Teachers' Opportunities to Explore Literacies

The teachers had opportunities to explore literacies within the TPL activities. In each lesson cycle, our lesson planning began with discussions about print literacy skills and strategies in our preliminary scheduling meetings. For example, at Cornerstone, Grace considered how she could use digital technologies to support her students in acquiring print literacy skills and explained, "I am going to in the next while, start digraphs and blends… because "ch", "th" [and] all those come up in their individualized reading and writing program. So anything to do with those is fair game" (February 10, 2017).

Similarly, at St. Nicholas, the teachers considered how they might use technologies to support the instruction of reading strategies:

> Esther: Do you have something in mind?
>
> Fireball: The first thing that jumps in my mind is something like… having…online, or visual books…and being able to implement some of the reading strategies that we are focusing on. So, for example like up on my board over there I have Eagle Eye and Chunky Monkey [see Figure 5.3 for images of plush toys and reading strategy cards used]. (February 7, 2017)

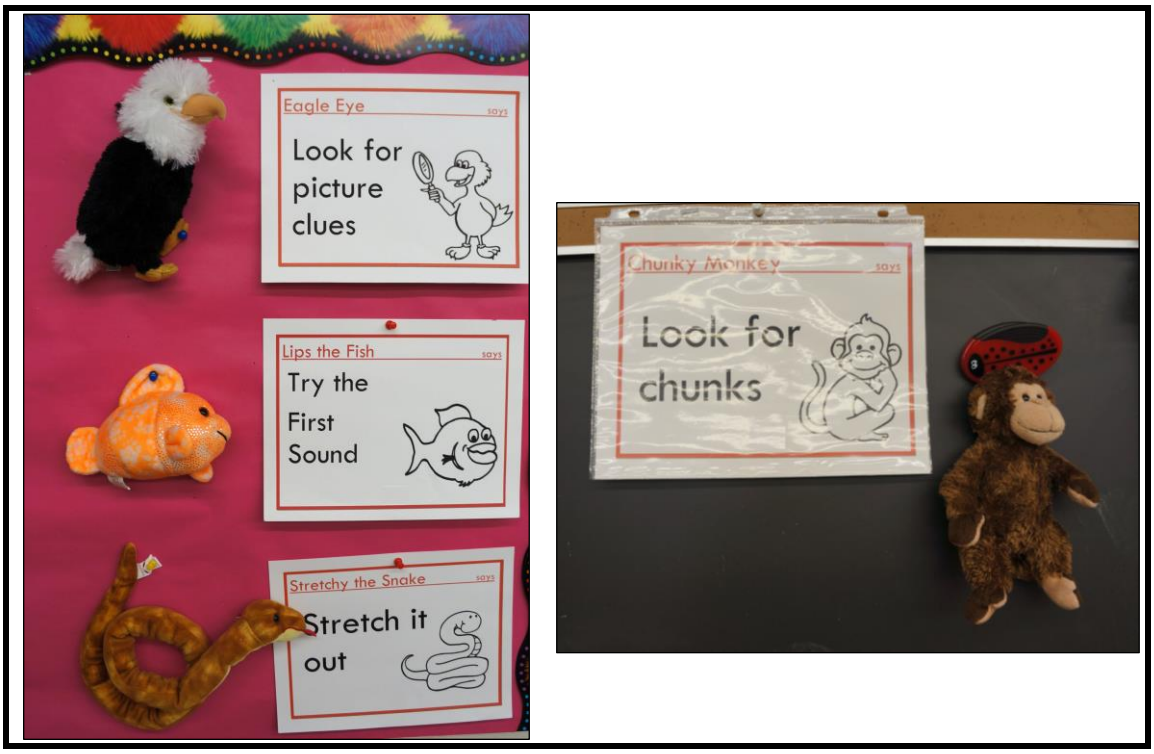


Figure 5.3. Plush toys and strategy cards used to support reading instruction in Fireball's class.

The teachers began lesson planning activities by considering the ways that technologies could enhance instruction of print literacy skills and strategies that were already a part of their classroom curriculum.

As we met together in the TPL meetings, in both cases, I encouraged the teachers to explore what could be possible within a broader understanding of literacy in light of the

study's emphasis on multimodal literacies. For example, when meeting with Angela and Grace, I explained my understandings of literacy within the study:

> Lori: It's about literacy being a process of meaning making and it's supported through digital technologies…. so in that, print, like reading and writing, is really important…but also gesture, oral language, image…So, [the lesson] doesn't have to be restricted to reading and writing support…
>
> Angela: Oh! (February 10, 2017)

The TPL activities provided opportunities for the teachers to explore literac*ies* that include reading and writing as well as meaning making through other modes.

5.1.6 "I wouldn't have known" (Angela, April 10, 2017): Exploring the ways teachers could use available technologies in literacy instruction

Within the TPL activities, teachers had opportunities to explore what technologies were available and how they could be used in literacy instruction. The teachers were interested in introducing different technologies into their classroom curricula but were unsure what could be used with the available technology. For example, Grace requested assistance in identifying technologies she could use with her kindergarten students and said, "I'd appreciate help coming up with what would best work with technology" (February 10, 2017). We explored different digital applications and the ways each teacher could incorporate them into her/his classroom curriculum. In her interview, Angela explained the benefits of the exploration of different technologies and the pedagogical support:

> Angela: One of the huge benefits that I found from working with you and with Grace is that I wouldn't have known about the Do Ink program [DK Pictures Inc., 2016] ….just wonderful ways that I can incorporate [the technology] into the classroom….It takes a little bit of extra thinking and planning of how the logistics are going to work out but….the exposure to have those creative new ways to do things…
>
> Lori: Like seeing what is possible, right?
>
> Angela: Yeah. I wouldn't have known. (April 10, 2017)

Within the activities, all of the teachers, including me, explored technologies that we had never used in our classrooms prior to the research study.

The teachers investigated the ways they could use technologies to expand literacy learning opportunities for their own students. Related to conceptions of print literacy, in both cases, the teachers initially considered including digital applications that were more "closed" and provided students with opportunities to practice literacy skills with a singular correct answer. As we contemplated possibilities, we talked about how digital applications (apps) could be used to expand learning opportunities for students and how we might use the collaborative element of the study to expand pedagogies and literacy learning opportunities:

> Lori: Sometimes they…classify them into closed apps, [and] it's…one person who is practicing their skills on their own…There is nothing wrong with that, but you probably don't need *us* to plan a lesson for that, right?
>
> Grace: I know. That's something to think about.
>
> Lori: So if we think about… [apps] that are not closed, [and use digital technologies] to expand, to open possibilities--
>
> Grace: Yeah.
>
> Lori: Where kids can…build on what they are learning…but to take those skills and apply them in a way that, that expands.
>
> Grace: Yeah, yeah. (February 10, 2017)

In our lesson planning activities, we continued to consider the ways that particular apps could expand literacy learning opportunities.

As we explored various digital applications, we discovered how the features of the app could support literacy learning. For example, as we planned together at St. Nicholas, we played with the Puppet Pals app (Polished Play, 2016) to learn how to use it, and we discovered that the app provided opportunities for the user to select pre-made cartoon type characters and settings from fairy tales. We considered the ways that these features could support the students in composing stories. As we planned, Fireball considered how

he could extend the storytelling beyond the fairy tale genre and connect to curricular content in the Social Studies programmatic curriculum (e.g., OME, 2013):

> I think that what I would like to do is…use this type of idea…but even deviate from the fairy tale writing because I want it to be something a bit more tangible, so even if we can get pictures of our community… (March 2, 2107)

As we planned, we searched for ways that we could use the digital application to support Fireball's vision and discovered that the application also provided opportunities to create characters and settings using the iPad camera:

> Lori: Can you change the avatars?
>
> Fireball: *That* is a *wonderful* question.
>
> Esther: Do you have to buy it?
>
> Fireball: [reading on app] "add actors from photos."
>
> Lori: Ohhh! Wouldn't that be cool if they could add themselves? (March 2, 2017)

We learned that the app had a free version that allowed access to a limited number of pre-made characters and settings and an enhanced, pay version that granted access to the "Director's Pass" which allowed the user to access additional pre-made characters and settings, and also enabled the user to create their own characters and settings using the iPad camera (see Figure 5.4 for an image of the fully enabled Director's Pass on the app). We learned that the school district had purchased the license for the enhanced version of the Puppet Pals app and we believed that the ability to create characters and settings from photos would expand meaning making opportunities for the students. As we continued to explore the technology, Fireball created an animated story that included pre-made characters in the app as well as a photo avatar of Esther. Figure 5.5 shows the story Fireball created using Puppet Pals in our planning meeting that included a stock character from the app of a dragon and a character of Esther he created using the photo-taking feature. As we explored literacies and technologies within the TPL activities, the teachers also considered the ways that collaboration could expand pedagogies and literacy learning opportunities.

The flexible, responsive, and fluid structure of the TPL activities invited the teachers to discover possibilities through their interconnected explorations of pedagogies, literacies, and technologies.

Figure 5.4. Fully enabled "Director's Pass" on Puppet Pals app.

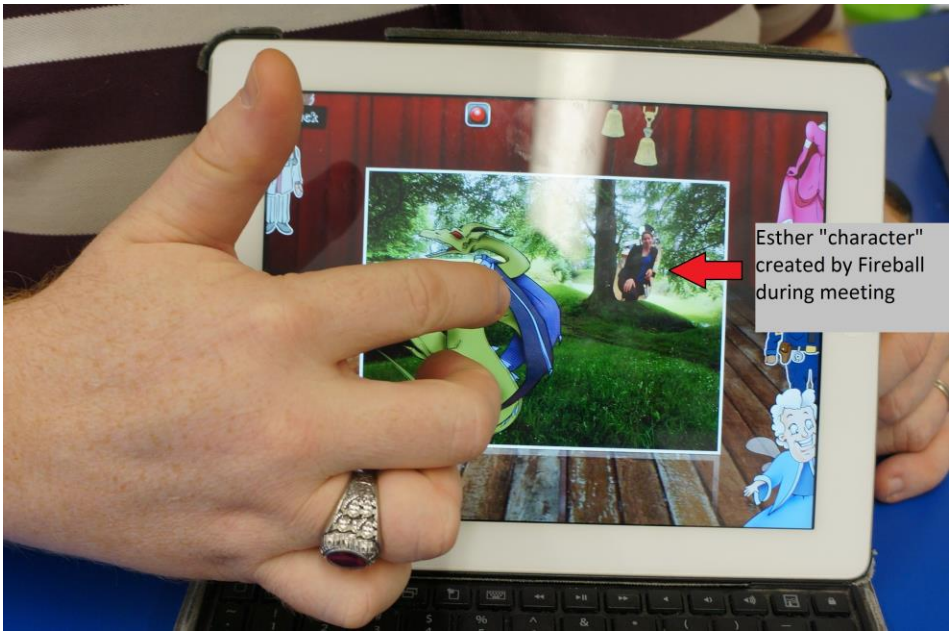


Figure 5.5. Fireball demonstrating how to use the app with Esther avatar.

5.2 In What Ways Did the Opportunities to Explore and Discover Within the Teacher Professional Learning Activities Support Teachers to Enact Multimodal Pedagogies?: Finding Ways Multimodal Pedagogies Could Fit Within Schools, Classrooms, and Personal Beliefs and Practices

The opportunities to discover and explore literacies, technologies, and pedagogies within the TPL activities supported the teachers in considering how multimodal pedagogies that included digital technologies could *fit* within their schools, classrooms, and personal beliefs and practices. In my field notes, I reflected that as we planned our lessons, we were "trying to find a way to plan that intended curriculum to fit within the existing [school, classroom, and programmatic] curricula" (February 24, 2017), and I further recognized that "the ways that we include technology in practice are embedded in beliefs about literacy, the institutional (school curriculum) and programmatic curriculum, and play out in the context of relationships (in the class and with families)" (journal, March 12, 2017).

Finding a fit between multimodal pedagogies and particular classrooms followed an individualized process that was neither straightforward nor linear. Instead, this fit was negotiated and renegotiated to reflect the changing demands on teachers within the ebb and flow of busy classroom and school life. As we planned lessons for each teacher, I encouraged the teachers to consider how the lessons could connect with their classroom curriculum:

> Lori: I think that this will be the most meaningful if we can do something that you are already working on and extend it. Instead of saying, "well, I have this really cool lesson and let's see how it works in your class…if we think about--
>
> Fireball: Making it applicable.
>
> Lori: Yeah. (February 7, 2017)

Within our lesson design and implementation, the teachers designed lessons to *fit* within the school and programmatic curricula, and classroom practices. I describe each in turn.

5.2.1 "It's a HUGE deal!" (Grace, February 10, 2017): Planning lessons to fit within the school curriculum

Teachers planned their lessons to fit with the school curriculum. As I worked with the teachers, I recognized that events in the life of the school influenced the lessons that we designed. In my journal, I termed these events the *school curriculum* as I noticed that each school followed its own particular curriculum that was comprised of particular practices and events and I considered the ways the school curriculum affected our professional learning activities:

> I am also thinking about how… the "*school curriculum*" influences teacher professional learning. In Cornerstone, the *Celebration of Learning* [open house] is a big influencer. In the last meeting at St. Nicholas, report cards had just gone home, and we ended up talking about a big project that could hit all subject areas on the report card. (March 4, 2017)

In both cases, we planned lessons to fit within the school curriculum by scheduling around planned school activities or rescheduling TPL meetings and classroom observations to accommodate other important events as they occurred. However, at Cornerstone, an open house called a *Celebration of Learning* influenced every step of our lesson designs.

The *Celebration of Learning* at Cornerstone was a significant event in the school curriculum and we discussed it every time we met together. Grace explained that this spring open house was designed to showcase the students' learning within the school's initiative of project-based Learning. Grace further described the *Celebration of Learning* as "an exhibition in each classroom and parents come through and each class is presenting and talking with visitors, and it's a HUGE deal!" (February 10, 2017).

When we began working together in the winter, Angela and Grace had already started preparing their students for the *Celebration of Learning* held in late April. As we considered possibilities for designing a lesson that included digital technologies in meaningful ways within each classroom, Angela and Grace had different ideas about connecting the lesson to the activities for the open house. Angela viewed the co-designed lesson that included digital technologies as an opportunity to support her Grade 2

students' presentations for the *Celebration of Learning*. As we brainstormed ideas for lessons, Angela formulated an idea that connected to the open house:

> Angela: I'm putting together this idea of using what we are already doing for our *Celebration of Learning*… We're already starting to work up for it. This is a project-based learning activity that we are doing… it's a Social Studies unit mixed with language…and all these wonderful things. I'm thinking…for them to write a story…that connects with their country of origin. Once they have written that idea down, instead of editing their written form, videotape each student and first have their classmates in small groups critique… How can you make an improvement, with a focus on voice volume, body gesture, voice tone, and voice expression?
>
> Grace: And then re-videotape them?...
>
> Angela: And… only show their final [draft] during the *Celebration of Learning*. (February 10, 2017)

From the start, Angela positioned the use of technology as supporting her preparations for the open house and responding to the expectations of the school curriculum. In contrast, Grace initially opposed connecting her co-constructed lesson to the *Celebration of Learning*. In our initial conversations, she described the magnitude of what she was doing for the open house and how this was particularly challenging to do with her kindergarten students. As we considered possibilities for lessons, Grace explained that she did not want to add anything more to her open house activities:

> Grace: My…apprehension is the thought of, like adding another BIG aspect to … this already HUGE project…
>
> Lori: Let's not…add to something that's already feeling very big.
>
> Grace: It's already…a HUGE project for Kindergarten. (February 10, 2017)

Though Grace envisioned her lesson as separate from the *Celebration of Learning* open house, she recognized the importance of collaboratively designing a lesson that was embedded in the life of her classroom. She explained, "I do want it to be valuable.…we already do…extremely a lot for *that*!" (February 10, 2017). Our collaboration within the activities supported each teacher in designing the lessons to fit within the school curriculum according to the teacher's vision for her class.

The teachers' understanding of the ways that the lesson could fit within the school curriculum changed over time and was individually determined. As Angela implemented her lesson and it did not go according to plan, she considered disconnecting her lesson from the *Celebration of Learning*. Eventually, as Angela revised her lesson and implemented it, she re-connected it to the *Celebration of Learning*, and the green screen videos were featured in the class' open house activities. Grace also reconsidered her plan to keep the co-constructed lesson separate from the *Celebration of Learning* after she experienced success with the creation of the video stories within her implemented lesson. Grace shared a revised plan to show the video stories in the open house, but expressed concern that some children did not have opportunities to compose a video story during the lesson observation due to time constraints. As a result, I volunteered my time (outside of the data collection periods) so that all of the students had opportunities to create video stories for the *Celebration of Learning*. As the teachers designed and implemented literacy lessons that included digital technologies, they continually reconsidered how their lesson that included digital technologies could fit within the school curriculum.

5.2.2 "I think we're blurring the lines between…curriculum" (Lori, February 7, 2017): Planning lessons to respond to programmatic curricular expectations

The teachers always needed to consider the programmatic curriculum in their planning. As we considered the programmatic curricular expectations, I envisioned each teacher as a *curriculum interpreter* (journal, February 21, 2017) as they considered how they could plan lessons that addressed curricular expectations in ways that supported their particular students. I identified that the teachers at Cornerstone had a heightened responsibility to interpret curriculum given that they were not mandated to follow the provincial programmatic curriculum (e.g., OME, 2006) in the same way as at St. Nicholas, a publicly funded school. In my journal, I reflected, "I know that all teachers interpret the curriculum. At Cornerstone, this is an important part of their mandate as they are charged with the responsibility of interpreting programmatic curricula through a Christian worldview" (February 24, 2017). As we planned lessons, the programmatic curricula were a part of our discussions at both sites.

In both cases, the teachers recognized that we could design literacy lessons that crossed boundaries between programmatic curricular expectations. For example, as we brainstormed different options for lessons, Fireball and Esther considered they could design a single project that included digital technologies, which could respond to curricular expectations in Language, Math, and Social Studies. As we considered the project, I explained, "I think that we're blurring the lines between…curriculum [documents] and….bringing [the curriculum] together in a cohesive way" (February 7, 2017). Though Fireball and Esther recognized the possibilities for crossing programmatic curricular boundaries in their lesson in our initial meetings, we continued to consider how the lesson could fit within the programmatic curricula as we refined the lessons and selected the digital application. In our planning meeting, I asked Fireball how he envisioned his lesson within the programmatic curricula:

Lori: So you're conceptualizing this *within* Language itself, or are you…you know how we were talking about Social Studies before? For this stage of using this technology, are you thinking of it as Language, or Language *and*--

Fireball: I think it is going to be incorporating the ideas of Social Studies, but with a focus on Language…Yeah we have explored Community helpers and "roles, responsibilities" and all that, and now it is going to come down to just using that schema that they have in there and then applying it within another realm.

Lori: So, working with the Language as the foundation of it, and then almost extending into the other curricular areas as they have the--

Fireball: the foundational knowledge of it--

Lori: and of the app. (March 2, 2017)

Fireball designed his pedagogy to grow and expand to cross curricular lines once the children gained understanding of how to use the app within literacy instruction.

Similarly, even in the early stages of planning, Angela recognized the potential for crossing the programmatic curricular boundaries and connecting to the school curriculum. As we planned, I asked Angela to explain how she envisioned her lesson within the life of the school and in the programmatic curriculum:

Lori: So, when you are planning it, when you are conceptualizing it, it's connected to the *Celebration of Learning* and it's connected to the project-based learning, and it's connected, like there is language all over it…

Angela: Yeah, always.

Lori: Are you also connecting it to Social Studies?

Angela: Umhm. (February 24, 2017)

Though the specific details of Angela's lesson changed over time, throughout the lesson cycle, she maintained her vision of embedding her lesson within intersections of Language and Social Studies programmatic curricula and in the school curriculum. In my reflective field notes, I explained to Rachel:

> This lesson is… embedded in the classroom curriculum and in an event that is really important in the… school curriculum. In my journal, I wrote that I believed the beauty of the lesson was in the ways it was embedded in the classroom curriculum, and in the ways the lesson was crossing curricular lines. (March 8, 2017)

Not all the lessons were designed to cross curricular lines. Though Grace acknowledged that it was possible to cross curricular lines, she initially envisioned her lesson as fitting only within the Language programmatic curriculum, and considered the ways the lesson could support her students in creating and retelling stories to improve the students' achievement in Developmental Reading Assessment (DRA)[8] (e.g., Beaver & Carter, 2014). Over time, Grace extended her lesson to cross curricular lines and linked her lesson to curricular content in the subjects of "Science" and "Bible".

[8] The Developmental Reading Assessment® "measures each student's reading proficiency through systematic observation, recording, and evaluating of performance" (Pearson Education, 2017). This assessment, designed by Beaver and Carter (2014) includes a standardized process where teachers "observe student reading habits, preferences, and goals", "analyze and record oral reading" through Running Records, "evaluate how students understand the information they have read" through retell and questioning, and "use assessment results to personalize instruction" (Pearson Education, 2017).

5.2.3 "I am wondering if we would do better if…you practice with a partner" (Angela, March 8, 2017): Planning lessons to build on classroom practices

All of the teachers built upon the routines and structures they had in place as they implemented a lesson that introduced new technologies. For example, following a common practice in her classroom, Grace worked with a small group of students in while the other children worked independently on "whisper work" that included a cut and paste activity, story sequencing cards, and puzzles. Esther also structured her lesson to introduce the digital technology after the children had completed their routine of reading quietly.

In both cases, the teachers used commercially constructed or school district developed literacy programs as part of their literacy instruction. For example, Angela used the structure of a commercially designed literacy program to introduce her lesson that included digital technology. Angela explained that all of the primary teachers at Cornerstone used the "*Daily 5*[9]" (e.g., Boushey & Moser, 2006) to support instruction in print literacies:

> I think it was about three years ago…we wanted to choose a system in which to work that would allow us to meet the ministry guidelines, but give us that openness and a system in which to work, so that we would have some consistency between the grades. (February 23, 2017)

Angela used the *Daily 5* program to support her lesson with the green screen technology. As Angela introduced the lesson to her students, she explained that they would be adapting the *Daily 5* structure to support them in creating video stories:

> This is part of our project presentation…. We are preparing our stories to tell about…our country of origin…. This is part of our Language time, this part of the project. And you are right, things are going to be a little bit different for this, but

---

[9] "The Daily 5™ program is a framework for structuring literacy time so students develop lifelong habits of reading, writing and working independently." This framework is structured to provide children with 5 choices of literacy activities including *Read to Self*, *Work on Writing*, *Read to Someone*, *Listen to Reading* and *Word Work*. The Daily 5 website lists benefits of the framework, including "students develop independence, stamina, and accountability." The site also states, "the framework adapts flawlessly to district-adopted curriculums and state mandates" (Daily Café, 2017).

> that's okay. We can do different right? As long as it is part of our learning. (March 8, 2017)

As Angela continued in her lesson, she strengthened connections to the classroom practice of *Daily 5* when her lesson did not go according to plan. When Angela invited Jinga to the front of the classroom to share his written text about his country of origin, he could not read his work and so she used the *Daily 5* structure of "reading with a partner" to support the students in rehearsing their story and developing reading fluency before recording. Angela explained to her class, "I am wondering if we would do better if I handed each of you your papers and you practice with a partner. I will give you about three minutes for that. Would you feel more comfortable with that?" (March 8, 2017). Figure 5.6 shows the commercially prepared poster that describes the goals of the reading with a partner practice within the *Daily 5* program. Angela relied on the children's experience with the *Daily 5* program to support them in preparing for filming with the green screen application (e.g., Do Ink, DK Pictures, 2016).

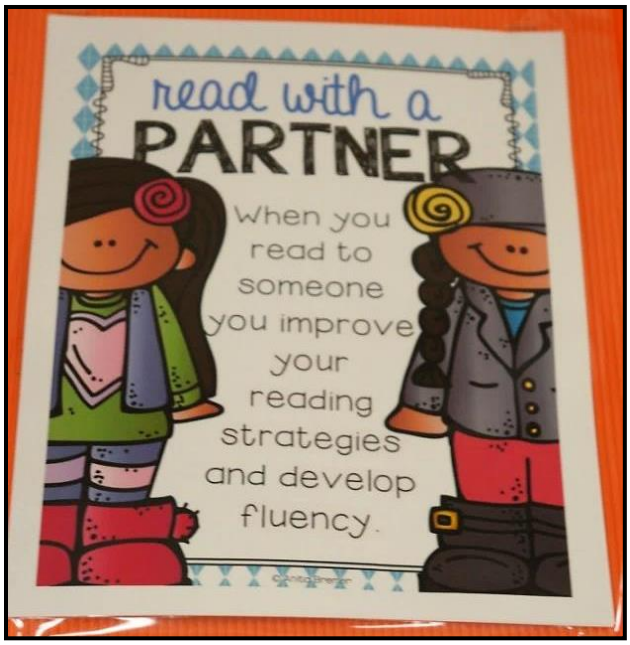


Figure 5.6. Commercially prepared poster describing "Daily 5" practice of reading with a partner.

In addition to connecting to the *Daily 5* structure, Angela designed her lesson to connect with her classroom practice of *critique*, a way Angela had established with the children for giving feedback to improve their work. Further, Angela planned to build on this practice as she envisioned the use of technology requiring several drafts before producing the final product. Figure 5.7 shows the bulletin board in Angela's classroom describing the criteria Angela and her students used for giving feedback or critiquing students' work.

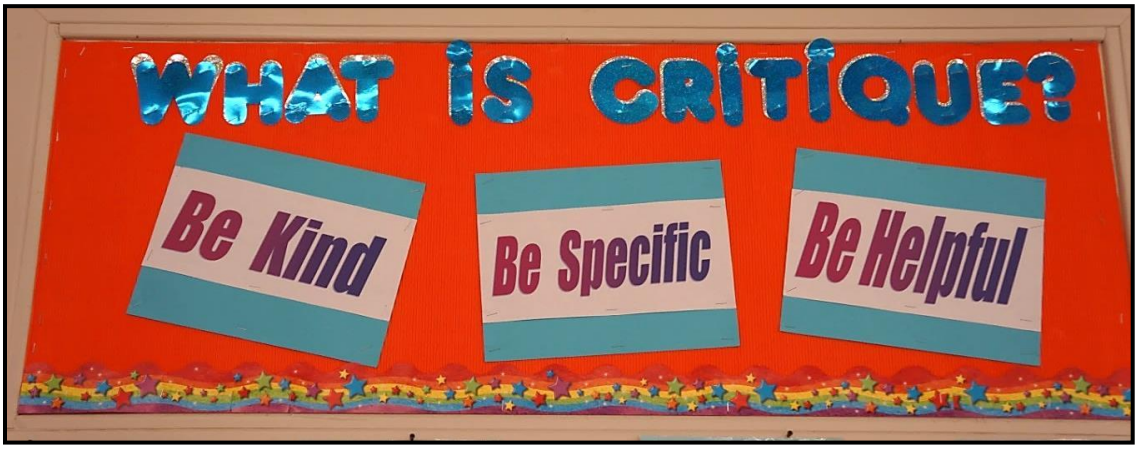


Figure 5.7. Bulletin board with criteria for Angela's classroom practice of critique.

Fireball also connected to existing classroom practices in the design of his lessons. He built upon his pre-study practice of encouraging the children to explore and make attempts at their work even when concepts were challenging. As I visited his classroom the first time, Fireball asked me what I thought about the class, and I documented the discussion in my field notes:

> So as the kids were working here, Fireball and I were just having a conversation about how quiet and peaceful it is and Fireball said that… if he can make the class peaceful for kids, then they will be able to learn…. So his goals as a teacher are to have it feel safe and peaceful so that the kids feel like they are capable of persevering even when they make a mistake. (February 23, 2017)

Fireball's lesson reflected his goal to support children to persevere. As we discussed Fireball's implemented lesson in our TPL meeting, I explained, "I was thinking what you were saying and how you were arranging the lesson was so fitting with that philosophy of your class—just try something" (April 6, 2017).

After Fireball implemented his lesson, we discussed the ways the lesson fit with his philosophy of providing a fun and supportive environment to try new things. I explained,

> What you have said about how you want kids to just try something, and to feel like it is safe to make mistakes, and that…yeah…that playfulness…that is the undercurrent of the *whole* classroom, and that this activity on top of that was just an extension of, or reflective of what was already here. (March 9, 2017)

Fireball agreed that his lesson built on classroom practices already in place and explained, "We, the students [and] the staff, are trying to make this school a very safe place to take risks" (March 9, 2017). The teachers found ways to fit their lessons within established classroom practices.

5.3 What Do The Children Do and Produce Within the Curriculum that Included Digital Technologies?: Classroom Observations

The curriculum designed within an ethos of exploration and discovery in the TPL activities invited the children to discover new resources and explore literacies. As I worked with the teachers and observed the students, I identified parallels between our explorations in the teacher professional learning activities and the ways the children responded in the lessons. In my journal, I reflected, "I haven't been able to shake this idea that the ways that teachers are learning parallels the ways that the children are learning" (April 4, 2017). The data suggest that just as the TPL activities provided opportunities for the teachers to expand pedagogies as the teachers explored and discovered different possibilities, the children also had opportunities to explore their understanding of literacies and literacy practices in their classrooms. Though each teacher planned lessons that were different in design and in the digital application used, all of the teachers created lessons that provided children with opportunities for discovery and invited children to select and combine different resources in the creating and telling of stories. In this section, I narrate the children's playful exploration of literacies as they used digital technologies in the implemented lessons. First, I show the ways that the technology and pedagogy guided their exploration. Then, I highlight the ways the children created playful literacies and the ways that they played with literacies.

5.3.1 "Do you think that the technology enables [the children] to see possibilities?" (Lori, March 9, 2017): The children's envisioning of what they could do with the digital technologies

The data suggest that the children envisioned what could be possible in the literacy lessons that included technology when the teachers introduced the technology. For example, in Fireball's class, the children had some idea of what could be possible with the Puppet Pals app (Polished Play, 2016) within the observed lesson because they had explored the app prior to the observation. Fireball and I observed the ways the children in his class used the Puppet Pals app as a resource to expand their story ideas. Following the classroom observation, I asked Fireball, "Do you think that the technology enables them to see possibilities?" and he replied, "Yes, it does." (March 9, 2017). The children's previous experience and understanding of how they could operate the technology expanded the opportunities for meaning making.

Even when the children did not have experience with using the particular technology introduced in the lesson, they could predict what might be possible. For example, in Angela's class as soon as the children saw the green cloth draped over the SmartBoard (See Figure 5.8) they started to anticipate what could happen and applied their understanding of green screen technology in weather forecasting to imagine what could be possible with the technology:

> Angela: Do you know that [weather forecasters] stand in front of the green screen too? Like this…The map is not really there!
>
> Dan: I know!
>
> Natalie: You can see it and it seems real, but it's actually not.
>
> Angela: That is the cool thing about the app that we are using. *This* screen will turn into the image…. So, Skylar is going to be telling about Nigeria, and she is going to have a picture of Nigeria behind her. (March 8, 2017)

As the children discussed how weather forecasters used the green screen technology, they considered how they could use this technology to support telling stories about their countries of origin.

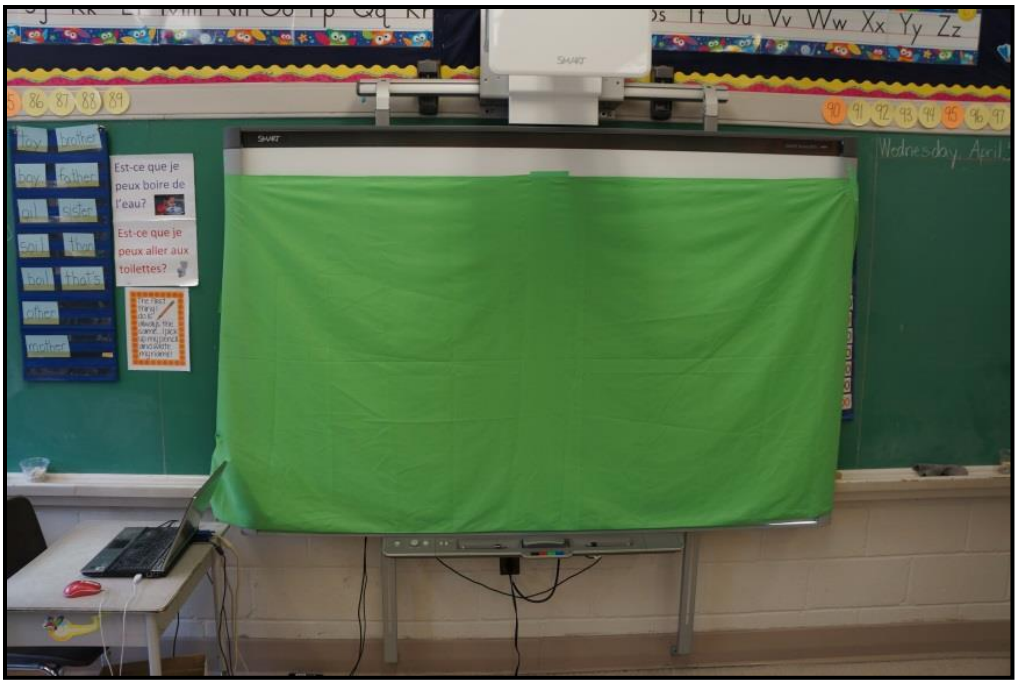


Figure 5.8. Green screen ready for filming in Angela's class.

Similarly, the children in Grace's classroom predicted how they could use the technology to tell stories. Grace invited Sarah, Batman, and Chocolate to go to a table at the back of the classroom where her laptop was preloaded with a story template from Adobe Spark video (Adobe Systems International, 2017) (see Figure 5.9 for the image of the preloaded template). As Grace finished explaining the activities for the other children, the small group waited for their teacher and looked at the image on the screen. I asked the children to predict what they might do with the computer:

Lori: So what do you guys think *might* happen here? Have you ever seen anything like this before?

Sarah: No….

Lori: What do you see, Sarah?

Sarah: Trees. Mountains.

Lori: Yeah, there's mountains.

Chocolate: Clouds.

Batman: Grass.

Chocolate: It looks like an explosion over there.

Lori: Yeah, and what do you think that red thing [icon of microphone] is about?

Batman: A microphone.

Lori: It *is* a microphone. What do you think might happen? There is a [real] microphone here and there is a microphone [onscreen], and we have been talking about *stories*…so what do you think could possibly happen?

Chocolate: We can make a story!

Lori: Ah! How did you know that?

Chocolate: Because I think and I know. I love it! (March 31, 2017)

The children shared their prediction with Grace and were excited to learn that they were going to make a video story and watch it with the class. The children's engagement supported their collaborative discovery and story creation.

Figure 5.9. Grace's computer loaded with storytelling template.

Similarly, Esther's class was excited to have the opportunity to use the Puppet Pals (Polished Play, 2016) application and anticipated how they could use the app to create a story. As Esther introduced the lesson and demonstrated the app, child Mike (see Figure 5.10) was immediately engaged and seemed to understand what they could do:

Esther: I think that you are going to have some fun with this. So what we are going to do is…we are going to create a story that is recorded and…it includes characters, different scenes, so it can be in the schools, or in the cities, or on the streets, or maybe in a castle or a church—some of the things we talked about this morning actually.

Mike: Or a wall!

Esther: It could be a wall. We are going to pick some characters and create a little story. You don't have to write any words. We are just going to record our voices.

Mike: Okay!

Esther: Then we can watch our video. So this is how we get started. So we need to press start. This says *press to start* here. (April 6, 2017)

Figure 5.10. Esther introduces Puppet Pals app and Mike sees possibilities.

Esther continued her lesson by co-creating a story with her students to demonstrate what could be possible with the application in storytelling. As she demonstrated how to use the app, she invited different children to select characters and settings for the story, and she

started to compose. As Esther began creating the story, Mike, who had been invited to move the characters chimed in to collaboratively compose the story (see Figure 5.11 for an image of Mike moving the characters in the lesson demonstration). Later, Esther explained to Fireball, “It was cool because I didn’t even know what to say next and [Mike] just jumped in. I didn’t even say anything!” (April 13, 2017).

Figure 5.11. Mike moves characters in Esther's lesson demonstration.

The children explored possibilities for storytelling as they worked with their teacher to create a story using some pre-made characters and a setting from the app. Though not every student moved the characters in the demonstration story, the children were engaged in the activity. In my field notes, I recorded that I thought Kallista and Anna could “see possibilities” for how they could tell stories as the children collaboratively composed a digital story with Esther (April 6, 2017). Figure 5.12 shows an image of Kallista and Anna watching Esther and Mike create the story.

Figure 5.12. Kallista and Anna watch Esther demonstrate the app and create a story.

As Esther worked with her students, I noted a change in the tone of the class as the children envisioned what they could do with the Puppet Pals app (Polished Play, 2016). Where previously I had observed children in conflict with one another and noted that the children appeared distracted and unsettled during instruction, I noticed the children smiling and leaning in to see the ways that Esther and Mike were creating their story. The children's shift in engagement continued throughout the lesson observation as the children used the technology to create their own stories. In my reflective field notes, I explained,

> What happened was so exciting!...As the teacher introduced the lesson, she invited the kids to tell a story with her and they constructed a playful story as a whole class on a single iPad. The kids leaned in to see and were so interested. The change in the spirit of the class was amazing. The kids were focused and relaxed. Then, she asked the kids if they would like to work with a partner or by themselves to play with stories. Most kids decided to work in partners and collaborated beautifully. I was surprised because they have struggled with this before when I have observed. The kids took it beyond what we thought they

> would as they experimented with actors and settings and plot. Those children were happy. (April 6, 2017)

The introduction of the technology supported children's learning in ways that we had not anticipated. As the children recognized possibilities with the technology, they explored the ways that they could use technologies to communicate meaning in their stories.

5.3.2 "You get to be authors and illustrators again but in a different way this time" (Grace, March 31, 2017): The ways the children combined print and digital resources in the lessons

Print literacies were an important element in each of the lessons and were included in different ways. The teachers introduced the co-constructed literacy lessons that included technology to their students in ways that highlighted understandings of print literacies and this emphasis sometimes structured the students' exploration of the digital technology. In particular, writing was considered a difficult practice for the children and all of the teachers referred to writing in their lesson introductions. For example, when introducing her lesson to a small group of her kindergarten students, Grace compared the story composing with a computer to composing with traditional resources:

> You get to be authors and illustrators again but in a different way this time. So, *this time*, instead of writing your story, you are going to… *say* your story…. into the microphone and instead of drawing your illustrations, we are going to find pictures on the computer and that is how we are going to do it. (March 31, 2017)

When Grace explained this to the children, they reacted with excitement. Figure 5.13 shows the children's wide eyes and open mouths as they reacted to Grace's explanation that the children would be authors and illustrators but did not have to write. The data are unclear if the children's excitement was related to the use of novel technology, the collaborative element of story creation, or that they would not have to write. In Grace's invitation to use the technology for storytelling, she positioned oral recording through the use of technology as a substitute for writing.

Figure 5.13. Grace invites the children to be authors and use the computer instead of writing and the children react with wide eyes and open mouths.

Fireball invited the children to use the technology *and* a paper story map to compose a story. In this lesson, the technology was not a substitute for print literacy, but was designed to be used in combination with traditional tools in story composing. Though Fireball positioned the use of traditional tools as complementary to the digital tools, he emphasized the importance of writing with his students as he introduced the idea of a story map graphic organizer (Figure 5.14 shows the graphic organizer that Fireball introduced to the class [Manis, 2012]):

Fireball:	So friends, this is called a *Story Map*.
Funny:	Story *Map*?
Fireball:	What do maps do?... Why do we have maps, Aidan?
Aidan:	So you know where to go if…you have a map and you want to go somewhere you can look on a map and go there.
Fireball:	Right. So, the map can tell us where to go! (March 9, 2017)

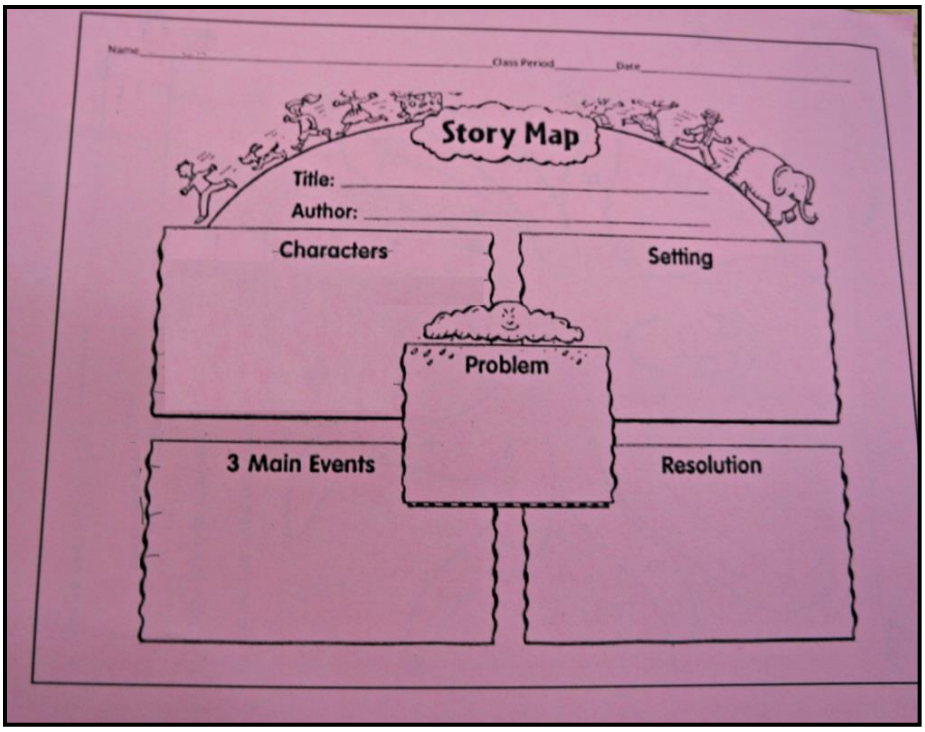


Figure 5.14. The story map graphic organizer (Manis, 2012) that Fireball introduced to his class for use with the Puppet Pals app.

Fireball explained that a story map was like a road map and could prevent the children from getting "lost" when writing stories (March 9, 2017). He encouraged the children to use the iPad as a resource to select characters and setting:

> You are going to look at your iPad and a few characters in it. And, tell me what is going to happen, and *maybe* your story is not going to happen on something on the iPad. Maybe you can think of something else. So, maybe it is going to happen at a circus. Maybe your story is going to happen *right here* at St. Nicholas! (March 9, 2017)

In Fireball's invitation to use the iPad as a resource for storytelling, he recognized that the children may need to create different characters and settings if they were not already represented in the character bank on the app. As Fireball continued to introduce the activity that combined the paper story map with the use of the digital application, he emphasized the importance of writing the story ideas on the story map and prompted the students to use the strategies for reading and writing that they had already learned:

> I want you to first tell me where the story is going to happen. Who is in your story? What's going to happen? …Where does it happen? What the problem is. If the words I want to use are not word wall words, what do I need to do? Use Stretchy the Snake. Where is Stretchy the Snake in the classroom? [See Figure 5.3 for image of Stretchy the Snake previously introduced.] (March 9, 2017)

Fireball emphasized print literacies in his students' exploration of the app. From time to time, Fireball prompted the children to write their ideas on the paper story map as they were composing with their iPads. Figure 5.15 shows how some of the children like Merida appeared to easily switch from digital composing to writing, but others, like Funny, appeared exhausted at the reminder to write.

Figure 5.15. Funny lays his head on his desk when Fireball reminds students to write.

After Fireball invited the children to write, I noticed that Funny did not begin writing but continued to work with the iPad. I asked Funny about his work:

Lori: Do you think it's better to do stories with just an iPad, or just paper, or iPad *and* paper? What do you think is best?...

Funny: iPad.

Lori: iPad? Because why?

Funny: Because we can play games and we don't have to work, because work is kind of hard. It's not fun.

Lori: Work is hard? How come work is hard? Why is work not fun?

Funny: Because we need to do some drawing.

Lori: You have to do some drawing? What about writing? Do you have to do writing too?

Funny: Yeah. (March 9, 2017)

Although Funny used the iPad for the "work" of story composing, he considered the use of the iPad fun and like a game. For Funny, writing and drawing were both difficult and he used the terms interchangeably. Though Merida seemed to move more easily between digital and print-based, she expressed similar insights about the difficulty of writing:

Lori: Is it easier to make a story with an iPad, or is it easier to make a story with words and paper?

Merida: An iPad.

Lori: The iPad? Because why?

Merida: Because we don't need to put any words. We can just take pictures and we can make the stories. (March 9, 2017)

The ways the children moved between digital composing and writing alphabetic text influenced how children explored literacies and literacy practices. As Fireball encouraged his students to use digital and traditional tools to compose stories and he invited them to revise and refine their work:

> So you can just think and try it and if it doesn't work, you can go back and fix it, not fix it—*change* it. You know, that's what real authors do. They start making a story, they say hmmm, I don't like that and then they go back and change it…. They make it different. So then they feel good about it. And that's all we're doing. (March 9, 2017)

The comparison of the children's story composing with digital and print-based resources to the authoring of print-based texts shows the importance of print literacy practices in the lesson. The structure of the lessons and positioning of print-based resources focused the ways the children used digital and traditional resources in composing stories.

5.3.3 Play*ful* literacies: Children's uses of technologies to support playful discovery of literacies

The children used technology to discover literacies in playful ways. As the children created their stories, they explored how they could use technology to combine different modes to generate and represent their ideas in stories.

5.3.3.1 "I can just look to see… and I can think what story I want to make with all of the characters" (Aidan, March 9, 2017): Children's uses of technology to generate story ideas.

The children used the digital technologies to help them generate their story ideas. For example, when working with the Puppet Pals app (Polished Play, 2016) in Fireball's class, Aidan described how the iPad helped him learn, and said, "There's characters so I can just look to see… and I can think what story I want to make with all of the characters" (March 9, 2017). Figure 5.16 shows some of the cartoon-type characters available to the children within the app. Aidan used the digital application to help him generate ideas for composing stories.

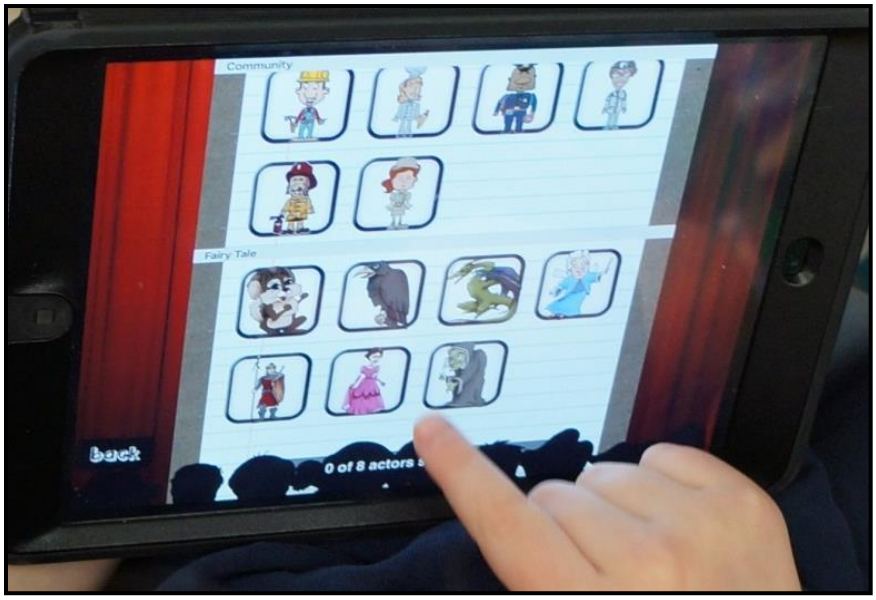


Figure 5.16. Some of the pre-made characters available within the character bank on Puppet Pals.

5.3.3.2 "It is a blue jay so it has to be blue!" (Chocolate, March 31, 2017): Children's uses of technology to represent story ideas.

The children used technology in different ways to represent their story ideas. The children explored how images and text can work together to support meaning in stories as they used the technology to select images that could represent their ideas. For example, as Batman, Sarah, and Chocolate worked together with Grace to create a story about a tree, they first planned their story orally and Grace recorded it in writing. In this planning stage, Sarah appeared to have a clear idea of the kind of picture she wanted to represent her idea that the tree "got turned into a Christmas tree" (March 31, 2017) at the end of the story. Figure 5.17 shows that when Sarah shared her idea, she gestured that she wanted a picture of a tree with a star on top and Sarah wrote down the idea:

> Sarah: And he had lights on him!
>
> Grace: Oh! Okay. A Christmas tree with lights.
>
> Sarah: And a star on the top. (March 31, 2017)

Sarah had an idea about the kind of image she wanted to use to represent her story idea and used the digital application to find an image that matched her idea.

Figure 5.17. Sarah gestures that she wants a tree with a star on top and Grace writes down Sarah's idea on paper.

Following the initial planning stage, Grace worked with Sarah, Batman, and Chocolate to search for images that represented their story ideas. In our planning meetings, we planned the lesson to use the icon bank rather than the image bank icons on Adobe Spark video (Adobe Systems International, 2017) because it had plenty of choices for the children and we found the icon bank easier to navigate than scrolling through pages of images. However, the children were frustrated when the icons only appeared in white and did not represent their vision adequately so Grace adapted her lesson to support the children's ideas:

Chocolate: I wish there was a blue jay.

Grace: Okay, then we will have to search for a blue jay. So let's take a look. We are going to look for…

Chocolate: Blue jays! It's a *blue* jay so it has to be *blu*e.

[Grace selects white icon of blue jay]

Batman: It has to be *blue* though!

Grace: Well, we should find a real photo then. (March 31, 2017).

Figure 5.18 shows the image that Chocolate selected to represent his idea about the blue jay. Grace quickly responded to her children's request to find an image that would represent the children's oral text and the image that they envisioned. As Grace continued to work with the children to represent their story ideas, she expressed that the images "looked better" on the screen (March 31, 2017).

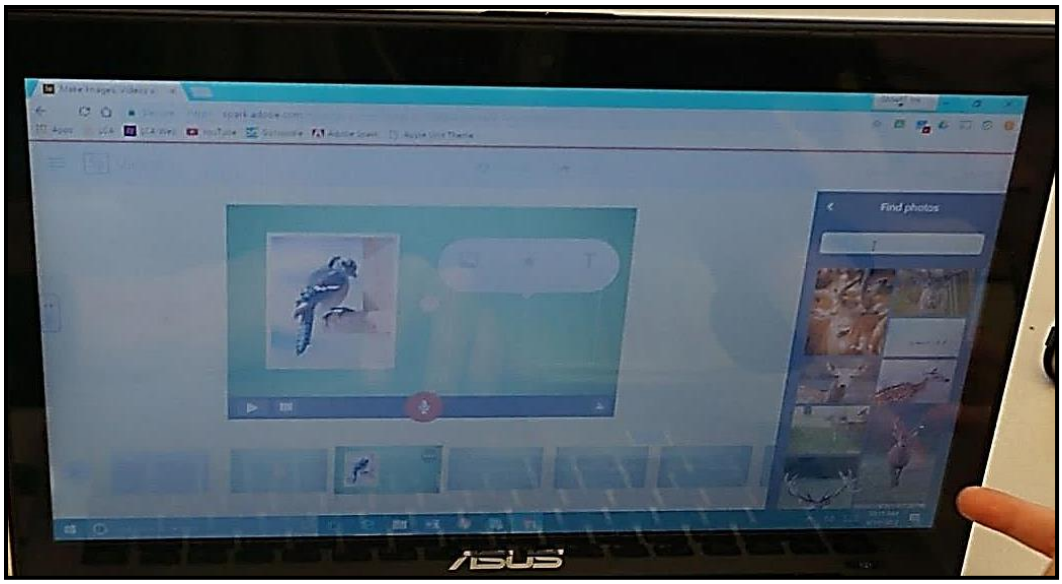


Figure 5.17. Chocolate selects a blue jay image rather than an icon to represent his idea.

5.3.3.3 "I like this one!" (Hope, March 31, 2017): The children's uses of technology to support exploration of the ways images and text can combine to support meaning.

The children explored how images and text can work together to support meaning in stories as they used the technology to select images that could represent their story ideas. At times, the images available within the photo bank on Adobe Spark video (Adobe Systems International, 2017) did not match the text that Grace had written or the children's ideas of what the image should look like. For example, as Spiral, Hope, Emma, and Grace composed their "scary, silly story" about a tree, they had difficulty finding a picture that matched the idea of a tree that had been cut down. As they searched for images, Grace explained,

> We need to find a tree that has been cut down… I don't see many pictures…Let's keep looking. Some of these are not chopped down, are they? … Let's keep looking…. Now we have a waterfall! How did that fit with chopping down the tree? (March 31, 2017)

As the group searched for photos, they continued to talk about the kinds of images they were looking for and talked about different phrases that could describe their image as they entered search terms like “tree cut down” and “tree chopped down” to extend their search. As the children worked together to represent their planned text, they had opportunities to explore how image and text can work together to support their intended meaning.

There were also examples when the children appeared to test how image and text could work together to support meaning. For example, at times, the search criteria entered in Adobe Spark video returned images that expanded the children’s story ideas beyond what made sense with the planned text. As Hope worked to select her images, she wanted to select an image of a monkey that was “cute”, but Grace was concerned that the story plot that had been collaboratively constructed could be lost.

Grace: You want that one?

Hope: No, this one. It’s so cute… I like this one. It’s cute.

Grace: Yeah? They *are* very cute, but the monkey in your story is climbing all over a tree so we need to find a picture of a monkey that is climbing. I see one. Do you see one of a monkey climbing in a tree? (March 31, 2017)

After searching through several screens of images, Hope selected an image that was “cute” and also represented the idea of climbing the tree that was in the text:

Hope: I would like that one.

Grace: But he has to be climbing in a tree, right?... There’s one.

Hope: Or this one?

Grace: Yeah, that’s cute. You can do that one. And eating right?

Hope: Yeah! (March 31, 2017)

The image Hope selected represented the idea in the text, but also stretched the meaning of the text as the image of the “cute” monkey showed the monkey eating an ice cream sandwich, which was not mentioned in the text. Figure 5.19 shows Hope selecting her image of the monkey for her video story. The children explored literacies as they considered how image and text work together to support meaning making in stories.

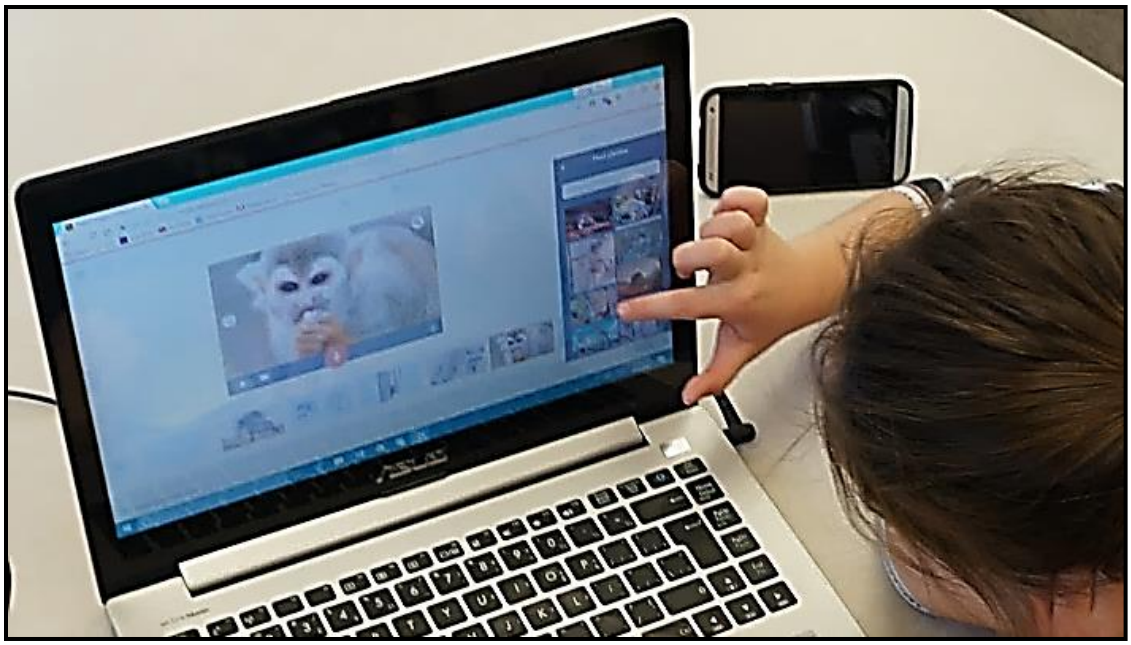


Figure 5.18. Hope selects an image of a "cute" monkey eating an ice cream sandwich.

5.3.3.4 "I don't like cats!" (Cookie, March 9, 2017): Children's uses of technologies to select personally meaningful images.

The children used the digital technologies to select images that were personally meaningful to them, and this expanded the meaning of the written text. For example, Dan researched his country of origin at home with his father and learned that his ancestors came from England. He wrote a text about his country of origin and represented his country through an image he found on the internet of the landmark "Big Ben" (see Figure 5.20). He explained that the image represented his country of origin as it was an important landmark, but he also selected the image because he found the lightning bolts "interesting" and because Ben was the name of a close family member. When Dan's video was shown at the *Celebration of Learning*, the school community appeared to recognize the personal connections Dan had with the image without the connections being explained. As Dan represented his written text through his image selection, he layered meanings that were not included in the written text.

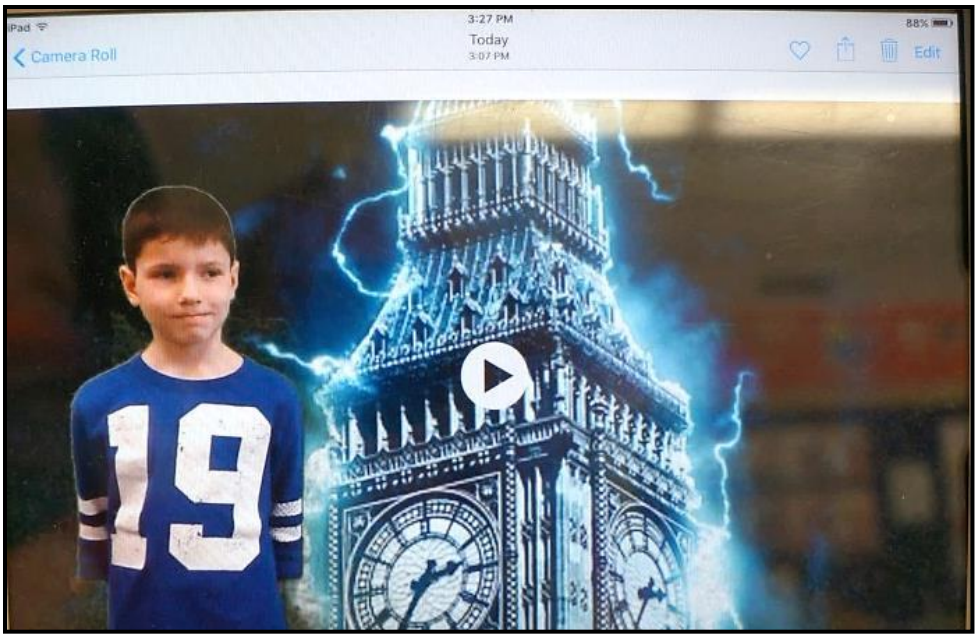


Figure 5.19. Dan's green screen project that shows lightning around "Big Ben".

Other children used the technology to create personally meaningful characters for their stories. For example, in Fireball's class, the children were invited to create their own characters using a feature of the Puppet Pals app (Polished Play, 2016) that allowed students to create characters or settings from images on the iPad camera roll. Cookie explained that he loved dogs, and selected his pseudonym to represent the husky dog named "Cookie", which he hoped to have when he grew up. Cookie's love for dogs was apparent as he created a dog character from an internet image that had both a dog and cat. As he created his dog character, Cookie explained,

Cookie: I don't like cats.

Lori: Okay, so you want to cut out the cat.

Cookie: I gotta cut the *dog*. (March 9, 2017)

Figure 5.21 shows the image of the cat and dog that Cookie selected and how he used the character creation feature of the app to cut out the part of the image with the dog to exclude the cat. In addition to creating personally meaningful characters from the internet, the children used the photo creation feature of the app to create characters from images of their classmates and settings from pictures of their classroom. Figure 5.22 shows Spiderman taking a photo of the classroom to use as a setting.

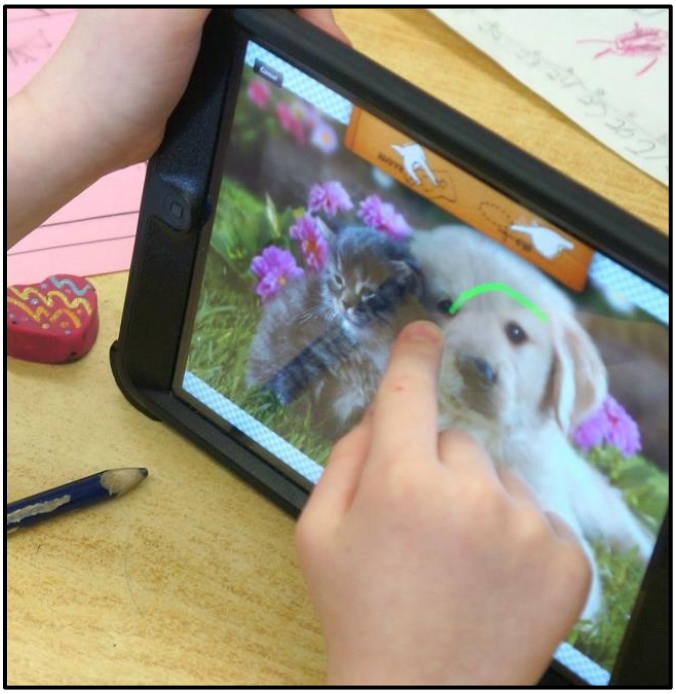


Figure 5.20. Cookie using the app to create a dog character by cutting out the dog part of the image.

Figure 5.21. Spiderman taking a picture of the classroom to use as a setting.

Many children featured their teacher as a main character in the story. During the lesson, Fireball reminded children of the ways that they could use the iPad to create their own characters and use the pre-made characters in the app:

Fireball: You still have to think about what character you might want, but I can choose from my list of characters. I saw some friends using dragons or princesses or knights… or OGRES or…

Funny: [to Fireball] Or YOU!

Fireball: Some people took pictures of me! Are you saying that I am an ogre, Funny?

Funny: No [laughs]

Fireball: Oh, I'm glad! [laughs] (March 9, 2017)

Throughout the discussion that guided children through selecting and creating characters, there was a playful tone in the class that invited exploration and discovery. Merida combined an image of her teacher with stock fairy tale characters in the app and created a story that positioned her teacher in an unexpected way. She recorded her story ideas on the paper story map. I asked Merida about the role of her teacher in the story:

Lori: Wow, Merida! Mr. Fireball is in your story? Is HE the hero?

Merida: No. He's an evil person!

Merida and Lori: [Laugh] (March 9, 2017)

Figure 5.23 shows Merida's story on the iPad that uses stock characters and includes Fireball as an "evil person" in her story. Figure 5.24 shows Merida's story map that included the characters of "Mr. F." and a "prisess" in the setting of the "towr" on her story map. The children created playful stories that included images of people and objects that they found meaningful.

Figure 5.22. Merida's story that includes Fireball as an "evil person".

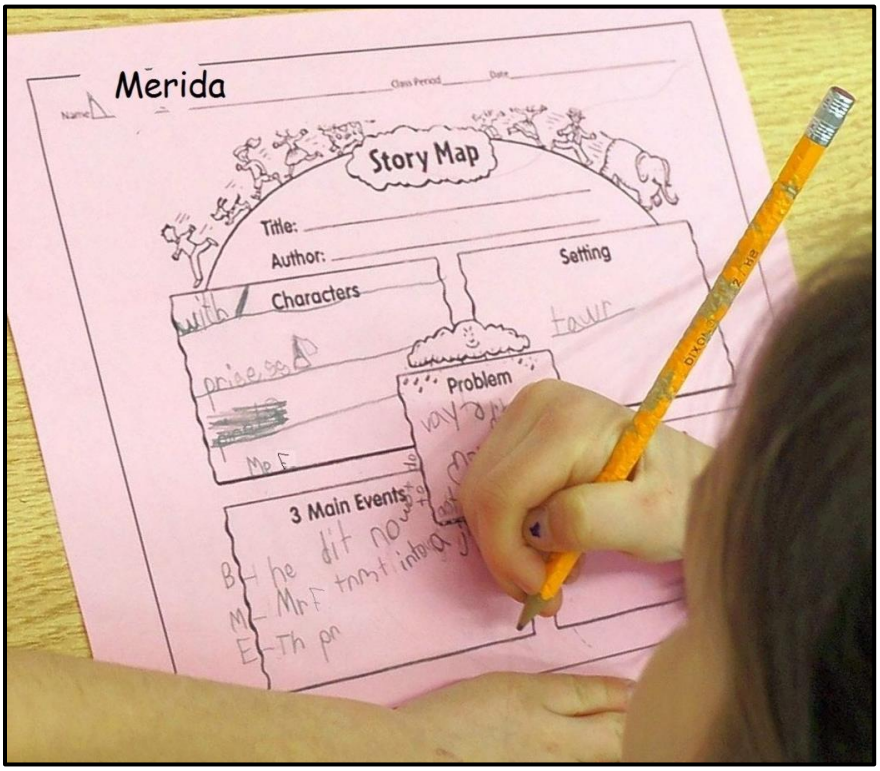


Figure 5.23. Merida's story map that includes "Mr. F." and a "prissess" at a "towr".

5.3.3.5 "That's a funny one!" (Lily, April 6, 2017): Children's uses of technologies to create playful stories with shared meanings.

Even when the children did not use the app's affordance of creating personalized characters, the children created playful stories with shared meanings using the characters within the character bank on Puppet Pals (Polished Play, 2016). As Esther's class explored the app for the first time, they did not use the photo taking feature of the app but instead relied on the pre-made characters and settings within the app. Most children chose to work with partners to create stories, and as the children worked together they composed and animated stories with very little discussion about what would happen. For example, Anna and Lily started composing their stories almost immediately when they received their iPad. They seemed to intuitively know when it was their turn to move a character or change the scene. Figure 5.25 shows Lily holding the iPad as Anna moves characters with a view of the children's faces and also shows an image of their co-constructed story on the app.

Figure 5.24. Anna moves characters while Lily holds the iPad.

Esther was so impressed with the ways that Lily and Anna worked together to co-create their story that she came to get me from across the room so that I could observe. Lily and Anna created a playful story as they explored the app:

Esther:	Just listen to them! This is great.
Lily:	Yum, yum, yum--and he got bigger—bigger--bigger…. Splash! Eat it! Yum, yum, yum….
Anna:	The boy had to chase the dragon! The dragon killed it!
Lily:	Bigger—bigger—bigger-- and punch! (April 6, 2017)

Anna and Lily laughed as they created and viewed their animated story (see Figure 5.26). While the story was humorous, it appeared that the co-authors had created a shared meaning in the sub-text that was only understood by them. I took a step back so I could document their joyful collaboration.

Lily: That's a funny one!

Anna: Where is the picture? [Lily and Anna laughing]…

Lori: You girls are having so much fun. (April 6, 2017)

Figure 5.25. Anna and Lily smiling as they create a story together with shared meanings.

The children's creation of digital stories with a partner provided opportunities to create playful stories with shared meanings. Esther and I did not have a chance to discuss the observation at school, and she phoned me to debrief the lesson after school. I documented this conversation in my journal:

> Esther called me on my cellphone as she was driving home. She said that she was so excited about the lesson that she wanted to call… She commented on how happy Anna and Lily were and how there was just so much joy. (April 6, 2017)

As Anna and Lily explored the app, they created joyful, playful stories within the context of a supportive relationship.

The playfulness of the lessons invited children's curiosity as they recognized that their classmates were creating unique stories. The distinctiveness of the stories seemed to draw the children together. For example, as Grace worked with her students at the back of the classroom, the other children worked on a cut and paste retell activity or playtime activities. From time to time, children walked over to the table and watched to see what kinds of stories could be composed about trees. Most of the children observed briefly and went back to their activities. Batman was particularly interested in what other groups would do with the technology as they created their stories even after he had composed his story with his group. Though Batman had the option to play, he chose to observe Spiral, Hope, and Emma as they created their story with Grace. Figure 5.27 shows Batman as he stood behind the story composing group and watched silently for several minutes without being noticed by the authors working together.

Figure 5.26. Batman watches Spiral, Hope, and Emma compose a video story with Grace.

Batman watched the group for the entire time that they composed the story. As we met together with Angela in our planning meeting, Grace and I considered how Batman elected to observe the story composing rather than play:

> Grace: Oh there's Batman! ... He hung around.
>
> Lori: He did, and that's why I chose these pictures. Sarah came over too, but she didn't stay like Batman did. So he is coming by and he didn't say a word actually. It was like, okay…what are they doing? What is their story about?
>
> Grace: Umhm, umhm! He pulls a chair over! (April 5, 2017)

Batman continued his exploration of the technology and literacies as he observed his classmates' story creation.

5.3.4 Playing w*ith* literacies: The children's uses of technologies to explore and extend literacies

The children used technologies to explore and extend what could be possible in their stories. In this exploration, children played with literacies as they innovated characters and settings and explored ways that they could use and combine resources to support meaning.

5.3.4.1 "I did something funny!" (Cookie, March 9, 2017): The children's uses of technology to innovate characters and settings.

The children used the technology to innovate their understandings of what a character and a setting could be. This was most evident in Fireball's class as the children used the photographing function to create characters and settings. As Fireball introduced the lesson, Cookie explained that he had discovered how to create different kinds of characters in the app:

> Cookie: I did something funny…with the cutting out thing. I cut out someone's ear on mine! So now, you play around with things on the ear in the… [app].
>
> Funny [to Lori]: How did he do that?! (March 9, 2017)

Cookie's announcement about using the ear as a setting appeared to invite further innovation. Throughout the observation, other children used the technology to select parts of the images to use as characters and settings. Figure 5.28 shows Sophia taking a picture of Spiderman's ear, and Figure 5.29 shows the ear in use as a setting in her story.

Figure 5.27. Sophia taking a picture of Spiderman's ear.

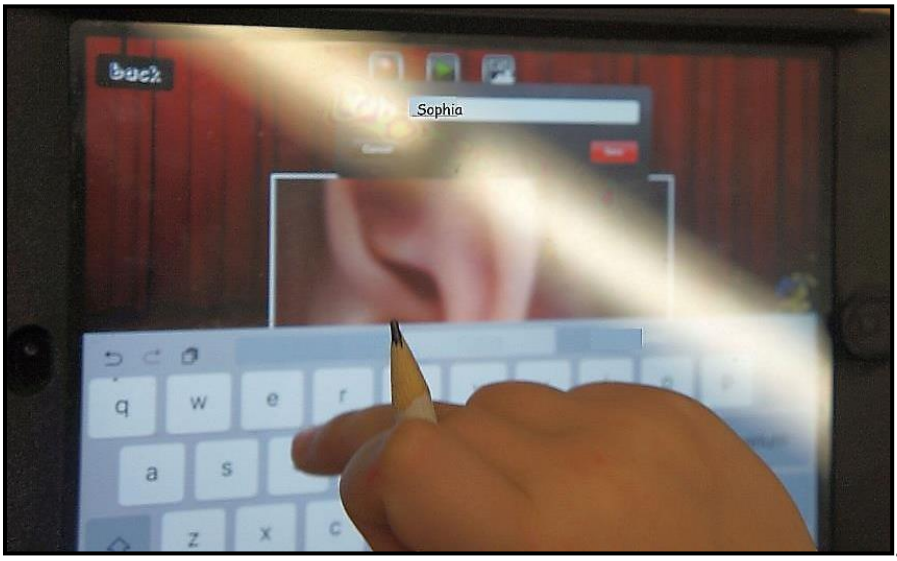


Figure 5.28. Sophia using the image of Spiderman's ear as a setting.

As children learned how to they could use the technology to create settings out of ears, they also considered how they could use the technology to create characters out of the eyes of their classmates. Figure 5.30 shows Sophia creating an eye character from an image of Spiderman. Figure 5.31 shows how Funny further extended this idea and took a selfie so that he could include his own eye in his story. The ways the children used technology provided opportunities for them to expand their story ideas as they innovated what could be possible in stories.

Figure 5.29. Sophia creating an eye character from an image of Spiderman.

Figure 5.30. Funny takes a selfie so that he can create a character from an image of his own eyes.

5.3.4.2 "Remember the Little Tree?" (Chocolate, March 31, 2017): The children's uses of print and digital resources to create personalized meanings.

As the children combined different resources in storytelling, they created their own meanings. For example, as Grace worked with her students to create stories in small groups, they used their understandings of story and storytelling to create their own stories about a tree. As Grace invited Chocolate, Batman, and Sarah to compose a story about tree, they decided to include elements from another story they had read about trees:

> Grace: So we are going to write a story about a tree and our story is going to have six parts to it. We are going to have a starting and four middle parts and an ending…. you have to decide what you want your tree to do.
>
> Chocolate: There's so many!
>
> Grace: So maybe your tree story is going to have people in it. Maybe your tree story will have animals in it. Maybe it will have--
>
> Chocolate: Remember *The Little Tree*?
>
> Grace: *The Little Tree*?
>
> Chocolate: Yeah.
>
> Batman: Yeah, *The Little Tree.*
>
> Chocolate: I want to do *The Little Tree*. (March 31, 2017)

At first, it appeared that Chocolate wanted to retell a familiar story. However, as the children collaborated, the idea for the story expanded to include other texts the children knew. As she worked with the students, Grace called the story a "remix", or "combination of a retell of a video and a book…" that she shared with her students several months before (March 31, 2017). As the children prepared to use the technology, Grace turned to me and explained,

> So, Mrs. McKee, this is a story about a tree that we read at Christmas. They're remembering the parts of it and they want to tell it themselves… because I just threw out ideas and I didn't even prompt it and they decided to tell about *The Little Tree.* (March 31, 2017)

Figure 5.32 shows Grace working with Batman, Chocolate, and Sarah to create “The Little Tree Remix.”

Figure 5.31. Grace working with Batman, Chocolate, and Sarah to create "The Little Tree Remix."

As the children in Grace’s class moved between activities to support story retell and composing, they added their own meanings to the stories by drawing on different resources. At the end of the lesson observation, Grace and I considered the unique storylines and the particular ways they collaboratively composed the stories:

Grace: I even prompt them with different prompts each time so that they are not doing the same thing.

Lori: Yeah, so the stories are different. I think that the whole idea about the remix is really interesting because we planned it for retell and we also wanted it as a composing thing…

Grace: Yeah

Lori: But then, what they [the children] actually did is that they created their own layers.

Grace: Yeah, they did! (March 31, 2017)

Though this was the only group where the data show that the children specifically included other texts as resources, all of the groups created their own unique stories.

5.3.4.3 "It was fluid" (Fireball, April 6, 2017): The ways the children combined print and digital resources to support meaning making.

The children used and combined print and digital resources in different ways to support meaning making. The children combined digital and print resources in different ways in their story composition. In the lessons that combined traditional print based resources and digital resources, the teachers sometimes prompted the students when they should switch the type of resource they were using. For example, in Angela's class the children had a written text that they read in front of the green screen. As Grace worked with her students to plan and compose video stories, she prompted them to plan their story, select digital images, and finally record the story.

Fireball also instructed his students to use the iPad as a resource for selecting characters and settings and then write the information on the story map. However, the children used these resources in much more flexible ways. As I moved around the room, I noticed that the children were all doing different things at the same time and moving between the paper and the iPads according to what they were working on. Figure 5.33 shows how Cookie, Merida and Funny worked independently and selected the resources that they needed. In my journal, I considered the ways the children were combining digital resources:

> I see that the process of composing a story with paper and pencil AND an iPad was a really flexible process. The children would go back and forth between the different tools at their own pace. There is an image of Sophia and Spiderman working side by side and each working with a different medium. (March 10, 2017)

Figure 5.34 shows Sophia and Spiderman working with different resources to compose stories.

Figure 5.32. Cookie, Funny, and Merida using different resources to support story composing.

Figure 5.33. Sophia and Spiderman using different resources to compose stories.

The fluidity of the ways the children moved between the resources was remarkable to Fireball and me and we explained this to Esther:

> Lori: it wasn't that they were planning with the paper and then going to the iPad. It was this back-and-forthing constantly.
>
> Fireball: Umhm. It was fluid.
>
> Lori: Yes, very much so.
>
> Esther: Really?
>
> Lori: It wasn't a sequential thing. It was just…whatever I need to do right now, it's okay. (April 6, 2017)

Within Fireball's class, the children moved between resources according to their own plan to support meaning making as they composed their stories.

5.3.4.4 "That is what I'm drawing on a piece of paper. The first one I made" (Sophia, March 9, 2017): The children's uses of technology to explore the interrelated processes of story composing and retell.

The children used the technology to explore the composition and retelling of stories as interrelated processes. In Grace's class, this was a planned process as she provided the children with opportunities to retell their field trip to the sugarbush on the SmartBoard (see Figure 5.35), in a cut and paste activity created from the SmartBoard activity (see Figure 5.36), and to compose stories with Adobe Spark video (Adobe Systems International, 2017).

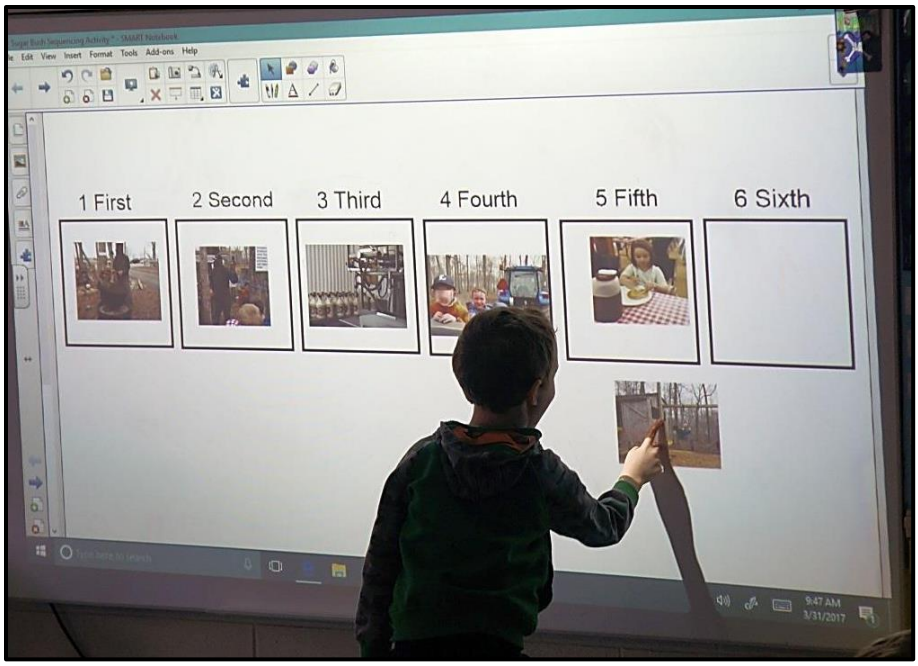


Figure 5.34. Chocolate retelling the events of the field trip on the SmartBoard.

Figure 5.35. Hope doing a cut and paste activity created from the SmartBoard activity to retell the field trip events.

In Fireball's class, children found their own ways to explore connections between story retell and composition as interconnected and reciprocal processes. When Fireball

instructed his students to use the digital technology and the paper story map to create a story, most of the children interpreted this instruction to mean that they could create a new story with their story map and iPad. Sophia interpreted the instructions differently and used the technology to explore literacies as she retold a story that she had recorded on the previous day. Sophia used her recorded story to "map" or retell her story on the paper story map using pictures and words. Figure 5.37 shows Sophia's recorded story on the iPad next to her paper story map and Figure 5.38 shows Sophia's paper story map that highlights her use of pictures and words to retell her story. Sophia's innovation became clear as I talked with her about her using the iPad:

> Lori: Sophia, how do you think that the iPad helps you learn?
>
> Sophia: 'Cause it helps me remember what happens in the story.
>
> Lori: Because it helps you remember…because there's pictures?
>
> Sophia: Umhm and because the characters are there…and the first story I made…it's…S…o…p…h…i…a [spells name to bring up saved story] Then it will say the first one that I made.
>
> Lori: Okay.
>
> Sophia: When I made it. Right there.
>
> Lori: That's the first one you made? And it just helps you remember?
>
> Sophia: Umhm. And that is what I'm drawing on a piece of paper. The first one I made. (March 9, 2017)

Sophia's intuitive exploration of composing and retelling stories as interrelated processes stood out to me, and I reflected on the ways this exploration was supported through the flexible ways the children were combining resources. Following my visit, in my journal, I wrote:

> Sophia understands the power of multimodality. She wrote her story map with pictures and words. When I spoke with her about her map, she explained that she was not writing a new story, she was actually retelling the story she did on the previous day. When I told Fireball this, he was really interested. I think that the flexible ways the kids were using technology also shows how composing and retelling are reciprocal processes and we can use the same tool in different ways to support different aspects of literacy learning. (March 10, 2017)

Sophia explored the interconnectedness of literacies as she used the digital technology to help her retell her story through images and printed text. She further explored literacies as she recognized the reciprocity of composing and retelling stories.

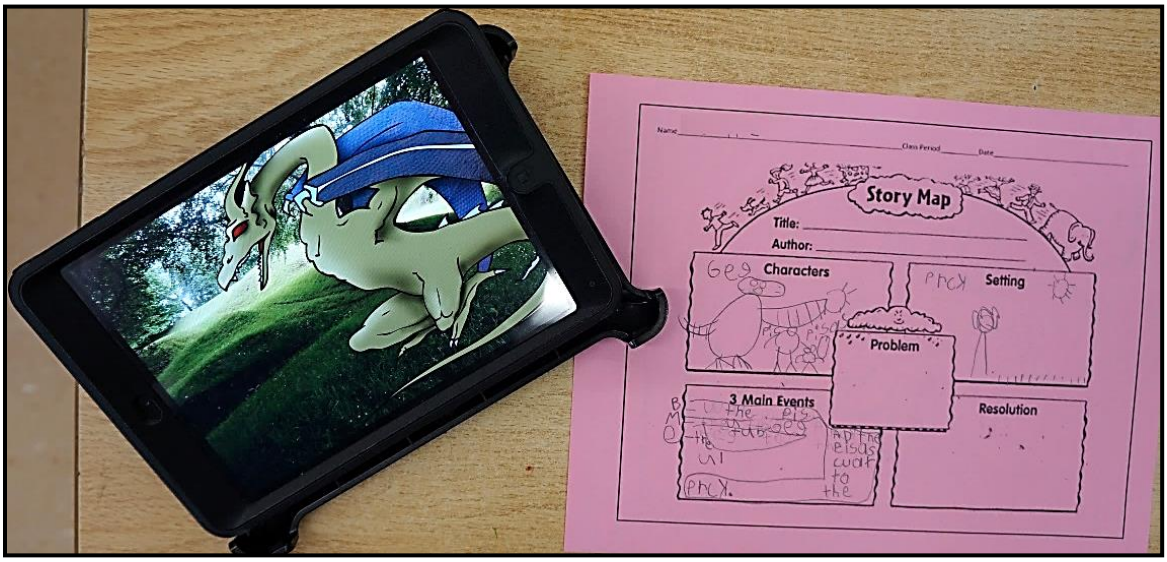


Figure 5.36. Sophia's recorded story on the iPad next to her paper story map.

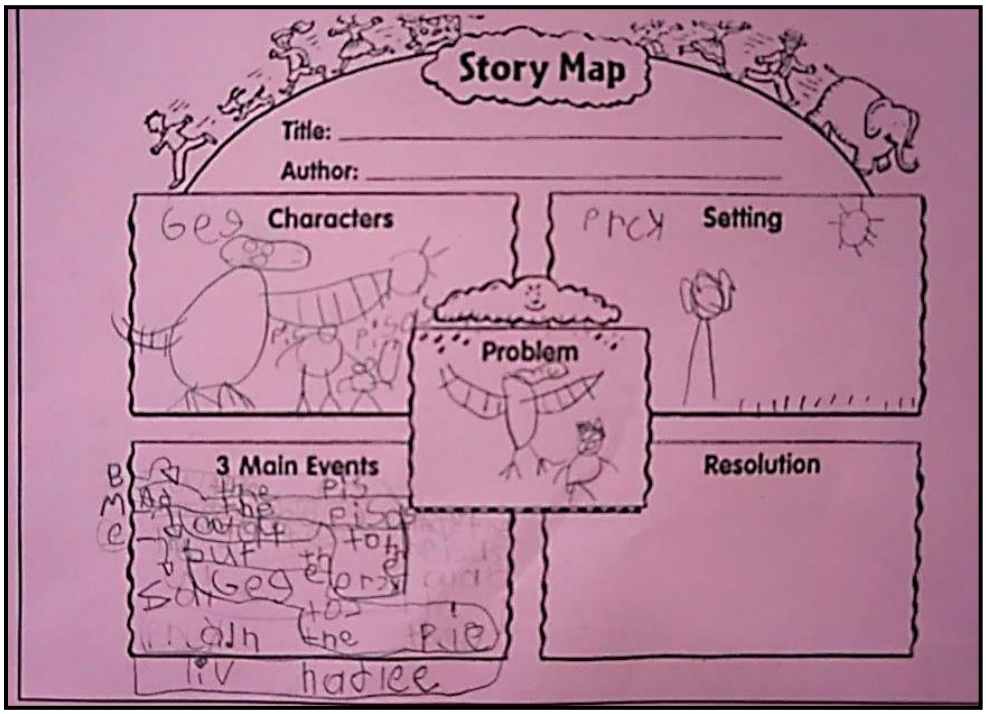


Figure 5.37. Sophia's story map that highlights the ways she used pictures and words to retell her story.

Within the curriculum, as the children explored the ways they could use the digital technologies to support meaning making. In their exploration, they created playful stories with personal meanings, and played with what could be possible with literacies and literacy practices. The ways the children used the resources were sometimes surprising and this supported the teachers' collaborative and individual reflection.

5.3.4.5 "The iPad opened up possibilities for Chloe" (Lori, March 17, 2017): The children's uses of technologies to expand communication of stories.

The children used the technology to communicate their understandings of stories in ways that they could not when using traditional print-based resources alone. The differences in the ways the children communicated through traditional resources and technology were sometimes surprising. For example, as I observed in Esther's class, I heard child Abby's voice above the classroom din. At first, I couldn't see her because she had taken her chair behind a bookshelf and pushed the book bins aside so that she could rest her iPad on the shelf (see Figure 5.39). I noticed that she was rapidly tapping her screen and jumping up and down in her chair as she recorded her story:

> Once upon a time, there was a beautiful princess and a beautiful fairy godmother and a beautiful prince and then an evil witch came and put them all away and put the princess in a scary, scary, scary, scary cave--and, then and a scary forest. (April 6, 2017)

As I listened to Abby record, I noted the complexity of her story and how she changed background scenes (from a castle to a cave to a forest) mid-sentence to support her story. As the children were working, Esther and I discussed the way Abby was using the technology to compose her story:

> Esther: Did you see Abby?
>
> Lori: I know! It was really good.
>
> Esther: It was totally planned out.
>
> Lori: I know and she would go to change the scenes and she knew exactly what she wanted! Three scenes!
>
> Esther: I didn't expect that. (April 6, 2017)

Esther explained that Abby's animated story was much more fluent than what she could have composed using only traditional resources. The complexity of Abby's story was surprising to her teacher and we shared this with Fireball in our meeting to debrief Esther's lesson:

> Lori: So Abby takes her iPad and she goes off and she was talking…I went over to her because she was talking so much. So you can see on the app, three scenes…she is moving all of these characters in and out. She has adjusted the stage size, and she just started talking and she was using two hands and--
>
> Esther: Yeah, she was amazing. So good, eh?
>
> Lori: It was complicated and you didn't even really say how to change the scene.
>
> Esther: No.
>
> Lori: And they just kind of went, "Okay!" So, three scenes, complex story, all of these characters, and two hands moving them in and out. (April 6, 2017)

The ways that Abby used the tool to create a fluent and complex story prompted the teachers to reconsider what Abby was capable of in story composing.

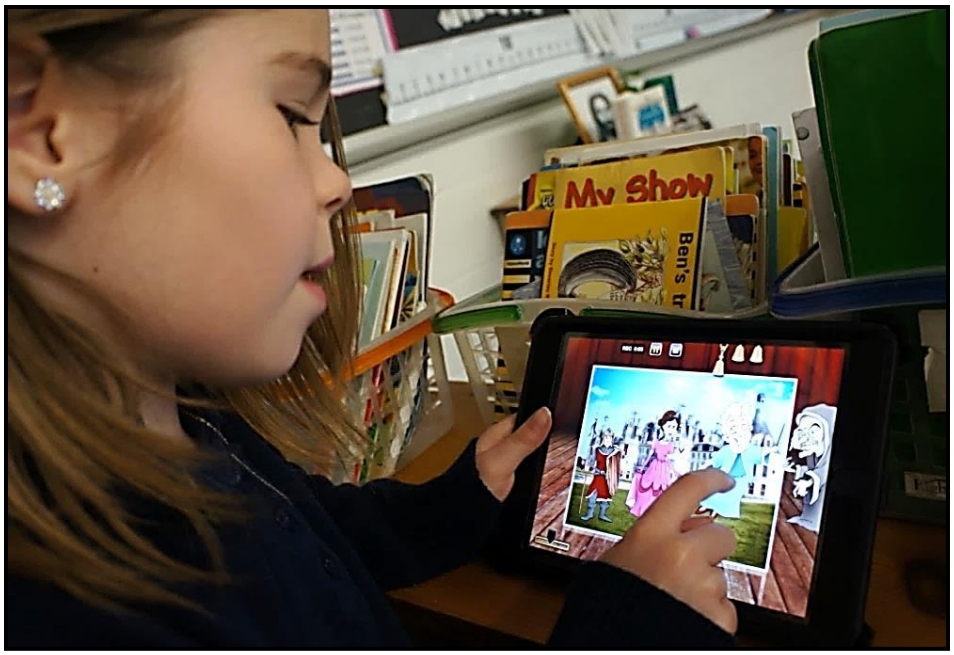


Figure 5.38. Abby enthusiastically records her story with three different scenes.

Similarly, children in Fireball's classroom also used the technology to demonstrate their understanding of literacies in ways they could not using print alone. For example, Chloe, who Fireball described as "one who struggles with writing" (April 6, 2017) appeared very frustrated in the lesson when she was asked to write. I noticed that Chloe was struggling and offered to help her using the reading strategies that Fireball highlighted in his instruction:

Lori: Do you need help?

Chloe: I need help spelling chipmunk.

Lori: Chipmunk?

Chloe: Yeah

Lori: Ch, ch, ch. …

Chloe: I can't. I don't know how to spell. (April 6, 2017)

I continued to help Chloe sound out words and write them on her story map. After she wrote down the words she needed, I left Chloe to continue working. When I returned to her desk later, I noticed that she had erased much of her writing she had completed previously. Figure 5.40 shows Chloe's written story map at the end of the observation period.

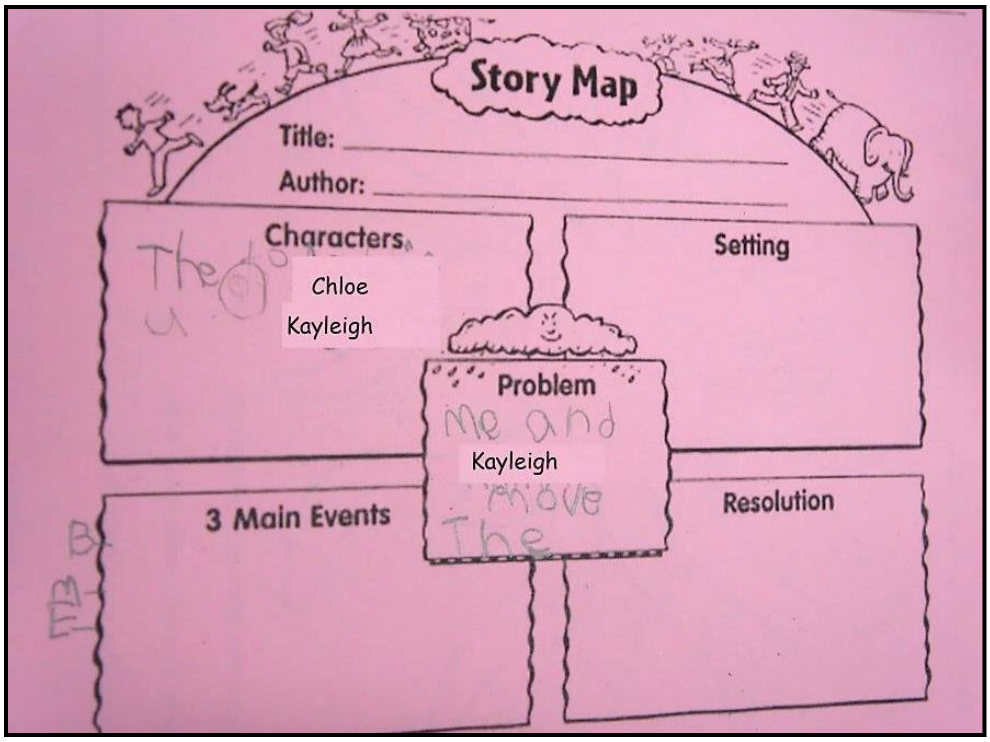


Figure 5.39. Chloe's story map at the end of the observation without the word "chipmunk".

During the lesson, the Educational Assistant noticed me working with Chloe and suggested that I view Chloe's video story from the previous day. As I viewed the story, I noticed that Chloe had created a well-developed storyline using complex language that was in contrast to the few words she had written on her story map and reflected in my journal:

> I see the difference between oral story telling with animated characters and writing. Fireball and the Educational Assistant both mentioned how detailed Chloe's story was from the day before. In Chloe's story, she had a well-developed plot involving a police officer with a doughnut and a chipmunk came and got the doughnut…. In the oral story, Chloe even used different voices…and adopted a British accent for her characters. When it came to writing, Chloe was far more limited in what she could write down. (March 10, 2017)

After the lesson, Fireball and I laid Chloe's written story map next to her animated story from the previous day (see Figure 5.41). As we considered the differences between Chloe's oral story on the app and her written text, Fireball explained that he thought the

use of the technology provided Chloe with opportunities to express herself in different ways than she could using only print, and said, "giving her this exploration, this voice, where she has just delved into *this* reality or into this alternate reality…she has really come out and [she's]….not inhibited" (March 9, 2017). Following the lesson observation, I continued to reflect on Fireball's words and the difference between Chloe's written text and her digital text. In my journal, I reflected, "the iPad opened up possibilities for Chloe… to communicate in ways [she] would not have been able to if using print alone" (March 17, 2017).

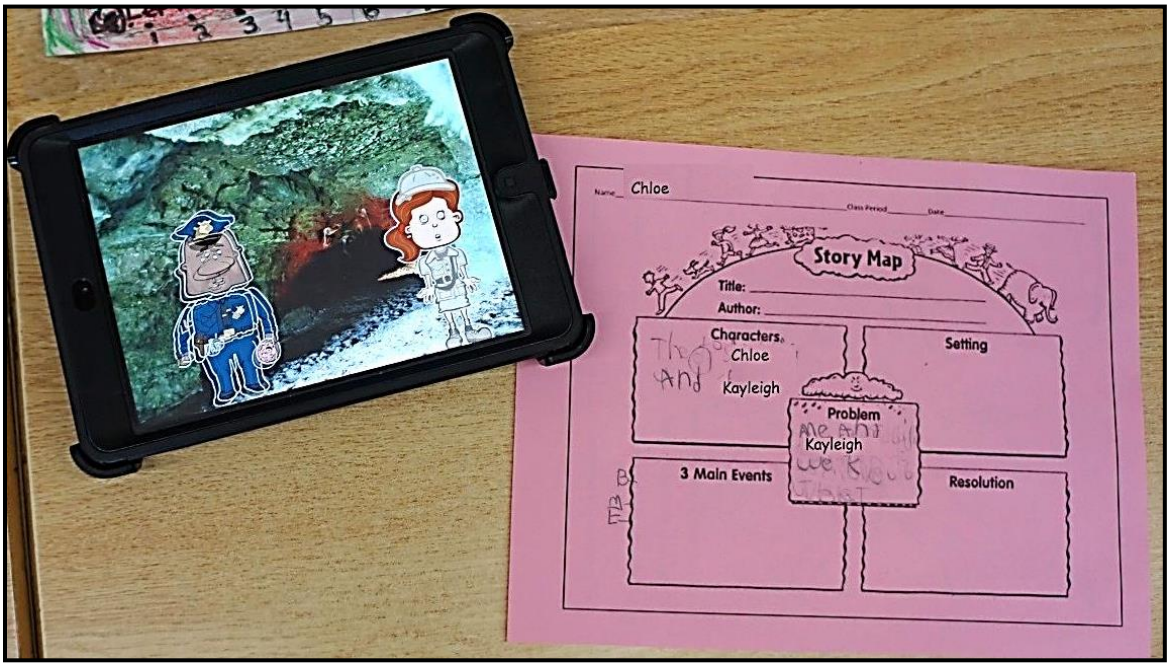


Figure 5.40. Chloe's story map compared with her animated story from the day before.

Chloe's expanded meaning making enabled through the digital technology provided opportunities for her teacher to see her in a different way. As we met together as a community of teachers at St. Nicholas, we considered how viewing children's meaning making attempts through only written modes limited our understandings of what the children understood about stories and story composing:

Lori: So that is her story from the day before compared to what she could get down in print. [Figure 5.41]…I think the iPad allowed her to show her strength….where if you only looked at--

Fireball: Relied on the text

Lori: Yeah, then it would look like she didn't know what she was talking about. (April 6, 2017)

The use of the digital technology in story composing positioned the children as capable meaning makers.

5.4 What Were the Enablers and Barriers to Multimodal Pedagogies that Include Digital Technologies?: Planning Meetings and Classroom Observations

There were many factors that enabled and/or constrained multimodal pedagogies as the teachers planned and implemented multimodal pedagogies that fit within their classroom curriculum. At times, it was not clear if a factor enabled or constrained because the teacher adjusted the pedagogy to address the challenge. In this section, I describe the enablers and barriers to enacting the multimodal pedagogies that the teachers sought to implement in their classrooms. First, I explain the enablers of collaboration and sharing pictures within the meetings. Next, I identify the barriers of time and of using available technology. Then, I describe the ways that the teachers' existing practices and understandings of literacy served as both enablers and constraints. Finally, I consider the complexity of designing multimodal pedagogies to fit within classroom curricula.

5.4.1 "All of a sudden, you are not completely on your own with it" (Grace, April 11, 2017): The enabler of collaboration

All of the teachers expressed that collaboration enabled their innovation of pedagogies as teachers shared knowledge of digital technologies and experience with implementing lessons. The teachers explained that collaboration provided teachers with opportunities to share resources including what technologies were available and the ways teachers included them in lesson design. For example, Esther said that in her previous experiences, sharing teacher created lesson SmartBoard files alleviated workload and supported continuity between classes:

> If you are using a SmartBoard, or you have some sort of digital learning in your room…then you can share the files a lot easier. I used to teach high school business and my course was on a USB and I passed it to the next teacher and we all did the same thing. It was uniform. The kids knew what they needed one class to the next…. It was always the same, the expectations were the same. Very, very easy to share and keep a certain standard across the board in your school. (April 20, 2017)

For Esther, the sharing of lessons that could be universally implemented supported teachers and students.

The teacher explained that collaboration allowed for the sharing of digital and human resources. For example, Grace said that the teachers' sharing of resources in her daily practice and within the research study provided her with access to new digital technologies, but also connected her with someone who had experience using it in her/his classroom:

> It also is really helpful because you get resources from the other teachers…especially when someone goes, "Oh hey! I have used *this* app or whatever. Let me share it with you" and then all of a sudden, you are not completely on your own with it. (April 11, 2017)

The combination of human and technological resources provided opportunities for the teachers to learn about what technologies were available and how to use the tools. In her interview, Grace explained that the sharing of resources extended beyond having additional resources and/or technological support for using the app and created opportunities for sharing their successes with the implementation of multimodal pedagogies collaboratively designed within the meetings:

> Grace: I also find too that if you work on something with someone then it's a lot more exciting to show them the product….because…Angela wanted to show me this [green screen] video. Other people would also think it is cute, but because I knew the background behind it…
>
> Lori: Yes! You can celebrate it!...
>
> Grace: It makes it more meaningful, right? So you can celebrate how it worked, and you can also support each other when it is not working… because we have been working together so I know her plan and so if she said like "Today it didn't work well because the technology isn't

> working" and then you're like "Oh!" You really feel for them or like "Oh! Guess what happened for me?" (April 11, 2017)

The teachers' collaboration allowed for shared understandings of the challenges and successes that were a part of designing pedagogies that include digital technologies.

The teachers explained that collaborating with teachers who understood the context of working in an early primary classroom was supportive to enacting multimodal pedagogies. In her interview, Grace described previous professional learning activities where she partnered with a teacher who taught a much higher grade. She explained that this partnership was collegial and supportive in helping her understand the learning goals and activities in the greater school context. However, Grace expressed that it was difficult to collaborate in meaningful ways with teachers outside of the early primary years because the teachers did not have common understandings of what children in the different grades could do, and were unfamiliar with the practices that could support children's learning:

> Grace: We have no clue what the other grade needs. ….to collaborate, you have to…be in the same area.
>
> Lori: JK-Grade 2 is a different animal.
>
> Grace: Yeah. It's a different world.
>
> Lori: Right. A totally different world and… because it is such a different world, the way that technology can be used is going to be different. (April 11, 2017)

In our discussion, Grace and I considered the particular demands that the early primary context placed on pedagogical design that included digital technologies and the need for collaboration with teachers who understood this context.

The collaboration within the professional learning activities enabled the teachers to expand and refine their lesson designs as they considered the ways they could incorporate digital technologies. For example, at the close of the study, Fireball and I discussed the ways that the collaborative element of lesson design supported his lesson:

> Fireball: I think that the more minds that come together, the better the ideas are that are created. And I say that because my experience is, my own

> knowledge base is limited, and when you bring someone else who has a limited knowledge base and someone else who has a limited knowledge base, then the knowledge tends to grow, right? And just because I have this *wonderful* idea in my head, it doesn't make it practical.
>
> Lori: Right
>
> Fireball: So when I think about the practicality with someone else….
>
> Lori: You can sound it off?
>
> Fireball: Yeah, exactly. Sometimes I say things and later I think, "Wow, that was stupid! Oh, okay let's go back!" [laughs] (April 20, 2017)

For Fireball, collaboration enhanced pedagogical design as it broadened the knowledge base and informed the scope and sequence of his lesson. As the teachers explored pedagogies, literacies, and technologies, collaboration between early primary teachers enabled the teachers to access human, technological, and pedagogical resources and this expanded what was possible in the lesson designs that included digital technologies.

5.4.2 "There are some beautiful pictures that capture the identities of the children and the spirit of the classroom" (Lori, April 6, 2017): The enabler of sharing images of implemented lessons

The sharing of images and stories of the enacted lessons within the meetings enabled the teachers' exploration of multimodal literacies and pedagogies. Within the research design, I anticipated that the sharing of images would be supportive to our collaborative work as the images provided opportunities for the co-designing teacher who was not implementing the lesson to envision what had happened during the lesson implementation. The images served this purpose, but they extended our learning in ways that I had not imagined. I started to realize the significance of sharing images with the teachers when we met to debrief the first lesson of the study that happened in Fireball's classroom. In my reflective field notes, I explained to Rachel:

> As we were debriefing [Fireball's implemented]… lesson, I showed about 7 slides of images of the lesson so that [Esther] could visualize what happened. As [Fireball] watched the images of his students, he was very moved. There are some

> beautiful pictures that…capture the identities of the children and the spirit of the classroom (April 6, 2017).

As we met together in our meetings, the sharing of images facilitated the telling of stories that supported our interpersonal relationships, and provided opportunities for the teacher to explore the co-constructed lesson from different perspectives.

5.4.2.1 "It brought a different light to what was going on" (Fireball, April 20, 2017): (Re)visioning teachers' practices through the sharing of images.

As we told stories of the enacted lesson, the sharing of images provided opportunities for the teacher to see their own practice in a different light. Within my role as researcher, I interacted with the children in different ways than the classroom teacher since I did not have responsibilities to manage the classroom. As I observed the implemented lessons, I moved around the classroom, assisted the children as needed, and documented the learning. As we viewed photos from Grace's implemented lesson, she explained, "Wow.… I didn't even think about you doing that because I was so focused on [teaching]" (April 6, 2017). During Esther's interview, she expressed that my role as a researcher enabled me to document the learning in different ways than a classroom teacher could, and the sharing of pictures provided opportunities to see things that happened in her classroom of which she was not aware. When I asked Esther to comment on the importance of the sharing images in the activities, she explained,

> You don't know everything that is going on at the time but if somebody in the room came and was taking pictures, then it helps you to see all the places in the room that you are actually not able to be. Like, I was only working with 2 students while you were taking pictures of everyone else and you were able to look at the pictures and remind me about, and even let me know what was happening. (April 20, 2017)

The sharing of pictures provided teachers with opportunities to understand more of what happened in their classroom during the enacted lesson. During Fireball's interview, we considered the ways that the sharing of pictures allowed us to explore the learning from our different perspectives as teacher and researcher:

Lori: When I met with you and Esther, it seemed to be really valuable to have the pictures to look at.

Fireball: It was lovely to see the pictures…as the classroom teacher because my engagement was different than yours.

Lori: Right.

Fireball: So hearing you explain what you were seeing was rejuvenating. It brought a different light to what was going on as well. (April 20, 2017)

As we viewed pictures, we created shared stories of practice, where each teacher had a voice in the telling of stories as s/he shared from her/his different perspectives. The sharing of images enabled the teachers to discover and explore the ways the pedagogical design impacted opportunities for student learning within the enacted lesson. I will show the ways the sharing of pictures supported the teachers' understandings of the experienced curriculum later in this chapter.

5.4.3 "It is impossible to collaborate. We have busy lives" (Esther, April 20, 2017): The barrier of time to collaborate

The teachers all identified the time to collaborate as a barrier to the design of multimodal pedagogies. In my journal, I recognized that the demands on the teachers' time made collaboration more difficult and expressed, "I think that teachers want to collaborate, but…things like conflicting yard duty schedules, incompatible planning times, and family commitments take time away from opportunities for collaborative teacher learning" (March 12, 2017). In her interview, Esther said that the time investment was an obstacle to collaboratively planning lessons and explained, "There's no prep time. That's a big one. It is impossible to collaborate. We have busy lives" (April 20, 2017). To mediate the demands on teachers' time after school, we scheduled many of our meetings at St. Nicholas over the lunch hour when children were outside for recess. Though this minimized the need to meet after school, I realized that this was an imperfect solution as it compressed the teachers' work day, and "[made] a long day with no breaks" (April 20, 2017).

Though the teachers viewed the time commitment as an obstacle to collaborative planning, they explained that it was more manageable to make the time investment in particular situations. For example, in her interview, Angela explained,

> It's hard to find a time that works for everyone…and…make sure that everyone is motivated to take that time and *make* that time. If everyone has…the same purpose, the same goal and if that is to use our technology better or to…include more technology, then it is more possible to meet. (April 10, 2017)

For Angela, the teachers' common interest in integrating digital technologies in literacy instruction motivated her to invest the time to collaborate.

Despite the busyness of personal and professional lives, the teachers were generous with their time within activities. Though we scheduled our meetings to fit within school, classroom, and personal calendars, we had to reschedule almost half of our meetings (9/20 in total; 6/10 at St. Nicholas and 3/10 at Cornerstone) when unpredicted events occurred in the school and in the teachers' personal lives. I reflected on the frequent need to reschedule in my journal:

> I feel like at one point in this research, I would have been disappointed that we would have had to re-jig like this. And now, the way that I am thinking about it is…this is just the reality of teaching. People are busy, the lesson planning happens within a very busy context of family life, and planning for other subject areas. (March 2, 2017)

The time to collaborate was a barrier to the design of multimodal pedagogies.

5.4.3.1 "What a Gift!" (Lori, April 11, 2017): Release time from teaching responsibilities to support professional learning.

Though we scheduled most of our professional learning meetings outside of teaching time and on teachers' lunch hours, planning time, or after school, at Cornerstone the teachers received release time from their teaching responsibilities for one of our meetings. We were able to meet together to debrief Angela's lesson and plan a lesson for Grace during the teachers' instructional time within the school day. The teachers received release time for 1/4 of a school day each while their classes were taught by supply

teachers. When I learned of the release time, I explained the teachers' request for release time in my reflective field notes to Rachel:

> The teachers decided to ask for release time because the principal told the staff that there was money available for literacy professional development and they felt that the study definitely qualified as professional development. The teachers explained that the principal didn't hesitate and worked with the teachers to find a way to make the release time possible. (March 21, 2017)

Though the time released from instructional responsibilities might seem small (about 1.5 hours per teacher), the release time had a positive effect on our learning community. The release time took pressure off of the teachers who had also committed to meetings after school for other school activities. In her interview, Grace described how she appreciated the opportunity to meet within the school day:

> Grace: We are just trying to collaborate about planning for track and field. And teachers are like…*another* meeting after school? Like when are we going to find time to meet? Nobody has time during the day…. It's *really* valuable but… So when [the principal] was able to give us…that little section [of time]!
>
> Lori: What a gift!
>
> Grace: I was like, *whew!* Another time when we don't have to meet after school!... I find like on average, 2-3 out of my 5 nights a week I am at an appointment or a meeting after school. (April 11, 2017)

Angela also recognized the gift of release time as supporting our collaboration and affirming our efforts to innovate our pedagogies. In her interview, I asked Angela about the advice she would give to other teachers who wanted to engage in collaborate lesson design. She explained,

> Angela: I would say, "Go to your administrator and ask for that time" because when you invest that time, it's just so helpful. To find that time outside of the classroom in your own time…it seems like it's even not fair to have to do that. To…be able to have that time within the school day when you are there anyways, it creates a motivation.
>
> Lori: Do you think that it validated this [our collaborative work in lesson planning]?
>
> Angela: I really do. I do think it did. (April 10, 2017)

Like Angela, I also thought the gift of time to the teachers affirmed our collaborative work in lesson planning, and reflected how the goal of the research study was compatible with the school's goal of including technology in literacy instruction in the primary grades. In my reflective field notes, I explained to Rachel:

> I don't want to overstate the significance of the release time, but I know that Professional Development funds are limited, and I find it affirming that the principal would allocate resources for supply teachers to support the study. (March 21, 2017)

In our planning meeting, I shared with Angela and Grace my reflections about the allocation of professional development resources toward the teacher's release time, and I explained, "I was just thinking that it is encouraging for the research study because…it's viewed as professional learning… I was very encouraged by that" (March 23, 2017). The gift of release time at Cornerstone was an unexpected change to the research design. This shift supported our professional learning as it alleviated some of the time pressures experienced by the teachers and also acknowledged the professional learning that was taking place within our work together.

I continued to consider how release time from teaching responsibilities could support teachers' professional learning since each teacher strongly stated that demands on their time inhibited collaborative work and the release time from teaching was so supportive to our collaborative work at Cornerstone. As I reflected on my own practice, I understood that time away from the classroom for professional learning also increased programming demands for the teacher. In his interview, Fireball and I considered how release time could support teacher professional learning:

> Fireball: You still have to do the work!
>
> Lori: Exactly!...Even if you have release time... you still have to plan for the [substitute] teacher to keep… the program running when you are not there. (April 20, 2017)

Although release time created additional work for the teachers as they had to plan lessons for the substitute teacher, the teachers expressed that having release time signalled the importance of the professional learning activity to the school administration.

The teachers identified the shortage of time to collaborate as a barrier, and that supporting the teachers by providing time to collaborate could be an enabler to the design and implementation of multimodal pedagogies. In my journal, I reflected, "I think that using technologies to…support literacy learning takes time and intentionality. In spite of allowing for these things, obstacles remain that impact how we can actually use technology" (journal, March 12, 2017). The time to collaborate is one concern in designing multimodal pedagogies, and more barriers exist.

5.4.4 "There is so much out there!" (Angela, April 10, 2017): The barrier of time to select digital technologies

The teachers agreed that selecting and examining digital technologies that could support their curricular goals and meet the needs of their students was a time-consuming process and a barrier to enacting multimodal pedagogies. As I interviewed Fireball, he explained the challenges of selecting and critically evaluating different technological applications before using them in his classroom:

> Lori: There are a million new apps coming out…
>
> Fireball: Daily!
>
> Lori: So how do you know what app to try or what app could be useful for what you want to do because you have to sort through so many?
>
> Fireball: Yeah. And even once you start referencing resources…. well one [website] might say, here's the three best apps, and another website will say another three…and it all comes down to, what actually works for them from their own perspective. So everything is biased. (April 20, 2017)

The process of vetting digital technologies for use in the classroom was an unreliable and time-consuming process. As I interviewed Angela, she explained that even when a trusted colleague forwarded information about an educational website that was suitable for use in primary classrooms, she still needed to consider if and how she would include it in her classroom:

> There is so much out there! To have the time to sort through it and to discover it even after someone has recommended it…does it fit with my age group? Does it fit

> with *this* group *this* year? And maybe not this year, but another year and how can I save that so I can reopen that and have easy access to it? (April 10, 2017)

The time required to find digital technologies and consider how they could be used in their classrooms to support their particular students could be a barrier to creating and enacting multimodal pedagogies.

5.4.5 "I reached out to families, and I fundraised" (Grace April, 11, 2017): The barrier of lack of available technologies

The digital technologies that were available to the teachers sometimes constrained the design and implementation of multimodal pedagogies. As previously explained, Cornerstone and St. Nicholas had different technologies available, and within each of the schools, each of the classrooms had different technological resources available. Grace explained that the technological resources in Cornerstone were allocated differently between classrooms and the older grades tended to receive access to technological resources first when funds became available. As an independent school, all school resources were donated or provided through fundraising campaigns. In previous years, there had been a fundraising campaign for interactive whiteboards, but the campaign raised insufficient funds to furnish all of the classrooms and the Grade 1 and kindergarten classrooms did not receive the interactive whiteboard technology. As we planned together, Grace described how she fundraised for her classroom Smart Projector:

> Everybody else had [a SmartBoard] after years of this. And I was like, I want even just a projector. I want something and I was told that if you want it, then you have to come up with the letter, you have to fundraise, and you have to get it. So, I wrote the letter, I reached out to the families, I fundraised, and I got the money to come in and then…. we got a Smart Projector. And we got enough for both kindergarten and Grade 1. But, that's because we took initiative, but it was funny because one of the board members was saying, that "you guys should have gotten it first because that is where you use it the most!" (February 24, 2017)

Though Grace's fundraising efforts for the technology secured the purchase and installation of the Smart Projector in her classroom, in her interview, she explained that she used her own personal laptop to run the Smart Projector:

> Lori: You run [the Projector] with your own computer?

Grace: Yes, because we don't have any computers available. [The computer teacher] is like, "There's no laptops left" and even if there were, they would be *years* old.

Lori: Too old to run this.

Grace: So, I just bring mine in. (April 11, 2017)

Figure 5.42 shows Grace's personal computer that she used to run the Smart Projector.

Figure 5.41. Grace's laptop used to run the classroom computer.

5.4.6 "I don't like to rely fully on technology even when I have the tools" (Grace, March 23, 2017): the barrier of unreliable digital technology

Even when digital technology was available, the teachers expressed frustration in the ways the technological resources were configured and the reliability of the technology. To varying degrees, the teachers expressed that frustration and "glitchy" technologies were an inevitable part of including technologies in lessons. For example, at Cornerstone, as we planned lessons together, we considered the challenges of using unreliable technology in lessons:

Lori: We are talking about real life teaching.

Grace: Where you plan a lesson on technology and it doesn't work!

Lori: Right!

Grace: Which happens all the time! (March 21, 2017)

In our meeting, we expressed that unreliable technology was so commonplace that it was "real life teaching." As we planned, Angela and Grace described the ways that the unreliability of the technology frustrated previously designed lesson plans:

Angela: I was so frustrated yesterday. I brought in a CD player…before March Break, it was working beautifully…. Yesterday, it wouldn't even turn on! So…I had a group sitting up there to listen to reading for one of our Daily 5 choices and--!

Grace: I know! All of a sudden, our sound was shut off. Like every day, the video sound works. Then, one day it stops and then the next day it's sketchy and then the next day it works. And I was like--

Lori: How can you plan if you can't rely on the technology?...

Grace: Yeah, and that is why I like the balance. I don't like to rely fully on technology even when I have the tools. (March 21, 2017)

The unreliable technology influenced the ways the teachers designed lessons because they always needed to create "back-up plans" in case the technology failed.

The digital technology was particularly unreliable in Grace's classroom. Grace explained that the internet signal was unpredictable in the wing where her classroom was located. Throughout the research, Grace emphasized her concern with the inconsistent internet access as it affected what could be possible in her lesson design. As I volunteered in her class to help her students finish their video stories, I experienced the frustration Grace described with the internet access. In my reflective field notes to Rachel, I explained,

> I experienced firsthand the glitchy technology in the classroom. The internet was spotty and was very frustrating for the kids, but we persevered and we ended up working in a hallway alcove. There is no way the teacher could have completed these videos on her own given the unreliable connection. It worked dandy last week when we did the lesson. I am glad that I experienced what the teacher has to deal with daily. She said, "see? This is why I can't rely on technology. I love it when it works, but I can't count on it." (April 7, 2017)

Since there were two teachers in the classroom when I was volunteering, I could take the story composing group down the hallway to pick up the internet signal as Grace stayed with her class. However, if Grace were working on her own with her class, she would

have had to delay the story composing process until the internet signal was restored in her classroom.

The teachers also expressed concerns that digital technologies shared between classrooms might not be in good condition for use. For example, St. Nicholas had 20 iPads that could be signed out by teachers for use in their classrooms. Fireball explained that while the iPads had all been configured identically at the outset, "Sometimes [the apps] are in different folders because some of the older students move things around—either they are exploring or they are being monkeys" (April 20, 2017). Further, Fireball explained that the iPads were not always stored correctly so that they were charged for use:

> Fireball: I went to do an activity yesterday and I brought 20 iPads for my class of 18 and 6 of them were dead.
>
> Lori: That happened in Esther's class too.
>
> Fireball: Yeah and it's frustrating because I mean, if you want to use the technology, that's great, but you need to be respectful and plug it back in. (April 20, 2017)

The teachers could not always rely on the available technology to work correctly and this constrained the design of multimodal pedagogies.

5.4.7 "I don't know what I can use that technology for" (Esther, April 20, 2017): The barrier of the ways technologies were installed in the classroom

The teachers could not always use the available technology to support instruction within the ways technologies were installed in the classrooms. For example, in Angela's classroom, there were two computers, but they were not plugged in and could not be used due to the number and placement of electrical outlets in the classroom (see Figure 5.43). Angela explained that the school was working to repair the electrical issue, but in the interim, the students accessed the computers in the computer lab across the hall.

Figure 5.42. The unplugged computers in Angela's classroom.

In Esther's classroom, the location of the ceiling mounted data projector and screen rendered the resources almost useless. Esther explained that she had no input into the installation location of the technological resources as they were installed prior to Esther's employment at the school. The projection screen was located near the classroom entryway and mounted above a shelf (See Figure 5.44). Esther and her teaching partner had located the main teaching area and children's carpeted area for seating in the centre of the classroom and away from this high traffic area (See Figure 5.45). In her interview, Esther explained,

> Esther: I don't really use the projector very much because it is not anywhere near our carpet.
>
> Lori: Yeah.
>
> Esther: It is right in our doorway.
>
> Lori: Which is odd.
>
> Esther: It's awful! (April 20, 2017)

Esther explained that this "awful" setup of the projector and screen constrained the ways she was able to use technologies. She further explained that when the children sat on the carpet for periods of instruction, they could not see the projection screen well in its location. In addition to the location of the projection screen near the doorway, the

computer that was linked to the projector was located on the opposite side of the classroom. Figure 5.44 shows an image of the classroom computer across the room that controlled the projector.

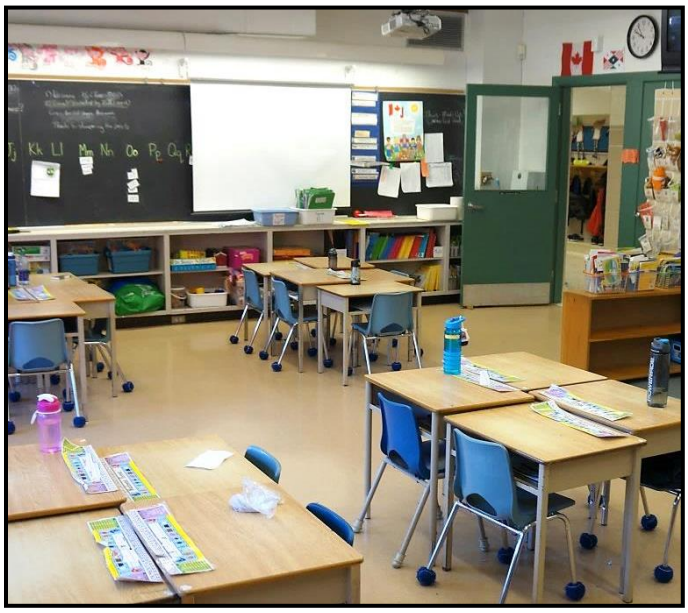


Figure 5.43. The data projector and screen in Esther's classroom located in front of a doorway and above a shelf.

Figure 5.44. The desktop computer that controls the data projector located across the classroom.

The configuration of the resources was a barrier to the use of technologies. As Esther and I discussed the setup of the installed digital technologies, we considered ways she could alter the locations of desks, shelves, and teaching areas so that she might be able to use the digital technologies. We recognized that even if Esther redesigned the classroom setup so that the teaching area and carpet were closer to the screen, she would still have to operate the projector from the desktop computer at the opposite side of the classroom, and the screen would be very high for the young students to view. This configuration of technologies made it difficult, if not impossible to operate the technology and interact with her students in meaningful ways. Esther explained that she had inquired about moving the projector and screen, but it was considered too costly for the school budget. In her interview, Esther explained, "I don't know what we can use that technology for" (April 20, 2017).

The availability and usability of the technology affected how the teachers included technology in their lessons and the kinds of literacy lessons were possible. For example, in Grace's class the limited and unreliable technology shaped the ways we designed the lesson to include digital technologies. In my journal, I expressed frustration about the ways the limited reliable technology was constraining the lesson design:

> At Cornerstone, I find myself wishing that there were more/different resources available. I think the lack of resources could constrain the lesson. I feel like just going out and buying an iPad for each of the teachers to use. However, I know that this is not what the study is about. It is about using the resources that are available to support literacy learning. (February 24, 2017)

The availability of usable digital technologies affected what was possible in the design and implementation of our literacy lessons. In her interview, Esther explained that she felt that her limited access to technologies negatively influenced the opportunities she could provide for her students to make and communicate meaning:

> Not having the SmartBoard or even a useful projector is really hard for my teaching. I feel like our class and the behaviours could be better if we had something…Not everyone wants to work on paper either…Not every kid is going to learn the same way. They are different. Because I don't have a SmartBoard, or a projector, I use that little chart paper on the stand and honestly, that is the best way for me to engage them. I have tried every way. (April 20, 2017)

The availability and configuration of technologies constrained the design and implementation of multimodal pedagogies.

5.4.8 "If the internet is not working, I use my data" (April 11, 2017): Finding ways to mediate the barriers of available technology

The teachers found ways to work within the confines of the available technology. For example, Grace explained that she built "back-up plans" that used different resources into her lessons that included the technology to mediate the unreliable technology. Grace said that her students often asked for a visual reference when they were creating structures using art materials. In her interview, she explained how she used her own personal equipment to mediate the difficulty of inconsistent internet and support the students' inquiry:

> Grace: The boys are like, "I am making a submarine. What else does a submarine need?" So we will google submarine.
>
> Lori: So it is a good thing that you have your own technology!
>
> Grace: Yeah! And if the internet is not working, I use my data, I have enough data so it's not a big deal. (interview, April 11, 2017)

In addition to using their own technology, the teachers supported each other in finding ways to troubleshoot technological issues. For example, Fireball shared his experiences using the Puppet Pals app (Polished Play, 2016) with his students and helped Esther resolve a potential difficulty that the children could experience with finding the app on the iPads. In our planning meeting, Fireball explained how to quickly locate the app because the iPads were imaged differently:

> Fireball: Okay, so swipe down. And search Puppet Pals. Start with a P.
>
> Esther: See, I didn't even know that! (April 6, 2017)

The teachers adjusted their pedagogies to use the available technologies. For example, Esther recognized that the configuration of the data projector in her classroom would not support her demonstration of the app to her students and explained in her interview, "So that day when I used the iPad, if I would have put it on the projector, they would been

lost by the time we got there" (April 20, 2017). Esther opted to work with the technology in the classroom in ways she believed could support her students and used the iPad to demonstrate how to use the app even though the iPad had a small screen. Esther's adjustment in pedagogy supported her students' learning as her students leaned in to see the small screen:

> Lori: We have talked about… how you have this small window of focus, you could have potentially projected it…but it almost helped them to focus when they were all zoned in on that one thing.
>
> Esther: Unless you had a SmartBoard that worked, that was positioned properly…it might be different. But I don't have that. (April 20, 2017)

The teachers had different technological resources available in their classrooms, and the availability of technologies impacted the ways we designed lessons in the meetings.

5.4.9 "Now I would never want to go back" (Grace, April 11, 2017): Recognition of the affordances of multimodal pedagogies

Though the teachers expressed some frustration in the availability and configuration of technological resources, they were excited about the ways technologies were changing their teaching and shifting opportunities for learning. For example, Angela did not have access to an interactive whiteboard in her previous teaching positions. In her interview, she said that she was gradually learning how to use the interactive whiteboard in more meaningful ways:

> Angela: This was my first school with a SmartBoard, so it was quite a learning curve for me. At first, I was just using it…like a whiteboard basically…a beefed up whiteboard and it took some time and I am still learning how to print nicely on it.
>
> Lori: So do you use your SmartBoard daily?
>
> Angela: Yes, I do. Yeah, and I use it in different ways--sometimes slideshows, sometimes just the plain whiteboard. We draw pictures and charts on it. (April 10, 2017)

Angela began using the digital technologies in the same ways as traditional resources, and was learning how to use the affordances of digital technologies to support teaching

and learning. Grace also had recently started using the interactive projector and she did not want to revert to using only traditional teaching methods. In her interview, she explained,

> Grace: This technology that I have now…it was probably there when I started teaching, but it was too expensive.
>
> Lori: Right and so not readily available, right?
>
> Grace: Umhm, so now it is, but now I would never want to go back…because it's amazing to be able to use it. (April 11, 2017)

Whereas Grace and Angela were growing in their pedagogies as different technologies gradually became available in their school, Esther had to adjust to using fewer and different technologies than she had used in her previous schools. In Esther's previous teaching assignments in high school and elementary schools, there were "SmartBoards in every room" (interview, April 20, 2017), and she was accustomed to using digital technologies. In her position at St. Nicholas, she had fewer technological resources available and she had to learn to teach using different resources. In her interview, Esther expressed, "I get really frustrated not having…the SmartBoard for the little kids" (April 20, 2017) as the difference in available technological resources constrained her teaching. As teachers adjusted their pedagogies to include digital technologies, they explained that it was difficult to return to pedagogies that included only traditional resources.

5.4.10 "It's never clear if it is…an enabler or a constraint" (Lori, March 9, 2017): Navigating factors that both enabled and constrained multimodal pedagogies

At times, it was clear when factors enabled or constrained multimodal pedagogies; however, this distinction was sometimes murky. In my journal, I reflected, "I keep on saying things are enablers *and* things constrain because it is never clear if it is…an enabler or a constraint" (March 9, 2017) because the ways these factors influenced multimodal pedagogies depended on the circumstance. Within the activities, we navigated tensions as we designed multimodal pedagogies to fit within the established pedagogical practices and teachers' understandings of literacy.

5.4.10.1 The *Enduring Curriculum*: Designing Lessons that Could be Used Again

The teachers identified the importance of designing lessons that could be easily adapted for use for their future classes. As I reflected, I identified these lessons that were repeated year after year as the *enduring curriculum* and envisioned this as "different from practices, because it is specifically about lessons that carry over from year to year in the same way" (March 2, 2017). The enduring curriculum was especially apparent when planning lessons at Cornerstone. For example, Grace initially planned to design a lesson that could be used each year to address a particular expectation in reading:

> Grace: I want to take one of these concepts and want to develop something that every year when I am going to teach that, I can use this.
>
> Angela: Right. (February 10, 2017)

Grace wanted to create a lesson that was useful for her current students as well as her future students. I recognized that planning a lesson using our lesson cycle structure was time-consuming, and it made sense to create a lesson that could be reused. However, I was unsure of the ways the enduring curriculum supported innovations of multimodal pedagogies. In my journal, I reflected:

> I think that all teachers have enduring practices and routines that carry over from class to class. I know I have my favourites that I seem to take with me from grade to grade and class to class.… I believe that the enduring curriculum can potentially support planning for the intended curriculum. When the teachers have a really strong understanding of programmatic curricula and they have practices in place that support learning, this structure has the potential to support learning.…[but]…I have also felt that the enduring curriculum…. with its firmly established practices could constrain learning. (March 8, 2017)

The enduring curriculum had the potential to enable or constrain the design of multimodal pedagogies.

5.4.10.2 The teachers' understandings of literacy that influenced lesson designs

The teachers' understandings of literacy impacted the ways they designed literacy lessons that included digital technologies. Our discussions in the activities were strongly

connected to print literacies (i.e., reading and writing with traditional tools). In my journal, following a planning meeting at St. Nicholas, I considered if this focus was a function of the research study or of the teachers' understandings of literacy:

> Initially, [the discussion] was…about reading and spelling and retell, and then we started talking about literacy in a more expanded way. I don't know if this is because the teachers believe that literacy is about reading and writing or if they thought that because it was a literacy study that I wanted it to be about reading and writing. (February 11, 2017)

As I continued to reflect on the dominance of print literacies and print literacy practices in our discussions at both sites, I considered the positioning of print literacies within the programmatic curriculum:

> I also wonder if it is also about the teacher interpreting what is important within the programmatic curriculum. For example, in my own practice, I feel the tension within the curriculum of promoting an expanded view of literacy, and yet the expectations highlight the importance of print. (February 21, 2017)

The tension about different understandings of literacy was evident in our lesson designs. At times, we designed literacy lessons to include digital technologies in ways that privileged print literacies, but the data also suggest that the teachers understood that literacy included more than only print literacy skills and strategies. In my journal, I considered the ways teachers included multimodal meaning making opportunities in their classrooms:

> I would say that at both sites, there is…multimodal awareness. Grace hints at it in our scheduling meeting, when she suggests the importance of pairing songs with Bible verses… Angela seems to understand to some degree an expanded view of literacy… Fireball has his children do sign language during O Canada.… Esther… seems to understand that literacy can be visual as she talks about the idea of mapping. [The] teachers seem to understand that literacy happens throughout the school day in different subject areas. (February 21, 2017)

In my journal, I further explained, "In some ways, I think the teachers have broader understandings of literacy, but print is king" (February 26, 2017). As I reflected on the teachers' understandings of literacy and the ways they designed their lessons to fit within the classroom curriculum, I realized that the data were not clear if the teachers

understood literacy in only print literacy terms, or if there were other reasons for privileging print literacies (e.g., the focus of the research, or the emphasis in the programmatic curriculum). I also recognized that I understood the power of multimodal literacies in practice long before I could articulate it in words. In my journal I reflected:

> I think that teachers' understandings of literacy can both enable and constrain. The data show that teachers have some understandings of expanded notions of literacy… however, print literacy remains privileged…I keep thinking about my own classroom setup and how I have organized resources. I am not sure it would be all that different from what I am seeing in the classrooms even though I have some understanding about multimodal literacies. (March 7, 2017)

In my journal, I considered how finding a fit between the teachers' understandings of literacy and designing multimodal pedagogies could work:

> I was thinking about how difficult it is to know when to steer the teachers toward broader conceptions of literacy, and when to allow the professional learning to unfold and progress in incremental steps. I also think about pedagogical resources, and am thinking about the teachers' existing pedagogies as *funds of knowledge*, and then building on what they have and expanding from there. (February 17, 2017)

As I reflected, I considered the teachers' understandings of literacy teaching and learning as resources that could support the design of multimodal pedagogies within the activities.

5.4.11 "Technology uses are not neutral" (Lori, March 12, 2017): Finding a "fit" within the curriculum

The data suggest that the activities supported the teachers in finding ways that the literacy lesson that included technology could fit within the school and programmatic curricula and within the classroom curriculum of each teacher. Finding this fit was an ongoing and complex process and involved negotiating barriers in particular ways in each classroom. I highlighted the complexity of designing and implementing multimodal pedagogies in my journal:

> Technology uses are not neutral. The ways that we include technology in practice are embedded in beliefs about literacy, institutional (school curriculum), programmatic curriculum, and play out in the context of relationships (in the class and with families). (March 12, 2017)

The professional learning activities supported the design and implementation of multimodal pedagogies within dynamic classroom curricula.

5.5 How Did the Teachers Combine Digital and Traditional Resources in Planning Literacy Lessons?: Planning Meetings

In the TPL activities, the teachers planned lessons that provided children with opportunities to use traditional and digital resources. Print literacies (e.g., reading, writing, oral rehearsal) were of prime importance in the planning of literacy lessons. Each teacher designed lessons to respond to programmatic curricular expectations related to literacy (e.g., OME, 2006) and all lessons provided opportunities for the children to compose and/or retell stories. The teachers explained that the inclusion of digital technologies had the potential to enhance student engagement and support students in achieving print literacy goals related to reading, writing, and oral communication. In my journal, I considered the lessons as opportunities for "stepping into stories" (March 4, 2017) as the teachers planned to use the technology to support children in creating stories that were personally meaningful.

The teachers designed lessons that provided opportunities for the children to use and combine print and digital resources in different ways in their stories. After we had planned the first lessons in each case, I recognized that Fireball and Angela included opportunities for technology use at different times in their lesson. In my reflective field notes, I explained to Rachel:

> Technology in Fireball's lesson is…introduced at the front end of the long-term vision, whereas technology in Angela's lesson is introduced later on as both part of the process and product. In both cases, the technology is viewed as a tool that will be used long term and can be adapted to support different learning opportunities. (March 2, 2017)

The teachers configured their lessons to include technologies at different times and in different ways. In the section that follows, I explore the positioning of digital technologies within the literacy lessons. I first describe the lessons at Cornerstone that began with traditional resources and extended to using digital technologies, and then I

describe the lessons at St. Nicholas that began with using digital technologies before incorporating traditional resources.

5.5.1 Beginning with traditional resources

At Cornerstone, the teachers designed literacy lessons that began with traditional resources and print literacy practices (e.g., reading, writing, oral language) and extended to include digital technologies. Both Grace and Angela designed lessons that provided opportunities for the children to compose and retell stories. Each teacher designed their lesson to begin with print literacies and developed their lesson to use technology in different ways.

5.5.1.1 "What is your family's story?" (Angela, Feb. 24, 2017): Designing lessons to use technologies to support project based inquiry.

Angela designed her lesson to support their project based inquiry and answer the question, "*What is your family's story?"* (February 24, 2017). As previously explained, Angela designed her lesson to begin with a homework assignment that asked her Grade 2 students to work with their parents to research and write about "what their [families'] country of origin is and…why they came to Canada" (February 24, 2017). She planned to use technology to support her students' revision of writing through the established classroom practice of critique. Angela envisioned the use of technology as supporting the revision process as well as creating a digital product and explained, "My plan is to do a couple of drafts [of the video]…because we are going to critique, then go back and fix it (February 24, 2017).

Angela's lesson design started with using traditional resources that focused on print literacies and expanded to include digital technologies to enhance what was possible through print alone. In my journal, I considered Angela's process of including digital technologies within literacy instruction:

> I think that Angela's idea to use the technology as both supporting the process of representing as well as facilitating the creation of a product is interesting. Here, Angela wants to use technology to support her students in enhancing oral

> language communication, but also to facilitate peer feedback. She plans to use the same technology again to create a final product for the *Celebration of Learning*. This process reminds me of a writer's workshop format. (March 2, 2017)

Though the lesson design included technology, the process of revising the digital text was similar to the practices I had used to support my own students in revising written texts created with traditional resources.

To respond to Angela's goals, we selected a digital application that could support the revision process and enhance the written stories the students created. I had recently introduced green screen technology and the Do Ink app (DK Pictures Inc., 2016) to my teacher education students in Language Arts and wondered if this application could support Angela's lesson. I shared this suggestion in our planning meeting:

> Lori: I wondered if that was something that would fit. It doesn't have to, and like I said, there is no obligation to do it or not do it.
>
> Grace: A green screen and then you add a picture on the background?
>
> Lori: Yeah, so what you do is…if they pick a picture from their country of origin, screenshot it. It goes in the background, and then—
>
> Angela: Oh, wow! That's so cool! (February 24, 2017)

The teachers were unfamiliar with the digital application and so we discussed the ways that the technology could support the learning goals Angela had identified. I explained,

> Why would I suggest that? Like, what would be the reason…because it's a cool app? Hmmm, well, it *is* a cool app…but, it's not about that as much as it is about learning. I think that it might help kids feel a little bit more connected if they are feeling like they are stepping into a location in their country of origin, then that might help with engagement. It might also help kids with feedback. (February 24, 2017)

While I identified the ways the digital technology could support the author's engagement, Grace recognized that the app could also support the audience's engagement which could support the revision process Angela outlined and said, "I think that it would also draw the audience in… because they could see, they could imagine what the person is talking about as they do it" (February 24, 2017). As we discussed the application, we considered

the affordances of the technology and the ways that the technology might enhance Angela's goals for her students:

> Lori: I think that it fits with what you are thinking. And I think that anytime when we are talking about using technology… to do it, so not just for the sake of using the technology, but do it because it is going to enhance.
>
> Angela: Umhm.
>
> Lori: So, do you feel like that would add a layer?
>
> Angela: Yes!
>
> Lori: A manageable layer? (February 24, 2017)

In our planning meetings, we designed Angela's lesson that included green screen technology to layer the digital application on top of print literacy practices.

5.5.1.2 "That is super cool, but probably not for the whole class, right?" (Grace, March 21, 2017): Designing lessons to use technologies to support students' retell of stories.

Grace designed her lesson to support her students in achieving print literacy objectives and positioned the use of traditional resources and print literacy practices as a pre-cursor to using the digital technologies. For example, in her lesson design, Grace planned activities to support her students' skills in retelling stories. In our planning meeting, Grace explained that she would like to plan a lesson that could extend her students' abilities to recall details from the story in sequence and support her students in preparing for the Developmental Reading Assessment (DRA):

> So it would be wonderful to tie in…even sequencing, like when you do DRA… they read the book…they also have to retell a story and recall the specifics. So, I have worked on retell, like sequencing—beginning, middle, end. But, I want to teach them more about the specifics, like do you remember the name of the character? What happened? You know, like give three things that happened in the middle and not just one because when they do that….it's a simple enough story. It's got maybe 5 parts, but you want kids to be able to give enough detail, right? (February 24, 2017)

I understood Grace's concern about preparing the children for the DRA assessment. In my own practice, I had experienced the importance placed on DRA assessments by school administrators, and I also recognized that children are much more comfortable with the assessment when they have practice with the particular skills evaluated. However, I felt constrained by the discussion to use digital technologies to support a singular assessment. In my journal, I reflected:

> Grace wants to do something with retell to support her students in achieving on the DRA. I am finding it difficult to think of *expanding* communication when the ultimate goal is achievement on a particular task. …. I can't help but wonder….why? How is this use of technology better than an oral retell? What is it about this use of technology that enhances the analog process? (February 26, 2017)

Almost a month later, I raised these questions with Grace and Angela as we met to plan the lesson for Grace. As we met, Grace explained her plan to create a retell sequencing activity that was similar to the sequencing cards she had in the class (see Figure 5.46). We considered the ways that the addition of technology could expand learning opportunities for students:

Lori: Do you think that the technology in that case would expand what you were able to do if it would have just been pictures alone? Do you know what I mean?

Grace: Oh yeah…because you are looking more for that?

Lori: No, I'm just thinking like, you know we have talked a little about the complications of using technology, so it's got to be worth it!

Grace: The thing that I see with this is that, for example… if you use these, my sequencing cards, they are great, but they are very small. [See Figure 5.46] You can hold them up, but how do you hold them up so the whole class can see?... What I love…about the SmartBoard is it takes those pictures and it makes them larger… (March 21, 2017)

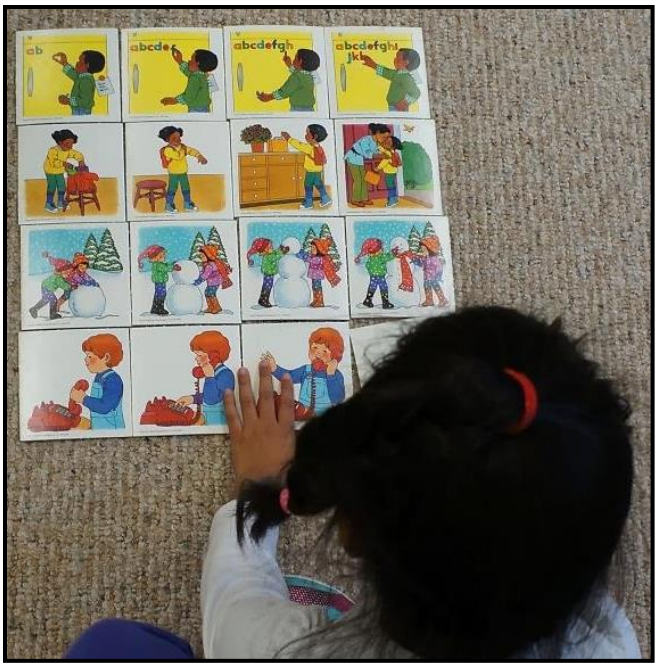


Figure 5.45. Sequencing cards that Grace used to support story retell.

I had not considered the affordance of enlarging the images for a whole class activity of sequencing pictures, but was still unsure of whether this activity could be more supportive to students than using the sequencing cards. I acknowledged the importance of retell in the DRA assessment and encouraged Grace to consider the ways that retelling stories and composing stories were interconnected processes:

> Lori: We need practice with the retell, but sometimes when you work on the opposite, so the composing, and you are really strong with composing, that can also help with decomposing a story.
>
> Grace: Okay.
>
> Lori: So, we call that reciprocity where language is interconnected, and when we work on one process, it also works with the other. (March 21, 2017)

Grace was receptive to this suggestion and we explored the ways we could use Adobe Spark video (Adobe Systems International, 2017) to support the students in composing video stories. Adobe Spark video is a web-based application that has pre-made story templates, embedded links to images, and opportunities to voice record text, and overlay printed text to support the creation of video stories.

As we continued to plan Grace's lesson, we played with the technology and created a video story together as teachers. Grace considered the ways she could use the application with her laptop to support story composing in her class, and said, "Now, the thing with that is that it is super cool, but probably not for the whole class, right?" (March 21, 2017). As we considered how the application could work using one laptop in a class full of kindergarten students, Grace's goals for her lesson expanded to include retelling and composing detailed stories in a logical sequence. She planned to use the digital technology in two different activities. First, Grace planned to use her cellphone to take pictures of a field trip to a "Sugarbush" where the children would take part in many different activities and learn how Maple Syrup is made. Then she planned to create a SmartBoard file where the students could sequence the images of their field trip:

> Grace: I think I might use SmartBoard for the first part of the lesson…and just have copied and pasted 5 or so pictures of …specific things of what we did, and have the kids drag and drop into…boxes… and then use this program [Adobe Spark video, Adobe Systems International, 2017] for…
>
> Lori: The extension. (March 21, 2017)

Following the retell activity on the SmartBoard, Grace planned to use Adobe Spark video (Adobe Systems International, 2017) as an enrichment activity for a smaller group of students. Grace initially planned to have the lesson about stories in general, but as we played with the technology, she considered selecting a broad story topic for her students so that they would not be overwhelmed by the choices in the digital application. I suggested connecting the topic to her inquiry about trees:

> Lori: Could they make a story about a tree? Does that make any sense?
>
> Grace: Ooh! Yes! (March 21, 2017).

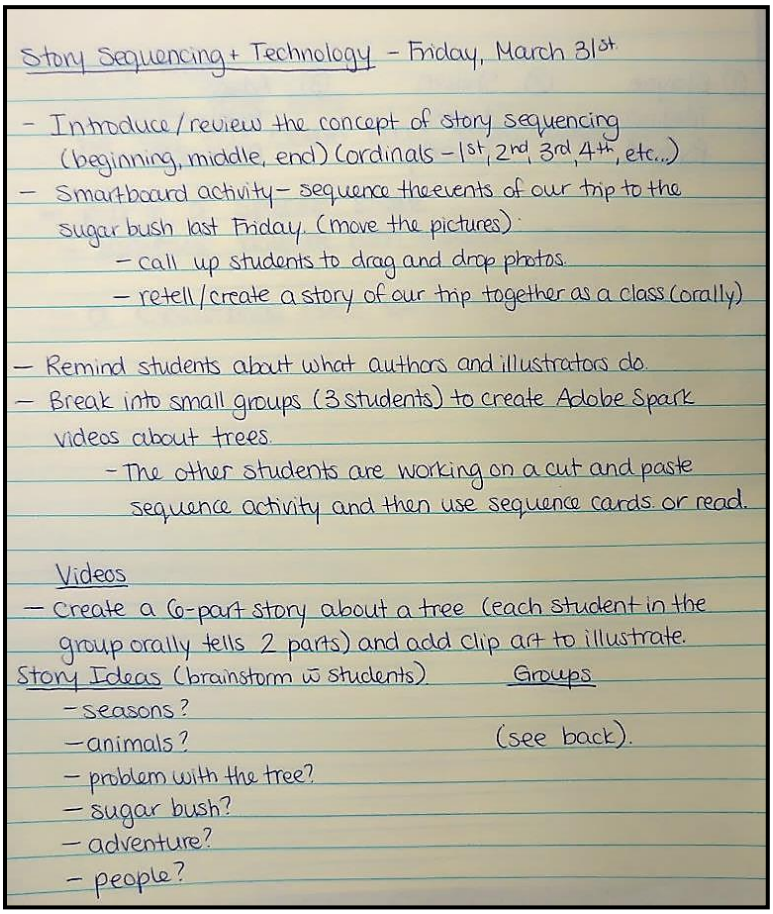
As Grace, Angela, and I composed a practice story about trees, Grace considered the ways the curricular connections enhanced the lesson, saying "This is *so cool* because it is actually authentic!" (March 21, 2017)

With the curricular connections established and the technologies selected, Grace explained that she planned to invite the children to orally rehearse their story composing

and recording ideas before moving the pictures on the SmartBoard or recording their ideas on the video story:

> When we have a small group, we might sit down and talk about it first. Okay, you are going to have 6 things and we are going to start with a tree. Tell me a little bit about it. What's going to happen? We can prompt a few ideas, and then once we have our 6 things, we can sit down and choose…and each of them gets to talk about 2 or something. (March 21, 2017)

Grace did not write down her lesson plan in our planning meeting, but instead continued to refine her plan on her own before the lesson implementation. Figure 5.47 shows Grace's handwritten lesson plan completed outside of the professional learning meeting that highlights the retell activity with the whole class using the interactive whiteboard, followed by the story composition activity with a small group of children that was supported through a cut and paste retell activity for the rest of the students.



Story Sequencing + Technology - Friday, March 31st

- Introduce / review the concept of story sequencing (beginning, middle, end) (ordinals - 1st, 2nd, 3rd, 4th, etc...)
- Smartboard activity - sequence the events of our trip to the sugar bush last Friday. (move the pictures)
  - call up students to drag and drop photos.
  - retell / create a story of our trip together as a class (orally)

- Remind students about what authors and illustrators do.
- Break into small groups (3 students) to create Adobe Spark videos about trees.
  - The other students are working on a cut and paste sequence activity and then use sequence cards or read.

Videos
- Create a 6-part story about a tree (each student in the group orally tells 2 parts) and add clip art to illustrate.

Story Ideas (brainstorm w students)
- seasons?
- animals?
- problem with the tree?
- sugar bush?
- adventure?
- people?

Groups
(see back).

Figure 5.46. Grace's handwritten lesson plan, written after the planning meeting.

5.5.2 Beginning with digital technologies

Fireball and Esther designed their lessons in ways that provided children with opportunities to play with the digital application before they were asked to formally compose, write, or record their stories.

5.5.2.1 "I have had some kids playing with [the app]… this morning" (Fireball, March 2, 2017): Designing lessons to begin with playing with technology and extending to include print.

Fireball designed his lesson activities to start with play and exploration with digital technologies and then connect to a story planning activity in writing. Fireball explained that our initial discussions in the planning meeting started his own exploration of what technology was available in the school:

> We were talking last time about using a few different apps to tell stories and things like that. And I *really* like that idea. I started exploring the one called Puppet Pals [Polished Play, 2016] … which is on the…iPads that we have in our library. (March 2, 2017)

Fireball further explained that he planned to use the application to "help support telling stories" (March 2, 2017). Fireball connected his vision for using the technology to his previous print literacy instruction about story components. He anticipated that the combination of technology and storytelling could concurrently support his students in generating and developing story composing ideas and also focus the students' exploration in the app. In our lesson planning meeting, Fireball explained,

> One of the things that… we have been looking at in literacy is the beginning of the story, the middle of the story, and the end of the story. The key points, so who are the characters? What is the plot? What is the setting? Things like that. So you can have students introducing their story in a recorded fashion on the iPad and then you can have it play it as a movie later on after they have explored it and tried creating their own story to develop their language for that, rather than just on the fly playing with it. They have to plan it out. (March 2, 2017)

Fireball envisioned the digital application and print literacy practices as compatible and mutually supporting. In our planning discussions, Fireball explained his tentative idea to combine the use of the app with reading and writing activities:

> If they were going to have…let's say for example, a little storyboard in front of them, where they would have… that cue so they know what is going on. Like sight words and words they know for their interest and then they apply it when they are telling their stories. So then they have to be able to read their plan. (March 2, 2017)

Fireball considered the lesson as providing opportunities for the children to combine print literacies with the digital technologies.

Fireball continued to expand his ideas for the lesson as he shared his ideas for the ways the technology connected to story planning on the storyboard. As Esther and I began to envision what was possible with the application, we considered how Fireball could introduce the app to his class and Fireball emphasized the importance of play and exploration:

> Esther: Have you guys tried [the app] yet?
>
> Fireball: I have had some kids playing with it… this morning.
>
> Lori: Because playing is, well it seems like it's the first step, right?
>
> Fireball: Absolutely.
>
> Lori: Just fooling around with it. What can it do?...The physical coordination of moving stuff in and out--
>
> Fireball: Yeah ….That's the same thing we do with any type of new learning, right?
>
> Lori: Yeah.
>
> Fireball: You put it in their hands… let them get a sense of ownership over it, let them explore it, let them try it out because then, from there, they will have meaning and questions that they might ask, or a greater understanding of what is going to happen. (March 2, 2017)

Fireball's emphasis on play and exploration was foundational to the lesson design.

The ways we worked together to design Fireball's lesson in the meetings reflected the emphasis on play and exploration. As previously explained, we spent most of our lesson design time exploring the affordances of the app. We viewed the available characters and settings in the storage bank on the app, and we tested the character making function within the app and Fireball created a character out of a picture of Esther (see Figure 5.5 introduced earlier) and created the kind of story we thought the children might compose:

> Fireball: [starts recording and moving characters on the background] Once upon a time, there was a knight that was guarding the castle. Inside the castle there was something very valuable, and it was a fairy godmother!
>
> Lori: duh, duh, duh, duh [makes dramatic music while Fireball continues to record]
>
> Fireball: [continuing recording] bah, bah, bah, Now she was there to make sure that the princess that she was looking after would always be okay. But, one day, the guard walked away and along came the dragon, and he flew around, and he said to the princess, "you're going to be my lunch!" [stops recording] Or, whatever! (March 2, 2017)

As we played with story composing within the app, Fireball continued to build his lesson design and considered the amount of writing that he would ask his Grade 1 children to do on their "template" or "storyboard":

> Fireball: Okay, what I am going to do is…give them a few periods to try [the app] out, give them a template of say four blank squares of what your story is going to be about. Who are the characters? I might even just leave it at that at first.
>
> Lori: And then play with it?
>
> Fireball: Yeah. (March 2, 2017)

As the lesson plan continued to emerge, Fireball planned to demonstrate how to use the application with his students so that they could see what was possible, and he considered having the children work in small groups to collaboratively compose stories. Fireball explained, "I will develop a story first so that they can see what it looks like. Then I will say, now go and play with this and make your own stories. Maybe in groups of 3 or 4" (March 2, 2017). We further discussed the possibility of dividing the children into three

groups for collaborative storytelling and having each adult in the room (i.e., Fireball, the Educational Assistant, and me) facilitate a group, but we did not finalize any plans, and Fireball did not write down his lesson ideas in our meeting. At the close of our lunch hour meeting, we recognized that the lesson plan was tentative and would grow as Fireball observed what the children could do when they played with and explored the app.

5.5.2.2 "I think my storytellers will do great" (Esther, April 6, 2017): Designing lessons to begin with playing with the technology.

Esther also planned to provide opportunities for the children to play and explore with the technology before asking the children to combine the use of the tool with print-based resources in her lesson. As previously explained, Esther designed her lesson to build on what we had learned in the design and implementation in Fireball's lesson. As we planned, we considered the ways that Fireball had structured his lesson and the ways that Esther could adapt the lesson to support her students.

As we debriefed Fireball's lesson, we considered the creative ways that children had used the app, and Esther explained, "I want to do the same thing" (April 6, 2017). We examined the ways that the openness of Fireball's pedagogy expanded opportunities for learning, and Esther asked, "You didn't show them anything? Except for how to save? And how to open it?" (April 6, 2017). We discussed the ways in which the time to play with the app prior to the observed lesson expanded children's learning opportunities:

> Lori: [Fireball's students] found out more than we could have…taught them because if we would have had to teach them every single little thing about [the app], they would not have had any time to hold the [iPad] in their hands, right?
>
> Fireball: Yeah, yeah.
>
> Esther: Yeah.
>
> Fireball: And I think that…[too much instruction] would take away their own excitement and passion, "Oh! Look what I discovered! Look what I can do!" Right? (April 6, 2017)

We were excited about the ways Fireball's pedagogy invited the children to explore storytelling and the app, but I was concerned about trying to exactly replicate the lesson for Esther's class given the different classroom dynamics and suggested planning the lesson observation for a different stage in the lesson sequence:

> Lori: We know that the classes are different, right? And I don't want to set it up as let's compare what happened in this class versus that class.
>
> Fireball: Umhm!...
>
> Lori: We know that this app has some potential to support… learning [about stories and storytelling], so what happens at that first contact?
>
> Fireball: At the onset. Exactly!
>
> Lori: Yeah.
>
> Esther: Do you want to see that? Yeah, okay! (April 6, 2017)

We discussed the scope of lessons as including an exploration phase leading to story writing with the app and a storyboard (in a similar fashion as in Fireball's lesson). Esther designed the lesson (that was observed) as the first lesson in a sequence and an exploration of storytelling and the app.

Esther planned her lesson to introduce the Puppet Pals app (Polished Play, 2016) and invited the children to play with and explore the app. As we planned Esther's lesson together, we designed the lesson as an opportunity to play with orally telling stories, and we did not identify any expectations for the children to read or write. However, as we planned and practiced using the app, our discussions sometimes focused on print literacies. For example, Esther asked Fireball about the ways he used writing strategies in his class:

> Esther: Do you talk about writing strategies in your class? Or no?
>
> Fireball: We use reading strategies that also translate over to writing as well.
>
> Esther: Oh, okay. That's cool.
>
> Fireball: Like when you stretch things out in reading, it works in writing too. (April 6, 2017)

As we continued to plan Esther's lesson, Esther reflected on the strengths of her students in print literacies:

Esther: We have done more writing than reading. We need to be better readers now…I do a lot of writing because my kids work better on paper…

Lori: Well, because it is very focused, right?

Esther: Right. Yes. So a lot of my kids have flown through two journals already.

Lori: Yeah.

Esther: So that's where we are at.

Lori: Yeah. And we meet them where they are. (April 6, 2017)

As we planned Esther's lesson that focused on play and exploration of storytelling within the Puppet Pals app, our conversations about literacy defaulted to discussing print literacies.

Esther adapted the lesson that Fireball created to support the learners in her class. As she prepared to introduce the lesson to her class, she explained that the oral storytelling component would build on the strengths of her students:

Esther: I think my storytellers will do great.

Fireball: I think so too.

Lori: It will be exciting.

Esther: Some of my kids are strong.

Fireball: You have some…phenomenal oral communicators. (April 6, 2017)

As we continued to consider the ways the lesson could support the particular learners in Esther's class, Esther asked, "What if I did two [kids] together? Then they could do voices" (April 6, 2017). Esther further explained that the grouping of children together for collaborative story composing could provide opportunities for the children to develop the characters in a different way and enhance the meaning of the stories while also building on the collaborative partnerships established in her classroom.

The teachers planned lessons that provided opportunities for the children to use and combine traditional and digital resources and practices in different ways. Though print literacies were emphasized in both cases, the configuration of resources to achieve print literacies were different. Grace and Angela planned their lessons to begin with traditional

resources and print literacies, and used the digital technologies to enhance what could be possible in print. Fireball and Esther planned lessons that provided opportunities for the children to play and explore with the digital technologies before inviting the children to use traditional resources.

5.6 What are the Teachers' Perceptions of the Experienced Curriculum?: Planning Meetings and Classroom Observations

The teachers shared their emerging understandings of the experienced curriculum during classroom observations and meetings. As we discussed the different lessons, we grew in our understanding of the experienced curriculum. We reflected on our perceptions of the inclusion of technology, how the children used technology to understand literacies and literacy practices, and we considered the implications on pedagogical design. In this section, I describe each in turn.

5.6.1 "Enabled to play, enabled to explore" (Fireball, March 9, 2017): Enhancing children's meaning making opportunities

All of the teachers explained that the literacy lessons that included digital technologies enhanced meaning making opportunities for the children. For example, after teaching his lesson, Fireball reflected on the ways his students used the technology and said, "the kids… feel enabled to play, enabled to explore!" (March 9, 2017). As Grace reflected on her lesson in her interview, she explained that the lesson that included digital technologies expanded learning opportunities for the children and said, "it's such a cool tool to give them a different perspective on how to tell stories" (April 11, 2017). The teachers perceived that the co-constructed literacy lessons that included digital technologies expanded literacy learning opportunities for the children. As the children used the technology as a resource for composing, they explored the ways image and text worked together to support meaning.

5.6.1.1 "Having to create out of the ether is very, very challenging" (Fireball, March 9, 2017): Uses of technology to support story composing.

The digital technology supported their students in composing stories. Fireball expressed that it was very difficult for children to "conjure" stories on demand, and explained, "I think that having to create out of the ether is very, very challenging" (March 9, 2017). Fireball explained that the technology supported children's story composition by providing visual images in the photo bank on the Puppet Pals app (Polished Play, 2016) as catalysts for story ideas, but he also considered that the technology was open enough to allow children to create stories from their own ideas. In his interview, Fireball likened the image bank on the iPad to the kinds of concrete, "hands-on" materials used to support the teaching and learning of abstract concepts in mathematics in primary classrooms. He explained that the images provided flexible support for story composing:

> I think [the technology] takes away the stress of pulling it out of the ether. Here are some manipulatives that you *can* use, but then there is also the option of pulling out of the ether as well. So for students who want it, there's more. I think there is a safety net there. (April 20, 2017)

Fireball's description of the technology as a "safety net" emphasized the difficulty young children can have with composing stories and the need for flexible and responsive support.

The technology supported the children in revising their work easily. All of the digital applications provided children with opportunities to easily revise their digital stories. I noted in my journal that "in Grace's class, we even re-recorded only a screen or two in the movie and saw that affordance of Adobe Spark as being beneficial to supporting student learning" (April 21, 2017). In her interview, Angela explained that the green screen application helped the children revise the ways they communicated on the green screen:

> When we watch something that we have taped with this green screen app… and say, "I think that this should be improved in this way." It helps with media literacy in that way, so it helps us to recognize, "Oh, here are some common

> things that we expect to see in video, and this is how we performed in that." We can critique that based on that knowledge. (April 10, 2017)

The teachers explained that the digital technologies supported opportunities for digital composing and revision.

The ways the children combined digital and traditional resources highlighted the different ways children used digital technologies to support story composition. All of the lessons were planned to combine digital and traditional resources, but in Fireball's class, the children combined print and digital resources in ways that we did not plan:

> Lori: And seeing the iPad and the paper together…. It is quite an image because it is not just *one* or *the other*.
>
> Fireball: Umhm, but it's the full-on multi-tasking…
>
> Lori: But, the way that they were *using* them kind of interchangeably… going from the device to the traditional tool…and then back again. (March 9, 2017)

Within the pedagogy that invited the children to explore, the children combined the resources in unexpected ways to support meaning making.

5.6.1.2 "It has to make sense" (Angela, April 5, 2017): Uses of technology to expand story ideas.

The teachers explained that the use of the digital applications provided children with opportunities to expand their story ideas and explore how image and text can combine to support meaning. For example, as we reflected together, we considered the ways Hope used the pictures to test the limits of what could be possible when combining oral text and image as she selected images from the photo bank on Adobe Spark video (Adobe Systems International, 2017). Grace allowed the children to select images that they liked even when they did not fit exactly with the planned text.

> Lori: You allowed the kids to really expand their story, but what you held them to is that your picture has to match what you are saying.
>
> Grace: Well, we have been working on that in our other books. You have to draw what the story says!

Lori: Because the picture *and* the words tell the story. So, you held them to that… but they were allowed to be a little bit silly in it… and then… Hope is like "I like *that* monkey." And you are like, "but it doesn't match what you want to say." And then there is this monkey with an ice cream sandwich that comes in.

Grace: And so I let her choose it. Because it had a tree in the background. Like some of them, the monkeys are sitting in a house and I am like you are saying that the monkey is climbing all over the tree. It has to have a tree.

Angela: It has to make sense. (April 5, 2017)

Grace explained that she wanted to maintain the goal of the lesson to compose a story with a logical sequence, but she allowed the children to expand their ideas as they saw the different images on the application and include an image that didn't completely match the text, but still made sense.

5.6.2 "I am seeing your students in a different light" (Fireball, April 13, 2017): Using pictures to support reflection on experienced curriculum

As previously explained, the sharing of pictures was an enabler to supporting the design and implementation of multimodal pedagogies. In our meetings, the sharing of images provided opportunities for the teachers to reflect on the experienced curriculum, recognize the ways that the children were learning, and view the children in different ways. The sharing of images was important in understanding the experienced curriculum in all classrooms, but it was particularly significant in reflecting on the experienced curriculum in Esther's class, as there was a significant change in the tone of the class. Next, I describe the ways that our reflection of the experienced curriculum, supported through the sharing of pictures, repositioned the teachers' understandings of what the children could do.

Esther explained that she had previously told Fireball about the successes in her lesson implementation. However, as we viewed pictures of Mike helping Esther compose the Puppet Pals story in Esther's demonstration of the app, the pictures provided

opportunities for Fireball to more fully understand the joyful, collaborative storytelling experience in Esther's classroom:

Fireball: Wow, what a gorgeous picture of Mike!

Lori: Right?!

Esther: Yeah

Fireball: Oh!

Lori: He is watching. He is so happy.

Esther: He is awesome, yeah! (April 13, 2017)

Figure 5.48 shows Mike with a beaming smile as he watched the story he collaboratively composed with Esther. We continued to view the images and tell stories about the experienced curriculum in Esther's class:

Lori: And then [Mike] he became a really important part of the story, right? He really helped you tell the story, which was so cool. And so see? He wasn't alone.

Esther: Look at Anna's face!

Lori: I know! So yeah, it is sort of cut off because I am…literally standing over your shoulder taking this picture and they are all leaning in like that!

Fireball: Wow! (April 13, 2017)

Figure 5.49 shows the images from the PowerPoint slide that supported our reflection of the experienced curriculum. As we continued to discuss the lesson and the ways Mike collaborated with Esther to compose the story, Fireball explained, "I remember you saying that. But this! He wanted to plunge right in! (April 13, 2017).

Figure 5.47. Mike smiles as he watches the animated story he helped create with Esther during the demonstration of the app.

Figure 5.48. Screenshot of PowerPoint slide shown in planning meeting to facilitate teachers' understanding of the experienced curriculum.

In addition to having a greater understanding of what had happened during the enacted lesson, reflecting on the experienced curriculum (enabled through the sharing of pictures) helped the teachers see the children in a different way. For example, as we reflected on the images from Esther's implemented lesson, we viewed images that showed the children's joyful collaboration while creating stories with the Puppet Pals app (Polished Play, 2016), and Esther explained how Anna and Lily laughed as they composed stories together (see Figure 5.50). Fireball explained that he was surprised to see the ways Anna and Lily worked together, because their interactions were so different than what he had observed previously:

> Esther: They were so fun.
>
> Lori: So fun! The head is down. Oh!
>
> Fireball: But even their energy together too. And it is so different just looking at these pictures, right? Seeing Lily so engaged, because usually I see her when she is quieter… than that picture. (April 13, 2017).

Fireball explained that the pictures caused him to reconsider the ways he had positioned the children as he interacted with them on the playground and in the hallways of the school. As we closed the meeting, Fireball reiterated the ways that he was reconsidering what he understood about the particular learners in Esther's class:

> Fireball: Again Esther, seeing the pictures in *your* class, *I* am seeing the students in a different light because I mean I see them in different ways when I pop my head in or in the hall or stuff like that, but seeing how engaged they were *with this*, and then hearing the stories about what happened in the class once they had that first introduction to the app, right? And hearing how fluent and expressive…. Abby was with her oral story…
>
> Esther: Oh yeah!
>
> Fireball: Yeah.
>
> Esther: That was a shock. (April 13, 2017).

Fireball continued to explain how seeing the images from Esther's class helped him make connections to his own class and understand his own students in different ways:

Fireball: And even going back to Chloe in my class, and seeing how *she* took off.

Lori: And that was exactly what I was thinking…the connection between Chloe and how she had this beautiful, expressive story and then when Abby went over there, I was like, okay this is like Chloe.

Fireball: Right, and you wouldn't see that otherwise. (April 13, 2017)

I reflected on Fireball's comments and the ways the sharing of photos in the meetings supported professional learning as teachers viewed the enacted lessons from different perspectives. I further considered the ways these changing perspectives repositioned the children:

> I am listening to Fireball talk to Esther about the impact that viewing pictures of Esther's class and hearing the stories about the learning in her class has …[had on] him. He says that this has helped him see the kids in a different way. As I reflect on this, I see that the telling of stories within the teacher professional learning meetings can enable new stories to be told as they reposition the children. (journal, April 19, 2017)

The sharing of pictures of the experienced curriculum within the meetings supported the teachers' exploration of pedagogies.

Figure 5.49. Anna laughing so hard she puts her head down as she composes a story with Lily.

5.6.3 "It's easier to tell a story than it is to write" (Esther, April 20, 2017): The role of writing within multimodal literacies

The teachers considered the role of writing within the experienced curriculum that included digital technology. As previously described, the teachers recognized that writing was particularly difficult for the children. Recognizing the challenge of writing, when they introduced the lessons to their classes, Esther and Grace highlighted that the students would not have to write. In her interview, Grace reflected on the ways the digital technologies were a substitution for writing and provided alternate media for the children to use to create stories:

> Well I just think that it got them excited about making a story….and it's just another way…but it is something that is exciting and different because …you're always writing and so when they heard that they got to be authors and illustrators but they didn't have to write or draw….it…gives them a different way to do the same thing. (April 11, 2017)

Esther cautioned against the use of technology as a substitution for writing because she believed that this practice could constrain print literacy learning. In her interview, she recalled an experience with a previous student "who wouldn't write because he started typing, and he was just not really interested in print period because he wanted to type" (April 21, 2017). In her interview, Esther expressed that learning to write using traditional tools was an important skill and that the ways teachers positioned the technology as either a substitute or a support was important:

> It's easier to tell a story than it is to write and you probably saw that in Fireball's class. … I didn't make them write it while or before, but yeah, if you can tell a story or write it, you can just choose the easier way. But, that is the purpose of digital technology, right? To make things easier for us. So I think that, as teachers, we just need to use it as a support, like not a substitution because you just… have to draw a fine line there. (April 20, 2017)

As the teachers reflected on the experienced curriculum, they considered ways that they could combine digital technologies with print literacies in literacy instruction.

5.6.4 "You learn to talk before you learn to read and write" (Esther, April 20, 2017): Interconnectedness of literacies

As we considered the experienced curriculum, we explored how different literacies can work together to support meaning making. For example, Esther explained that her students' use of oral language to compose a story with Puppet Pals held potential for supporting reading and writing in the future:

> I think it's like, you learn to talk before you learn to read and write…so it's the same idea. They are creating the story, and you know, a long term goal….maybe when they get older…would be that they could turn that story into a written piece. So, I think that it is the beginning of telling a story. (April 20, 2017)

Esther and I continued to consider how literacies were interconnected in her interview and I asked Esther how the children could translate their understanding of literacies into other modes:

> You know what you were saying about the oral to the reading to the writing…how do we get oral language, like what Abby was doing with that well-developed story and how do we get that to transfer? We know Abby can do it, but how can we get her to transfer to writing? I haven't figured that out. (April 20, 2017)

Like me, Esther was unsure about the "how" and the ways that teachers could build on the interconnectedness of literacies to leverage understandings in a particular area to support another. We looked to the children's innovations in literacy practices to help inform how we could support children's learning of literac*ies*.

5.6.4.1 "We learned that from Sophia" (Lori, March 9, 2017): Learning *from* the ways the children combined literacies.

The children seemed to intuitively negotiate the intersections of literacies and literacy processes. As previously described, Sophia used her iPad to retell a story on her story map rather than compose a new story (see Figure 5.38). As Fireball and I paged through the children's work at the end of the school day following his lesson implementation, we considered the ways that Sophia seemed to recognize the reciprocity of story composition and story retelling in her innovative practices during the lesson:

Lori: *This* one was interesting! So, I wanted to show you that one. I didn't know if you had a chance to see it.

Fireball: No, I haven't…

Lori: She made a story today, but this is actually the story she did from yesterday and she was doing a *retell* of the story that she already composed. So, she went back and she was playing the story over and over again so that she could get it right.

Fireball: Oh! O-kay! Neat! (March 9, 2017)

In the busy classroom setting, Fireball had not understood that Sophia innovated the instructions. As we reflected on Sophia's innovations, we considered what she understood about the interconnectedness of literacies and literacy practices and the ways that Sophia's combinations of the technology and paper story map could support the design of future lessons:

Lori: I thought *that* is interesting…. to go back and to retell it and to watch it over and over again, and I thought well that is interesting because you could, you know how you use the same story map to compose, you could *also* use the same story map--

Fireball: --to document. Exactly!

Lori: Yeah! To decompose, or to retell.

Fireball: Right.

Lori: Right…You know…seeing the flip….of the process. …Yeah, we learned that from Sophia!

Fireball: Again, that's just it! *That's why I love this job!* (March 9, 2017).

The ways Sophia combined literacies and literacy processes in the experienced curriculum informed Fireball's future lesson designs.

5.6.4.2 The children can be "playful while still meeting the objectives" (Fireball, March 9, 2017): The children's expansions of story components.

The children used images to expand their understandings of what characters and settings could be. As previously described, the children used the photo-taking feature on the Puppet Pals app to create characters and settings out of body parts (see Figures 5.29 and

5.30). The children's innovation with the app was surprising to us. Almost one month after the lesson implementation, Fireball and I continued to wonder about the ways the children expanded understandings of character and setting as we described the innovation to Esther:

Lori: What happened is exactly what we thought would happen—taking the pictures was kind of a game changer.

Fireball: Umhm.

Lori: We had that inclusion of characters, like Fireball was in there, and the kids were in there. Then they did a really interesting innovation where… Sophia… took a picture of the ear…and…cut out the ear and the ear became the setting. And so they were telling a story on an ear which was kind of interesting. We would not have predicted that!

Fireball: Unique! Absolutely!

Lori: So then, you had other people who had like….Spiderman tried to do this with the eyes and then Funny overheard that and he was like, "I am going to take a picture of my *own* eye." So, from what I could see, from the pictures that I had, he was the only one who took a selfie…And then cut a part of himself out. So then he was going to take a picture of himself, cut out his eye and his eye was going to be a character--

Esther: Okay!

Fireball: Yeah

Lori: --which was kind of--

Fireball and Lori: --Weird! (April 6, 2017)

Fireball and I considered that in their playful exploration, the children did not see boundaries between what a character and setting could be, and they repurposed the same image as both character and setting in their stories:

Lori: Would we have ever thought that a setting would be someone's ear? Or the character would be somebody's ear? Because it [the ear] was used both ways…so, there is this flexibility of… how…they were going to use those images.

Fireball: I think ….yeah…to be playful *while* still meeting the objectives.

Lori: Right! …I think we plan for…well this is what is going to happen, and isn't it great because we can cut out these characters, but the ways that they *used* the characters were different than what we had expected because, I don't know…in *my* mind, I was thinking…oh yeah you can take a picture of the classroom and that would be your setting. (March 9, 2017)

Fireball and I expressed that the students' creative innovation of setting and characters expanded meaning making opportunities while addressing and even exceeding the goals for the lesson, but Esther was less sure. In our final debriefing meeting together, we continued to reflect on the ways the children used technology to expand their understanding of characters and setting in ways we could not have anticipated:

Fireball: It comes down to having the ear as the setting, right?

Lori: And I can't get over that!

Fireball: We couldn't have planned that!

Lori: Right. Because if we would have said, "guys, I would really like you to use some body parts for a setting", it might get inappropriate very quickly!

Fireball: Yeah, take a shot of someone's nose and pretend that you are inside the nostril! No! You would take away that creativity once they have that ability to manipulate.

Lori: Yeah.

Esther: So like, do you think that the stories would be more professional if they weren't using their body parts or their faces or their bodies?

Fireball: I think they would be more limited, to be honest with you.

Esther: Do you think so? (April 13, 2017)

Fireball went on to explain to Esther how he felt the children's use of images expanded the meaning making in the Puppet Pals stories:

Fireball: Well, because you have set characters here with Puppet Pals and they could take pictures of anybody in the classroom, or the class. They could go online and grab a picture as well if they had that proficiency, right? And they could just manipulate it that way.

Lori: And it's, I think it's the ability to see things in a different way, I mean…yeah, it might be a more realistic story, but it depends what

you are looking for because to take things like an eyeball and use it as a character or a setting, it opens up what is possible. Right? So, I think that, as adults, for me anyway, I tend to be--

Fireball: Static.

Lori: Yeah, this is how things go, and, and for kids they think, well I can do this and I think that creative kind of problem solving transfers to other things, right?

Fireball: Yeah! (April 13, 2017)

As we reflected on the students' innovations in the experienced curriculum, Esther asked whether teachers should impose limits on the ways children used the technology to expand meaning making to maintain realism in their stories. Though Fireball and I recognized the children's innovations as valuable, as we closed our final meeting, there were lingering questions about if teachers could/should limit students' innovations and if/how these limits constricted meaning making opportunities.

5.6.5 "I feel so bad because we didn't use any tech!" (Angela, March 21, 2017): The complexity of introducing technologies

As we reflected on the experienced curriculum, we considered the complexity of introducing new digital technologies into literacy lessons and the ways we could adjust our pedagogies to better support the students. The complexity of designing literacy lessons that included digital technologies was highlighted through instances when the lessons did not go according to plan. In every lesson, there were examples when the operational curriculum was different than the intended curriculum. Prior to observing the first lesson in the study at St. Nicholas, I considered potential differences between the intended and operational curriculum in my field notes:

> We plan…the intended curriculum, but then the curriculum as it is operationalized changes and so we could be very rigid and enforce the lesson in the way that we think it needs to go. But, we know that the classroom is a dynamic place and… all kinds of things that impact the classroom environment will affect what happens today. (March 9, 2017)

The need to adapt and respond to changes in the operational curriculum was highlighted when Angela's lesson to use green screen technology did not according to plan even though the lesson was carefully designed.

5.6.5.1 "It will be 'real life' teaching" (Angela, March 6, 2017): A difference between the intended and experienced curriculum.

As we approached the day for the green screen filming in Angela's class, I checked in with Angela to see if she needed any help preparing for the lesson. We had previously rescheduled the lesson observation to provide more time for Angela to work with her class to prepare their written texts which were the focus of the green screen filming, and to provide additional time for Angela to practice using the Do Ink app (DK Pictures, 2016). In my field notes, I recorded that Angela declined the support and explained that whatever happened on the observation day would be an example of "real life" teaching (March 6, 2017). On the scheduled day for the lesson, I arrived at the school when the children and Angela were outside for recess. I noticed that the green screen was scheduled on the weekly calendar and the green screen materials were ready on the teacher's desk. Figure 5.51 shows the weekly calendar that highlights videotaping on Wednesday for C.O.O. (the initials represent the "Country of Origin" Project for the *Celebration of Learning*).

Figure 5.50. Weekly schedule with green screen videotaping scheduled for Wednesday.

Following recess, Angela introduced the lesson and invited Jinga to come to the front of the class and demonstrate how the green screen activity would work by reading his written text about his country of origin from his homework assignment. As Jinga walked to the front of the class, it became clear that the children had interpreted their homework differently. Natalie asked, "What if you didn't write a common tradition on your paper? What if you just wrote what you were going to bring in?" (March 8, 2017) Angela explained that they would use whatever information the children had written and that they could made revisions later. Figure 5.52 shows that as Jinga started to read his homework, he stumbled on the words and Angela stepped in to support him:

Jinga: Is this the word “in”? And there’s another word “in”.

Angela: That’s okay. You just say it once then. Good for you for catching that, Jinga! Okay!

Jinga: What word is *this*? (March 8, 2017)

Angela recognized that Jinga was becoming frustrated. As previously explained, she adjusted the lesson by inviting the children to use their *Daily 5* practice of “Reading with a Partner” to rehearse in a small group before using the green screen. The children all appeared to appreciate the opportunity to work together to practice reading. Jinga worked with Pegasus to rehearse his written text (See Figure 5.53) and he explained to me why he couldn’t read his homework:

Jinga: My mom writed it.

Lori: Your mom wrote it?

Jinga: umhm

Pegasus: I wrote mine. (March 8, 2017)

Figure 5.51. Angela helping Jinga read his mom's writing.

Figure 5.52. Jinga practicing reading his text with Pegasus.

Following the opportunity for rehearsal with a partner, Angela invited Jinga to return to the front of the class and read his homework in front of the green screen. Jinga's second attempt at reading the written text was much more successful than the first attempt and the children were invited to give Jinga feedback on his reading using their established practice of critique:

Jinga: [reading] A common tradition that we practice in Korea is the New Year festival. All of the families meet together to eat ttookguk. Ttookguk is meaning rice cake soup. We wear traditional clothes which is hanbok. We play yutnori.

Angela: Okay. Who has something to say that is helpful, specific, and kind for how Jinga could do better?

Pegasus: What is Yutnori? I couldn't really hear what you said.

Jinga: Yutnori are things that we play. (March 8, 2017)

The children's need for extra rehearsal of their oral texts and in some cases, significant revision to what they had written, prompted Angela to delay the green screen filming to another day when the children were better prepared, and when she felt that the use of the green screen would better support the learning.

Immediately following the lesson, I was confused about the reasons for such a difference between what was planned and what operationalized and I considered the careful planning to connect the lesson to the classroom, school, and programmatic curricula. In my reflective field notes, I explained to Rachel:

> In my journal, I wrote that I believed the beauty of the lesson was in the ways it was embedded in the classroom curriculum, and in the ways the lesson was crossing curricular lines and also breaking down boundaries between home and school. However, as I reflect on the difference between the intended and operational curriculum, I think the complexity and interconnectedness of the lesson may have held it back…. if the lesson was a standalone lesson that was simpler, it may have been able to progress as planned. (March 8, 2017)

As we met together to debrief Angela's lesson, Angela explained, "I feel so bad because we didn't use any tech!" (March 21, 2017). I understood this to mean that Angela felt bad because she thought I did not observe what I needed for the research study. As we debriefed the lesson, we tried to make sense of what had happened and how we might reconfigure the pedagogies. We reflected on the experienced curriculum as we discussed what we observed and viewed pictures of the lesson. Angela described how she felt when she realized the lesson was not going according to plan:

> I felt that they…weren't ready for that step, jumping into the video even though I had it on our schedule, and they had it in their planner that we were going to begin our videotaping…*I* wasn't ready to use it, even…let alone having them have everything *they* needed in their toolbox to do it, right?... I was feeling like the lesson was too big, maybe too much. (March 21, 2017)

We considered the ways that Angela had adjusted the lesson to offer children the support of rehearsing the texts with a partner. I explained to Angela, "If I were in your position, I think I would have done the exact same thing, which is like recognizing, *WHOA!* We are *not* ready for this…we need to slow it down" (March 21, 2017). As we debriefed, I showed a slide of pictures that represented how I saw the lesson as being valuable and a part of the classroom curriculum. Figure 5.54 shows a screenshot of the slide of pictures shared with the teachers that highlighted how the lesson was embedded in classroom curriculum. We continued to reflect together as we debriefed the lesson:

Lori: And so when I was thinking about the lesson…I looked back at the other pictures that I had taken from the other times that I was there and I was thinking, you know what? *This [lesson] is still right in the heart of what is going on in the classroom.*

Angela: Umhm.

Lori: Right? So, you have got it going into the *Daily 5*, and talking about the reading with a partner. You even highlighted this when you were talking about the critique and then we have also the community, right? And so, no, I didn't observe the technology, but I *did* observe *leading into it*… and…what's involved in preparing kids for using the technology…

Angela: Umhm, umhm!

Lori: And, I think that the…learning potential of that lesson is still there. There are so many really good things. It's so embedded… you've partnered with families. It's tied to the end learning goal, but on the flip of that, it also makes it very complicated, and, then putting technology into that. So when I think about the lesson… The lesson was not a problem.

Angela: Umhm

Lori: It was just the pace, right? (March 21, 2017)

Our reflection as a community of educators helped put the lesson in perspective and in my reflective field notes to Rachel, I recorded that Angela thanked me for encouraging her when the lesson did not go according to plan (March 31, 2017).

Figure 5.53. PowerPoint slide that shows how the lesson connected to the classroom curriculum.

Though Angela explained that she was encouraged through our reflections on the experienced curriculum, the significant difference in what operationalized and what had been planned caused her to reconsider the ways she might connect the green screen activity to the *Celebration of Learning.* Angela explained, "after doing this lesson I am not sure we are going to be *ready* for the *Celebration of Learning"* (March 21, 2017). I agreed with Angela that the lesson could be simplified and explained, "I think you are right. Take the pressure off with the *Celebration of Learning"* (March 21, 2017). Angela tentatively disconnected her lesson from the *Celebration of Learning*, but she asked me to volunteer in her class so that she could continue to work with her students to complete the green screen filming. When Angela completed the green screen filming with her students, she decided to reconnect the green screen videos to the *Celebration of Learning* and featured the videos in her open house activities. See Figure 5.55 for a picture of Jinga's video created with the green screen technology that shows a background from his country of origin, Korea.

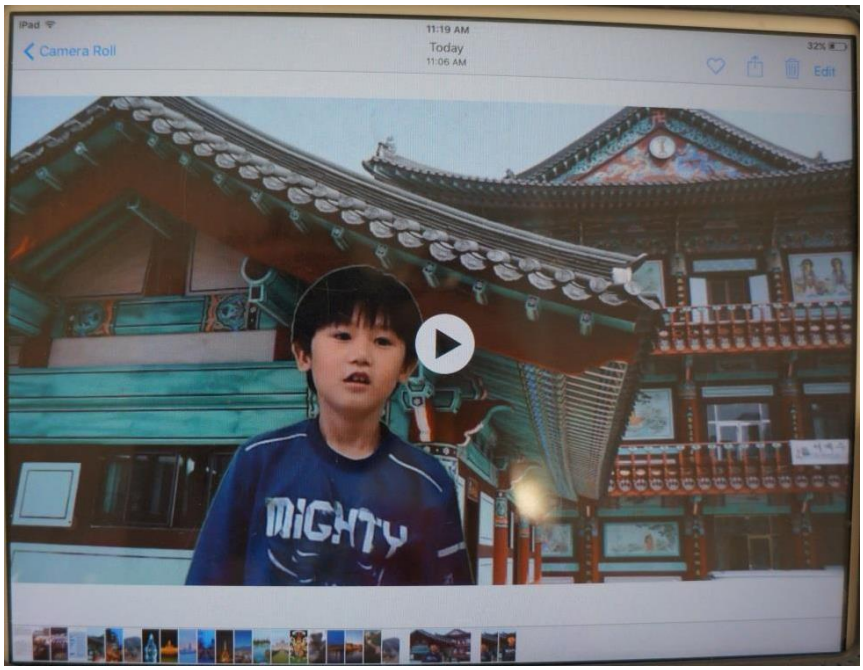


Figure 5.54. Jinga's completed video created with green screen technology.

The differences between the intended and operational curriculum in the lessons highlighted the need for us to reflect on the ways we were configuring our pedagogies to include digital technologies in light of the experienced curriculum.

5.6.6 "How do you add technology into something that you are already doing?" (Grace, March 21, 2017): Layering digital resources on top of traditional resources

In all of the lessons we designed, we added something new to the classroom curriculum, and in many cases, we layered digital resources on top of traditional resources and practices. As we planned Angela's lesson, I considered the ways we were innovating our pedagogies in my journal:

> As I was transcribing, I jotted the words "additive pedagogy" on a scrap paper to explain that we added a resource, but the pedagogy had to adjust to include the technology in a meaningful way. I think that the addition of the resource has the potential to enhance the pedagogical design—Angela had done this project before with students, but the incorporation of a new technological tool forced a redesign of the pedagogy. (March 2, 2017)

At Cornerstone, as we debriefed Angela's lesson that did not go according to the plan, we considered the ways that we had added digital resources to traditional resources and existing classroom practices. As we tried to make sense of the experienced curriculum, we considered how our pedagogy could support this additional "layer" of technology. As we discussed, Grace posed the question, "*how* do you add technology into something that you are already doing?" (March 21, 2017). Given the complexity and particularly of lesson design, there cannot be a singular answer to this question. However, the question opened up an examination of pedagogical innovation in the community of practice at Cornerstone in light of the experienced curriculum.

5.6.6.1 "[Technology] has to be part of the story, not an additional story" (Angela, April 10, 2017): Positioning technologies as integral to literacy lessons.

The positioning of technologies was important in the design of literacy lessons that included digital technology. For example, in her interview, Angela explained that "whenever you are choosing technology, then it has to fit with what you are already doing because if you are adding onto it a little bit, then it won't get done" (April 10, 2017). She further described her classroom curriculum as a story:

> Angela: [Technology] has to be part of the story, not an additional story…
>
> Lori: Yes, part of the story!... And so when we are thinking about the classroom curriculum… as a story, then the technology can't be floating on top…
>
> Angela: No, it can't (April 10, 2017).

Angela's comments resonated with her lesson design of embedding the technology within her classroom curriculum story. Angela continued to explore the idea of her classroom curriculum as a story. The next day, Angela shared her reflections on the difficulties we experienced in the planning and implementation of lesson in her classroom story:

> Angela: When we talked about the glitches that happened, that we needed to work out that were part of it….That was just part of the story.
>
> Lori: It *is* part of the story, isn't it? (April 11, 2017)

The experienced curriculum prompted the teachers at Cornerstone to consider how they could adjust their pedagogies to include digital technologies.

Though Grace was not present in Angela's interview, she also used a metaphor of story as she reflected on the experienced curriculum. Grace compared her pedagogical design to writing a story. As Grace walked me to the door at the close of our interview, she explained that to include digital technologies, teachers needed to edit their teaching practices. In my field notes, I explained,

> Grace said that we need to edit our pedagogies. So just like Angela called… her classroom curriculum a story, Grace said, we need to edit our story and that means that we have to get rid of some of the things that we have been doing…when we add something else in. (April 11, 2017)

The teachers recognized that adding technological resources could mean that they had to remove or reconfigure other resources or practices.

Grace and Angela's use of the metaphor of writing to describe pedagogical design reminded me of the emphasis on print literacy practices and pedagogies in the lessons. In my reflective field notes, I explained to Rachel, "The editing comment reminds me of this undercurrent of the pedagogical design following the writing process" (April 11, 2017). Throughout the study, I reflected on print literacy pedagogies and the concept of multimodal design, and I wondered how I could support teachers in refining and/or innovating pedagogies to appreciate multimodal meaning making. In my Journal, I explained,

> We have to meet people where they are, and identify the next step (think zone of proximal development). [Some teachers] might only be ready to dip [their] toes in with multimodal literacy and technology uses, while others are ready to wade or swim. (February, 28, 2017)

A month later, in my journal I continued to question the ways teachers could innovate their pedagogies to include digital technologies:

> At the time, I thought that it was really smart to plan a lesson that would piggyback on a process that was familiar to the kids and apply the technology within that process. It seemed like a logical progression for the kids as they were just adding one more step. I think that those print literacy pedagogies were a good

> vehicle leading to the technology use. But, does this make it feel like the technology is just sitting on top of the print literacy pedagogies? Should we have tried to redesign the pedagogy altogether?
>
> I don't think that would have worked because it would have been completely overwhelming for the teachers and maybe even for the children. I think that pedagogical design and redesign is a learning process for teachers and we have to start with what we already know and understand rather than starting completely from scratch. That's what happened for me, anyway. I tried something using familiar pedagogies, saw a glimpse of the potential of multimodal pedagogies and then redesigned to embed the technology in further learning activities. (March 29, 2017)

The teachers considered the ways they could design their pedagogy to include technologies as a meaningful part of the classroom story in light of the experienced curriculum.

5.6.6.2 "I don't think I can do this next year" (Grace, April 11, 2017): Adapting lessons for future classes.

As the teachers considered the experienced curriculum, they reflected on the ways they could include the lesson in future years. For example, Grace wondered how she could adapt the lesson for use in her class next year because the lesson design that was implemented in the research study required the teacher to work with a small group of children within the context of a busy classroom. In her interview, Grace explained,

> As we were speaking about how I don't think I can do this next year, because I can't be in two places at once… and then it was like, well maybe we could do one story with our class and each child gets one part, right? And like, how do we make it fit with what we have here? (April 11, 2017)

Grace considered adapting the lesson so that the whole class could collaboratively compose a story on the SmartBoard using Adobe Spark video (Adobe Systems International, 2017). In her interview, I asked Angela to predict how the experiences within the research study might inform her future practice. Angela responded,

> I would say that I have learned that even though the technology is available, that to take the time to really practice with it, set things up, and also have volunteers set up as well because that quiet training is so necessary and I am so glad that we

> were working with *Daily 5* this year so that they had the training possible. So… to move forward, I would say have volunteers in the classroom, and say, "here is some busy work for the class to do. We are going to be across the hallway in the computer room and we are going to do some taping." (April 10, 2017)

At Cornerstone, the limits of available technology and the importance of print literacy practices influenced the ways the teachers predicted that they could adapt the lessons for future use. Throughout the study, the tension between pedagogical innovation and the enduring curriculum continued. In my journal, I reflected:

> I think of pedagogical practices within the enduring curriculum as a tree that needs pruning. It feels safe to do the same things over and over—why change something that isn't broken? But, as teachers grow in their practices, and adapt to meet the interests and needs of their students, then some pedagogical practices need to be pruned to allow the others to grow. (March 8, 2017)

Pedagogical innovation is a complex process that can be constricted by the enduring curriculum.

5.6.7 "This is how authentic learning works for kids" (Grace, April 5, 2017): Parallels between the ways the teachers and students learned

As we reflected on the experienced curriculum, we recognized that the ways the teachers learned in the design and implementation of literacy lessons that included digital technologies paralleled the ways the children learned. For example, in our final meeting at Cornerstone, we compared our learning as teachers to the ways our students learned:

> Grace: The fact that [the co-constructed lesson] tied into what we were actually doing and I can use this now, it just, it made it so authentic. So then you realize *this* is how authentic learning works for kids.
>
> Angela: Yeah.
>
> Grace: Because as soon as I heard that it could tie into our project on trees, I thought great. Because now it is not an extra add-on.
>
> Lori: And that's something that I have been thinking about too. As we learn as teachers, it's not all that different from how kids are learning and how we are supporting kids' learning. It's the same kinds of things,

right? We want it to be connected. We want it to be meaningful. (April 5, 2017)

We recognized the importance of authentic learning experiences for teachers and students. Similarly, as we met to debrief Fireball's lesson at St. Nicholas, we noted the parallels between the ways the children and teachers explored the digital application:

Lori: Do you know what was funny? When I was looking at the pictures, I was thinking that what Fireball was doing was the same as what the kids were doing! [laughs] So he is moving it around like this when we were meeting the last time.

Fireball: Yeah, that's right.

Lori: And there are pictures of kids doing exactly what Fireball is doing. Maybe that means you are a big kid…what do you think?

Fireball: Well, I am!...That's probably why I am a good fit in primary. Because I like to play. (March 30, 2017)

Figure 5.56 shows how Fireball used the app with two fingers to animate his story in the planning meeting and how Aidan also used two fingers to create his story in the classroom lesson.

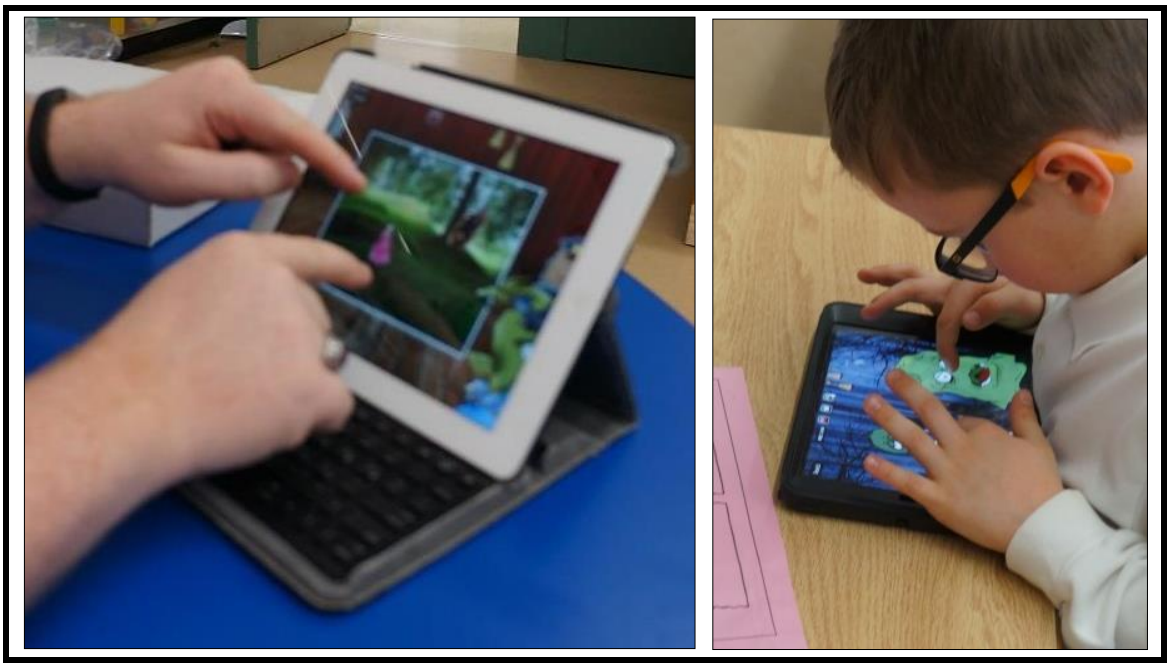


Figure 5.55. Fireball (left) and Aidan (right) use fingers to create an animated story.

As the teachers reflected on the experienced curriculum, we considered how the parallels between the ways the teachers learned and explored the app were also evident in the design of pedagogy and the learning opportunities these pedagogies supported. For example, in Fireball's interview, we discussed how the ethos of the pedagogy was reflected in the ways the children responded in the lesson:

> Lori: And so what I am thinking is about is how you were very open and inviting… you invited the kids to explore.
>
> Fireball: Umhm
>
> Lori: And because you were so open and expansive with your pedagogy, what they did was equally that way, right?
>
> Fireball: Umhm.
>
> Lori: Really powerful! (April 20, 2017)

In Fireball's interview, we continued to reflect on Fireball's pedagogy that invited the children to play and discover technologies and literacies. Fireball considered the role of the digital technology in expanding story ideas:

> Fireball: So, again whether technology just allows us to be more playful or just gives them the modalities to tell their stories and be creative rather than just having to pull their stories out of the ether.
>
> Lori: Right.
>
> Fireball: Would it have been the same if it had been puppets?
>
> Lori: Yeah! I don't know. (April 20, 2017)

Fireball recognized the technology as expanding meaning making, but questioned whether the particular affordances of digital technology expanded meaning making or whether it was the multimodality or hands-on aspects of the resource. As we further reflected on the experienced curriculum, we considered the pedagogy of play that invited children to explore, and wondered about the sustainability of a lesson that invited exploration and when print could or should be introduced in the lessons. As we debriefed Fireball's lesson, I considered the ways the children innovated literacies and literacy practices within the pedagogy that invited play and discovery:

> I was thinking that this is about playing…it's about playing with literacies, it's about playing with pedagogies, like how we can include the technologies. And I think that's where we start. And maybe…if we are really smart, that's where we stay. (April 6, 2017)

I recognized the importance of the playful exploration of the app prior to introducing print literacy objectives, and in my experience as a teacher of Grade 1, I also understood the importance placed on providing opportunities for young children to practice their writing. I questioned when and how print literacies could be introduced within a playful pedagogy in my notes after observing Esther's lesson:

> I talked with [Esther and Fireball] about this idea of playing with literacies and playing with pedagogies and how that is a starting point and maybe that is really something we need to think about is…maintaining, or retaining the playfulness when we have the use of the tool. Does the tool itself afford possibilities for retaining playfulness or do we end up going straight to print? (April 6, 2017)

Questions remain about the ways teachers can design, refine, or innovate pedagogies to include digital technologies.

5.7 Summary of Chapter 5

The data suggest the teachers had many opportunities to explore and discover technologies, literacies and literacies practices, and pedagogies throughout the TPL activities. The flexible responsive structure of the TPL activities promoted collaborative and individual exploration and discovery. Print literacies strongly influenced the design of literacy lessons that included digital technologies. The TPL activities supported the teachers in discovering how multimodal pedagogies could *fit* within their school, classroom, and programmatic curricula. The design and implementation of the lesson were enabled through collaboration and the sharing of pictures, but were constrained by time and the availability of usable technology. The teachers planned literacy lessons to respond to print literacy objectives and configured their lessons to position print as a pre-cursor to discovering other literacies in playful ways and expand their understandings of characters and setting. The teachers recognized that the use of the digital technologies expanded learning opportunities for the children, and considered how the children's

practices could inform pedagogical design. There were similarities in the ways the teachers learned and the ways the children learned.

Chapter 6

6 Pedagogies of Possibilities

Months have passed since I completed data collection and I continue to reflect on the parallels between the ways that the children and teachers made sense of multimodal literacies, practices, and technologies and how this was a part of the classroom curriculum, that Angela called the classroom "story". As the teachers in the study worked together, we created pedagogies designed to support children's meaning making through literacy lessons that included digital technologies. These pedagogies supported the creation of "mini-narratives" in each classroom's story of meaning making. We co-constructed "chapters" in our professional learning stories that documented our collaborative learning about multimodal literacies and pedagogies supported through the structure, or pedagogies of the activities. These stories came to life as the children and teachers interpreted the pedagogies to support their own meaning making and as the teachers' and children's stories converged within the experienced curriculum. The sharing of these stories enabled the design of new pedagogies.

As I reflect, I am thinking of the stories created through the research study as adventure stories as I explored what learning opportunities could be possible for teachers and students when teachers work together to design and implement literacy lessons that include digital technologies. I now share these stories of meaning making in my dissertation, not so they can be replicated by readers, but as examples that can support teachers, teacher educators, and researchers to envision new possibilities for designing, implementing, and researching pedagogical design. These possibilities can enable the creation of new stories. (journal, July 17, 2017)

6.1 Introduction

This study is borne out of my experiences as an early primary teacher where I recognized the potential of multimodal literacies and designed multimodal pedagogies that included digital technologies to respond to my students' request to make a music video. Though our video project expanded opportunities for children's literacy learning as they combined print and digital resources in meaning making activities, my process of pedagogical design was isolating and I wondered what could be possible in multimodal

pedagogical design that was supported through collaborative professional learning. This dissertation is a continuation of my exploration of multimodal literacies and pedagogies. The goals of this study were to explore the ways that collaborative professional learning activities can support early primary teachers in designing and implementing multimodal pedagogies that include digital technologies in literacy lessons. Within this exploration, working as a participant observer, I documented the processes of pedagogical design in the professional learning activities as well as the implementation of the co-constructed lessons in the teachers' classrooms. The study seeks to contribute knowledge in the areas of multimodal literacies, pedagogies, and teacher professional learning.

In reading the findings in relation to the literature, I identified a theme of *pedagogies of possibilities*. In the writing of this dissertation, I learned that other authors had used this term. For example, Barbara Comber (2016) used the term to describe the kinds of pedagogies that can arise from theories of critical literacy that are situated in space and place and the ways this can expand students' opportunities for literacy learning, and suggested that the pedagogies described in her book can be catalysts for teachers to create critical literacy pedagogies. In my discussion of pedagogies of possibilities, I used the word possibilities to highlight the promise that these pedagogies can hold and explain that these promises are not guaranteed. I also identified a series of talking points whose discussion also holds promise/possibilities for the generation of multimodal pedagogies and teacher professional learning. In this chapter, I identify each of these talking points in turn and include within the contributions to knowledge and practice of this study. First, I define the pedagogies of possibilities in the study and how they supported each other to expand participants' literacy options. Next, I detail what these pedagogies produced for the children and how, followed by what these pedagogies produced for the teachers and how. Last, I forward recommendations for realizing the transferability of possibilities to new literacy teaching and learning contexts and suggest offer where the research can go next.

6.2 Pedagogies of Possibilities: Connections between children's literacy practices and teacher professional learning

The study invited teachers to participate in teacher professional learning activities (hereafter called TPL activities), within the context of an instrumental CoP (McDonald, 2015), and design multimodal pedagogies that included digital technologies in literacy instruction. The teachers and I agreed that the main goal in designing the pedagogies was to support the children's literacy learning. The study found that through these pedagogies, there were expansions of *children's literacy practices*, *teachers' pedagogical practices*, and *teacher professional learning*. The children's literacy practices were expanded through the *pedagogies of possibilities* that invited children to explore. The teachers' pedagogies were supported on a sea of TPL activities. All of these elements floated on top of one another, washed into one another, and were responsive to each other. Figure 6.1 shows a visual representation of the pedagogies of possibilities that supported the expansion of children's literacy practices and that were created and expanded through the TPL activities. The funnel shape with gradated colour shows the gradual expansion of meaning making experienced in the TPL *activities*, *pedagogies*, and *children's literacy practices*. The wavy dashed lines between components show that the boundaries are permeable and flexible. The funnel is surrounded by dashed lines to show that the meaning making was not confined to the research activities. The orange arrows show expansion in the components and these lines are dashed to show that expansion was not necessarily straightforward and extended beyond the study. The purple arrow shows that the children's literacy practices informed our TPL activities and these activities were designed to support and expand children's literacy practices.

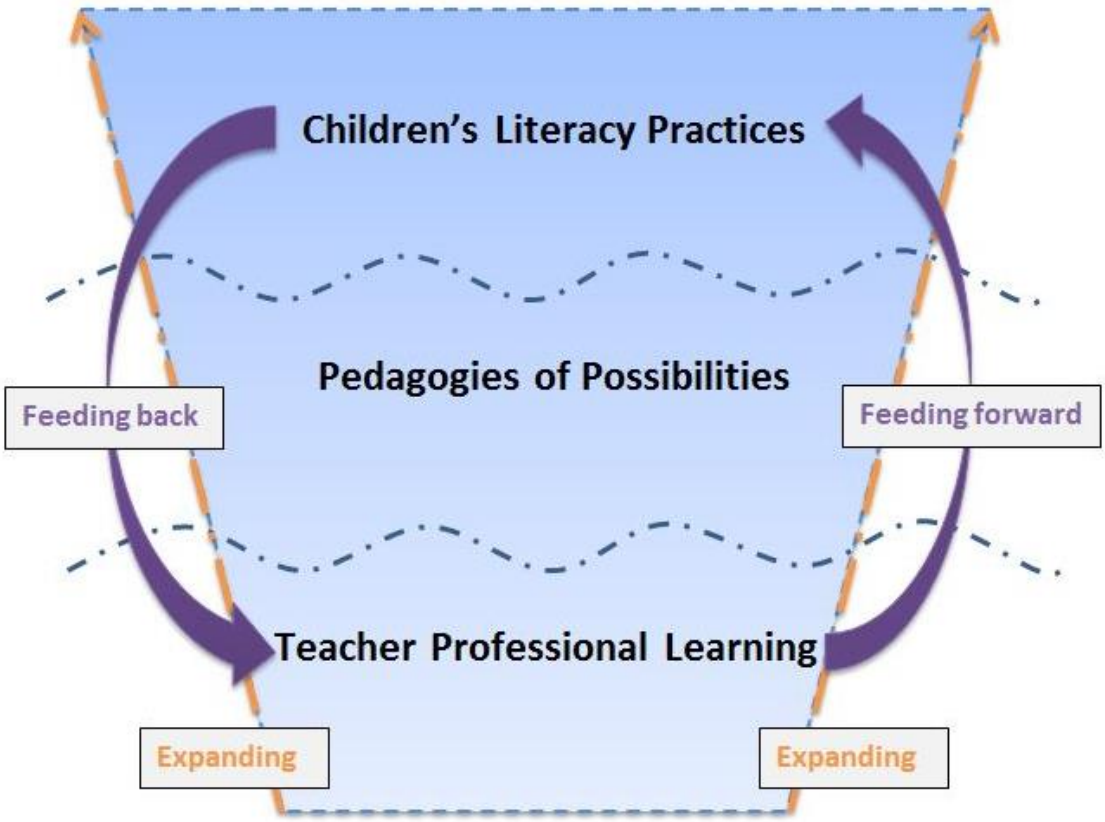


Figure 6.1. The expansions of teacher professional learning, pedagogies, and children's literacy practices.

6.3 Pedagogies of Possibilities: Multimodal Literacy Learning Opportunities for Children

The data produced evidence of pedagogies that could open up possibilities for children's multimodal literacy learning. By possibilities, I mean the multiple, expansive meaning making opportunities that were taken up in particular ways by children. These pedagogies were open, flexible, responsive, and provided opportunities for children's innovations of multimodal literacies. In the sections that follow, I discuss the children's literacy learning opportunities afforded through the pedagogies and describe the ways these possibilities were supported through the pedagogical design.

6.3.1 What is created with these kinds of pedagogies?

The pedagogies created opportunities for the children to expand understandings of literacy and literacy practices. The data represented in the previous chapters overwhelmingly show the children as active and capable meaning makers as they explored literacies, technologies, and practices. The children were innovative and selected and combined digital and print resources in diverse ways. The data show the children remixing and layering resources to create personally meaningful stories with embedded meanings understood by members of their classroom communities. The children used the digital technologies to expand the ways they could communicate meaning and to reposition themselves as capable meaning makers, even when they could not communicate through traditional printed modes.

The pedagogies created opportunities for the children to expand understandings of literacy and literacy practices. The data illustrate the children in each class using the digital technologies as placed resources (Prinsloo, 2005) as they recognized and used the different affordances of the technologies to support their intended meanings. For example, the kindergarten children in Grace's class used photo images rather than the icons in the application to support their intended meaning. Even when the children had the same resources available as in Fireball and Esther's classes, they were innovative and selected and combined digital and print resources in diverse ways. The data show the children remixing and layering resources (independently and with support) to create personally meaningful stories with embedded meanings. These meanings were sometimes immediately understood by members of their classroom communities (e.g., Dan's selection of Big Ben as an image for his green screen background), and sometimes were uncovered through the children's explanations (e.g., Merida's inclusion of Fireball as an evil character in her story). The ways the children used resources in meaning making confirms the stance in the early childhood literacy literature that recognizes children as capable meaning makers who can flexibly use and combine modes in meaning making activities (e.g., Gillen & Hall, 2013). It extends this assertion to show dynamic representations of the specific ways that young children are capable including that they can identify the affordances of digital technologies and use them as they combine

multiple modes in meaning making. The data corroborate examples in the literature that display young children using digital technologies to include elements of their own identities, other known stories, and elements of the popular culture as meaning making resources in their stories (e.g., Lotherington, 2011; Rowsell & Harwood, 2015). The findings extend this literature to illustrate examples of the ways children can use digital technologies to create texts with embedded meanings and highlight the importance of children explaining their meaning making practices to uncover embedded meanings.

The children used the digital technologies to enhance meaning making and reposition themselves in their classroom communities as capable meaning makers. Walsh (2011) asserted that opportunities for multimodal meaning making can "reveal talents of students who do not usually succeed at traditional reading and writing tasks" (p. 89). The data corroborate Walsh's finding and highlight examples of individual children (e.g., Chloe and Abby) who used technology to reposition themselves as capable storytellers, even though they had been identified as having difficulties with writing. The data extend Walsh's finding as they show an example of an entire class of children (e.g., Esther's class) repositioning themselves as capable meaning makers as they used the technology to create digital stories, even though the class had been recognized as "unsettled". Further, the data provide specific illustrations of the diverse ways that children can learn within asset-oriented approaches (Iannacci & Whitty, 2009) in early childhood literacy curricula that include digital technologies.

The innovative ways the children used the technologies to support meaning making informed the teachers' future lesson designs. As the children took up the lessons in different ways, the teachers considered what they could learn from the children's literacy practices. The data show examples of the teachers learning from the children who played with and remixed stories and literacy practices as they seemed to intuitively move between the practices of story composition and retell. For example, teachers Fireball and Esther considered the ways Sophia spontaneously moved between the practices of story retell and composing and the ways this could inform future lessons and Angela and Grace discussed the diversity of ways that the kindergarten children composed texts as they incorporated/remixed known stories with new ideas. The findings confirm the literature's

recognition that young children are more than passive beneficiaries, and can inform teachers' pedagogical design (e.g., Hill, 2010; Rowe & Miller, 2016; Rowsell & Harwood, 2015; Pyle & Luce-Kapler, 2014). The findings extend this literature to provide examples of young children moving beyond the role of curricular informant and promoting the expansion of pedagogical design and teacher's professional learning as the children demonstrated understandings of the interconnectedness of literacies through their innovative literacy practices.

6.3.2 How did the pedagogies create possibilities for children's meaning making?

The children's meaning making opportunities were supported through the teachers' pedagogical designs. The pedagogies were open and flexible—designed to grow and change in response to the ways the children interacted with the lesson. The pedagogies were uniquely designed to "fit' within the particular classroom stories and school curriculum and support the children in each class. The pedagogies built upon existing classroom practices and extended from what the children already understood about literacies and technologies. The pedagogies responded to the programmatic curriculum and provided opportunities for multimodal meaning making through traditional and digital resources to reach print literacy goals. The pedagogies positioned digital technologies as resources to support literacy learning.

The pedagogical design supported children's innovative uses of technologies. In designing pedagogies, the teachers were intentional in positioning technologies as placed resources (Prinsloo, 2005) used in service to children's meaning making. As such, the teachers did not prescribe the ways the technologies had to be used but instead designed pedagogies that invited children to play with and explore the technology and consider the ways they might use it to support the creation of their stories. For example, Fireball encouraged Esther to be open with her pedagogy and said, "have a play and see what happens" (April 6, 2017). The data confirm the importance of positioning digital tools as placed resources within pedagogies (Rowe & Miller, 2016). The data extend the literature to show the ways that pedagogies that position technologies as placed resources can

support young children's positioning as capable meaning makers and thus expand children's literacy options.

The lessons were uniquely designed to support the children in reaching print literacy goals and were embedded within the particular classroom "stories" of meaning making and connected to existing classroom practices. The pedagogies reflected what the children understood about literacies, practices, and pedagogies and were connected to other activities in the classroom curriculum when, for example, Angela used the *Daily 5* program to support the green screen filming for the *Celebration of Learning*. The pedagogies positioned existing literacies and literacy practices as *funds of knowledge*, or resources for meaning making (Moll et al., 1992). The pedagogies designed were multimodal, in that they provided opportunities for the children to use and combine print and digital resources in meaning making activities (e.g., Walsh, 2011). However, the ways the pedagogies positioned print and digital resources (e.g., print as a precursor to digital uses at Cornerstone and the digital uses leading to print at St. Nicholas) supported the children in using and combining the resources in different ways.

The findings confirm the "huge variations" (Cope & Kalantzis, 2009) possible in multimodal pedagogies and provide illustrations of what can be possible in multimodal pedagogical designs in early childhood classrooms. The findings resonate with multimodal pedagogical designs in the literature that position print as a precursor to the digital uses (e.g., Walsh, 2011) as well as pedagogical designs that use digital tools for composing, even when the children were not proficient with print (e.g., Sofkova Hashemi et al., 2017). The findings illustrate the ways teachers used existing pedagogies (including print-centric pedagogies) as "available designs" (Cope & Kalantzis, 2009, p. 176) or resources for meaning making. Within the process of design, the pedagogies grew in different ways as the teachers "reworked" (p. 175) the resources and reconfigured lessons. The findings show that all of the teachers' pedagogies grew and included multimodal resources; however, the pedagogies continued to strongly resemble traditional pedagogies and privilege print literacies and this influenced opportunities for children's meaning making. The findings extend the literature to raise questions about the differences between pedagogies that support children in multimodal design (i.e.,

composing with different modes at the same time) and designing multimodally (i.e., using different modes in sequence).

The findings further illustrate the complexity of multimodal pedagogical design as teachers must navigate competing advice about the ways they can innovate pedagogies to include digital technologies. For example, the findings illustrate a tension in the literature that highlights the importance of connecting pedagogies to existing classroom practices (Flewitt et al., 2015) and acknowledging existing resources for meaning making (e.g., Cope & Kalantzis, 2009), but also cautions that the use of traditional pedagogies when using digital technologies can inhibit meaning making (e.g., Flewitt et al., 2015; Lynch & Redpath, 2014; Räisänen et al., 2016). The data illustrate examples of pedagogies that are configured to recognize the diversity of ways different children learn within particular classroom and cultural contexts (e.g., Iannacci & Whitty, 2009) and shows the ways that multimodal pedagogies that explicitly include print literacies can be helpful in navigating schooled contexts that privilege print literacies (e.g., Walsh, 2011). Yet, the findings confirm the need for more research about the types of pedagogies that can support young children's meaning making with digital tools (e.g., Alper, 2011; Walsh, 2011) and to answer Grace's question, "*how* do you add technology into something that you are already doing?" (March 21, 2017).

6.4 Pedagogies of Possibilities: Multimodal Literacy Learning Opportunities for Teachers

The data produced evidence of TPL activities that opened up possibilities for teachers to generate multimodal literacy learning opportunities for the children. By possibilities I mean the opportunities for the teachers to make sense of literacies, technologies, and pedagogies within the TPL activities as they planned lessons. These possibilities were multiple, expansive, and taken up in different ways by the teachers. The pedagogies of the TPL activities were the structures that supported professional learning. These pedagogies were open, flexible, and responsive and were supported through interpersonal relationships.

6.4.1 What is created with these kinds of pedagogies?

The TPL activities created opportunities for the teachers to expand understandings of literacies, pedagogies, and technologies as they collaboratively designed lessons. The teachers were capable and reflective meaning makers and designed innovative pedagogies that combined digital and print resources and practices with the support of other educators. The teachers planned lessons that extended from what they understood about literacies and technologies and connected these lessons with their existing pedagogical practices.

The teachers were not merely *users* of pedagogies, they were *creators* of innovative pedagogies and involved in curriculum innovation. Though the process of curriculum change was time-consuming and not always straightforward, with the support of the other teachers in the CoP, the teachers all designed literacy lessons that included digital technologies that they had never used before. Even when the teachers at St. Nicholas used the same digital application in their lessons, the lessons were designed to reflect the particular classroom practices in place, with Esther adding the option of student collaboration to the lesson that invited digital story creation. The findings confirm the positioning of the teachers as "designers of learning processes and environments" (NLG, 2000, p. 19). The findings extend this position as they show diverse ways that teachers can collaboratively design pedagogies and illustrate the ways that teachers can be involved in curriculum change (Walsh, 2011).

Further, the findings extend the multimodal pedagogy literature to conceptualize the process of multimodal pedagogical design as a social practice of meaning making that was embedded in the contexts of the school and classroom communities and designed to respond to the applicable programmatic curricula (e.g., Street, 2003). As we worked together to plan literacy lessons, we negotiated and renegotiated the ways the lessons could "fit" within the existing structures of the programmatic, school, and classroom curriculum and mediate barriers of availability and usability of digital technologies. Further, we explored what literacy could mean within each classroom context and questioned the enduring qualities of constructed lessons for future classroom use. The findings confirm that mandated curriculum and standardized assessment measures can

constrain multimodal pedagogies (e.g., Lynch & Redpath, 2014). The findings confirm Räisänen et al.'s (2016) descriptions of pedagogical innovation as non-linear, complex, and unfolding over time within a context of existing print-centric pedagogical practices and programmatic curricula that recognized expanded understandings of literacy. The findings extended Räisänen et al.'s work by illustrating the ways that the teachers negotiated these tensions and innovated pedagogies in a collaborative setting within the Ontario, Canada curricular context (e.g., OME, 2006).

6.4.2 How did the pedagogies create possibilities for teachers' meaning making?

The structure of the TPL activities supported the teacher's design of multimodal pedagogies intended to support the children's literacy learning. The TPL activities were open and flexible and responded to the teachers' goals and the ways they wanted to learn. The TPL activities were collegial, collaborative, and sometimes critical, and provided spaces for the teachers to discuss questions about literacies, pedagogies, and technologies, and reflect on the experienced curriculum with other early primary educators. This supportive structure, facilitated by the researcher, created a space for teachers to generate pedagogies that were responsive to their particular contexts with the support of other teachers. Though the TPL activities were time consuming, the teachers considered the collaborative work as important in supporting innovative pedagogical designs that included available digital technologies.

The formation of an instrumental CoP (McDonald, 2015) supported the teachers' design of multimodal pedagogies. In each case, the teachers were united through a common interest in designing pedagogies that included digital technologies, and the TPL activities provided a structure to support the community's generation of shared practice. The teachers identified that the inclusion of other early primary teachers in the TPL activities was particularly supportive as the teachers shared understandings of programmatic curriculum and of the ways young children can learn in classrooms. The findings confirmed Wenger et al.'s (2002) assertion that collaborative learning is supported through a clearly defined focus, and illustrated the importance of flexible, responsive TPL activities that are designed to grow within the community's shared practice. Though

the literature identifies that learning communities can support cross-curricular, cross-subject planning (e.g., Wenger et al., 2002), this study provides an example illustrating the importance of having a common understanding of early childhood curricula in multimodal pedagogical design.

The pedagogies were created within the context of supportive relationships. Pedagogical options were expanded as teachers learned from and with members of the CoP about literacies, pedagogies, and technologies. The data show that the supportive relationships within each CoP were established quickly and that the TPL activities were characterized by collegiality as we planned together and reflected on the experienced curriculum. The importance of learning within the context of supportive relationships (Wenger, 2010) was especially confirmed when Angela's lesson did not go according to plan, and she confided her concerns about the lesson and asked for support in redesigning the lesson scope and sequence. The data extended understandings about the importance of relationships in collaborative pedagogical design to illustrate the ways that relationships supported the teachers in navigating the differences between the intended and operational curriculum. Further, in consideration of the findings that show innovative pedagogies that were created in a relatively short time within supportive relationships and literature from Heineke (2013) that shows professional learning supported over time within supportive relationships, I ask, *What could be possible if teachers worked together to collaboratively design multimodal pedagogies over a sustained period of time?*

The data speak to the importance of responsive facilitation—in this case by the researcher who was also an early primary teacher. In the study, I moved between my roles as researcher and early primary teacher to respond to the changing needs in each learning community. As a member of the CoP, I shared understandings of literacies and pedagogies gained through my research and practice. The study adds to literature that highlights the importance of responsive facilitation in supporting collaborative curriculum design and implementation (Edwards, 2012) and provides an example that illustrates the importance of theoretical *and* practical knowledge of literacies and pedagogies in supporting pedagogical design.

The TPL activities created spaces for teachers to generate pedagogies that were responsive to their particular classroom and school contexts. The data show the importance of sharing pictures and telling stories about the implemented lessons to support lesson planning and reflection, and the images enabled the teachers to view their own practice in different ways as well as envision the learning that happened in other classrooms. For example, Esther explained that the pictures helped her to gain a different perspective on what happened in her class and Fireball explained that viewing the pictures of Esther's implemented lessons and hearing the stories about the children learning helped him to see Esther's students "in a different light" (April 13, 2017). The findings confirm Geiger et al.'s (2015) assertions that teachers' reflections on practice can be supported through viewing images of implemented lessons. The findings extend Geiger et al.'s work, providing examples of the ways that reflection supported through multiple modes can support multimodal pedagogical design and strengthen interpersonal relationships in the CoP.

The TPL activities created opportunities for the teachers to discover what software options were available, gain facility with using the digital applications, and explore the ways they could use the applications to support and extend children's literacy options. The data confirm findings by Johnson et al. (2016) that show that the teachers had access to networked technologies. The findings extend work by Johnson et al. to show a difference in available technologies between a privately funded school and a publicly funded school, illustrate issues of usability of technology (due to installation of hardware and sharing resources between classes), and a variation in access to technologies between classes in the same schools. In addition, the findings extend work by Johnson et al. to show that all of the teachers used their own personal technologies to support student learning in their classes.

The teachers in the study strongly identified the time to collaborate as constraining collaborative work. This is perhaps not surprising given the literature's recognition that the time required to select and use digital technologies in meaningful ways in classrooms is a barrier for technology integration (e.g., Blackwell et al., 2014; Ertmer, 1999). The findings confirm the demands that collaborative TPL activities place on teachers' time

and the ways this time commitment can constrain collaboration in the learning community (e.g., Lotherington, 2011). Further, the findings corroborate examples from Owen (2014) that show that time for professional learning during the school day was supportive to collaborative planning. The data extend this research to illustrate the importance of release time for professional learning during the school day for alleviating time pressures on teachers as well as recognizing the TPL activities as valuable in the school community.

The data show parallels between the ways the teachers and students learned and the structures that supported the learning. The "pedagogy" of the TPL activities (i.e., the structures that supported learning) mirrored the pedagogies the teachers created for their students. For example, when planning a lesson for Fireball, we played with the digital application and he designed his lesson to provide opportunities for the children to play with and explore the digital application. Pedagogies that supported professional learning and student learning were focused on supporting meaning making and were flexible, responsive, collaborative, and situated in particular contexts. These pedagogies embraced funds of knowledge and extended from what was known by the learners (e.g., teachers and students) and provided opportunities for meaning making through different modes and media. The recognition of parallels between the ways teachers and students learn leads to a closer examination of "pedagogy as a teaching and learning relationship" that can create the conditions for learning (NLG, 2000, p. 9). This finding confirms work by Lotherington (2011) who found that collaborative TPL activities can promote collaborative learning activities for children. The findings extend work by Lotherington to show that the teachers' opportunities to explore literacies, technologies, and practices promoted opportunities for the children to likewise explore and discover literacies, technologies, and practices.

6.5 Recommendations

In a bid to promote expansive meaning making opportunities for early primary teachers and their students, the findings as discussed allow me to make recommendations for teachers' knowledge and practice and areas for future study.

6.5.1 Teachers must recognize children as meaning makers and the funds of knowledge they draw on in this meaning making

This study is built upon understandings of early childhood literacy that recognize young children as capable meaning makers (e.g., Gillen & Hall, 2013). I extend this positioning to these recommendations to recognize that the ways that teachers position children impact the ways they design pedagogies. I write these recommendations for teachers as curriculum makers (Connelly & Clandinin, 1988) and recognize that policymakers and administrators can support or constrain the positioning of young children.

Teachers must recognize children as capable meaning makers and build on children's unique funds of knowledge as resources when designing pedagogies. These resources can include traditional literacy practices, but can also include children's multimodal practices gained from outside of the classroom. Teachers may identify funds of knowledge through providing children with literacy learning opportunities to play, explore, and gain facility with digital technologies before expecting the children to compose texts using technologies. To support children's positioning as capable meaning makers, teachers may provide opportunities for children to share their innovative technology practices with their peers and their teachers. This sharing of practices may support and extend the multimodal literacy practices of their peers and the multimodal pedagogies/practices of their teachers. This recommendation is foundational to each of the following recommendations.

In designing multimodal pedagogies, teachers must

1) Connect multimodal literacy learning activities with existing literacy practices in the classroom. To do this, teachers may adapt existing collaborative partnerships (e.g., student pairs) in the classroom or adapt existing classroom management structures (including commercially prepared programs) to support multimodal literacies learning. This may provide opportunities to use and combine traditional and multimodal literacy practices.

2) Carefully consider the ways they position digital technologies in their pedagogies. Teachers should consider the ways they can use "open" technologies that invite children's innovations rather that "closed" applications that must be used in a particular way. Further, teachers should consider including opportunities for children to compose with digital tools *and* print resources rather than combining modes/media in a predetermined sequence. In addition, teachers should incorporate technologies as placed resources using an open flexible pedagogy that invites child to select the ways they will use the digital technology.

Policymakers also have responsibilities to support teachers in designing multimodal pedagogies that recognize young children as meaning makers with unique funds of knowledge. To support teachers in the design and implementation of multimodal pedagogies, policymakers should revise the programmatic curriculum (e.g., OME, 2006) to recognize children's funds of knowledge, position children as capable meaning makers, and expand children's literacy options. Specifically, the documents in Ontario should be revised to reflect understandings of multimodal literacies identified in the front matter of the document within the overall and specific expectations for each grade. In addition, the teacher prompts and examples should be revised to include examples of multimodal literacies in early primary grades, including the ways that children can use digital technologies to compose texts. Elsewhere, where programmatic curricula privilege print literacies, programmatic curriculum documents should be revised to include multimodal literacies as integral to literacy teaching and learning in schools. These revisions can clarify expectations for the teaching and learning of literacies and can support teachers in designing responsive curricula.

Further research is needed to examine the ways that young children can expand literacy practices within multimodal pedagogical designs. For example, an inquiry that takes a closer look at children's innovations within literacy lessons that include digital technologies could expand knowledge about the ways that young children compose multimodal texts (including the ways they select and combine print and digital resources). Also useful would be to investigate the ways that children's multimodal texts can be assessed and evaluated. Further, future inquiries should investigate the

teacher/learner relationship in pedagogical design and examine the roles of the child in curriculum-making (e.g., as curricular informant or co-creator of curricula) and the ways this can support or constrain children's literacy options.

6.5.2 Teacher professional learning activities must recognize that teachers are meaning makers and the funds of knowledge they draw on when designing pedagogies

This study is built upon understandings of multimodal pedagogy that recognize the teacher as an expert in her/his classroom. I extend this positioning to these recommendations to recognize that teachers should be responsible for their own professional learning, and have input into the content, duration, and structure of professional learning activities. School administrators and policymakers have a responsibility to support teachers in these efforts. I forward these recommendations for the design of TPL activities to teachers as they select activities to support their professional learning and to school administrators and policymakers who can provide the supports that can enable teacher professional learning activities.

TPL activities should recognize teachers as capable meaning makers and the experts of their classrooms. This means providing opportunities for teachers to identify the types of activities that can support them in their classroom (e.g., coaching, collaborative learning structures, seminars on particular topics, professional conversations). These TPL activities should be structured to extend from teachers' funds of knowledge in literacies and pedagogies. Within this structure, teachers' existing pedagogies and understandings (including traditional print literacies and pedagogies) are considered resources for pedagogical growth and innovation. This recommendation is foundational to each of the following recommendations. TPL activities should support teachers to

1) Grow as pedagogical designers. TPL activities should be responsive and support teachers in designing pedagogies for their own purposes, but they should also extend those purposes and provide learning opportunities that will ultimately expand children's literacy options. This is a delicate balance that requires facilitators to be sensitive to power relationships. However, this balance may be

realized through structuring the activities within safe, supportive spaces that invite teachers to share understandings as they discover and explore literacies, pedagogies, and technologies. This may further be supported through thoughtful questioning by colleagues and facilitators that encourages teachers to consider alternate possibilities.

2) Connect professional learning to classroom practice. Through collaborative learning opportunities, TPL activities can support teachers to plan activities that are uniquely designed for particular groups of students at particular times and are embedded in classroom curriculum. This means that lesson designs will not be replicable for other classes. Activities can further support teachers in adapting existing multimodal pedagogies that include digital technologies to respond to particular learners in classrooms.

3) Explore the ways they can design multimodal pedagogies to respond to expectations within the current programmatic curriculum (OME, 2006). This may be supported through opportunities for the teachers to discuss the tensions within the programmatic curricula that suggest an expanded view of literacy but privilege print literacy skills and practices, and the ways the programmatic curriculum allows for digital technologies in literacy instruction. TPL activities can further support teachers' multimodal design through explorations of the ways the programmatic curriculum and standardized achievement measures can limit children's literacy options.
4) Explore what technology is available and how they can include the technology in ways that can expand children's literacy options. School districts should include classroom teachers in making decisions about the applications that they install on school computers and iPads. When applications are remotely installed by technicians, teachers should be informed of what is available. Further, teachers should be consulted when installing fixed technologies (e.g., data projectors, SmartBoards) in classrooms. Teachers of the same grade level should have access to similar technologies to ensure equity of access to technologies. To ensure this

is possible, funds should be allocated in school budgets to replace or add digital technologies.

In addition, school administrators and policymakers can provide the supports that can enable supportive TPL activities. School administrators and policymakers should provide teachers with opportunities for professional learning conversations and activities within the school day. Teachers should receive time within the school day to design innovative pedagogies. These activities should include opportunities for collaboration with other teachers of a similar grade, or with similar pedagogical goals as well as opportunities to learn with more expert pedagogues (with expertise in multimodal literacies that include digital technologies). Cambourne's (1995) conditions for literacy learning (immersion, demonstration, expectation, responsibility, use, approximation, and response) can support teachers in planning, but may also support the design of the professional learning activities. Activities should also include opportunities for teachers to view images of implemented lessons. This can support teachers' understandings of the experienced curriculum.

Further research is needed about collaborative participatory structures that can support teachers in designing multimodal pedagogies that include digital technologies in ways that expand children's literacy options. This study was exploratory in nature and provided opportunities for teachers to plan and implement one lesson. Future research designs should be longitudinal and document teachers' learning over time and the ways sustained professional learning can influence children's literacy learning. Future studies should consider the ways that teachers can assess children's multimodal processes and products created within multimodal pedagogies. Further, more research is needed about the ways teachers use technologies in their classrooms, including an examination of their uses of personally owned technologies to support student learning.

Epilogue

…And yet, I don't know if I can really say the circle [of my elementary teaching practice] is closing. Yes, I am overlapping with my past practice, and my practices and experiences are propelling me through this study as they inform this work. However, I am not returning to the same place that I was. In this way, it is an iterative circle, and as I am coming up to the crest of the circle, I feel like I am about to start something new and/or redefine my practice. That's a scary feeling, but exciting at the same time... (journal, February 15, 2017)

The stories in this dissertation have become a part of my own stories of teaching and learning. As I move forward, these stories will be woven through the stories I tell in the future.

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Appendices

Appendix A: Timelines for Professional Learning Meetings and Classroom Observations and Summary of Meetings

February, 2016	March, 2017	April, 2017
First teacher professional learning meeting - scheduling, identifying goals		
Classroom visit of first focal educator (observation/volunteer)		
Second teacher professional learning meeting - designing the lesson for the first teacher		
	Observation of implemented lesson in first focal teacher's classroom	
	Classroom visit of second focal teacher (observation/volunteer)	
	Third teacher professional learning meeting - debriefing the implemented lesson in first teacher's classroom; planning for lesson in second teacher's classroom	
		Observation of implemented lesson in second focal teacher's classroom
		Fourth teacher professional learning meeting - debriefing the implemented lesson in second teacher's classroom
		Follow up semi-structured interview with teachers

Appendix B: Letter of Information and Consent Form for Teacher Participants

Western

Letter of Information and Consent

Project Title: Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons

Document Title: Letter of Information- Educator

Doctoral Candidate conducting the study:
Lori McKee
c/o Faculty of Education,
Western University
[redacted]

Supervisor (Principal Investigator)
Rachel Heydon, PhD
Faculty of Education,
Western University
[redacted]

Introduction
You are being invited to participate in this research study that is designed to support early primary educators in integrating digital technologies into classroom literacy lessons because you are an educator who plans literacy lessons within an early primary classroom (FDK- Grade 2) and have interest in using digital technologies to support literacy learning in your classroom.

Why is this study being done?
Many early primary educators in Ontario have access to digital technologies, but it can be challenging for educators to use these technologies to support literacy learning. The purpose of this study is to support early primary educators in creating and implementing literacy lessons that include digital technologies and is designed to produce knowledge about the relationship between multimodal literacies and pedagogies, the processes that support teacher professional learning, and how this all can support student learning.

How long will you be in this study?
It is expected that the study will take place over 6 months. Within this time period, it is anticipated that you will be asked to be a part of up to 6 meetings with other participating teachers (these meetings will be less than 2 hours and will occur outside of school hours). You will also be asked to participate in two visits within your classroom during the regularly scheduled classroom activities within the regularly scheduled school day, with each lasting less than 1.5 hours. Finally, you will be asked to participate in one interview which will last less than 30

minutes. In total, during your participation in the study, you will be asked to participate up to 15.5 hours over a 6 month period. Of this total time commitment over 6 months, 12.5 hours (over 7 meetings) will happen outside of your regular work day.

What are the study procedures?
If you agree to participate in this study, you will be asked to participate in teacher professional learning meetings and also be observed in your classroom.

You will be asked to participate in teacher professional learning meetings with other participating early primary educators. These meetings will be designed to support early primary teachers in creating literacy lessons that are supported through digital technologies. In these meetings, you will be asked to work with a small group of early primary educators to create lessons that are specifically designed for the students of each educator. These meetings will be audiotaped, and photos will be taken of the process of creating lessons within the group of educators. These meetings will be held at a time and location that is convenient to educator participants.

You will also be asked to be observed two times in your classroom during the regularly scheduled school day. These classroom observations are designed to support you in implementing lessons that include digital technologies and are not designed to evaluate or judge your performance as a teacher. On the first visit, Lori McKee will observe and participate in the regular activities of the classroom. This visit is designed to help the children become accustomed to having an additional person in the classroom. On this visit, photos of the physical set-up of the classroom may be taken, and you may be asked informal questions about the physical set-up of the classroom. These conversations may be audiotaped. On the second visit, you will be asked to be observed and/or photographed while implementing the lesson that was created with the other educator participants in the teacher professional learning meetings. During the observation, the researcher may take notes about the lesson. With your consent, you may also be videotaped while implementing the lesson. Information about the implemented lesson including the researcher's notes, photographs and/ or videotape of you implementing the lesson will be shared with the other teachers in the teacher professional learning meetings. You may be asked to comment about your perceptions of the lesson after it was implemented. These conversations may be audiotaped.

At the end of the study, you will be invited to participate in a brief interview. In this interview, you may be asked questions about the processes that supported teacher professional learning, the types of meaning making afforded through digital technologies, and your perceptions of the implications for student learning. In sum, over the course of the study, you will be audiotaped, and/or photographed. With your consent, you may also be videotaped.

If you do not wish to be audiotaped or photographed, you will not be able to participate in the study. If you do not wish to have unidentified quotes from you included in the dissemination of the research findings, you will not be able to participate in the study.

What are the risks and harms of participating in this study?
There are no known or anticipated risks or discomforts associated with participating in this study.

What are the benefits of participating in this study?
No benefits are guaranteed through participation in this study. The possible benefits to you may include having a group of early primary educators helping you to plan literacy lessons supported through digital technologies according to the goals identified by you for your classroom. In addition, a benefit may include learning more about literacies and pedagogies which may support your professional learning.

Information from this study may benefit society as a whole to understand more about the ways digital technologies can be used in literacy education. This information may inform teacher practices, policies, and inform future research designs.

Can participants choose to leave the study?
If you decide to withdraw from the study, you have the right to request withdrawal of information collected about you. However, co-constructed anonymized artifacts created within the teacher professional learning meetings prior to you leaving the study may still used. If you wish to have your information removed please let the researcher know.

How will participants information be kept confidential?
Please be advised that although the researchers will take every precaution to maintain confidentiality of the data, the nature of this study prevents the researchers from guaranteeing confidentiality. You may appear in videos or photos, and your voice may be heard in audio-recordings shared with other educators within the teacher professional learning meetings. The researchers would like to remind participants to respect the privacy of your fellow participants and not repeat what is what is shared in the videos, photographs, or audio-recordings.

The results from this study may be disseminated in thesis materials, books, and/or academic journals, as well as at academic conferences around the world in slideshow and print formats. If the results of the study are published, unidentifiable quotes from you as well as images of you, your environment and/or property may be included. If the results of the study are published, your name, your students' names, your school's name, or the name of your school district will not be used. The researchers will keep any personal information about you in a

secure and confidential location for 5 years. A list linking your study number with your name will be kept by the researchers in a secure place, separate from the rest of the data.

While we will do our best to protect your information, there is no guarantee that we will be able to do so. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. In addition, if data is collected during the project that is required by law to report, we have a duty to report.

Are participants compensated to be in this study?
You will not be compensated for your participation in this research.

What are the rights of participants?
Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on your employment.

We will give you new information that is learned during the study that might affect your decision to stay in the study.

You do not waive any legal right by signing this consent form.

Whom do participants contact for questions?
If you have questions about this research study please contact Lori McKee at [redacted]. You may also contact Dr. Rachel Heydon at [redacted] or [redacted].

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research [redacted], email: [redacted].

Thank you very much for considering this request,

Sincerely,

Lori McKee

This letter is yours to keep for future reference.

Consent Form

Project Title: Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons

Document Title: Letter of Information- Educator

Doctoral Candidate conducting the study:
Lori McKee
c/o Faculty of Education,
Western University
[redacted]

Principal Investigator:
Rachel Heydon, PhD
Faculty of Education,
Western University
[redacted]

I agree to be video-recorded during this research.

☐ **YES** ☐ **NO**

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

Name: (please print)_____

Signature: _____

Date: _____

Person Obtaining Informed Consent (please print):

_____

Signature:_____

Date:_____

Appendix C: Photo Release Form for Adult Participants

Western

Photographic Release Form for Adult Participants

Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons

I agree to have photographs of me, my environment and property used in the following ways (please check all that apply):

In teacher professional learning meetings	☐ Yes	☐ No
In academic articles	☐ Yes	☐ No
In print, digital and slide form	☐ Yes	☐ No
In academic presentations	☐ Yes	☐ No
In thesis materials	☐ Yes	☐ No

Name of Participant: _____ (please print)

Signature of Participant: _____

Date: _____

Person Obtaining Consent: _____ (please print)

Signature of Person Obtaining Consent: _____

Date: _____

Version Date: 01/02/2016

Appendix D: Letter of Information and Consent Form for Child Participants

Western

Letter of Information and Consent

Project Title: Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons

Document Title: Letter of Information- Parent of child

Doctoral Candidate conducting the research:
Lori McKee
c/o Faculty of Education,
Western University
[redacted]

Principal Investigator:
Rachel Heydon, PhD
Faculty of Education,
Western University
[redacted]

Introduction

Your child is being invited to participate in this research study that is designed to support early primary educators in integrating digital technologies into classroom literacy lessons because an educator in your child's classroom is interested in using digital technologies to support literacy learning in her/his classroom. The purpose of this letter is to provide you with information about the study to help you make an informed decision about your child's participation in the research.

Why is this study being done?

Many early primary educators in Ontario have access to digital technologies, but it can be challenging for educators to use these technologies to support the literacy learning of their students. The purpose of this study is to support early primary educators in creating and implementing literacy lessons that include digital technologies and is designed to produce knowledge about the relationship between the teaching and learning of literacies, the processes that support teacher professional learning, and how this all can support student learning.

How long will your child be in this study?
Lori McKee will visit your child's classroom two times within the regularly scheduled school day. Each visit will last less than 1.5 hours.

What are the study procedures?
If you agree to have your child participate in this study, your child will be asked to participate during classroom visits that will occur within the normal course of your child's curriculum within the regularly scheduled school day.

On the first visit, Lori McKee will observe and participate in your child's classroom. This visit is designed to help the children feel more comfortable with having an additional adult in the classroom. On the second classroom visit, Lori McKee will observe your child's teacher teaching the lesson, and will take pictures of the children as they take part of the lesson. As your child is working in the classroom, she/he may be asked about what they are learning. These conversations may be audiotaped. In sum, over the course of the study, your child may be audiotaped and/or photographed.

If you do not wish for your child to be audiotaped or photographed, your child will not be able to participate in the study, but may participate in the classroom activities as usual.

What are the risks and harms of participating in this study?
There are no known or anticipated risks or discomforts associated with participating in this study. There will be no marks or grades assigned during the research study.

What are the benefits of participating in this study?
No benefits are guaranteed through participation in this study. Your child may not benefit directly from participating from this study but information gained through this study may be of benefit to society as a whole to understand more about the ways digital technologies can be used in literacy education. This information may inform teacher practices, policies, and inform future research designs.

Can participants choose to leave the study?
If you decide to withdraw your child from the study, you have the right to request withdrawal of information collected about your child. If you wish to have your child's information removed please let the researcher know.

How will participants information be kept confidential?
Please be advised that this study involves a research design whereby other teaching professionals will be reviewing the photos, and audio-recordings of the classroom lesson to help them plan future lessons. Your child may appear in the photos, and her/his voice may be heard in the audio-recording.

As such, while the researchers will take every precaution to maintain confidentiality of the data, the nature of this study prevents the researchers from guaranteeing confidentiality. The researchers will remind all educator participants to respect the privacy of their fellow participants and not repeat what is shared in the photographs or audio-recordings.

The results from this study may be disseminated in thesis materials, books, and/or academic journals, as well as at academic conferences around the world in slideshow and print formats. If the results of the study are published, unidentifiable quotes from your child as well as images of your child, your child's environment and/or property may be included. If the results of the study are published, your child's name, your child's teacher's name, your school's name, or the name of your school district will not be used. The researchers will keep any personal information about your child in a secure and confidential location for 5 years. A list linking your child's study number with your child's name will be kept by the researchers in a secure place, separate from the rest of the data.

While we will do our best to protect your information, there is no guarantee that we will be able to do so. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. In addition, if data is collected during the project that is required by law to report, we have a duty to report.

Are participants compensated to be in this study?
You will not be compensated for your child's participation in this research.

What are the rights of participants?
Your child's participation in this study is voluntary. You may decide not to have your child participate in this study. Even if you give consent for your child to participate, you have the right to have your child not answer individual questions or to withdraw your child from the study at any time. If you choose not to have your child participate or to leave the study at any time, it will have no effect on your child's marks.

We will give you new information that is learned during the study that might affect your decision to stay in the study.

You do not waive any legal right by signing this consent form.

Whom do participants contact for questions?
If you have questions about this research study please contact Lori McKee at [redacted]. You may also contact Dr. Rachel Heydon at [redacted] or [redacted].

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics ([redacted]

Thank you very much for considering this request,

Sincerely,

Lori McKee

This letter is yours to keep for future reference.

Consent Form

Project Title: Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons

Document Title: Letter of Information- Parent of Child

Doctoral Candidate conducting the research:
Lori McKee
c/o Faculty of Education,
Western University
[redacted]

Principal Investigator:
Rachel Heydon, PhD
Faculty of Education,
Western University
[redacted]

I have read the Letter of Information, have had the nature of the study explained to me and I agree to allow my child to participate. All questions have been answered to my satisfaction.

I consent to the use of unidentified quotes obtained during the study in the dissemination of this research

☐ **YES** ☐ **NO**

Child's Name: _____

Parent / Legal Guardian (Print): _____
Parent / Legal Guardian (Sign): _____
Parent / Legal Guardian (Date): _____
Person Obtaining Informed Consent (please print):

_____

Signature:_____

Date:_____

Was the parent/legal guardian assisted during the consent process?

☐ **YES** ☐ **NO**

If **YES**, please check the relevant box and complete the signature space below:

☐ The person signing below acted as a translator for the participant during the consent process and attests that the study as set out in this form was accurately translated and has had any questions answered.

Print Name of Translator	Signature	Date *(DD-MMM-YYYY)*

Language

Appendix E: Photo Release Form for Child Participants

Western

Child Participant Photographic Release Form

Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons

I agree to have photographs of my child, my child's environment and property used in the following ways (please check all that apply):

In teacher professional learning meetings	□ Yes	□ No
In academic articles	□ Yes	□ No
In print, digital and slide form	□ Yes	□ No
In academic presentations	□ Yes	□ No
In thesis materials	□ Yes	□ No

Name of Participant: _____ (please print)

Name of Parent: _____ (please print)

Signature of Parent : _____

Date: _____

Person Obtaining Consent: _____ (please print)

Signature of Person Obtaining Consent: _____

Date: _____

Version Date: 01/02/2016

Appendix F: Assent Form for Child Participants in Grades 1 and 2

Western

Assent Letter

Letter of Information and Consent

Project Title: Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons

Document Title: Letter of Information-Child (Assent)

Doctoral Candidate conducting the study:
Lori McKee
c/o Faculty of Education
Western University
[redacted]

Supervisor (Principal Investigator):
Rachel Heydon, PhD
Faculty of Education
Western University
[redacted]

Why are you here?
Lori McKee wants to tell you about a study that will look at how teachers plan lessons for kids in their classes using technologies (like iPads, SmartBoards and things like that), and she wants to know how this helps kids learn. She would like to see if you want to be in this study.

Why are they doing this study?
Lori McKee wants to see how teachers can work together to plan lessons for kids that use different technologies and they want to understand the ways kids learn in these lessons.

What will happen to you?
If you want to be in this study, Lori McKee will visit your classroom two times. On the first visit, Lori McKee will help your teacher in the classroom. On the second visit, your teacher will be photographed teaching a lesson, and you might also be in the pictures because you are in the class. When you are doing your work, Lori McKee might ask you questions about what you are learning. Lori McKee might take some pictures and record your voice while you are working.

Will there be any tests?
There will not be any tests or marks on the report card for this study.

Will the study help you?
This study might not help you right away, but in the future, it might help teachers plan lessons for their students, and this might help kids learn.

Do you have to be in the study?
You do not have to be in the study. No one will be mad at you if you do not want to do this. If you do not want to be in the study, tell Lori McKee, your teacher, or your parents. Even if you say yes, you can change your mind later. It is up to you.

What if you have any questions?
You can ask questions at any time, now or later. You can talk to the teachers, your family, Lori McKee, or Dr. Heydon.

Thank you very much for considering this request,

Sincerely,

Lori McKee

This letter is yours to keep for future reference.

I want to participate in this study.

Print Name of Child_____

Date_____

Age _____

Name of Person Obtaining Consent_____

Signature of Person Obtaining
Consent_____

Appendix G: Letter of Information and Consent Forms for "Other Adult" Participants

Western

Letter of Information and Consent

Project Title: Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons

Document Title: Letter of Information- Other Adult

Doctoral Candidate conducting the study:
Lori McKee
c/o Faculty of Education,
Western University
[redacted]

Principal Investigator:
Rachel Heydon, PhD
Faculty of Education,
Western University
[redacted]

Introduction
You are being invited to participate in this research study that is designed to support early primary educators in integrating digital technologies into classroom literacy lessons because an educator in a classroom where you work is interested in using digital technologies to support literacy learning in her/his classroom. Although the focus of the research is not on you, you are invited to participate in the research because you work with children in the class during literacy lessons.

Why is this study being done?
Many early primary educators in Ontario have access to digital technologies, but it can be challenging for educators to use these technologies to support literacy learning. The purpose of this study is to support early primary educators in creating and implementing literacy lessons that include digital technologies and is designed to produce knowledge about the relationship between multimodal literacies and pedagogies, the processes that support teacher professional learning, and how this all can support student learning.

How long will you be in this study?
A researcher will visit the classroom where you work two times within the regularly scheduled curriculum within the regularly scheduled school day. Each visit will last less than 1.5 hours.

What are the study procedures?
If you agree to participate in this study, you will be asked to participate during classroom visits within the regularly scheduled curriculum within the regularly scheduled school day.

On the first visit, Lori McKee will observe and participate in the classroom. On the second classroom visit, Lori McKee will observe the educator teaching the lesson, and will take pictures of the children as they take part of the lesson. As you are working with the children, you may be asked about your perceptions of the activity. These conversations may be audiotaped. In sum, over the course of the study, you may be audiotaped and/or photographed.

If you do not wish to be audiotaped or photographed, you will not be able to participate in the study, but may continue participating in activities in the classroom as usual.

What are the risks and harms of participating in this study?
There are no known or anticipated risks or discomforts associated with participating in this study.

What are the benefits of participating in this study?
No benefits are guaranteed through participation in this study. You may not benefit directly from participating from this study but information may be of benefit to society as a whole by forwarding understanding about the ways digital technologies can be used in literacy education. This information may inform teacher practices, policies, and inform future research designs.

Can participants choose to leave the study?
If you decide to withdraw from the study, you have the right to request withdrawal of information collected about you. If you wish to have your information removed please let the researcher know.

How will participants information be kept confidential?
Please be advised that this study involves a research design whereby other teaching professionals will be reviewing photos, and audio-recordings of the classroom lesson to help them plan future lessons. You may appear in the photos, and your voice may be heard in the audio-recording. As such, while the researchers will take every precaution to maintain confidentiality of the data, the nature of this study prevents the researchers from guaranteeing confidentiality. The researchers will remind all educator participants to respect the privacy of their fellow participants and not repeat what is shared in the photographs, or audio-recordings.

The results from this study may be disseminated in thesis materials, books, and/or academic journals, as well as at academic conferences around the world

in slideshow and print formats. If the results of the study are published, unidentifiable quotes from you as well as images of you, your environment and/or property may be included. If the results of the study are published, your name, your school's name, or the name of your school district will not be used. The researchers will keep any personal information about you in a secure and confidential location for 5 years. A list linking your study number with your name will be kept by the researchers in a secure place, separate from the rest of the data.

While we will do our best to protect your information, there is no guarantee that we will be able to do so. Representatives of The University of Western Ontario Non-Medical Research Ethics Board may require access to your study-related records to monitor the conduct of the research. In addition, if data is collected during the project that is required by law to report, we have a duty to report.

Are participants compensated to be in this study?
You will not be compensated for your participation in this research.

What are the rights of participants?
Your participation in this study is voluntary. You may decide not to be in this study. Even if you consent to participate you have the right to not answer individual questions or to withdraw from the study at any time. If you choose not to participate or to leave the study at any time it will have no effect on your employment.

We will give you new information that is learned during the study that might affect your decision to stay in the study.

You do not waive any legal right by signing this consent form.

Whom do participants contact for questions?
If you have questions about this research study please contact Lori McKee at [redacted]. You may also contact Dr. Rachel Heydon at [redacted] or [redacted].

If you have any questions about your rights as a research participant or the conduct of this study, you may contact The Office of Research Ethics ([redacted], email: [redacted]

Thank you very much for considering this request,

Sincerely,

Lori McKee

This letter is yours to keep for future reference.

Consent Form

Project Title: Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons

Document Title: Letter of Information- Other Adult

Doctoral Candidate conducting the study:
Lori McKee
c/o Faculty of Education,
Western University
[redacted]

Principal Investigator:
Rachel Heydon, PhD
Faculty of Education,
Western University
[redacted]

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

I consent to the use of unidentified quotes obtained during the study in the dissemination of this research

☐ **YES** ☐ **NO**

Name: (please print)_____

Signature: _____

Date: _____

Person Obtaining Informed Consent (please print):
_____

Signature:_____

Date:_____

Appendix H: Semi-structured Interview protocol for use with Teacher Participants

This semi-structured interview is designed to have the tone of a collegial conversation. The interview is designed to be inductive, and involves asking some open-ended questions about the educator's experiences with digital technologies, the educator's experiences within the teacher professional learning meetings, and the educator's perceptions of the learning opportunities afforded through digital technologies.

At the beginning of the interview, the participant will be reminded that the interviews will be audio recorded, that the participant can refuse to answer any questions or stop the interview at any time.

PART A: Experiences with digital technologies

1. How do you use technologies in your daily life? (how comfortable are you with using digital technologies?)
2. What kinds of technologies are available to you for use in your classroom?
3. In a typical week, describe how you might use digital technologies in your classroom.
4. In your experience, what are some challenges that can arise when using digital technologies with young children in a classroom setting?

PART B: Experiences in the Teacher professional learning meetings (questions adapted from Wenger et al., 2002, p. 141)

1. Describe one memorable event within the teacher professional learning meetings.
2. What was most helpful within the teacher professional learning meetings?
3. What was least helpful within the teacher professional learning meetings?
4. Has your experience within the teacher professional learning meetings (or the lessons created within the teacher professional learning meetings) continued to impact your teaching? In what ways?
5. What advice would you give educators who want to be part of teacher professional learning meetings?

PART C: Perceptions of learning with digital technologies

1. In your opinion, how does the inclusion of digital technologies influence children's meaning making, if at all? (how can digital technologies support meaning-making? How can digital technologies constrain meaning making?)
2. Following the implementation of the co-constructed lesson, has your uses of digital technologies changed? In what ways?
3. Following the implementation of the co-constructed lesson, have you noticed any difference in the ways children are using digital technologies? In what ways?

Appendix I: Approval Notice from Western University Non-Medical Research Board

Western Research

Research Ethics

Western University Non-Medical Research Ethics Board
NMREB Amendment Approval Notice

Principal Investigator: Dr. Rachel Heydon
Department & Institution: Education\Faculty of Education, Western University

NMREB File Number: 107711
Study Title: Learning stories: A case study of early primary educators creating and enacting multimodal pedagogies into classroom literacy lessons
Sponsor: Joseph-Armand Bombardier Canadian Graduate Scholarship-Doctoral

NMREB Revision Approval Date: November 23, 2016
NMREB Expiry Date: March 21, 2017

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Letter of Information & Consent	LOI-Adults no videotape	2016/11/22
Letter of Information & Consent	Parents no videotape	2016/11/22
Revised Western University Protocol		2016/11/22
Revised Letter of Information & Consent	Educator	2016/11/22

The Western University Non-Medical Science Research Ethics Board (NMREB) has reviewed and approved the amendment to the above named study, as of the NMREB Amendment Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

[redacted]
Ethics Officer, on behalf of Dr. Riley Hinson, NMREB Chair

Ethics Officer: Erika Basile ___ Katelyn Harris ✓ Nicole Kaniki ___ Grace Kelly ___ Vikki Tran ___ Karen Gopaul ___

Western University, Research, [redacted]

Curriculum Vitae

Name: **Lori McKee**

Post-secondary Education and Degrees:

University of Guelph
Guelph, Ontario, Canada
1992-1996 B.A.Sc. Child Studies

Queen's University
Kingston, Ontario, Canada
1996-1997 B.Ed. Primary-Junior Qualifications.

The University of Western Ontario
London, Ontario, Canada
2010-2013 M.Ed. Educational Studies

The University of Western Ontario
London, Ontario, Canada
2014-2017 Ph.D. Educational Studies

Honours and Awards:

Western University
Doctoral Excellence Research Award
2016-2018

Western University
Art Geddis "Learning About Teaching" Memorial Award
2016

Province of Ontario Graduate Scholarship
2014-2015; 2015-2016 (declined)

Joseph-Arm and Bombardier Canadian Graduate Scholarship-Doctoral Award
2015-2018

Language and Literacy Researchers of Canada Master's Research Award
2014

Western University
John Dearness Memorial Graduate Award
2013

Related Work Experience

Instructor, Preservice Teacher Education
The University of Western Ontario
2013; 2016-2017

Elementary School Teacher
Thames Valley District School Board
1998-present

Elementary School Teacher
Faith Community Christian School
1997-1998

Research Assistant
The University of Western Ontario
2012-2015

Selected Publications:

Heydon, R., **McKee, L.,** & O'Neill, S. (accepted)**.** Singing our song: The affordances of singing in an intergenerational, multimodal literacy program. *Literacy.*

Heydon, R., **McKee, L.,** & Daly, B**.** (2017). iPads and Paintbrushes: An Exploratory Case Study of Integrating Digital Media as Placed Resources into an Intergenerational Art Class. *Language and Education, 31*(4), 351-373. doi: 10.1080/09500782.2016.1276585

Heydon, R., **McKee, L.,** & Phillips, L. (2016). The affordances and constraints of visual methodologies in early childhood education research: Talking points from the field, *Journal of Childhood Studies, 41*(3), 5-17. doi:

McKee, L., & Carr, G. (2016). Supporting beginning readers in reading to learn: A comprehension strategy. *The Reading Teacher, 70*(3), 359-363. doi: 10.1002/trtr.1510

McKee, L. (2016). [Review of the book *Negotiating Critical Literacies with Young Children*, 10th anniversary edition, by Vivian Maria Vasquez]. *Journal of Early Childhood Literacy*, *16*(1), 137-141. doi: http://dx.doi.org/10.18357/jcs.v41i3.16302

McKee, L., & Heydon, R. (2015). Orchestrating literacies: Print literacy learning opportunities within multimodal intergenerational ensembles. *Journal of Early Childhood Literacy, 15*(2), 227-255. doi: 10.1177/1468798414533562

McKee, L. (2013). *Print literacy opportunities for young children in a multimodal literacy ensemble* (Master's thesis). Retrieved from http://ir.lib.uwo.ca/etd/1156