IMPORTANCE OF WORKING COLLABORATIVELY
AND RISK-TAKING WITH DIGITAL TECHNOLOGIES
WHEN TEACHING LITERACY

by

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IMPORTANCE OF WORKING COLLABORATIVELY AND RISK-TAKING WITH DIGITAL TECHNOLOGIES WHEN TEACHING LITERACY

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Abstract

As classroom landscapes and digital technologies are constantly changing, this qualitative research study investigated the challenges for elementary educators as they implement and sustain digital-based literacy practices. The perceptions of 15 participating elementary teachers, from rural and urban Ontario, Canada, as they reflected on their own teaching practices and curriculum planning involving literacy and digital tools, were explored through the lens of New Literacies (Coiro et al., 2008). The following research questions guided this study: a) What do teachers who use multimodal practices perceive as their teaching strengths? b) How do teachers describe their understanding of literacy and learning? c) How do teachers utilize digital technologies to support teaching and learning through multimodal methods? d) What types of environments support teachers to address the challenges of teaching with multimodal practices? Primary sources of data for this study were semi-structured interviews and the teachers’ educational resources and documents, sourced to plan teaching and learning literacy activities, and collected and analyzed through a grounded theory approach.

Findings suggest that the 15 teachers effectively integrate multimodal and digital tools and resources into their literacy curriculum, through supportive environments and peer collaborations. This shift in teaching and learning illustrated challenges with common technological and connectivity issues as well as finding space for professional
development with Web 2.0 applications. The teachers experienced tensions when teaching through multimodal means, such as inequity of access to digital resource sharing and daily implementing digital tools in the elementary literacy curriculum. Constantly seeking out new ways to integrate digital technologies, tools and resources, while embracing the tensions of teaching digitally, these pedagogical risk-takers provided opportunities to further understand the importance and challenges of facilitating multimodal practices in the elementary literacy classroom.
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CHAPTER ONE: 
ENTER INTO THE STORY

Introduction

“What do you have there?”
“It’s a book.”
“Can it text?” “No.” “Tweet?” “No.” “Wi-Fi?” “No…”
“It’s a book.”

Smith (2010), It’s a Book.

In It’s a Book, a story by Lane Smith (2010), a print-book reading monkey and a
supposedly tech-savvy donkey relate the possibilities of literacy through their different
understandings of the purposes of a book. While the monkey rolls his eyes at the donkey
trying to read the print book like he would use a Web 2.0 application, this story illustrates
some differences between the uses of digital technologies and print texts. In the
classroom, this challenge is experienced by teachers and students alike. Challenges for
educators may include common technological issues with connectivity and access to
digital resource sharing, as well as space for professional development with Web 2.0
applications. When we consider how quickly digital technologies evolve, how are
educators to implement quality digital-based literacy practices in their classrooms (Coiro
et al., 2008)? This research study provides teachers’ perspectives and experiences on how
such implementation might be achieved. Joining the work of New Literacies researchers,
this study hopes to continue the conversation regarding multimodal and digital literacies,
collaborations among educators, and integrating digital technology practices in the
classroom. I illustrate how 15 elementary teachers reflect on their own teaching practices,
plan literacy curriculum, and create learning opportunities through multimodal and
digital resources and tools in their classrooms. These participating teachers exemplify
how, through peer and student collaboration, and by taking chances with digital
technologies, opportunities for learning in the classroom are boundless.

This study arises from reflections on my own teaching experiences. Technology
was not a major consideration when I first began teaching. It was actually students, like
Charlie (described below), who introduced me to the learning potential of media and
digital technology through their own explorations. I have been an educator, a literacy
educator in particular, for a number of years. High schools first drew me into their halls
as I could coach sports and teach literature and history. My technology uses were centred
on word processing programs, tools for doing research searches, and graphic programs
for teaching journalism. But, eventually, a small elementary school invited me into their
laughter-filled rooms full of creative learning. It was here, amongst the close-knit
families and staff that I first began researching what it means to be an educator in today’s
world. Since those halcyon days I have taught and conducted research in a variety of
educational spaces. I also began crafting curriculum that integrated digital technologies.
But, while I often remember back to how and what I taught in my classrooms, I also look
forward to how to implement best practices of intertwining literacy and digital
technologies into elementary curriculum.

Some years ago I taught grade seven in an elementary school on the west coast of
Canada. One of my students, I’ll call him Charlie, was a young actor. He was away on a
movie set for a number of months during the school year. Although he and the other
child actors had tutors while they were on set in California, as his classroom teacher, I
was responsible for ensuring he was taught the local curriculum. When Charlie returned
to regular school with us I asked him to share some of his dramatic expertise, leading us
to have a richer drama program that year, and stories about his experiences as an actor.
Charlie chose to create a photo slide presentation to illustrate what he did to get ready for scenes as well as what he did with his fellow actors in ‘on-set’ school. His digital presentation gave us a window through which to look into his life on set. Now, years later I wonder about the digital opportunities that he and I could have explored while he was in California. We could have Skype’d with him in our class, used video conferencing to allow him to participate in some of our class activities, or, we could have utilized social networks (like Twitter or Facebook) to further connect with each other. We might have created inquiry activities to learn more about California or the movie industry on the west coast. Although my students found Charlie’s photo presentation a worthwhile learning experience, they might have been more deeply connected through today’s myriad of digital technologies. For instance, “students [could have] used the affordances of technology (e.g., social networking; applying multimodality to language learning; responding to issues through interactive, multimodal compositions)” to create spaces for further learning (Lapp et al., 2012, p. 376).

**Perspectives on Multimodality Underpinning this Research**

My experience with Charlie represents an opportunity to potentially extend students’ learning using digital technology. In the following examples of teaching practices, I illustrate how my perspectives on multimodal teaching (which will be elaborated on in chapter 2) have been carried into my own practice. In my reflections on these practices, I present principles for multimodal teaching, which became part of the criteria for participant selection for my research study. These principles are:

1. Creating space for meaning making by teaching and learning with multiple modes

2. Utilizing digital technologies as tools and resources
3. Providing choice in multimodal projects

4. Integrating texts from students’ lives outside of school

A favourite read-aloud text in my junior classrooms was Neil Gaiman’s (2002) *Coraline*, a strange story about a girl who actually meets her ‘other’ mother and ‘other’ father on the other side of a door in an old house. A story of misconstrued identities, *Coraline* explores how misunderstandings based on identity can be harmful. When she encounters her moment of truth, or “unravelling time” (p.128), Coraline finds her way back home to her family. The spooky nature of the story always drew positive reactions from my students, more so when the stop-motion movie was released. The culminating learning opportunity following the read-aloud of this novella was a choice of multimodal presentations, such as charcoal medium sketchbooks, multimedia dioramas, musical soundtrack creations, and other creative modes. I offered students choice, in agreement with Stein (2008) who asserts that choice is essential to the design of a multimodal project. I consider this to be an example of multimodal teaching because my students were engaged with their chosen activity, mainly since the students chose their own medium, but also because Gaiman was an author many of the students were familiar with outside of school. It was in fact a student who introduced me to Gaiman’s comic books, graphic novels, short stories and novels. From there, *Coraline* found its way into my curriculum. This example underscores my belief that teachers and students bring rich experiences with them as they enter their classrooms. If I were teaching in a grade seven classroom today, I would have a wider array of digital choices to present to my students, such as using *Storybird.com* or *iMovie*. But the multimodal teaching principles remain the same. While the principle of utilizing digital technologies was not incorporated in the
original project, creating space for meaning making with multiple modes, providing choice, and integrating text from students’ lives were encompassed.

Teachers who follow the principles of multimodal teaching often engage students in inquiries using technology. I recently noticed a young student reading J.K. Rowling’s (2000) *Harry Potter and the Philosopher’s Stone*, and answering one-dimensional questions for each chapter that the teacher had assigned for homework. While we discussed some of the characters in the book he asked me if I thought the snake from the zoo was also Nagini, Voldemort’s horcrux snake which appears later in the series. I thought this was a thoughtful question and we searched for the answer on Rowling’s *Pottermore* website but could not uncover a solution. Since we discovered J.K. Rowling does not answer emails, we decided to type a letter to the author via her publisher. Through this exercise not only did I find out how deeply the student had read this book, but we also embarked on an authentic writing event. This type of writing event also bridges print and digital texts and tools through a teaching and learning opportunity. As Edwards-Groves (2012) found, new pedagogical and literacy practices “have enabled students in their everyday life and in their classrooms to become multimodal designers of text, as writing now requires multimodality, creativity, and technological and technical creativity” (p.99). Making meaning by teaching and learning with multiple modes, utilizing digital technologies as tools and resources, providing choice in multimodal projects, and integrating texts from students’ lives outside of school are the multimodal teaching principles constructed through work done by researchers and educators of multimodalities. There are a multitude of benefits for implementing digital technologies in the classroom through multimodal teaching practices.
Benefits of Implementing Digital Technologies

Digital technologies are fundamentally changing learning and teaching (Edwards-Groves, 2012). Developing students’ self-confidence as writers and connecting students’ home lives with their school lives are two of the many reasons why teachers should move “past the barriers that exist [to] forge a new kind of literacy” (Kist et al., 2010, p.63). For example, Kelly, a grade one teacher contributing to Kist et al.’s research, explains how blogging with her grade one students helps them develop their confidence as authors. In another example, Jeff, a grade two teacher, used Twitter with his grade two class to encourage parents to ask detailed questions about their children’s day at school. Jeff shared: “We are teaching our students to communicate, collaborate, and use technological tools to create learning networks that will enable them to become more successful learners in the 21st century” (p.65). Walsh (2010), studying how pedagogical practices aid teachers in combining print-based and digital technologies into their curriculum, found that creating activities that involved collaborating with social networking tools, such as blogging, motivated students to write and share. Furthermore, “recognizing the need to adapt classroom communication to those digital communication practices that students access outside school” (p.226) was beneficial to teachers’ curricular planning.

Other reasons for taking up the challenge of integrating digital technologies and learning networks into classrooms include the expanded possibilities for differentiating learning opportunities and for productive dialogue within ever-wider communities. For example, Journell et al. (2014) integrated Twitter as a tool for productive dialogue in the classroom and for global conversations. Utilizing another Web 2.0 tool, Reich et al. (2012) focused on wikis as “models of innovative, online pedagogies” (p.8) where
community members are collaborative and classroom learning networks provide
differentiated learning opportunities. Another important aspect for further integration of
technology in literacy classrooms is to build collaborative professional learning
communities for teachers to support each other and share digital classroom resources (An
& Reigeluth, 2011; McClay & Peterson, 2013).

The use of digital technologies as pedagogical tools is supported in Canadian
policy documents. According to the *Achieving Excellence: A Renewed Vision for
Education in Ontario* policy document (2014), one of the elements of achieving
excellence in today’s education system is for the Ministry of Education to support and
“invest in the technology, design and infrastructure required for the classrooms of the
future… [as well as] in innovative teaching practices and instructional methods enabled
by technology to more precisely engage and address the learning needs of all students”
(p.6). Furthermore, the *2014 Mandate Letter* from the Premier to the Minister of
Education calls for “inspiring all children and students to reach their full potential, with
access to rich learning experiences” (p.3). While mathematics and the sciences are to be
further explored in school, the *Achieving Excellence* document also focuses on promoting
the Arts “in developing critical and creative thinking skills that support success in school
and in life” (p.6). To ensure success for e-learning strategies, the Ontario Ministry of
Education encourages face-to-face and online professional development, collaboration
among professionals, and also created online sharing sites in order to further aid in digital
technology integration into classrooms (Borokhovski et al., 2011).

**Finding Teachers Using Digital Literacy and Multimodal Practices**

My research looks at what teachers do with digital technologies when teaching
literacy that sets them apart from other teachers. I drew on the findings of previous
research on educators using digital literacies in order to determine selection criteria.

Certainly, when students are engaged, there are more opportunities to be successful (Cummins, 2009; Gambrell, 2011). Teachers who employ multimodal practices organize their curriculum activities so students engage with literacy curriculum in a variety of ways: sometimes through sharing their out-of-school experiences (Hull & Schultz, 2002; 2002b); perhaps exploring cross-curricular writing in multimodal ways (Jewitt, 2005); ‘reading’ the art in picture books in order to create a response (Martens et al., 2012); or playing with and integrating digital technology (Hutchinson et al., 2012; Ware, 2006).

Reflecting on daily teaching practices is also an important aspect of being an educator. Baker et al (2010) found that teachers who “think about what helped their students learn that day and what did not” (p.6) created a positive connection in the classroom as teaching practices were altered according to students’ learning needs.

I used these criteria to identify participants for my research:

1. Literacy educators who regularly reflect on best teaching practices.
2. Educators who regularly utilize digital technology and incorporate multimodal production and texts. They provide a variety of modes for students to illustrate their learning and understanding. This might include developing a project where students need to persuade their audience to engage in a debate, while providing the support and opportunities for students to develop their project through a digital tool, such as a blog with movie clips, music, photos, links, and an online social component.
3. Educators who regularly share their pedagogical knowledge with other teachers, particularly integration of digital technologies.
4. Educators who plan engaging, digital technology-based literacy curriculum.
Karchmer-Klein and Shinas (2012) note that “teachers must recognize the new literacy demands of the 21st century and, most important, must transform their programs to meet these demands with timely literacy instruction” (p.289). This statement echoes Kress (1997), who found that if “language is seen as a dynamic, organic, fluid phenomenon, constantly shaped and re-shaped by those who speak and write it every day in accordance with their needs and wishes, then the educational task becomes different” (p.151). These educational activities that teachers create must have a foundation in, not only following the prescribed curriculum, but in evolving and dynamic social interactions (Bomer et al., 2010; Hutchinson, 2012; Mills, 2010). Coiro et al. (2008) state that “literacy will also include knowing how and when to make wise decisions about which technologies and which forms and functions of literacy must support one’s purpose” (p.5). How the participating teachers make these ‘wise decisions’, and what resources they use, is at the core of this study.

**Research Purpose**

By utilizing the theoretical framework of New Literacies, this study investigated what encompasses being a teacher in the 21st century and what types of environments support teachers who demonstrate multimodal practices. To explore how and what teachers do to plan curriculum that engages students, I used the following questions to guide this study:

1. What do teachers who use multimodal practices perceive to be their teaching strengths?
2. How do teachers describe their understandings of literacy and learning?
3. How do teachers utilize digital technologies to support teaching and learning through multimodal methods?
4. What types of environments support teachers to address the challenges of teaching with multimodal practices?

I utilized a grounded theory approach (Charmez, 2005; Creswell, 2009; Glaser & Strauss, 1967) to conduct the data analysis. I began by conducting semi-structured interviews (Kendall, 2008) with the 15 literacy teachers from central Canada. I then supplemented the teachers’ narratives by analyzing the commercial and online resources together with the curriculum resources and provincial Ministry of Education documents that the teachers used to plan the teaching and learning activities.

The teachers in this study designed their curriculum to provide students with various ways, or modes, to demonstrate their learning. I selected teachers on the basis of their use of teaching practices where “the design of modes often offers students different points of entry into a text, possible paths through a text and highlights the potential for readers to remake a text via their reading of it” (Jewitt, 2005, p.329). Like Ormerod and Ivanič (2000), I also find that curriculum activities that engage students are based on the degree of imbedded interest where students are “more in control of their own work, and [that] allows for a greater variety of approach” for teaching and learning (p.92). While learning and teaching do not always have to utilize technology, I wonder how often digital technology winds its way into the curriculum of these particular teachers to create engaging, authentic literacy activities in their classrooms.

Potential Significance of this Research

This research is significant for advancing the theory and practice of multimodal literacy pedagogies. Studies about multimodal literacy, as well as multiliteracies and New Literacies, are evident in recent research journals (such as in the International Reading Association’s *The Reading Teacher* and *Journal of Adolescent and Adult*
Literacy). But, as Mills (2010) states, while “current research focuses on the multimodal practices of youth in their recreational spaces, this needs to be balanced with scaffolded multimodal practice in school settings” (p.36). There continues to be a need to study practical curriculum-based literacy pedagogy, particularly the ever-changing face of digital technologies in the classroom. This study shows how the participating teachers plan curriculum to utilize digital technologies for multimodal texts in their classrooms, what challenges and triumphs they face, and what resources they have uncovered or created in order to teach multimodally.

The results of my research can inform educators, teacher educators and school board faculty responsible for professional development as they support teachers in overcoming the challenges of implementing literacy instruction using digital technology. These challenges are well documented. Drawing on their previous national study of how Canadian teachers teach composition, for example, McClay and Peterson (2013) discuss the “competing tensions” experienced by many Canadian literacy teachers trying to include digital technologies, such as developing “strong pedagogical materials for digital learning and to cope with an overburdened school lab; to teach traditional forms of literacy and to help […] students participate in the social world of newer forms of composition” (p.39). Furthermore, as noted in the Achieving Excellence (2014) document, “the current challenge facing educators is that they are competing on a daily basis for the attention and interest of their students, which can be easily drawn outside the classroom. As the world continues to change and technology becomes more prevalent, that challenge will only increase” (p.6).

It is important for teachers to overcome these challenges in the immediate future as digital resources are always evolving and taking up increasingly important roles in
everyday life outside the school. Karchmer (2008) found, for example, that “the ability to communicate through animated graphics, video, digitized pronunciations, hyperlinks, and other information resources necessitates the development of new literacy skills and create new opportunities for literacy instruction” (p.1242). Additionally, Canadian language arts curricula and policy are making it mandatory to use digital technology. For example, all Ontario elementary curriculum documents, such as Language (Ontario Ministry of Education, 2006), include a subject-centred section about the Role of Technology in Education. They assert that differentiated learning with digital technologies helps meet the learning needs of all students and encourages digital literacy.

Although some research has examined teachers’ perspectives on the importance of technology to their students and on their digital practices in their classrooms, (e.g., Steeves, 2012), the research has not focused on educators and teaching practice. Further research continues to be needed in acquiring understandings on how teachers can enhance learning through digital technologies, particularly in the area of literacy. My study addresses this gap by showing how teachers successfully integrate multimodal and new literacies into their pedagogy.
CHAPTER TWO:
THEORETICAL FRAMEWORKS AND LITERATURE REVIEW

Introduction

Utilizing the New London Group’s (2000) definition of pedagogy as “a teaching and learning relationship that creates the potential for building learning conditions leading to full and equitable social participation” (p.9), I explore how teachers plan their literacy curriculum to engage students through multimodal and digital experiences. As I describe these particular teachers’ understandings of literacy, I also uncover how they collaboratively plan literacy curriculum, the pedagogical designs and digital resources used in their everyday practice, and the challenges and triumphs of teaching multimodally in today’s classrooms. These teachers are utilizing Gee’s (1996) ‘social semiotic toolkit’, where their literacy practices, and the exploration of their multimodal pedagogies, aid in students’ growth as meaning makers in their communities.

Scholars of New Literacies, as well as the New London Group, have called for a re-thinking of literacy and literacy pedagogy. When the New London Group met for the first time in 1994 they also wanted to facilitate a re-thinking of literacy pedagogy, in terms of “the increasing salience of cultural and linguistic diversity” in society as well as “multiplicity of text forms” further established through digital technologies (Cope & Kalantzis, 2000, p.5). Kalantzis et al (2003) also state that “within the Multiliteracies paradigm, analyzing the structure and social uses of the emerging digital technologies is critical” (p.18).

The theoretical underpinning of this research is New Literacies theory (Coiro et al., 2008). Coiro et al. (2008) recognize that new literacies are “the rapid and continuous changes in the ways in which we read, write, view, listen, compose and communicate
information” (p.8). I turned to New Literacies to explore more specific changes in textual practices through multimodal means. New Literacies researchers focus on how digital technologies have mediated these communication changes. While New Literacies provides the lens through which to study these teachers and their teaching practices, related theories, such as multiliteracies theory (The New London Group, 2000), also provide the support beams upon which this study is built.

**Understandings of Literacies**

How I envision literacy is an important aspect of this study and I draw on a number of researchers to construct my understanding of literacy. Pahl and Rowsell (2012), for instance, separate their definitions of literacy and literacies in these ways: literacy encompasses “ways of making meaning with linguistic stuff in a communicative landscape” whereas literacies include “ways of expressing meaning in linguistic forms across domains” (p.xvii). “Literacy… is not only about rules and their correct application. It is about being faced with an unfamiliar kind of text and being able to search for clues about its meaning” as well as participate in communicating meanings to others (Kalantzis et al, 2003, p.23). Meaning making and the different modes through which to communicate in various social domains highlights are important to my understanding of literacy. Providing further elaboration on the term, literacies, as used in my research, Coiro et al. (2008) explain that the concept of literacies is most often connected to information and communication technologies (ICTs) that can “alter the nature of literacy” (p.1). Coiro et al. define literacy as no longer being “a static construct” but “it has now come to mean a rapid and continuous process of change in the ways in which we read, write, view, listen, compose, and communicate information” (p.5). Based upon these understandings, my construction of literacy is as a social practice for
communicating and making meaning using a variety of multimodal tools within different contexts.

The use of new social (and often digital) practices in our lives, and in our classrooms, has encouraged new ways to understand practices, such as exploring new semiotic interpretations (Kress & Jewitt, 2003) and multimodal out-of-school contexts (Hull & Schultz, 2002). As Street (2005) stated, “the ways in which teachers or facilitators and their students interact is already a social practice that affects the nature of the literacy being learned and the ideas about literacy held by the participants” (p.418). How literacies are constructed (just as Barton (1994) considered how language is constructed), is influenced by history, our social interactions, and how and when it is learned, such as in the classroom.

**Theoretical Frameworks**

**New Literacies**

New Literacies “are identified with an epochal change in technologies and associated changes in social and cultural ways of doing things, ways of being, ways of viewing the world” (Coiro et al., 2008, p.7). The New Literacies perspective is based on four assumptions: 1. new information and communication technologies “bring new potentials to literacy tasks”; 2. participation in the global community requires “instructional equity” in terms of digital technologies; 3. change is an important aspect of technology, therefore, change is essential for literacy as well; and 4. “new literacies are multiple, multimodal, and multifaceted” (p.14). New Literacies takes a comprehensive approach to understanding literacy and goes beyond examining the influence of technology and media on communication. It looks at the very nature of what constitutes authorship and social relationships in collaborative writing practices.
Knobel and Lankshear (2007) describe New Literacies pedagogies as a view of literacy as fluid, collaborative, and less centred on individual authorship in order to provide space for various types of learning and collaboration. It is important to differentiate between New Literacies and new literacies. Leu (2010) describes “New Literacies, as the broader, more inclusive concept, [which] benefits from work taking place in the multiple lower-case dimensions of new literacies” (p.ix). The lower case new literacies studies, such as Vasquez, Harste, and Albers’ (2010) research studying teachers’ conceptualizations of critical literacy pedagogy through multimodal venues and Chandler-Olcott and Lewis’ (2010) study on sociocultural perspectives through scrapbooking, further define New Literacies as a theoretical approach that incorporates Web 2.0 tools. Leu views all these practices as contributing to the “continually changing theory of New Literacies (p.ix) to further build understandings.

New literacies do not have to involve digital tools exclusively, however. Chandler-Olcott and Lewis (2010) make a case for scrapbooking to be considered a new literacy. While this creative way of capturing memories through pictures and art is multimodal in nature, scrapbookers do not always utilize digital technologies to create their work. Scrapbooking “had clearly been influenced by emerging information and communication technologies, but it was not solely dependent on them” (p.195). The authors recognize three aspects of scrapbooking as features of New Literacies: (1) the communal nature of sharing and finding help among scrapbookers’ communities, (2) teachers using scrapbooking techniques in literacy activities, and (3) scrapbookers’ work is often a hybrid of work from various social sites, including picture-share sites and texts found on the Internet, creating new designs that are often shared publicly.
Knobel and Lankshear (2007) call for the integration of technology in classrooms, particularly Web 2.0 applications that encourage participation and collaboration in literacy practices. Web 2.0 applications include blogs, wikis, and other socially and dynamically interactive digital tools. Teaching with Web 2.0 tools helps teachers and students to look beyond conventional literacies and embrace collaborative authorship. Albers and Harste (2007) found that, “in today’s classrooms, educators must be prepared to work with how messages are sent, received, and interpreted, as well as how media and technology position us as viewers and users of multimedia texts in the world” (p.6). As teachers utilize Web 2.0 applications in their classrooms they prompt participation from their students, not just in the form of using a new and cool digital technology, but in new ways of forming learning communities and allowing teachers and the students to facilitate learning in different roles. Lapp, Moss and Rowsell (2012) showed how teachers can “effectively scaffold new literacies learning” (p.376). A teacher in Barone and Wright’s (2008) study on literacy instruction using digital technology, for example, observed changes in his students when he implemented new technologies: “Kids are sitting up and leaning into their learning. As a teacher, this is the one thing I want from my students. If I have them engaged and motivated, the sky’s the limit” (p.301).

Making Meaning through Related Theories

Multiliteracies theory.

The New London Group’s multiliteracies framework emerged when a group of literacy scholars (including Gunter Kress, Bill Cope, Mary Kalantzis, Courtney Cazden, James Paul Gee, Allan Luke, Carmen Luke, Norman Fairchild, Sarah Michaels, and Martin Nakata) from Australia, the U.S. and the U.K., came together in New London, New Hampshire, to theorize about new literacy concepts. They met to discuss the rapid
changes in people’s “lifeworlds” (or various aspects of our lives, such as our home lives and school lives), that necessitated a rethinking of literacy pedagogy. The New London Group’s (2000) vision of literacy pedagogy developed into a framework where “culturally and linguistically diverse and increasingly globalized societies” are the context for a re-thinking of a pedagogy that recognizes and integrates the “burgeoning variety of text forms associated with information and multimedia technologies” (p.9).

Two arguments emerged from this initial meeting: the need for increasing integration of various modes of meaning and meaning making, and the recognition of local and global connections and impacts of multiliteracies (New London Group, 2000).

Multiliteracies refer to both the influence of cultural and linguistic diversity in society on symbolic representations of literacies and the use of multiple and multimodal text forms, including informational and multimedia technologies, to create meaning.

Reflecting on their own individual work, members of the New London Group (2000) stated that “in a profound sense all meaning-making is multimodal” (p. 29). The aim of the multiliteracies framework is to provide a space to explore various aspects of the Design process (linguistic, visual, audio, gestural, and spatial designs) through the concepts of hybridity (different cultural forms interacting in the same space), and intertextuality (how meanings are constructed through relationships to other modes of meaning) (New London Group, 2000).

The New London Group presented the notion of teachers and students as designers of meaning, explaining “that teachers are involved in making particular choices about how and what to teach. Students make decisions about how to represent what they understand and wish to communicate” (Stein, 2008, p.875). There is an increased need for students to be more active users of semiotic materials, particularly those involved
with digital technology. Likewise, while teachers often incorporate multimodal materials into their curriculum, they also need to be more active users and facilitators of digital technologies, particularly with Web 2.0 applications. The New London Group (2000) realized that “curriculum now needs to mesh with different subjectivities, and with their attendant languages, discourses, and registers, and use these as a resource for learning” (p. 18). To understand the what of this literacy pedagogy, these resources aid in what “it is that students need to learn” (p.19) and what it is that educators need to facilitate and teach through the design process.

These resources create a tool kit of multimodal choices and relationships that are used in students’ meaning-making processes (New London Group, 2000). The tool kit includes the following design elements: Linguistic designs are concerned with engaging language through delivery, modality, vocabulary and metaphor, information structures, local and global coherence relations, nominalization of processes, and transitivity and agency. Visual designs deal with colour, perspective, foregrounding and backgrounding through “images, page layouts, [and] screen formats” (p.28). Audio designs include music and sound effects. Gestural designs explore such elements as behavior, physicality, gesture, and feelings and affect. Spatial designs find the “meanings of environmental spaces [and] architectural spaces” (p.28) through ecosystems and geographical elements. Multimodal designs “represent the patterns of interconnection among the [] modes” (p.25). Interestingly, in 2010, Kalantzis and Cope (2010), together with Cloonan, separated the linguistic element into written and oral language modes, in order to show the “different… affordances as well parallel aspects of the representational jobs they do” (p.67) and reconfigured some of these elements to include a tactile representation.
Incorporating digital resources for learning is essential to contemporary educators’ curriculum planning because of the predominance of ever-changing digital technologies in everyday life. As teachers adopt the role of “designers of learning processes and environments” (p.19) they become active participants in creating processes for more interactive learning and teaching with their students. Teachers do not always have to be the ones in charge of learning in the classroom; it is possible for students to become leaders through their expert knowledge, particularly in the realm of digital technologies. Teaching using the New London Group’s pedagogical framework consists of harnessing Available Designs (resources for meaning), to engage students in the process of Designing (the active process of creating meaning), to create the Redesigned (the newly produced meaning from the resources). The process of Designing draws on the resources of Available Designs for further meaning making. For example, a teacher may assign an open-ended task to explain the history and social implications of a particular music genre in a digital format. One student designs a Glog (an online digital poster) to present his information on the history, people, and musical elements of rap. By embedding such resources as songs, videos, a how-to of rapping, a written history, and a pictorial representation of famous rappers, this student has transformed this information on rap into a new design, which can be shared publically, and re-created by another designer. This new text is the Redesigned. Teachers can design learning activities for students to develop Redesigned texts from a wide offering of choices of multimodal designs. The Redesigned material then, in turn, “becomes a new Available Design, a new meaning-making resource” (p.23).

To aid in answering how to connect meaning-making with the socio-cultural and material contexts of knowledge, The New London Group (2000) created a four-
The component pedagogical framework that Gee (2000) asserts are necessary for students to understand and practice in order to be successful literacy learners. The components include: Situated Practice, Overt Instruction, Critical Framing and Transformed Practice. 

*Situated practice* considers the socio-cultural needs and identities of all learners and students engaging in meaningful learning practices. Therefore, this part of the pedagogy includes learners “who are capable of playing multiple and different roles based on their backgrounds and experiences” (p.33), such as student and teacher experts. When implementing the *overt instruction* component of the pedagogical framework, teachers design and create space in the meaning-making processes to make concepts and theories explicit for learners, while providing learning tools to develop further awareness. By scaffolding learning, and intervening when necessary during the learning process, learners can explore the metalanguages collaboratively.

In the *critical framing* component of the pedagogical framework, learners reflect and locate their new knowledge in cultural, political and socio-economic contexts. Influences from Luke and Freebody’s (1999) Four Resource Model (code breaker, meaning maker, text user, text critic) are evident in this component. Reflecting on the roles of their original Four Resource Model, Luke and Freebody (1999) consider these roles more as a *family of practices*, with each family representing more fluid, social, and active practices of understanding and learning about literacy. The “notion of ‘practices’ suggests that they are actually *done* -- performed, negotiated, and achieved in everyday classroom and community contexts” while “the notion of ‘family’ suggests that they are dynamic, being redeveloped, recombined, and articulated in relation to one another on an ongoing basis” (n.p.). These practices consist of learners engaging in the following literacy activities: As *code breakers* learners decipher the codes and features (such as
conventions and patterns) of texts. As *meaning makers* learners “participate in understanding and composing meaningful written, visual, and spoken texts” while taking into account not only the text itself, but the learners’ “available knowledge and their experiences of other cultural discourses, texts, and meaning systems” (n.p.). Learners, as *text users*, are also required to understand how texts function and are performed, both in and out of school communities. As *text critics*, learners can critically analyze and transform texts by acting on knowledge that texts are not ideologically natural or neutral -- that they represent particular points of views while silencing others and influence people's ideas -- and that their designs and discourses can be critiqued and redesigned in novel and hybrid ways. (n.p.)

This transfer of learning, through critical framing, and this family of practices, allows space for learners to be reflective on their meaning-making. Then, with *transformed practice*, students can apply and revise what they have learned through critical framing into another context or learning site.

Revisiting the multiliteracies pedagogy discussed by the New London Group in 1996, Cope and Kalantzis (2009) found that the “centrality of diversity, the notion of design as active meaning making, the significance of multimodality, and the need for a more holistic approach to pedagogy still hold true” (p.167). In their evolving understanding of literacy, in 2010, Kalantzis et al. renamed aspects of these dimensions of pedagogy as “a map of the range of pedagogical moves that many prompt teachers to extend their pedagogical repertoires” (p.73). In *experiencing*, how human cognition is situated, context is recognized, and learning practices are both ‘known’ and ‘new’ as learners move “into new domains of action and meaning” (p.73). *Conceptualizing* continues to provide space for expert communities of practice to share knowledge, but also encourages learners to “become active conceptualizers” (p.74). The *analyzing*
dimension involves ‘being critical’, exploring not only “other people’s perspectives, interests, and motives” (p.74), but their own as well. Learners apply their knowledge and understandings in ‘real-world’ situations through the applying stage. By “applying creatively… learners do something that expresses or affects the world in a new way, or that transfers their previous knowledge into a new setting” (p.74). I find the 1996/2000 version of the framework to be more closely aligned with how the teachers featured in this study plan lessons and learning activities.

**Multimodal literacy.**

The constant changes in our classrooms provide an opportunity for teachers to “encourage students to produce texts that matter to them in different formats and for different audiences and purposes and that allow them to draw on and extend their range of semiotic resources” (Janks, 2010, p.156). For example, multimodality is an important concept in understanding how teachers are shifting from teaching writing using traditional print to using textual artefacts and/or digital resources. As a result, it is necessary to draw upon multimodal literacy theories in order to provide more grounding for the theoretical framework of this study.

Understanding multimodality requires an understanding of social semiotics (Kress, 1997; Kress & Jewitt, 2003; Jewitt, 2005). Social semiotics illustrates how environments are spaces where signs and symbols are continually created, communicated, and interpreted in multimodal ways. This approach assumes that all educational environments are semiotic spaces that contain creating and reading signs, and that all texts are multimodal (Kress, 1997, Kress & Jewitt, 2003, Jewitt, 2005, Stein, 2008, The New London Group, 1996). Multimodality offers “the possibility of
representing through a multiplicity of means, at one and the same time, in the making of one complex sign” (Kress, 1997, p.97).

Based on social semiotic theory, Kress’ (1997) multimodal theory refers to the production of meaning and signs. While a “child’s written signs are the effect of their meaning-making actions”, these signs are based on the child’s interests and the linguistic resources, or language and text experiences (Kress, 1997, p.17). As social actions, multimodal teaching and learning treat “individual speakers or writers not as language users but as language makers” (Kress, 1997, p.xvi). The New London Group (2009) builds on this idea of meaning makers as being “fully makers and remakers of signs and transformers of meaning” (p.175).

Multimodality is a central component to how teachers teach and how students learn. By utilizing various modes, including digital technology, teachers provide students with more choices for expressing their knowledge and ideas. Kress and Jewitt (2003) define modes as complex and as an “organized set of resources for meaning-making, including, image, gaze, gesture, movement, music, speech and sound-effect” (p.1). Modes can be also seen as “a socially and culturally shaped resource for making meaning” (Bezemer & Kress, 2008, p.171). The New London Group (2000) presented these modes as being linguistic, visual, audio, gestural, and spatial designs. Jewitt (2005) reveals that “the design of modes often offers students different points of entry into a text, possible paths through a text and highlights the potential for readers to remake a text via their reading of it” (p. 329).

It is also important to note that these modes are not fixed; they can be re-mixed and re-shaped according to the context and complexity of the activity or project. Walsh (2011), for example, recognizes the merging, or re-mixing, of literature-based texts that
re-evolve into digital stories or dramatizations. As Kress acknowledges, “if you have a multimodal view, suddenly you realize that the partiality of the modes is the issue: every mode has its strengths and its limitations; and in every ensemble of modes each mode does a part of the job of communication” (Bearne, 2005, p.294). Many modes can make up a communication event where each mode is represented separately, but also together in a complex manner, through the overall message.

Through their ethnographic multimodal storytelling project in an elementary classroom, Vasudevan, Schultz and Bateman (2010) paid close attention to the *authorial stances*, the new literate identities that students expressed in their compositions. Vasudevan et al (2010) “learned that recognizing and building on students’ knowledge and use of technologies and finding opportunities to introduce simple ways of incorporating multimodal texts into school assignments increased the opportunities for students to engage with and shape classroom composing and curricula in meaningful ways” (p.464).

Graham and Benson (2010) demonstrate how multimodal pedagogy focuses “on process rather than product alone” (p.93). Multimodal teachers, in particular, seem to need to focus more on the process in order to provide multiple opportunities for students to learn with and through digital technologies. Multimodal planning, while considering the end product, also requires a focused effort for teachers to explore digital technologies, their tools and capabilities.

**Connecting out-of-school literacies to school literacies.**

Because young people are engaging in digital activities outside of school, teachers need to recognize the teaching and learning opportunities afforded by digital devices and technological resources. In a 2006 report, the Canadian-based Media
Awareness Network (MNet) used focus groups and surveys of grade 4-11 adolescents to survey the use of the Internet in children’s and youth’s lives, from social interactions to schoolwork. As reported by Steeves and Wing (2006), the MNet found that between the use of personal cell phones, computers, and webcams, the participating young people considered the Internet to be “simply one more space in which they live their lives” (p.8). Both online and more traditional (watching videos and listening to music) ways of using the Internet were utilized by the young people in the study. Although the percentages of using the Internet as a learning tool for research and homework was not as large as using it for social interactions, when students were asked if they used traditional books or the Internet for research projects the answer was for the faster and more convenient method of the Internet. MNet/MediaSmarts recently released its third phase of research on studies for *Young Canadians in a Wired World* and Steeves (2012) discovered similar instances of Internet usage, although more Web 2.0 interaction has been occurring among youth than was the case in the previous survey. Recognizing these changes, I also examined ways in which participating teachers brought out-of-school literacies into their classrooms.

Moll, Gonzalez and Amanti (2005) argue that students can use their cultural resources, their *funds of knowledge*, to develop further understandings of the world around them. These theorists also see students’ resources as developing the necessities for transforming school and home domains into cohesive and transactive spaces by connecting their home experiences with classroom activities. Furthermore, access to diverse resources, including technologies, allows students and teachers to explore their funds of knowledge in classroom spaces (Hibbert, 2014; Janks, 2010; Moll et al, 2005).
It is important that schools not “dismiss the engagement of children with non-school learning as merely frivolous or remedial or incidental” (Hull & Schultz, 2002, p.3). Hull and Schultz (2002b) also see that teachers and students often switch roles when utilizing digital technology. Hull & Schultz (2002b) ask educators to investigate the “potential relationships, collaborations, and helpful divisions of labour between schools and formal classrooms and the informal learning that flourishes in a range of settings” (p.53). Campano (2007), for instance, states that schools are unique spaces with the potential for students to not only expand their knowledge about themselves, but also to have opportunities to share these experiences and knowledge. Merchant (2008) also encourages teachers to learn “more about the diversity of young children’s experience of digital writing in out-of-school contexts in order to better understand their literacy capital” (p.769) so that, in particular, digital technology can be incorporated into authentic meaning-making curriculum. As Street (2005) notes:

> In order to build upon the richness and complexity of learners' prior knowledge, we need to treat "home background" not as a deficit but as affecting deep levels of identity and epistemology, and thereby the stance that learners take with respect to the "new" literacy practices of the educational setting. (p.420)

Cummins (2005, 2009, and 2011) explains that literacy engagement can be enhanced when students’ prior knowledge and experiences are activated and cultural resources are utilized, when learning is scaffolded, when student identities are validated and their knowledge is actively integrated, and students are aware of language and how it is used. Gambrell (2011) underscores this notion by explaining, that when the tasks are relevant to students’ lives, when there are a range of activities to choose from, students will be engaged to a greater degree and will feel successful. Therefore, how a teacher
designs curriculum, and integrates relevant and engaging material and teaching tools, is a key element to student success.

**Related Teacher and Classroom Research**

Many researchers and teacher practitioners have studied ways of incorporating and accessing digital technologies and multimodal texts into literacy classrooms. Previous research has included student and teacher surveys and interviews, as well as classroom observations. Researchers have examined student production as well as aspects of teacher design, particularly through the usage of digital tools, while also reflecting on the social practices and collaborations that coincide with multimodal production. As described in the following sections, these multimodal-based studies have focused on digital technology tools (such as the Internet and iPads), digital storytelling, video production, and the need for teacher professional development around digital technologies in classrooms.

**Multimodal Pedagogical Practices in Classrooms**

Research studies encompassing digital and multimodal storytelling practices and tools of practice detail aspects of classroom life. Digital storytelling is both an effective instructional tool as well as a student learning tool where teacher and student-created stories can be used to enhance lessons, collaborate on ideas, and shared with an authentic audience. In the following sections I review literature on specific types of multimodal pedagogical practices.

**Digital and multimodal storytelling practices.**

Digital storytelling is a multimedia text that incorporates still images, movie clips, soundtracks and narration, often to publish on the Web. Through her ongoing *Teaching Language and Literacy* e-book for pre-service teacher candidates, Hughes
(2007) utilizes digital videos, visuals, and text to showcase literacy teaching strategies, ideas, theories, and resources. In a vignette on incorporating digital storytelling in a grade one classroom, for example, Tina Powell’s (2007) *Samantha’s Silly-icious Sandwiches* was used to scaffold multimodal storytelling. By first creating imaginative sandwiches, students connected the storybook to their own experiences, authored recipes, created critical literacy commercials, and then produced digital stories with the Photo Story program. The teacher candidate featured in the video noted how students not only worked collaboratively with each other and the teachers but were actively engaged in their story creations, often asking to re-record their voices and to add other elements to their stories. Ohler (2005) found “through creating electronic personal narratives, students become active creators, rather than passive consumers, of multimedia” (p.44). Indeed, such online sites as the Center for Digital Storytelling allow for the dissemination of digital stories created by a variety of people, for a host of purposes, including students in classrooms.

While incorporating Glynda Hull’s *Digital Underground Storytelling for Youth* (DUSTY) project, Ware (2006) studied two children and their different approaches to digital storytelling. One student multimodally composed independently and the other collaborated with others to share his story. Ware recognized “the creative ways that teachers and students can engage with literacy learning through technology” (p.45). While one student’s storytelling process was typical of classroom conventions (such as story structure and editing), with the added element of technology, the second student was motivated to compose because of the elements of “community building and interpersonal relationships” (p.45). The second student engaged his peers to help tell his stories. A tech-savvy volunteer helped with his story’s production. Ware found that “as
we continue to learn more about the intersection of technology and storytelling, we will undoubtedly uncover new approaches and emphases that ensure more inclusive pedagogy for all children” (p.53).

Also researching digital storytelling, Sylvester and Greenidge (2009) studied how to motivate struggling writers through a student interest-based movie-making activity. While the authors did not complete a digital storytelling project with the three grade four students they describe, although they have facilitated the project with other students, they did use the student profiles to illustrate how using digital storytelling projects supports students as writers. This research uncovered a plethora of digital storytelling tools and sites that could help all learners with utilizing Web 2.0 in literacy projects. Sylvester and Greenidge found that users of Web 2.0 applications, both students and teachers, needed “to have new literacies not necessary for traditional literacies” (p.284).

New curriculum responds to the integration of new literacies in the lives of teachers and students alike. Pahl and Rowsell (2010) showed how artifacts, intertextually created by students, not only create a space for meaning making for the students, but also provide contexts for teaching. Pahl and Rowsell present their digital storytelling activities with artifactual literacies. Habitus is of particular importance in the design of these activities, for when the meaning makers invest in their everyday practices they are “inclined to be more deeply engaged in what they are doing” with their texts (p.105). Pahl and Rowsell, basing their definition on the work of Bourdieu (1990), refer to habitus as the lived experiences that shape everyday practices. Other aspects of this design cycle include the “practices” of artifact selecting and crafting, storyboarding, “shaping the story around the object”, “shaping of modes into texts”, producing and “managing digital spaces” for the story, presenting the story, and the “transformation” of habitus and/or
practices (p.104). An interesting aspect of this cycle is the “sharing of best practice among teachers” (p.104). One of the classroom teachers, after being involved in a digital storytelling activity, notes that “in terms of educational goals, it is the experience of listening, and experience of filming and recording, the process of putting the story together… that then seeps into a lot of literacy” (p.93). The researchers want educators to rethink the value and meaning of home and cultural artifacts and how they could be used relationally, multimodally, and be transformed, in curriculum spaces.

McGinnis (2007) studied teachers who supported students’ home literacy and language practices in the classroom. These teachers provided a supportive learning environment and also found ways for to connect with their students. By facilitating inquiry-based literacy projects designed by her sixth- to eighth- grade students, McGinnis saw how interest-based storytelling projects engaged students in a summer migrant education program. Limited resources in the school “actually became a strong point in the students’ learning” as they had to construct their knowledge through various digital technologies plus home and community members (p.574). The students explored projects that related to their identities. For example, a group of girls bonded over a project on the fruit from their home country, and a group of boys explored rap, switching between Khmer and English during their discussions. McGinnis considered the various ways that her students made meaning from their own project designs and found that creating literacy projects with the social worlds of the students in mind allowed for dynamic and rich classroom environments. As in the previous studies of children’s multimodal meaning-making, McGinnis found that a balance between official and unofficial worlds and their literacies needs to be maintained. Incorporating the texts students utilize outside
of the classroom is as important as creating spaces for students to showcase their talents in school (Mills, 2010).

**Digital and multimodal tools of practice.**

According to Mills (2010), “teachers have a key responsibility to scaffold multimodal literacies and model new technical proficiencies. They can lead students to engage in sophisticated, mature forms of communication that are unattainable for many students without intervention and expert guidance” (p.41). In Mills’ work with adolescents’ digital video production, the participating teachers provided “substantial and ongoing scaffolding” (p.41) for the students to produce quality work they were both engaged in creating and proud of sharing with peers. Mills found that “the complexity of new technologies for multimedia production requires that teachers spend additional instructional time inducting students to new ways of communicating multimodally” (p.42). This would also require teachers to be interested in multimodal pedagogy and to actively learn how to use and teach with digital technologies. While, as Mills states, Language Arts and English language teachers are proficient at written text pedagogy, when supporting students to design “multimodal texts, teachers also need to focus the students’ attention on the visual, spatial, gestural, or audio modes embedded in a text” (p.42). One recommendation from this study is to develop student expertise in certain multimodal and digital areas. If each stage of a multimodal project, such as the digital video project from this study, had an expert student (who specialized in storyboarding, character design, or animation) the teacher would not have to scaffold as intensely (Mills, 2010).

Hutchinson et al. (2012) studied how one grade four teacher utilized iPads in her daily literacy instruction. The teacher was recognized as a teacher who used technology
regularly in her classroom and was willing to integrate more digital tools. With a quick tutorial, the teacher taught “the print-based literacy goals… in the reading curriculum… and provided [her students] with an opportunity to also learn some of the new literacy skills associated with 21st-century technologies” (p.17). The researchers, and teacher, were particularly concerned with how the tool was effective for the curriculum. They asked, “Does the tool enhance literacy instruction and promote progress toward a literacy learning goal, or is it only being used as an add-on to instruction?” (p.23). As noted by these teachers, digital tools, often with explicit instruction by the teacher and always with the active participation of the students, enhances literacy learning and engagement in the classroom.

In studies of teachers and students using digital readers in their classrooms, Larson (2009, 2010) researched the potential of integrating traditional and new literacy skills by examining both the students’ responses and the teachers’ project designs. Through a case study approach in a grade five classroom, Larson (2009) and the teacher examined the students’ reading of e-books on laptops and responding in electronic response journals. Utilizing reader response theory along with New Literacies theory, Larson found that the “students created close-knit learning communities and broadened their repertoire of literature response strategies by engaging in asynchronous message board discussions” (p.639). The teacher taught explicit mini-lessons on using the new online boards and both the researcher and teacher participated in the literature discussion online. The teacher also used the statistical summaries from the students’ online involvement to review who and how much students were participating online, and encouraged either more participation or different types of responses (such as lengthening one student’s numerous but short posts). Interestingly the teacher did not view herself as
a technology expert, even though she participated in various new literacies, because she had not used this type of learning tool in her classroom previously. This attitude was not evident with the teacher in Larson’s 2010 study as she encouraged her second graders to read and respond online through their classroom blog.

In her 2010 study Larson used the Kindle e-reader with two reluctant readers in a grade two classroom. Larson found that in order to “support their comprehension processes, the second graders consistently… adjusted the font size/ accessed the built-in dictionary to look up meanings… [and] to help ‘sound out’ text/ activated the text-to-speech feature” (2010, p.19). In both studies, students were allowed to use emoticons and short-formed words as the researcher and the teacher realized that informal oral communication occurred during face-to-face literature discussions as well. Both studies discussed how gaining access to technologies, such as obtaining more Kindles and the number of e-book choices, was problematic. Larson (2009) states that “the new literacies are here to stay, and it is the responsibility of all teachers to orchestrate learning opportunities in which students can collaborate and communicate within a technology-rich environment” (p.648).

In another study where teachers assigned multimodal texts that were not always digitally created, Baskwill (2009) designed an ‘art-full journal’ assignment to provide a space for grade four students to create visual texts along with written responses. These art-full journals are gateways through which students can merge ‘old technologies’ (storytelling, literature, drawing and collage) with the new (digital photography and various computer programs and technologies) to share their work with other audiences, enhance their responses with a spoken text or piece of music, or express their feelings and ideas in other forms (a video, a dance, or a graphic novel). (p.80)
Not only are these types of multimodal tools useful, it is also interesting how Baskwill and her teacher-participant worked together to create multimodal writing curriculum, based around children’s literature. Indeed, Lensmire (1994) found that “it is essential to put meaning-making at the center of literacy work with children, to enliven and transform classrooms with the voices and texts of children” (p.3). Utilizing multimodalities allows for choices in creation, production, reading and writing and allows a space for new sign-making and meaning making.

Nichols et al. (2012), in their study on online resource networks for educators, found that teachers are integrating new digital literacy practices alongside more conventional textual modes in their curriculum planning. The findings from this study also “reinforced the value of viewing teachers as producers, adaptors and active seekers of literacy teaching resources rather than simply as users” (Nichols et al., p.72). Nichols et al. described ‘teacher resources online’ as those outside official education resource sites. They found that there are a plethora of digital spaces to find teacher resources, for teachers to produce and circulate resources, forums to share their professional knowledge, and publishers and advertisers who offer resources online specifically for teachers. Some of these resources began as conventional texts and Nichols et al. found that this “digital conversion is a means of conservation of teachers’ work, of passing on the ‘legacy’ to new generations of educators” (p.70).

**Characteristics of Teachers Who Use Multimodal Teaching Practices**

Merchant (2008) created a continuum of how teachers infuse curriculum with digital writing. At one end of the continuum are teachers who sequentially introduce digital writing into their curriculum. They tend to use existing writing pedagogical approaches, with some updating, with “routine updating of hardware and software with
regular pupil access” (p.758). In the middle of the continuum are teachers who utilize specific pedagogical approaches “related to the development of screen-based writing practices”. With this “parallel introduction of digital writing,” teachers also tend to invest in new hardware and software and provide their students with more access (p.758). At the far end of the spectrum, teachers infuse their literacy curriculum with new digital writing approaches. They invest in new hardware and software and provide constant access for their students. These teachers access “new approaches based on a changed view of literacy and the possibilities of new technology” (p.758). Merchant’s continuum has been helpful in identifying ways in which my participant teachers incorporate technology in their literacy instruction.

Taking another approach, Kist (2005) identified characteristics of New Literacies classrooms as ones that “feature daily work in multiple forms of representation” and include “metadialogues by the teacher who models working through problems using certain symbol systems” (p.16). Kist discussed “how teachers are struggling to implement [new literacies] ideas in the real world” (p.5) and “into the fabric of their classrooms” (p.11). Torres, one of Kist’s participating teachers, described himself as a risk-taker regarding multimodal practices in the classroom. Describing the teachers as “part of the vanguard of educators who are both creating and reflecting the evolution of literacy in education” (p.127), Kist found that the passionate teachers in his study were defined by their collaborations, ability to design and utilize multiple text forms, and creating new spaces for teacher learning.

Lapp, Moss, and Rowsell (2012) described the roles of the new literacies teacher: Becoming an interrogator, new literacies teachers help students “interrogate texts and technology… in both online and traditional formats” (p.369). Another role is of resource
managers, “modeling how to manage print and electronic resources” and providing a “variety of text types” (p.369). Being coconstructors of knowledge, “they assume the role of colearners by acknowledging that students may know as much or more than they do about certain topics” (p.369). Finally, as design consultants teachers need to understand their “students’ views about literacy and the world” in order to provide constructive feedback (p.369). The teacher in this study utilized new literacies pedagogy to teach “students to interrogate, analyze, and create multimodal texts” within a social studies unit (p.369).

**Teachers’ professional development.**

In addition to describing characteristics of new literacies teachers, researchers have examined the professional learning needs of teachers who use digital technologies. Hutchinson and Woodward (2014), for example, found that by incorporating a reflective planning cycle for digital technology into literacy programs their teachers felt empowered. This method of instruction serves as a bridge between the technological knowledge that the teachers needed and the specific critical elements of literacy required for meeting literacy standards or expectations. Edward-Groves (2012) describes how professional dialogues plus opportunities to practice new-found technologies help teachers extend their teaching practice with literacy. With a focus on pedagogy, Edward-Groves observed that technologies assisted in creating new teaching and learning practices, particularly in terms of professional development and that “collegial sharing and collaboration, can function as a springboard for change” (p.104).

MacArthur and Karchmer-Klein (2010) describe three recommendations for teacher professional development. First, teachers need to become fluent in technology usage, which needs time, space, and support from their schools and peers. Second,
teachers must “practice developing, implementing, and evaluating… technology-based writing assignments with students” (p.64). Lastly, teachers need to “have opportunities to reflect on implementation” of digital tools in their classroom (p.64). Along with these recommendations, Karchmer-Klein (2012), this time collaborating with Shinas, elaborates on four principles for teachers supporting new literacies in their classrooms. As digital technology has “transition[ed] from Web 1.0 tools to Web 2.0 applications” it is important to remember “how quickly technology changes and how new envisionments for literacy learning develop” considering Web 3.0 is most certainly on the horizon (p.289). Therefore, the first principle is to “keep your eye on the moving target” (p.289) of new literacies, while principle two includes recognizing new literacies’ complexities. Here, recognizing how teachers differentiate traditional literacy instruction, the authors also advocate that teachers “differentiate online reading and writing instruction in their classrooms” (p.290). Third, realizing that “digital natives still have a lot to learn” (p.291), the authors acknowledge that new digitally-centered literacy skills need to be explicitly taught. The fourth principle focuses on assessment methods and, as the authors identify, ‘best methods’ assessment techniques still need to be discovered in order to assess the skills, process, and presentations that utilizing new literacies affords. Pahl and Rowsell (2012) also refer to needing to develop “assessment frameworks that assess digital, multimodal, design-based skills” (p.176). As Siegel (2012) remarks, “it is critical, therefore, that teachers and students become skilled readers of multimodal designs in all their variety” (p.676).

Through these studies of teachers and students utilizing multimodal approaches to learning, it is clear that not only do students need a variety of modes to represent their knowledge, they also need these new literacies scaffolded through curriculum design:
“…the instructional and conversational practices at play during a lesson – how the teacher models, how the teacher explains, how the teacher scaffolds – all serve as additional types of cultural tools (or additional modes) that children use to support their conceptual thinking” (Hassett & Curwood, 2009, p.272-73). My research study builds on and extends the findings of previous research by exploring the many practices that my teachers routinely use in their curriculum planning and multimodal design.

**Conclusion**

As Thomas Newkirk shared regarding encouraging student engagement: “The house of literacy has a thousand doors, and all you have to do is find one of them. One way in. One book. One kind of assignment. It could be cartooning. It could be a graphic novel. You just need one” (in conversation with Zumbrunn & Krause, 2012, p.348). My way into this research study on teachers who utilize multimodal practices and how they plan their literacy curriculum, is framed by studies in New Literacies, and sustained by the educators, researchers, and theorists who work with teachers and students on the engaging possibilities of digital technology and multimodal learning.
CHAPTER THREE:
RESEARCH METHODS

Introduction

Exploring how and what these literacy teachers do to plan their curriculum and create opportunities for student engagement through multimodal and digital technology tools in their classrooms is at the core of this study. To explore the perceptions and practices of these teachers the following questions guided this research:

1. What do teachers who use multimodal practices perceive to be their teaching strengths?

2. How do teachers describe their understandings of literacy and learning?

3. How do teachers utilize digital technologies to support teaching and learning through multimodal methods?

4. What types of environments support teachers to address the challenges of teaching with multimodal practices?

This research responds to the challenge that Ebel (1982) posed in stating that education “is not in need of research to find out how it works. It is in need of creative invention to make it work better” (p.18). Though this study, I found out how 15 elementary teachers who utilize multimodal practices made literacy education “work better” for their students. I conducted “research aimed specifically at determining how it might work better through methods firmly grounded in the realities faced by practitioners” (Reinking & Bradley, 2004, p.166) by uncovering how and what these literacy teachers do to plan and create their classroom curriculum.
Qualitative research methods are most useful to understand the complexities of teachers’ experiences as literacy teachers utilizing multimodal methods in elementary schools (Creswell, 2007). According to Denzin and Lincoln (2005), “the province of qualitative research... is the world of lived experience, for this is where individual belief and action intersect with culture” (p.8). I am “drawn to the fluid, evolving, and dynamic nature of this approach” (Corbin & Strauss, 2008, p.13). Qualitative methods allow me to “understand the cultural or everyday practices of individuals or social groups, the ways that these practices affect the access to and distribution of resources across time and space, and the consequences of this distribution of resources” (Schultz, 2006, p.359). These practices included the everyday planning practices of the teachers and the resources they rely on to deliver their digital technology-rich, literacy-based curriculum.

Qualitative research is concerned with direct encounters and interactions with particular groups of people, and “with the ways that people construct, interpret and give meaning to these experiences” (Gerson & Horowitz, 2000, p.199). This is particularly true in learning sites where “everyday teaching and learning are complex social happenings” (Dyson & Genishi, 2005, p.9). Qualitative researchers “stress how social experience is created and given meaning” (Denzin & Lincoln, 2005, p.10). My research study is concerned with the space(s) where these teachers plan their curriculum for daily teaching. These spaces are complex, not only for the variety of places where the teachers conduct their curriculum planning (in and outside of their classrooms, often digitally and multimodally) but for the multifaceted social connections among their peers.

In order to collect “data in a natural setting sensitive to the people and places under study” (p.37), teachers were interviewed in a natural setting for their planning
purposes, often in cafés, their homes, or in their schools after their students had gone
home. Inductive analysis was conducted to uncover themes (Creswell, 2007). As the
following sections explain in more detail, the voices of the teachers are prominent in this
report. Interpretations, reflections, and conclusions, together with interview excerpts, are
presented in order to provide credibility and applicability of the findings. These
interpretations are meant to convey the teachers’ “perceptions, meanings, definitions of
situations and constructions of reality” (Punch, 1998, p.175).

A Grounded Theory Approach

In order to describe the social interactions and situations that teachers perceived
allowed them to reflect on their own teaching practice with literacy curriculum planning
and digital technologies, a grounded theory approach was utilized. As a research strategy,
a grounded theory approach is a way to analyze qualitative data in order to generate
theory (Punch, 2009). Glaser and Strauss (1967) describe grounded theory as a means of
deriving theory from the data, using examples to illustrate the themes.

Glaser and Strauss (1967) recommend using comparative analysis as a method for
generating theory grounded in the data. Categories are generated from coding the data
and that evidence, or the selective quotes from the data, are used to illustrate the themes
(Corbin & Strauss, 2008). By comparing and contrasting the data, interrelationships
among the categories led to the development of themes. There is a “circular process”
(Glaser & Strauss, 1967, p.145) to this approach beginning with the first collection of
data, as researchers start the open coding of the raw data immediately and follow this
initial coding with axial coding to relate concepts to each other. Questioning, re-reading
and coding, intertwined with theoretical sampling, takes place on an ongoing basis until
conceptual saturation occurs to fully illustrate each category or theme (Corbin & Strauss,
Theoretical sampling, which refers to analyzing data from the beginning of data collection, allows researchers to “maximize opportunities to develop concepts in terms of their properties and dimensions, uncover variations, and identify relationships between concepts” (Corbin & Strauss, 2008, p.143). As Corbin and Strauss (2008) state “theoretical sampling is especially important when studying new or unchartered areas because it allows for discovery” (p.145). This enables researchers to take advantage of fortuitous events (Corbin & Strauss, 2008). As an example, issues of ‘access and inequity related to technology’ began to emerge in the initial analysis of the data. I continually went back to the data to analyze further. Related concepts, such as access and constraints, developed as the concept became saturated.

As data collection and analysis is often conducted simultaneously in grounded theory (Charmaz, 2005), I was able to realize early on in my data collecting stage that I had missed an important question regarding planning online. I was able to include the question (#8 – How did you develop that particular lesson/activity?) with subsequent interviews, as well as contact the first two participants and ask why and how they planned curriculum online. This process allowed me to expand my understanding of the teachers’ curriculum planning, particularly their planning online. While the categories were derived from the interview questions, which were organized in themes based on the guiding questions, findings emerged from the data, and new themes also emerged. I found myself constantly reflecting on the interviews and the themes I was seeing emerge. My own data memos, interview notes, and journaling provided further space for reflections regarding my data and how to convey meaning about the emerging concepts. By utilizing a grounded theory approach, I was able to constantly refer back to the data to
generate concepts, as well as go back into the relevant literature in order to redesign the theory.

In what Corbin and Strauss (2008) call “the interplay of data and researcher” (p.326), findings are derived inductively from the data as the researcher compares sections of data to each other. Promoting a constructive approach to grounded theory, Charmaz (2005) locates the researcher as an integral part of the inquiry process. Charmaz found that flexible analytic guidelines helped researchers focus their data collection and build inductive theories throughout levels of data analysis and concept development. “A grounded theory approach encourages researchers to remain close to their studied worlds and to develop an integrated set of theoretical concepts from their empirical materials that not only synthesize and interpret them but also show processual relationships” (Charmaz, p.508).

Utilizing semi-structured interviews is one way of demonstrating the flexibility of a grounded theory approach (Charmaz, 2005; Punch, 2009). This approach provides space for participants’ voices as they answer probing questions, and provides chances for participants to include their related experiences and further the conversation by sharing related ideas or comments. Charmez stated that “we share in constructing what we define as data” (p. 509), which I have exemplified through the descriptive quotes illustrating the themes.

**Data Collection**

Data sources included two in-depth interviews with the participating teachers, teacher resources (both digital and multimodal), and curriculum documents (Ministry of Education curriculum and guides). The documents were chosen for the information they provided about participants’ curriculum planning, particularly in conjunction with digital
technology. The qualitative interviews were the main data sources I used to create a narrative regarding teachers’ pedagogy and perceptions on digital and multimodal teaching tools.

**Qualitative Interviews**

In qualitative interviews, I asked teachers to talk about their classroom teaching and provide illustrative examples of what happens in their daily interactions with their students. In addition, I asked the teachers to talk about what happens in their other workspaces, the spaces where they plan lessons, activities, and units, to discover the resources that help them incorporate best practices in their classrooms.

As school research sites are social spaces where identities are fluid (Fine, 1994) and learning spaces are ever evolving and flexible, a series of interviews provided me with an opportunity to gather evidence. This material revealed the evolution of the teachers’ identities and practices as literacy educators, the supports and challenges that influence and have influenced their multimodal focus on teaching and learning, and their professional goals for their future work in education. Through comprehensive qualitative interviews, I interweave teachers’ “multiple stories” (Creswell, 2007, p.44) to examine the complexities of teaching with digital technologies in literacy classrooms.

I used a semi-structured interview style with some pre-established, open-ended questions. Semi-structured interviews “have a planned list of questions [which] allow room for dialogue, follow-up questions, and other changes” (Kendall, 2008, p.133). In this way, each of my interview sessions varied according to each participant’s story. After the first few interviews I realized I had not clearly asked how the teachers planned their curriculum. I had asked about their resources and literacy-based lessons and activities but it was not clear how these teachers planned curriculum using various
resources nor how they specifically planned the activities and lessons they had shared. Therefore, after I incorporated an appropriate question about the planning process into my interview protocol, I called and emailed the first few teachers to get their responses to the new question. My data collection process embodied Kendall’s (2008) observations of the semi-structured interview: “the flexibility and ability to probe with follow-up questions along with the dialogic nature of the interview enables the researcher to… see issues from the perspective of the interviewee and to achieve a degree of empathy and understanding with the research participants” (p.134).

Participants.

My teacher participants are elementary teachers who have taught for at least one full year, and have taught, or are currently teaching, a literacy-based course (i.e. Language Arts). When deciding upon criteria for selecting teachers, I drew on the methods of other researchers. Terms such as multimodal teachers, digital experts, and literacy elementary teachers were considered. In Hutchinson’s (2012) study on using iPads for literacy learning, for example, she selected her participant teacher “because she expressed a desire to integrate more digital technology into her instruction and because of her openness to trying new instructional approaches” (p.17). Karchmer (2008) wanted what she termed exemplary educators to participant in her study on the Internet and literacy instruction. Baker referred to effective teachers when she observed that “it is not the use of a particular teaching method that makes the difference – it is the teacher that makes the difference” (Baker et al., 2010, p.6). I also pondered Baker’s (2010) description of teachers who “tend to evaluate their own teaching… [and] understand a range of theoretical perspectives and their pedagogical implications” (p.6). As stated in chapter one, the teachers who participated in my study are reflective educators who
utilize digital technology, and incorporate multimodal production and texts, regularly in their literacy classrooms.

**Recruiting participants.**

Using a snowball sampling technique (Teddlie & Yu, 2007) to identify potential participants, I drew on my previous teaching experience and school-based contacts to recruit teachers. I have been a teacher for 18 years in elementary, secondary, and post-secondary schools where I taught literacy-related courses and have experience teaching and planning curriculum with digital technology tools (such as Web 2.0 applications). First, I asked teachers I have met through working together in schools, universities, and educational journals, to recommend colleagues who use digital technology in their classrooms.

Next, I invited teachers I knew from B.Ed. programs, former high school students who became teachers, and educators I have met through educational/literacy events and through my children’s former schools. By keeping in touch with teachers in previous schools I had worked in, I found out that some of my former students had become teachers and I contacted them through email addresses. To recruit additional participants, I followed Karchmer’s (2008) practices. She utilized electronic mailing lists to contact her participant teachers as she discovered that many “communicate regularly via the Internet… [and] subscribe to electronic mailing lists or listservs” to share classroom practices (p.1252). I enlisted the help of listservs from the university where I teach to contact previous students. I also drew on graduate student networks to which I belong, to enlist more participants. Fifteen teachers were contacted through this type of recruitment. In total 25 teachers showed an interest in participating. When I contacted them to confirm their participation, 15 teachers agreed to partake in this study.
Upon receiving ethics approval from the University of Toronto Office of Research Ethics, I phoned, emailed, and met with confirmed participants. I introduced myself to unfamiliar participants to give them further details about this study and the anticipated time commitment. At this time, I distributed the consent form and asked participants to create a pseudonym for themselves.

**Interviews.**

I considered Merchant’s (2008) views on digital resource elements when designing the interview questions, particularly the issues that he identified as integral to utilizing digital technology in a multimodal classroom: “issues of provision – what hardware and software is provided and how is it updated; location – where this equipment is situated in schools or classrooms; access – how and when teachers and pupils can get to the hardware and software; and use – the actual practices that are promoted in, and outside of, the formal curriculum” (p.759). Teachers need to consider issues of provision, or computer hardware and software availability, in order to provide digital services for all their students. Location, or the area for storage of digital equipment, is another aspect of using digital technology. Where the digital equipment for the classroom was stored and how it was shared became one of the interview questions. Access, or availability of hardware and software for both teachers and students, is another important aspect of the logistics of being a multimodal teacher. It is an important aspect of planning curriculum to know when, where and how the hardware and software is available for classroom use. The everyday practices of digital technology in the curriculum, and how teachers navigate and use these tools, are of particular interest to me. I discussed these issues with the teachers in order to establish the resources they have available and what resources are still needed.
**Interview process.**

The interviews were face-to-face with each teacher. The first interview was approximately 45-60 minutes in length, usually followed within days or weeks by a 30-60 minute interview. In the second interview, teachers answered any additional questions, and clarified any parts of their transcriptions, that arose as I began the data analysis process. Three of the teachers live far away from the researcher so time constraints and financial reasons kept the interview to one longer session, with follow-up emails regarding questions about the transcriptions. Another two teachers informed me during the first interview that they were unable to meet for a second session (due to planning a wedding and early summer travel plans, as the interviews were conducted at the end of June before school was out for the year) but were willing to complete the questions during our one interview together. While this was not optimal interviewing procedure, all the teachers responded to all interview questions and provided me with additional opportunities to contact them (through email or another meeting). The interviews allowed me a window into “the ways that people construct, interpret and give meaning to these experiences” (Gerson & Horowitz, 2000, p.199).

Attention to participants’ gestures and facial expressions provided additional information and guided my interpretations and additional questions as I conducted the face-to-face interviews (Kendall, 2008). Like a participant in Kendall’s (2008) study, I observed that “face-to-face is the most interactive you can get. You get the full range of information, not only the words [participants] speak, but the inflection and the gestures and the whole nine yards that we have to artificially create online” (p.145). Seven of the participants’ interviews took place in local coffee shops or restaurants, although for two of the teachers we completed the second interview at their school library. I interviewed
four of the teachers at their homes and one teacher was interviewed during her children’s swimming practices at the local community pool. Three teachers were interviewed in their classrooms after school or during their preparatory periods. Four sets of teachers also asked to be interviewed together as they were teaching and planning partners in their schools. As most of my participants live in relatively close proximity to me, I was able to conduct at least one face-to-face interview with each teacher.

I used qualitative interviewing practices in order to capture the voices of the participants and describe teachers’ practices through thematic, inductive, and descriptive analysis. As Kendall (2008) notes: “Interview quotes are compelling. They represent real people expressing opinions about their day-to-day lives” (p.143). Therefore, in order to fully present the stories of these literacy elementary teachers, as well as the differences and similarities among them, I also created teacher biographies, asking questions that gave me a window into their professional histories.

**Interview protocol.**

Interviews focused on teachers’ perceptions of multimodal learning and teaching as well as their literacy pedagogy. The interview protocol included an ice-breaker question to get to know each other (such as, sharing a personal teaching anecdote or inquiring about their school day), pauses between questions to encourage further responses and to make notes, asking for elaboration to answers when needed, and a thank you statement to acknowledge the teacher’s time and responses (Creswell, 2009). I asked participants to include details about their teaching career, such as what grades they have taught, how long they have been teaching, and their teaching strengths. Re-creating ‘a day in the life’ history of each teacher provides a base from which to develop each story, or narrative, on how their journey as a teacher led them to use digital technology in their
classrooms. Before the interview questions began, I asked the following questions to get to know each participant as an educator:

A) How many years have you been teaching and what grades have you taught (and are currently teaching)?

B) What did you do your undergrad degree in? Have you taken other courses (such as AQ or MEd courses)?

C) How many years have you been at this school?

D) How would you describe the student population of the school?

E) What do you believe are your teaching strengths?

F) Overall, is this school a good ‘fit’ with your approach to teaching?

Before I met with all of the teachers I asked them to bring, or think about, successful literacy lessons or activities that they used recently in their classroom. I informed my participants about how I organized my questions. My interview questions are based on five themes (Literacy: Understanding and Activities; Planning Multimodally with Digital Technology; Challenges/Triumphs of Everyday Practice with Digital Technology; Student Connections; Where do you go from here?). We covered two of the sets of questions during the first interview and the final three sets during the second interview. Teacher interviews included the following questions in order to help create the narrative about each participant regarding their teaching practices:

Interview #1 (following the Teacher Narrative questions):

Literacy: Understanding and Activities:

1. Literacy is a very broad field. Please talk about your understanding of literacy as a grade ___ teacher.

2. Do you think the field of literacy has changed since you were a student?

3. Please describe a successful literacy lesson or activity that you used this year.
Planning Multimodally with Digital Technology:

4. To what extent do you use digital technology in your classroom? (How many computers do you have in your classroom? Do you have access to a lab? Do you have a Smartboard? Do you have access to iPads, or other digital tools?)

5. Please describe how you came to use digital technology in your classroom.

6. During a typical week, how do you use digital technology and media in your classroom?

7. Please describe a successful lesson or activity where you used digital technology. (You can use the curriculum unit or activity that you brought with you, that you believe relates to multimodal resources and teaching and digital technology.)

8. How did you develop that particular activity/lesson plan?

9. What other digital technologies do you use in your literacy teaching?

10. Are there certain teacher-related resources that you like to use? (Personal resources, on-line resources, classroom teacher resource books?) What types of resources do you find you need? Why?

11. Do you have access to technology in your own classroom? If not, where do you go? If yes, how is your classroom designed to accommodate the technology?

12. What kind of support have you had in using digital technology in your classroom? Have you taken any courses or workshops on using digital technology? Do you have a support network (i.e. at school, the board, or at home) to help you with technology in the classroom?

13. To what extent are there other teachers in your school using digital technology to the extent that you do? Would you describe your school as one that is fairly focused and committed to using digital technology?

Wrap Up: Is there anything else you would like to tell me about your experiences with digital technology?

Interview #2:

Challenges/Triumphs of Everyday Practice: Using digital technology in teaching can be rewarding for both you and the students but it can also pose some challenges.
1. Please describe why you think that using digital technology is rewarding for you and your students. Do you have a practical example?

2. Now let’s look at the flip side. Please describe a challenge that you encountered while incorporating digital technology in your classroom.

3. Digital technology is only one aspect of a rich literacy curriculum. Please describe another curriculum activity, not necessarily one using digital technology, where your students demonstrate particular talents (i.e. artistic abilities, musical talents, drama skills). Given your grade level and the curriculum, to what extent can you have students demonstrate their learning in non-traditional writing forms?

Student Connections:

4. We know that many students have rich technology-related lives outside of school. If applicable, how do you incorporate your students’ use of personal technologies (such as IPods, IPhones, e-books, tablets) at school?

5. How do you support your students to develop their digital technology skills?

6. Regardless of your program, we know that some students are difficult to motivate to participate in literacy activities. I am sure that you have encountered some. How do you engage them in literacy?

Where to go from here?:

7. What are your future plans for teaching with digital technology in your classroom?

Wrap Up: Is there anything else you would like to tell me about your experiences with digital technology?

After the first interview I usually had one or two questions regarding our conversation from the first interview session. At the end of the first meeting we set up the second meeting. I also emailed teachers after our interviews to request resources, if they were not already submitted, or to clarify a section of their transcript.

Education Documents

During the interview, teachers were asked to share curriculum resources and documents that they felt helped them in their multimodal and digital literacy curriculum
planning. For most teachers it was more practical to submit their resources and documents electronically through email and/or web-links. I gathered further data through two sets of curriculum resources, education documents and personally collected resources, to understand what resources teachers utilize to help them plan their classroom curriculum.

**Government documents.**

The Ontario Ministry of Education produces the provincial curriculum policy documents and resource guides used by teachers in Ontario schools. The ministry’s website on the Ontario Curriculum hosts all related policy documents and resources. Curriculum policy documents are defined as “what students are taught in Ontario publicly funded schools. They detail the knowledge and skills that students are expected to develop in each subject at each grade level. By developing and publishing curriculum documents for use by all Ontario teachers, the Ministry of Education sets standards for the entire province” (Ministry of Education, Frequently Asked Questions section, para. 2). Within each set of documents, mandated requirements and standards are listed for teachers, students, and the public to know what is expected at the completion of each grade level. Government curriculum documents (e.g. *Language 1-8*, Ontario MoE, 2006), as well as government created policy, reports, and resource documents (e.g. *e-Learning Ontario* pamphlet, Ontario MOE, 2012), are accessible to the public.

Some schools, boards, and districts also create their own locally created curriculum documents where teachers follow the prescribed expectations and outcomes for each subject and grade.
Teachers’ personal collections of resources.

During the interviews, I asked teachers to share any other resources related to their literacy and digital technology-focused teaching with me. In order to refer to these resources later, I asked the teachers to send me the resources they created via email, the URL links to sites they used, digital photographs of resources, and photocopies of exemplars of activities they made. Specifically, teachers sent me photographs of student culminating projects and collaboratively created anchor charts as they hung on classroom walls, photocopies of examples of student work to illustrate an activity they spoke about, and electronic documents of activity descriptions and assessment tools. It was important to view all the resources available to teachers in this field and to discover which ones are directly related to each teacher’s pedagogy. Teachers told me that their personal resources were obtained from other teachers, organizations, and companies. They included lesson and unit plans, short and long range plans, and individually created resource packages. I recorded information about where teachers accessed these types of resources, and/or why they created resource packages. By analyzing the documents that the participating teachers utilize in their curriculum planning and everyday practice, I was able to gain a sense of teachers’ perceptions and their practices in utilizing useful resources.

In relation to Merchant’s (2008) digital resource elements about provision, location, access, and use, I would also add curriculum resources to this list. These resources, whether they are expected, personally collected, or technology help via an expert or company, aid teachers in their curriculum planning, both individually and as a school. Generally, Ontario MOE curriculum documents guide teachers with teaching standards across the province but they do not instruct teachers on how to teach. Teachers
also utilize personally collected curriculum resources to help them plan the activities required for their curriculum. All of the resources help these teachers effectively establish best practices in their classrooms.

**Data Analysis**

During the data analysis stage, concepts such as digital literacies and digital technologies (e.g. Web 2.0 technologies), collaboration, engaging teaching, and taking chances with digital technologies in the classroom emerged as I reflected on the patterns across interview and document data.

**Interview Analysis**

Analysis of the interview was inductive, as themes or patterns emerged from the transcribed interviews and document analysis. As Calfee and Sperling (2010) note, “analysis is best conducted as an ongoing activity” particularly to provide feedback for any adjustments during the data collection stage (p.61). Completing a memo chart was particularly helpful in clustering and deciphering concepts and categories by finding the key issues, main concepts, links between concepts, and participant concerns based on the interviews.

I followed steps recommended by Creswell (2009). I organized and prepared the data for analysis by reading through the transcribed interviews to gain a general sense of the information, coding the data, using the coding process to generate categories or themes, deciding on how the description of the data would be represented, and, finally, interpreting the meanings within the data by merging the narratives of the interviews with the analysis of the documents. At the same time, a grounded theory approach was also evident as my coding techniques involved open coding followed by axial coding.
where related concepts emerged until saturation of data created categories or themes (Corbin & Strauss, 2008). Creswell’s (2009) approach to coding has similar characteristics which I found useful. Therefore, I read all transcriptions carefully, choosing one interview to think about the overall meaning, clustered topics that emerged from the data sources, going back and coding all the data while looking for descriptive words to turn into categories, and fully organized all the categories in order to analyze.

I also incorporated the use of analytic tools as described by Corbin and Strauss (2009). In order to “better understand the problem from the participant’s perspective” (p.70), I used questioning to consider possible connections between interview questions. Constant comparisons was an important tool while coding the data in order to discover the differences between similar quotes and categorizing the data accordingly. The flip-flop technique was used “to obtain a different perspective on a word or phrase” (p.79). Corbin and Strauss (2009) illustrate this tool by using the same word I needed to further explore, ‘access’, although my definition related to access of technology. Finally, by drawing upon personal experience I was able to connect with participants regarding their overall teaching experiences. As Corbin and Strauss (2009) suggest, “we want to use our experiences to bring up other possibilities of meaning” (p.80).

Through this process I used evidence, the quotes from the interviews, to illustrate concepts and ideas as they emerged into categories or themes (Glaser & Strauss, 1967). I attempted to ensure that the voices of the teachers, through a detailed description and reflective interpretation of this study’s purpose, were heard when discussing the interview findings.
**Document Analysis**

The document analysis coincided with the interview analysis. The purpose for analyzing educational documents was to provide an understanding of what resources teachers use, how these resources reflected teachers’ practice, what resources were used beyond the curriculum documents, and what the gaps were in teachers’ resources for using digital technology in literacy classrooms. These gaps in teachers’ resources, particularly in relation to digital technologies, were often discussed in terms of the goals of the teachers.

This document analysis also entailed some deductive analysis, as mandated curriculum expectations were discussed during the interviews as part of the teachers’ curriculum planning. Likewise, aspects of digital technology played a prominent role in the teachers’ planning and implementation of curriculum. To assist in analyzing the resources I looked to Peterson’s (2012) work using Ivanič’s (2004) six discourses of writing and learning to write framework to deductively analyze writing objectives in provincial/territorial educational documents across Canada. The discourses include: skills, creativity, genre, process, social practices, and sociopolitical discourses. Coding the learning outcomes of each language document, Peterson found the process discourse to be predominant, followed by the creative, skills and genre discourses among the curriculum outcomes of the ten provinces and two territories. The teachers in my study also focused on teaching the writing process (the decision-making and thinking processes during writing) in their literacy classrooms, often providing examples of lessons and activities where the outcomes were writing-based. Therefore, coding for the document analysis included references to digital technology and the writing process.
Validity

I have endeavored to enhance the validity, in other words, the trustworthiness and soundness, of my results (Calfee & Sperling, 2010), through the triangulation of data sources and member checking of the interview responses. Triangulation of data sources was achieved through gathering interview data, as well as teachers’ lesson and unit plans, plus government, school board, commercial and teacher-created documents. A member checking strategy (Creswell, 2009) was implemented after the interviews were complete in order to clarify what the participant teachers reported, as well as to verify that the interview stories I wrote were accurate reflections of who they are as teachers who integrate multimodal practices in their classrooms. I asked the teachers if the transcripts accurately reflected their perceptions and practices. During the analysis process, another researcher also analyzed approximately ten percent of the data in order to corroborate my findings.

Being an insider in the world of the classroom, as well as the researcher, has benefits in ensuring the validity of results. The benefits include knowing the teacher-related vocabulary to read, understand, and compile education documents and teacher texts. I have experience and understand the day-to-day happenings in schools and classrooms, so I can empathize with teachers and develop an authentic relationship with them. I went to great lengths to check with my participants in order to develop a “pattern of meaning” (Creswell, 2007, p.21) that as accurately as possible reflected the lives of the teachers under study. My personal experiences provided opportunities for further meaning making to occur (Corbin & Strauss, 2008), such as understanding the chances these teachers had to take with technology in order to provide engaging learning opportunities in their classrooms.
Corbin and Strauss (2008) use the term ‘credibility’ as an equivalent measure of validity as it “indicates that findings are trustworthy and believable in that they reflect participants’, researchers’, and readers’ experiences with a phenomenon but at the same time the explanation is only one of many possible ‘plausible’ interpretations possible from the data” (p.302). As commonalities exist among the results, some truth can be applied to the experiences of other literacy, digital technology-focused teachers. How these teachers collect and utilize digital literacy resources in their multimodal classrooms has potential implications for the practices of other teachers.

**Limitations**

I am aware that my position as a researcher, teacher educator and former teacher may have made some of the participants feel that their personal pedagogy was being judged. I took every opportunity to demonstrate a spirit of inquiry, rather than of judgment when meeting and communicating with the teachers. A further potential limitation of this study is that the data only provide insights from the teachers’ perspectives. For instance, stories of students’ engagement with multimodal literacy activities are not told from the students themselves. Finally, I attempted to address the small sample size constraint of 15 participants by also analyzing the curriculum documents and resources that the teachers use in their daily practice.

**Conclusion**

As noted by Calfee and Sperling (2010), “research is an ever-changing story influenced not only by what we learn cumulatively over many studies, but also by social changes over time that shape teachers and students, goals and values, especially within the arenas of language and literacy” (p.49). This research study is one such story which
will, hopefully, springboard into further research into the field of elementary teachers and digital, multimodal, and literacy pedagogy.
CHAPTER FOUR: FINDINGS

Introduction

In this chapter I describe the 15 educators who participated in this research study and how they perceive their teaching practices have evolved with regular integration of multimodal practices throughout their literacy curriculum. These elementary teachers revealed how they reflected on their own teaching practices in order to make changes in their pedagogy. Along with describing the teachers and their understandings of literacy, their collaboration among teaching partners, and use of digital technology tools and resources in their curriculum planning, I provide evidence showing ways in which these teachers take risks with digital pedagogy in their classrooms.

Teachers’ Educational and Teaching Profiles

What the teachers articulate about themselves as educators provides details about the characteristics of teachers who utilize multimodal teaching practices in their classrooms. This section describes the 15 educators and how they depict their teaching strengths. Providing a glimpse into what these teachers are passionate about in their teaching practice concludes this segment.

Teachers who utilize multimodal teaching practices

Fifteen teachers participated in this study. Six of the teachers had between 5-9 years of teaching experience, five of the educators had been teaching for 10-19 years, and four had 20-26 years of teaching experience.

As shown in Table 1, the educators were teaching in grades 3 to grade 8 classrooms during the data collection period. Eight of the teachers were from urban school areas while five of the teachers taught in suburban school settings. The two grade
8 teachers were in a rural school. Twelve of the 15 teachers identified as female and three as male teachers.

Table 1

*Grade, School Location, and Gender of Participating Teachers*

<table>
<thead>
<tr>
<th>Current Grade</th>
<th>No. of teachers</th>
<th>Rural schools</th>
<th>Suburban schools</th>
<th>Urban schools</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>¾</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
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<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5/6</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6/7</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7/8</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*Notes.* Number of Participants (n=15)

In the following section, I depict each of the teachers (all names are pseudonyms) as they described themselves to me in our first interview together. There is a great deal of teaching experience among these educators, including Sheba who has taught every grade over her 25 years in education. Roxanne, Sally, and Dona have instructed in French programs while Gwen, Sheba, and Arthur have taught in Special Education programs. Gwen was also an Early Childhood Educator. Ria has held a teacher-librarian position and, along with George, was also a Literacy/Numeracy Coach. Ted has the distinction of being a Differentiated Instructor (DI) at his school. Together, Rosie and Abbey have both been a part of the Daily Physical Activity (DPA) programs at their school. Four of the
teachers, Roxanne, Leela, Daphne, and George, hold graduate degrees in education, while Arthur has his MSc in Behavioural Psychology. Almost all of the teachers have taken additional qualification (AQ) courses through the Ontario College of Teachers’ affiliated university programs. In my descriptions of the teachers I divide them according to their teaching assignments at the time of the study into primary, junior, and intermediate groupings.

Table 2

Demographics of Particular Participating Teachers

<table>
<thead>
<tr>
<th>Participants</th>
<th>Years of Experience</th>
<th>Grades Taught</th>
<th>Additional Qualifications (AQ) &amp; Graduate Degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosie</td>
<td>21</td>
<td>1, 3, DPA, PE&amp;H</td>
<td>Reading (AQ, Spec), PE&amp;H (AQ, Spec), Primary (AQ)</td>
</tr>
<tr>
<td>Cassidy</td>
<td>6</td>
<td>2, 3</td>
<td>Reading (AQ, Spec)</td>
</tr>
<tr>
<td>Claire</td>
<td>6</td>
<td>2, 6</td>
<td>Reading (AQ, 1&amp;2), Math (AQ, Spec)</td>
</tr>
<tr>
<td>Sheba</td>
<td>25</td>
<td>1-OAC</td>
<td>Drama (AQ, Spec), Special Education (AQ, Spec)</td>
</tr>
<tr>
<td>Roxanne</td>
<td>19</td>
<td>Core French, 4, French Immersion, 3-5</td>
<td>MA (Education, ESL)</td>
</tr>
<tr>
<td>Gwen</td>
<td>6</td>
<td>K, 4, HSP (4,5,6), Resource, Computer prep</td>
<td>ECE, Primary (AQ, Spec), Reading (AQ), Special Education (AQ)</td>
</tr>
<tr>
<td>Sally</td>
<td>9</td>
<td>7, Jr/Int French Immersion</td>
<td>ILP, Visual Arts (AQ, Spec)</td>
</tr>
<tr>
<td>Leela</td>
<td>12</td>
<td>5, 5/6</td>
<td>MA (Education, literacy/technology)</td>
</tr>
<tr>
<td>George</td>
<td>14</td>
<td>1, 3, 6</td>
<td>MA (Education, critical literacy/technology), Literacy/Numeracy</td>
</tr>
</tbody>
</table>
## Coach

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Grades</th>
<th>Qualifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbey</td>
<td>26</td>
<td>1-6, DPA</td>
<td>Primary (AQ), Reading (AQ, Spec), PE&amp;H (AQ, Spec)</td>
</tr>
<tr>
<td>Daphne</td>
<td>16</td>
<td>5/6, 6, 7/8</td>
<td>MA (Education, literacy/technology)</td>
</tr>
<tr>
<td>Arthur</td>
<td>13</td>
<td>ISP (Autism)</td>
<td>MSc (Behavioural Psychology)</td>
</tr>
<tr>
<td>Ria</td>
<td>12</td>
<td>5/6, Prim/Jr Librarian</td>
<td>Literacy Coach</td>
</tr>
<tr>
<td>Dona</td>
<td>8</td>
<td>7/8, French 6-8</td>
<td>Special Education (AQ, Spec), French (AQ, Spec)</td>
</tr>
<tr>
<td>Ted</td>
<td>5</td>
<td>8</td>
<td>DI Coach</td>
</tr>
</tbody>
</table>

*Notes. Names of participants are pseudonyms. Spec = Specialist level; Prim = Primary; Jr = Junior; Int = Intermediate; PE&H = Physical Education and Health; ECE = Early Childhood Educator; ILP = Instructional Laptop Program; ESL = English as a Second Language; ISP = Intensive Support Program (Autism); HSP = Home School Program; DI = Differentiated Instructor*

**Primary teachers.**

While primary grades are generally classified as K-3, because one of the teachers taught a split 3/4, I decided to add grade 4 teachers to the primary group. The years of teaching experience for this group range from 6-25 years and they all enjoyed conducting co-curricular activities, such as clubs and sports, with their students.

Rosie, a grade 3 teacher, has been teaching in the primary grades, and has also been a Physical Education and Health (PE&H) teacher, for 21 years. Over the last nine years at her current suburban school, she has been involved in providing workshops for Daily Physical Activity (DPA) in her school board. Rosie’s background includes a BA in Child Studies, and Additional Qualifications (AQ) as Primary Specialist, PE&H Specialist, and Reading Specialist. Rosie team teaches with Abbey, a grade 6 teacher in the same public school.
Cassidy, also a grade 3 teacher, has been teaching grades 2 and 3 since she became a teacher six years ago. Working in an urban school for the last five years, Cassidy believes her students are “little sponges and they need people to be passionate and caring and enthusiastic about what they're doing.” Cassidy majored in Sociology and English and has her Reading Specialist (AQ). Cassidy team teaches with Gwen, a grade 4 teacher who works in the classroom across the hallway in her public school.

Claire also teaches grade 3 and believes her public school’s team teaching approach not only benefits the teachers, but the students as well. A teacher for six years in grades 2, 3, and 6, Claire has been teaching in her current urban school for two years. Claire’s education background is in Psychology, and she also has completed the requirements for Reading, Parts 1 & 2 (AQ) and her Math Specialist (AQ).

Sheba has been a teacher for 25 years, including in Special Education. During her career, she has taught from grade 1 to OAC (Ontario Academic Credit or year five of a secondary school education in Ontario until 2003). Sheba has been a part of her current suburban Catholic school community for the last four years. She revealed that teaching grade 3/4, the grade she was teaching at the time of this study, is her favourite age group so far. Sheba’s BA was in Theatre Arts and her teaching specialties are Drama and English. Sheba has also completed the Drama specialist requirements.

Roxanne also teaches grades 3/4 in her urban public school community. Roxanne has been with this dual-track French Immersion school for 13 years, the last four years in Core French in grade 3. Roxanne has a French education background and her MA is in second language learning. Roxanne team teaches with the other grade 3 and 4 teachers at her urban school. Roxanne shared her advice about teaching: “You really have to look at
the kids in front of you and decide what’s the best way to teach. You have to bring learning to life in own your teaching!”

Teaching grade 4 at the time of this study, Gwen has also taught Kindergarten, in Resource, Computer Prep, the Home School Program and Special Education (with a focus on literacy and numeracy) in the primary and junior divisions over her six-year teaching career. Gwen’s education background includes a BSc in Math, an Early Childhood Education degree, and AQ Specialists in Primary Education, Reading, and Special Education. While teaching in her current urban school for the last three years, Gwen met her teaching partner, Cassidy.

**Junior teachers.**

The five grades 5 and 6 teachers all taught in the public school system and, at the time of this study, had a wide range of proficiencies and years of experiences. All the junior teachers enjoyed organizing co-curricular activities with their students. This group of teachers also includes teaching partners and a literacy coach.

Sally had been teaching junior and intermediate French Immersion and grade 7 for nine years in a suburban community until she transferred to a regular stream school. At the time of this study she was teaching grades 5/6. Interested in technology for her classroom, Sally has been involved in an Instructional Laptop Program (ILP) at her school board. This program consisted of taking eight school board-run, digital technology courses. Sally received a laptop to use in her classroom, a variety of digital resources, plus technology support from her school board. Sally found that “all the courses were relevant and helpful. They taught about how to use technology and what technology is available.” With a degree in Visual Arts, and AQ Specialist certification in
Visual Arts, Sally was also using her teaching specialty to guide her teaching practice in the classroom.

Leela has been teaching a grade 5/6 class, along with her teaching partner Daphne. Teaching for 12 years in an urban setting, Leela has always taught grades 5 and 6. Before her teaching career, Leela, who has a degree in Criminology and Psychology, worked in Immigration Canada. She is also an amateur photographer. Leela has her Reading Specialist (AQ) and a MA in curriculum and teaching. Leela and Daphne completed their MA program together in order to improve their teaching practices. Leela said that doing graduate work in education made her “look at the student as a whole person, not just as a student” and that while it took some time to make changes in their classroom and school, “things started to happen for the better.”

Daphne teaches grade 6 across the hall from her teaching partner, Leela. Daphne has been teaching for 16 years, 11 years in her current urban school, in various positions from grades 5 to 8. A Fine Arts major, Daphne was introduced to technology during her B.Ed. program and was encouraged to integrate it into her classroom teaching. “I was just taking a chance,” Daphne said, “and that's what I've been doing ever since, is taking chances.” Discussing her MA experience in curriculum and technology, Daphne stated that all the knowledge she and Leela had gained made “a direct impact on our teaching in our classrooms” and that is why she continues participating in professional development opportunities, particularly with digital technologies.

Abbey, currently teaching grade 6, has been teaching grades 1 to 6 for 26 years in suburban communities. Abbey has a degree in Biology and has completed her Primary, Reading, and Physical Education and Health Specialists (AQ) requirements. Even though they have always taught different grades, Abbey team teaches with Rosie, a primary
teacher. They organize school activities and events together, such as a UNICEF fundraiser just prior to this data collection. They regularly team teach using technology as a teaching tool.

Having been an educator for 14 years, five years at his most recent school, George has taught grades 1, 3, and 6 over his career, mainly in urban centers. George’s education background is in English and Psychology. His MA thesis was a self-reflective narrative that looked at teaching critical literacy with his grade 1 students. George recently switched from teaching grade 6 to being a Literacy/Numeracy Coach. George noted that “change in education is never fast, that’s why I love my new role. I’m in a position to make change. I challenge teachers and they challenge me.”

**Intermediate teachers.**

The intermediate teachers have a vast range of experiences, including teaching the Autism Intensive Support Program (ISP), writing curriculum on social justice issues, and working as team teachers in a small, rural community.

Arthur has been teaching for 13 years in his small urban public school. Arthur has an MSc in Behavioural Psychology, which is why he believes he is a good fit for teaching students with autism. He teaches the Autism ISP for students in grades 6/7 and also supports digital technology initiatives with his peers. Arthur claims that he works as a team with his students to troubleshoot on technology issues in his school.

Ria has taught in four schools over her 12 years of teaching. Ria recalled how, as a new teacher, she “fell into the trap of teaching how I was taught. I remember how during my first year of teaching I was photocopying packages for my kids for March Break and another teacher came in and asked what I was doing. When she asked what I was doing during the Break, she said don't you think the kids want to hang out too? That
changed my whole perspective.” Since that moment, Ria said she started to see how she could teach differently. Ria taught grades 5/6 for five years before becoming the K-6 teacher-librarian at the same school. About her teacher-librarian experience, Ria said, “most of my time was partnering as a teacher-librarian, so co-teaching and co-planning.” Next, she was a K-8 Literacy Coach where she worked in all four strands of literacy (reading, writing, oral, and media) in 18 different schools. Ria did co-teaching with some of the teachers while in this role but wished she had co-taught more. Ria has also worked on various curriculum writing teams in her community: “I work with different organizations. I’ve written curriculum for ETFO (Elementary Teachers’ Federation of Ontario) and Nedic (National Eating Disorder Information Centre). I was part of a webinar on body image and image issues in the classroom as the education expert.” Ria is currently teaching grades 7/8 in an urban public school where she organizes a variety of co-curricular activities with her students.

Dona and Ted team teach grade 8 together in a small, rural Catholic 7-12 school. Dona has been teaching for eight years, seven in her current school, while Ted has been teaching for five years, three years with Dona. Both are involved in various co-curricular activities with their students. Dona was the French teacher before teaching grade 8 and has completed her Special Education and French Specialist AQs. Ted has always taught grade 8 and is currently the DI (Differentiated Instruction) school coach. As DI coach Ted, and Dona, are able to practice with the digital tools and share them with the school staff.

Teaching strengths of the teachers

While possessing subject expertise was discussed by all the teachers, each teacher also identified varied teaching strengths. Incorporating differentiated learning strategies,
particularly the use of digital technologies in the classroom, aided in developing successful learning opportunities for students. Strong classroom management, plus flexibility, was also important in being able to offer students a variety of learning opportunities, including using digital technologies. Taking the time for teacher-student connections and collaborative working environments were also essential attributes of these teachers.

Working with parents and guardians was mentioned as an important aspect of being effective in the classroom. All the teachers pointed out how they kept in constant contact with the students’ parents, but the junior and intermediate teachers made specific references to parent communications. George, Ted, Dona, Leela, and Daphne all used their virtual learning environments (VLEs) as contact areas for parents. Daphne and Leela shared how they had daily communication with the parents of their students: “It's no secret what we're doing in our class; we're trying to make it as transparent as possible. And we do share pictures and videos - we have a window into our classroom through our blogs, discussions, and wikis.”

**Teaching strengths of primary teachers: Subject expertise and differentiated learning.**

The teaching strengths identified by the primary teachers include a variety of literacy teaching expertise, abilities to collaborate with colleagues, social justice focus, and the importance of writing. The primary teachers all believe in differentiated and student-centred learning, as well as the integration of technology. They also commented on how being able to work with parents as well as students is a teaching strength. Additionally, struggling with literacy learning inspired two teachers to be more sensitive
to struggling student writers. Primary teachers’ teaching strengths are described in greater detail in this section.

Claire, Sheba, and Cassidy believed that their strengths are in literacy and language teaching. In order to best teach her students, Claire found that purpose and responsibility are important aspects of learning to read and write: “I will say to the kids during independent reading time, you need to read because you’re going to write me a response letter or reflection to be responsible for your reading.” Sheba identified special education teaching as one of her strengths, explaining that she enjoys working with children who have particular special needs, often with literacy. She found that she is patient with her students, “especially those with expressive difficulties.” Sheba told a story about a boy in her class who was a very good reader but just could not get his thoughts on paper. She often scribed for him and showed him how to use a laptop for word processing with oral-text processing software when he was assigned writing tasks.

Besides having a strong social justice focus in her teaching, which she integrates throughout the subjects, Cassidy was also most concerned with teaching writing. Believing that writing was her weakness as a student, Cassidy was self-conscious with her writing and would often “talk” her ideas into a tape recorder and then have people edit her work. Cassidy said, “I don’t remember getting taught how to write properly. I’ve only been able to write well since I became a teacher really… It’s a struggle to teach writing too but you have to do it. Now I try different things and strategies with the kids, and how to connect with those one or two kids who don’t get writing either.”

The ability to support students through differentiated learning was a common strength among these grade 3 and 4 teachers. Rosie described her teaching strength as having a “strong knowledge of different learning styles and types of learners. I vary my
program to meet those needs.” For example, Rosie found that the types of literature students read changes quickly and “in order to keep their interest up you have to get everyone, the boys, engaged, whether it’s in graphic text, non-fiction, or whatever, you just have to find the right books.” Gwen remarked how she liked “getting to know” who her students are in order to deliver the best program. Roxanne found that differentiated learning and adaptation is something that “you have to do in the classroom where you have a multitude of learning levels. So in my class differentiated instruction is something I've learned I have to do so every kid can achieve success wherever they're at, and improving from where they're at too.” Roxanne believes she has a “good rapport with her students so that allows them to bond and to release any anxiety or stress and then they're comfortable and are able to take risks. All of that is related and rapport is definitely a learned skill and is very important with teaching.” Like Cassidy, Roxanne also struggled with literacy early in her schooling, as English was a second language to her first language, Italian. Roxanne shared, “I was intimidated by print and shunned it really. At school I learned it. I had to build a lot of that confidence up myself. My teacher would say, ‘read this book’, but I was not exposed to all the literacy, not even the fairytales because my parents didn't know them. So I learned from my siblings. And, as a teacher, I keep that struggle in mind.” Through differentiated teaching strategies the primary teachers found they were more able to relate and engage with their students.

While the focus of most of the primary teachers was on literacy, integrating math and technology also mattered a great deal to them. Besides having “a strong foundation on the teaching principles of literacy”, Rosie and Gwen found that having a strong grasp on “hands-on math” was an important aspect contributing to their effectiveness as teachers. Roxanne used the Smartboard for teaching math because, not only does it
engage the students, but, as a tool, it is “so visual, so tactile, and they love it. And most importantly the kids are learning. That's what it is, it's a tool for us and for them.” The primary teachers used these digital tools for their planning and for student-centred learning activities. Claire even found that Pinterest brought out creativity that she did not feel she otherwise had in her teaching: “People laugh because my whole classroom is a Pinterest ad!”

**Teaching strengths of junior teachers: Strong classroom management, flexibility and using technology.**

Utilizing strong classroom management approaches, using technology, and being flexible are the paths to providing engaging learning opportunities for students, according to these junior teachers.

While Sally identified her Visual Arts talents as her main teaching strength, she explained that her French and technology skills also played an important role in her teaching. George said that literacy and technology have always been springboards for his teaching. He believes that through technology “there is much more information out there for learning. We should be working with it. It’s no longer about the expert teacher. It’s about helping students manage the information better.” George not only created a space for technology in his former classroom and school, but, through his position as a literacy coach, has brought his technology expertise to more schools in his school board.

Leela and Daphne believe that classroom management is very important to create a positive learning environment to enhance students’ success. “Classroom management was important when I worked at a youth detention center, and working at immigration too,” Leela stated, “As a teacher you are thrown into the classroom, sometimes with little preparation. If you are going to survive teaching you have to have good classroom
management, because everything else will come along if you can manage a classroom.”
Daphne agreed, “You can know all the content curriculum and all the niches, but if you can’t get the kids to stick around and engage then it doesn’t matter.” Daphne found that teaching is not always about the curriculum, but about engaging the students and encouraging life-long learning. One way Daphne and Leela engaged their students, and themselves, was by incorporating technology into their curriculum. Furthermore, Daphne hoped that by “working with online tools in a responsible, respective manner, hopefully it carries over, translates, into their use of social media.” Leela added that “you have to let the kids know that you care and that they have a voice. I think they need to know that you are invested in them and not there just for the job.”

Finally, the junior teachers recognized that their flexibility is a key contribution to their teaching success. Abbey believed that while she is “organized and consistent” she is also “willing to try new things to insure student success.” This flexibility, an ability to modify and change, marks these teachers’ ability to adapt their teaching methods in order to better meet the needs of their students.

**Teaching strengths of intermediate teachers: Subject expertise and teacher-student connections**

According to the four intermediate participants, course subject expertise and the ability to work with students are what makes them stand out in their field. The ability to integrate digital technology into the curriculum was another teaching strength. Arthur, for example, stated that technology and science, as well as his incorporation of literacy throughout his programs, are his teaching strengths.

Ria and Dona were very enthusiastic about working with children. Ria claimed drama and literacy, as well as “working with kids”, as her passions and teaching
strengths. Dona has always enjoyed working with children: “For me my strength is relationships, 100%. I teach them the material and I’m okay at it, but I connect with kids, that's what I'm good at, that's what I'm known for. That's what I do. That's my job.”

Ted found that he was an advocate of reading online and critical literacy. In order to match his digitally-enhanced pedagogy, one way he integrated novels into his curriculum was through blog discussions on the iPads. Ted said, “I like to read great books. And part of my literacy program is to introduce my students to good stories. I bought *Persepolis*, a graphic novel by Satrapi, for example… And the kids are invested in them because they think they’re reading high school books. While I think they’re just good books.” Ted also identified innovation and teaching critical thinking as his strengths: “I think about critical thinking and integrate it into the classroom. I feel like I have become more understanding of where to use that innovation as my career has evolved.”

Dona, a grade 8 teacher in a rural school, described how her teaching and curriculum planning continually change in order to engage her students through meaningful learning opportunities, most notably through digital technologies. For example, Dona was teaching paragraph writing and decided to incorporate social media and the current trend of popular food trucks in a local city. Dona noted that this is “an example of how my teaching has evolved. Those food trucks are a trend right now. I feel like you have to go with what's current.” Dona had done all the preliminary work by contacting food truck owners via social media “and asked if the owners would be okay with my students contacting them about their business. They all responded and agreed to help.” Next, as Dona explained, she asked her students to research the food truck industry and contact, from the approved list, food truck owners through Facebook and
Twitter. Dona noted that “the students were actually interacting and talking to real people who owned and ran food trucks or who were in the midst of setting up these businesses… And then based on their research, talking to the owners, and using their paragraph knowledge, they had to make their own concept for a truck.” While the food truck posters might “look a little ‘old school’ up there on the wall,” the way Dona’s students obtained “their information was through technology” and she was proud of how her students communicated through social media avenues about an authentic topic. Dona commented on a few of the final products and incorporating current trends into the curriculum: “The calzone one is really a good one; the paragraphs are long, too. The truck is called Cal’s Zone, which I think is clever. And another good one is Crazy Stream: her paragraphs are a little weaker but the idea was cool. The student saw it on Pinterest about making spaghetti by putting it into Ziplock bags and adding food colouring and water.” Dona also noted that home-to-school connections grew out of this activity: “Now the students and their families are starting to visit the ones we talked with in class. Every week a kid comes in with a picture of a truck that they ate at, which is fun.”

Through this literacy activity, which linked digital technologies and relevant learning possibilities, Dona found that more emerged from the connections her students made with the food truck owners: “It’s good to learn to be an entrepreneur and how different people have taken different paths to make a living. All these people said that they are really driven and motivated, and some said school was not their thing, and that they are successful now. Sometimes school is challenging for kids, but they can always be successful at something.” Building successful learning opportunities is a key teaching component for these intermediate teachers.
Passion for Teaching and Learning

“I do think that my love of teaching is most important,” shared Abbey. A passion for teaching and learning connects these teachers. “I love to teach,” stated George. “When you have a person who is over-the-top passionate about what you’re doing, you cannot help but be excited. Teaching is a matter of reaching into your students’ hearts and finding what is important in what they are doing. Teachers should be striving every day to be excited about what they’re doing.” Gwen agrees that every teacher should be excited and passionate about teaching in their classroom: “teaching is all about oozing excitement.” For example, Gwen said, “If you’re excited to read, then the students are excited to read. If you’re excited to show them a website, they’re excited to see it. It’s just a matter of having that enthusiasm for everything you do.” Roxanne believes that “learning is supposed to be fun. I have to make teaching and learning fun for me, too. Be excited!” A great portion of that excitement about teaching was also exemplified in the teachers’ daily use of technology.

Passion for teaching with digital technology

Roxanne believes that to share “your positive attitude, your passion, means so much to the students. At my desk I pin or place a bunch of things that are important to me and the kids come up and look. I try and show them love for things that I’m interested in, like dancing.” Cassidy also believes that “showing your passions, and creating that positive, encouraging learning environment” is key to engaging students. According to Dona, these personal connections are the main focus of her teaching day. The teachers felt that their love of teaching meant finding connections with their students’ interests, often through the curriculum. Many of the teachers discussed their passion for their
teaching subjects and student learning, such as Roxanne whose love of literacy was interwoven throughout her teaching day.

Cassidy felt that issues of social justice were her passion in order to provide authentic learning opportunities for her young students: “Social justice is my passion and I have found that through that focus my students have become even more passionate about different things that other people won't take up.” Ria would agree. She is also passionate about connecting with her students through social justice issues. The first unit of the school year that Ria planned for her grade 8 students was about Identity. When Ria heard her students discussing Amanda Todd’s video about bullying, and the young girl’s suicide, she decided to bring these experiences into her classroom and focused on anti-bullying. “It was so powerful,” Ria stated. Then, together with her students, Ria created this big question: "How do we impact somebody else's identity by how we treat them?" Inspired by Amanda Todd’s cue card video on bullying, Ria created a response project, also via video and cue card messages. The project was a positive, anti-bullying campaign, where they “talked about power” through media, following by a class film festival. Ria stated that “it was great to have that conversation in a real way.”

While also dedicated to integrating visual arts and drama throughout her curriculum, Ria was particularly passionate about how fellow educators were teaching: “I tell other teachers: Find your passion. Do you love the environment? Do an environmental unit. That's your big idea, that's your focus; and connect everything to that idea. Do you love Medieval Studies? Teach it through your Language program if that's your passion.” Ria shared that her passion for incorporating drama and literacy throughout her curriculum was an important aspect of her practice. Ria “loved” teaching grade 7/8 for the first time because, not only could she bring drama and literacy cross-
curricular, she could also share her expertise with all the intermediate classes. Discussing shared teaching passions, Ria ended with this statement: “Just make your work engaging for everybody!”

**Passion for digital technologies in the classroom.**

When the teachers were asked about their daily use of technology, they were astounded by how much they actually used on a daily basis. Claire exclaimed how “it’s part of my daily practice to use technology. I didn’t even realize that I used that much!” While Gwen said, “I use technology every day in my classroom because I have it, so I can.” Whether the technology was in her classroom or being shared in the school, Ria said that “technology is everywhere.” George also stated how, in his classroom, technology is used “all the time and in everything. It's fully integrated into my language arts, my math, everywhere.” Arthur found that students “need to see and do so they remember what to do. This is why interactive technology is so fantastic!” Demonstrating how these teachers integrated digital technologies daily into their classrooms illustrates how dedicated and passionate the teachers were about learning and teaching with technology.

**Digitally connected classrooms.**

The teachers used a variety of digital technologies daily in their practices. The typical uses varied from using the Internet as a search engine to managing a virtual learning environment (VLE) as part of their learning classroom. An important aspect of utilizing digital technologies, whether they were technology tools or digital resources, was teacher and student interest, and often excitement, with interactive learning. Sally noted how excited her students would get when she turned on the data projector. Knowing that so much of the technology is interactive, Sally’s students would ask, “Can
When she gave her students the wireless mouse and keyboard they could pass the mouse and keyboard around so everyone could have a chance to participate in the lesson. Sally said, “It’s something they can relate to more than me standing up in front of the class and drawing pictures on the board. It’s good to have those resources that are electronic so there are things we can do when, for example, we don’t have the hands-on materials for science experiments.” As the teachers incorporated more digital technologies into their teaching practices, they became more passionate about learning, integrating, and sharing technologies in their classrooms.

As the teachers integrated digital technologies into their classrooms, they demonstrated a range of resources and tools from data projectors and interactive whiteboards to Web 2.0 online tools. Depending on how much technology was accessible, the teachers used what was available. Roxanne, for example, who was passionate about how her students were learning French, set up a French literacy technology centre in her classroom. She said, “using technology is rewarding because I just see how it is integrating all the modalities of learning, like the visual, the tactile, and the auditory.”

Data projectors that connect computer output to a screen were the most common digital classroom tools used by the teachers. Typically, the teachers who had data projectors set up in their classrooms had them on and used them all the time, while the teachers who shared projectors on carts set them up and used them as much as possible. Sheba stated how the projector was on all the time while Claire commented on the ease of loading videos through her laptop to the data projector. Dona utilized the Kursweil program, a text-to-speech reader software, for shared reading because of the highlighting feature. Dona shared that “sometimes when we’re reading I’ll scan the text into Kursweil
and we’ll highlight certain parts and make notes on them. It’s not just for kids who struggle with reading, it’s for everyone. So they can just listen instead of always reading because listening to language, like how they listen to music, is important too.”

Being able to project books, resources such as graph paper, and manipulatives through a document camera, often an ELMO, was also helpful in connecting the curriculum. Rosie and Abbey commented on how showing the whole class lesson instructions and working on problems was an easily integrated part of the school day. This also kept the students focused since they did not have to move to a computer lab or wait for another group to finish using the manipulatives. Abbey and Claire clearly stated that they rarely used the ELMO for taking up homework; instead, they used it to demonstrate a problem or inquiry, for students to share manipulatives or show examples of their work, or to do shared reading.

George found that being able to connect Smartboard technology with the data projector was as useful as having the interactive whiteboard in the classroom. George said, “I do a lot of my math lessons on it. I put questions into the Smartboard technology and the students can come up and play with the math.” Roxanne used the Smartboard in every subject area, every day, because “everything is so tactile.” For example, for an activity in her visual arts program, Roxanne photographed pictures of art and they manipulated them with the object animation tool. For her First Nations unit, Roxanne “projected images of native artist Norvel Mauriso’s work, studied them, and imitated some of them. Then we associated them with our legends that we read.” Arthur also found Smartboard technologies engaging and successful because students can “throw things up on the board or share work with each other.” For example, in order to
encourage more of his students to participate in class discussions, they used Clickers and found that the anonymity of the tool “increased student participation.”

Participating teachers also used the Internet to find curriculum resources. Gwen crowned Cassidy “Google Queen” because of her proficiency with the search engine. Claire, while a fan of the Pinterest site, often googled creative classroom activities. Ria, Sheba, Abbey, and Rosie shared how they often searched YouTube to embed videos into their lessons. Sheba had Bill Nye the Science Guy’s YouTube channel in her favourites because of her students’ excitement when showing the videos: “They love anything that’s visual!” Gathering around iPads was also mentioned, mainly because of their visuals and apps. Cassidy and Sheba would read stories with their students from an iPad app or play educational games at the end of the school day. Cassidy, Ted, and Dona also used their iPads to video conferences and work periods. Cassidy would video “when kids talked about their work so that I can refer back to it later on.” Dona used the app EduCreations to video what her students were “working out in math together and record it to see the gaps in their learning.” More Web 2.0 tools were integrated and utilized into the teachers’ practices. Dona found her students used Prezi for presentations and she loved sharing online story creation sites such as Storybird (www.storybird.com) and Bitstrips (www.bitstrips.com).

Creating virtual learning environments in face-to-face classrooms.

Teaching and learning in a virtual classroom was either in progress in the teachers’ classrooms or a future goal. Many of the junior and intermediate teachers, such as Leela, Daphne, George, Ted, and Dona, not only integrated Virtual Learning Environments fully into their teaching day, but were constantly searching for ways to improve upon their virtual practice.
Leela and Daphne noted how, while using *Wikispaces* and Web 2.0 tools in their classrooms, their virtual classroom was an “evolving textbook. It changes all the time because of what the students need. Then, there is also accountability and a release of responsibility too.” For example, when their students asked to have access to the anchor charts and success criteria on their classroom walls, the two teachers discovered how to create side bars and on their wiki so “anything modelled or co-constructed in class is there online.” Ted also utilized *Wikispaces* as an interactive classroom. One of his favourite tools consisted of using the Smartboard as a virtual whiteboard, recording lessons and student work, and posting it on the wiki that same day. Ted began using this feature when one of his students had to be away from the classroom for extended periods of time but expanded it so students doing group work could “record themselves and their work plus the solution and refer to it later.” Ted referred to his work with the wiki as his “little adventure and it has worked so well! It’s a simple thing, a little change, but a powerful change because I can move around the classroom, helping people, while everybody has a chance to use the virtual whiteboard. There’s tremendous potential with these tools!”

Dona, Ted’s teaching partner, used *Edmodo*, an education-based learning network, that “looks like Facebook, so students recognize it.” Students can use the agenda and calendar tools, submit assignments, find homework, send private messages to their teacher, and parents can have access to the site as well. Dona was particularly pleased with the “backpack feature where they can save work they do at school and work on it at home. And, if a student says they’re struggling with something, they can send me a copy so I can look at it, and then I can send it back to them. This is really helpful
because the amount of feedback I’ve given back since I started using this app has probably tripled, just because it’s easy to use.”

George referred to his classroom as a Virtual Learning Environment, made possible through the Moodle platform. Everything George did in his classroom was housed, “with wide open access”, on his classroom Moodle. He also noted how it became “a window into my room for parents too.” George found that his students were engaged in “something that meant they were elaborating, working together, sharing ideas, exploring information, and coming together, rather than recreating worksheets. The Moodle was key for that different integration, different ways for the kids to collaborate, share their work, and become much more of a community.” George’s passion for this open source, virtual learning classroom carried into his work as a literacy and numeracy coach as he shared his experiences with teachers in his school board.

**Passion for learning: Goals for teaching with digital technology.**

The teachers wanted to continue learning about new digital tools and how they could continue making their classrooms positive communities of learning. Cassidy and Gwen spoke of signing up for summer courses through their teachers’ union to use technology in the classroom. Cassidy wanted to continue “to build on what I’m already doing and implementing. Improvise, adapt, and overcome, I say.” George wanted to “continue to explore this amazing, unique way to produce information. I want to explore these powerful devices for reading, writing, speaking, viewing, and media literacy.”

Virtual Learning Environments were discussed by all the intermediate teachers and some of the junior teachers. Ted worked with a variety of digital tools, notably blogs and Prezi. Ted’s future plans include using Wikispaces as an integral part of his classroom, “where both students and parents become involved.” Ria also wanted to more
fully integrate *Moodle* in her classroom. Already using *KidsBlog* and *Instagram* to have her students respond to various inquiries, she said that trying a *Moodle* was her next move as many of the “high schools in her area use *Moodles* in their classrooms and I feel I can get my students ready for that next step.”

Learning new programs and tools were future goals for all the teachers. Gwen described how she wanted “to get the children to use different programs to share their learning. I want them to present their thinking in a different form of technology. We need to foster how they can show their creativity more.” Ria wanted to encourage her students to read more, but not through the Reader Response notebook she had been using. Ria said, “maybe it’s me in the classroom doing the reading and them doing something digital with it. I might call it an Idea or Thinkers Notebook, online, where they might watch a video or go on *Pinterest* and write about their experience.”

Netbooks, iPads, and Smartboard technology were devices with which the teachers knew they needed more professional development. Abbey and Rosie were excited about the new travelling Netbooks. Abbey knew they were “going to be a huge learning curve” and Rosie described the new devices as “yet another layer that will be new and exciting for everyone.” Abbey was also going to continue to find new ways to use the sets of Kobos. Roxanne was excited to use the new school iPads for French apps with her class: “Using the iPad as a tool to hear the different Quebec and Parisian accents for vocabulary would be very helpful.” She was also interested in using some of the photography apps for a Science unit on plants: “I want us to take pictures and then use them as slides to see the progression of how plants grow.” Roxanne also spoke about her Annual Learning Plan and how it was about learning new technologies to integrate into her curriculum. Dona was excited about getting a Smartboard back into her classroom
when the new addition of the intermediate wing of her school was completed. Dona said she would like to “focus on using more tools and how do we use what we have as users.”

Leela found that “every year we try new things to learn or get better. For me it’s using technology and getting better at the tools we’ve discovered so far.” Leela wanted to introduce Glogster to her students while Daphne wanted to use GoogleForms for assessments. Sheba’s goal was to use Prezi and teach her students how to present their ideas in different digital ways. Finally, Claire wanted to teach more programs and tools and hoped she would be able to get the mobile lab. Then, Claire said, she would like to teach Photostory or Storybird. “Aside from that,” Claire said, “you can always learn how to do things better.”

Being reflective and passionate teachers, while a trademark of these particular teachers, also revealed the variety in their understanding and knowledge of their teaching practices.

**Teachers’ Understandings of Literacy and Learning**

The teachers expressed a range of understandings of literacy and opinions on how teaching literacy has changed. This section seeks to answer the question: How do teachers describe their understandings of literacy and learning? While none of the teachers gave the same answer about what literacy might mean, there were connecting threads all leading to creating purposeful teaching and learning opportunities. Understandings of literacy that emerged often extended beyond the functionality of literacy and as a communication tool to concepts of critical literacy and the construction of meaning when literacy is perceived as more than reading and writing.
Literacy Understandings

Connections to curriculum documents.

Connections to the Ministry of Education elementary curriculum documents were found throughout teachers’ interview responses. Arthur, for instance, thought most teachers would view literacy as the four strands of reading, writing, oral, and media as described in the *The Ontario Curriculum, Grades 1-8: Language* (2006). The Ontario Ministry of Education sets the curriculum standard for all publicly-funded schools in some of the following documents: *The Ontario Curriculum, Grades 1-8: Language* (2006), *The Ontario Curriculum, Grades 1-8: The Arts* (2009), and *The Full-Day Early Learning – Kindergarten Program* (draft, 2010). There are also related resource documents, such as *Supporting English language learners: A practical guide for Ontario educators, Grades 1-8* (2008) and *Me Read, No, Way! A practical guide to improving boys’ literacy skills* (2004).

The *Language* (2006) curriculum document was often referred to by the teachers, particularly while describing lessons, activities, and their related assessment tools. As Rosie said, teachers are “so curriculum driven.” Many of the teachers, such as George, Sally, Rosie, and Abbey, discussed the push to make sure curriculum expectations were met. Rosie and Abbey described how aspects of the curriculum documents were seen throughout different teacher resources, such as in Scholastic’s *Literacy Place* which is a multi-subject resource for kindergarten to grade 6. Ria, on the other hand, while still concerned about the overall grade-specific curriculum, mentioned that “there no curriculum police, and there are always ways around things.”

The *Language* (2006) document begins by stating how literacy is about communication and how “literacy development lies at the heart of the grade 1-8 language
curriculum” (p.3). This is one way that the teachers characterized literacy. Leela, for example, found that “literacy is reading, writing, oral, and media all coming together.” Under the strand of Media Literacy, references are made to elements of multimodalities. For example, a distinction is made between traditional literacy and media literacy: “Whereas traditional literacy may be seen to focus primarily on the understanding of the word, media literacy focuses on the construction of meaning through the combination of several media ‘languages’ – images, sounds, graphics, and words” (p.13). The document also refers to popular culture, technology, and media and how they are significant to students’ lives. Indeed, Arthur commented that “media literacy is everywhere.” Critical analysis of media forms and texts, as well as creating media texts, are also encouraged to be incorporated in learning opportunities. The term ‘critical literacy’ is found throughout the Language (2006) document, in achievement charts and grade expectations. Cassidy, Ria, and Ted found that the integration of critical literacy was an important aspect of their pedagogy, from choosing appropriate texts to designing critical thinking focused activities. A section, entitled “The role of technology in language education”, outlines learning implementations for information and communications technologies (ICT). In the grade 2 expectation section, for instance, the term “digital images” (p.60) is part of the expectations for producing media texts. George and Ted discussed how they integrated technology throughout their curriculum, through Moodles and documentary iMovies. Teachers are encouraged to implement various tools in their teaching practice “and for the design of curriculum units that contain varied approaches to learning to meet diverse student needs” (p.30). Throughout the documents, teachers are encouraged to differentiate their teaching strategies to meet the needs of all students. The primary
teachers made particular reference to the importance of differentiated learning for student success.

**Literacy as skills.**

The awareness of words, decoding, inferring, and comprehending language are all incorporated into the skills-based understanding of literacy discussed by these teachers. Viewing literacy as a set of skills, this section describes one element of the teachers’ understanding of literacy.

Ria, whose teaching practice incorporated incredible multimodal avenues of teaching and learning, and who was very concerned about connecting with her students so they were engaged in their own learning, assumed an understanding of literacy that did not match with her teaching practice. Ria found a definition of literacy from UNESCO that she liked because of the “layers of literacy” that she believed are more inclusive than reading and writing. During our interview Ria found the definition from UNESCO’s *Education for All Report* (2006): "Literacy as an autonomous set of skills; literacy as applied, practiced and situated; literacy as a learning process; literacy as text."

Literacy is further defined as the "ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society" (p.148). While this definition includes the autonomous skill sets that do not seem in keeping with Ria’s teaching practice, the functionality of literacy, including learning language skills, appears in some other teachers’ understandings, as well.
Sally wants to make sure her students are able to write clearly, and not just for the EQAO test (standard tests administered by the Education Quality and Accountability Office as part of the Government of Ontario means to assure accountability amongst school boards in terms of literacy and numeracy skills). One challenge Sally faces is balancing the teaching of grammar and spelling so her students are able to perform well on the EQAO test, while still teaching reading, writing, and oral skills so her students are able to function both in school and in the community. As Sally explained, “it’s not the same when I was a kid. Technology is obviously the future. But if kids can’t spell, I guess we have autocorrect. But there is such a focus on writing and reading clearly and concisely on those tests.” Sally said, “We expect them to answer these three part answers, and if they don't know how to spell, and if they don't know how to write a sentence, and they don't know the structure of a paragraph, it's hard to get answers out of them.” One way Sally encourages better writing is through skill-based word study activities: “It’s a puzzle you have to figure out, fit in what they already know about language, and then they’re guided to learn more.” Sally realizes that you cannot teach grammar and spelling out of context, an assumption supported by school board policy that does not encourage grammar, spelling and language workbooks. She found that there is a fine line between teaching to the EQAO test and teaching language and that it often seems “you're teaching them how to answer a question, instead of teaching them language.”

Roxanne said that while she believes literacy is everywhere, she often thinks of literacy as “print, decoding, encoding.” Roxanne found that students need “to be aware of words around them and know how to tackle them. To make them more independent with the print world around them they need the strategies to at least ask the right questions
when they do not know what a word is. There is a competency about being able to ask instead of continue to not know.” Roxanne helped her English Language Learners (ELL) discover the right questions through a variety of techniques, most notably comprehensive literacy strategies. Roxanne and Claire were strong proponents for comprehensive, or balanced, literacy. Claire explained this literacy model was found across many Ontario schools: “That’s where the gradual release of responsibility comes in: you watch while I do, and then you try it with someone else, and then you try it on your own. So that’s the modelled practice, the guided work, the shared work, and then the independent piece. And you should be successful after I’ve given you multiple attempts.”

George found that “in the higher grades students are reading to learn, while in the primary grades they were learning to read. Now there are more higher level thinking skills.” In contrast, Abbey said that students are still learning to read, no matter what grade they are in because “all that inferencing is still learning to read. You’re still teaching them to read non-fiction, how to read between the lines, and focus on a point of view.” In order to teach inferring, at the beginning of the school year, Rosie discussed accessing prior knowledge with her grade 3 students: “You show the cover of a book, or the title of a book, and then they can infer what it’s about or predict how it will end, using their background knowledge... That's huge in primary, accessing the prior knowledge. And there is a variety of background knowledge. You're getting everyone to the same playing field.” To get to that same playing field, Rosie also found that students have “to have strong literacy skills early on. That’s what sets up your success in school. We break everything down into a variety of subjects, but really, the crux is you have to learn and comprehend early. We are so worried about decoding early but we really have to focus on comprehension because that is the key to student success.” Sally and Claire
discussed how they integrated literacy throughout the curriculum because it is intricately connected to learning. Claire found that “you have to integrate literacy across the curriculum because there’s so much to it. When you think about literacy, it’s not just reading and writing. If kids are not literate you can’t do anything. I mean if you can’t read, you can’t do math. You can’t do social studies; you can’t do science.” Abbey agreed that literacy is everywhere because schooling is “so literature-based, that in order to be successful, they have to have strong literacy skills.”

**Literacy as communication.**

Communication was key in many of the teachers’ understanding of literacy, particularly for social purposes. Ted said he often asks himself, “What are we writing for?” He believes it is to communicate: “A literate student communicates well with other people and part of that is reading well and obtaining information, and part of that is writing well, and part of that is speaking well, and understanding and processing stimuli around you.” Ted found that “someone who is literate communicates well with other people, not just in terms of reading and writing, but in speaking and communicating too. We need to teach how to communicate to different audiences.” Ted structures his literacy program to encourage his students to be able to “adapt communication styles” and be able to argue constructively. As noted by Ted and Sheba, communication combines writing, reading and oral communication throughout all subject areas. Sheba argued that communication is an integral part of the process of literacy: “Literacy is being able to read, understand what you read, and apply it. Then, it’s being able to express yourself through writing, clearly, so people can understand you. Next, it’s being able to take all that reading and writing and share it orally.” Sharing how she taught her students how to
speak clearly in front of the class, Sheba realized, “that’s what literacy is, being able to get your point across to other people.”

Ria, for example, created an activity to teach not only summarizing skills, but the importance of word choice, that would go beyond having students write “this happened and then that happened.” First, Ria created a section on her Twitter account for her classroom and invited some of her educator friends to join. By using a poetry book about basketball, entitled Rimshots (Smith, 2000), she gave each group the same humorous poem called Please Put Me In Coach. Only having 140 characters to summarize the poem, Ria “asked how we can summarize our thoughts through tweets. I tweeted the seven summaries from the seven groups of students to my friends, pulled up my twitter account on the projector, and we all talked about the summaries. They loved it!” Ria discovered that her students were not having the same trouble any more with summarizing. Then her teacher candidate, a pre-service student teacher, wanted to try to do a novel-in-an-hour as an activity. They used Crash by Spinelli (1996) and had the groups tweet the summaries of each of the five chapters. Ria said, “Again they loved it. I also used the Twitter bird in my classroom as an anchor chart to summarize things we were writing about or learning about.” Ria was then able to incorporate digital tools to teach writing skills through communication channels.

Daphne and Leela said that they are constantly struggling with what literacy entails, but also believe it is communication. While Leela felt that some teachers attach writing skills solely with communication, she said that teachers have to teach their students “about how they have a digital footprint and that their words and what they're saying actually has a wider scope and meaning to the wider audience.” Leela found that communicating ideas “can be said in a few words, 144 characters, and that can be just as
powerful as pages and pages in a book. So how do you say what needs to be said clearly and concisely, and how do you broaden it when needed?” Essentially, as Daphne noted, “that’s it, oral communication, writing communication, all of it is about communication.”

**Critical literacy connections.**

As connected by the teachers, critical literacy is closely linked to media literacy in both the *Language* curriculum document and in their own teaching. While Cassidy finds literacy in everything we do and are connected to, she said that critical literacy is “all around us. Being critical of what you see, the commercials, that’s media literacy. So are picture books, chapter books, and doing math.”

While Arthur viewed oral communication as an important skill, he stated that “oral communication is more about children having confidence in presenting information, organizing it effectively, and understanding media literacy. It’s about having students pull relevant information and understand the motivation behind it, and that's where media literacy is actually mixed in with everything.” Arthur incorporates media literacy throughout his curriculum: “I try and find ways to make children understand what they read so they can use richer writing and ideas through text-to-text, text-to-self, text-to-the-world meaningful reading.” Arthur further connects media with critical literacy: “While reading and writing is synthesizing information, literacy is the critical thinking and understanding of media literacy.”

Ted shared an activity he designed on making documentaries to meet the media literacy expectations in grade 8. Ted is a fan of documentary films and believes it is an interesting way to work with film genres. Together his students watched and analyzed a variety of documentaries, such as one about an artist and another on a blind dirt biker, which “the kids were really into.” Afterwards, students “brainstormed ideas about doing
their own documentary. They put a proposal together and then we worked together on a final idea they were going to work with.” The students shot the footage with *iMovie* over two weeks and then edited using *WeVideo*, an online editing tool that “they had access to at school and at home.” During our interview, Ted had a mini viewing of one of the videos, describing the methods and tools they used to create their documentaries. One partnership documented people’s first kiss and date experiences:

> We spent a lot of time talking about what they wanted to do. We came up with an idea to interview people differently about the same topic and see what their answers would be like. For example, one guy said they were together for 7 years and the girl said it was 9. The girls were pretty brave being that they were in grade 8 and asking questions of grade 12 students, and then strangers at other venues.

Ted then organized a Critic’s Choice Awards celebration in order to view and discuss all the documentaries. This was one way of not only creating learning opportunities on digital tools and interview skills, but created a venue for students to discuss, and analyze, topics of interest.

Roxanne realized that students have to be critically attuned to the print around them: “I think students, the younger they are, can be intimidated by print literacy. But the more strategies we give them the more aware they'll be of print and media literacy around them. I think it's about teaching them the strategies to be able to look at anything, print or digital, and be critical.” Cassidy planned a unit to analyze television commercials. They looked at a *Concerned Children’s Advertisers* commercial on the House Hippo, which began their discussion on thinking critically about what you see and hear. Together they answered questions about target audiences and then carried on their conversation into other areas of their literacy curriculum.
Ria also thought that media literacy was central to teaching. Ria learned through teaching grade 7/8 classes “that everything has to be through the lens of media.” Everything she presented, facilitated, or taught in her classroom was somehow through media. Ria described how she worked through Big Ideas in literacy by not organizing her curriculum into mini units, but by having big themes. In their first Big Idea at the beginning of the year Ria looked at Identity and Diversity. Wanting to study the power of stories, Ria began with the 2009 TED talk by Chimamanda Adichie entitled The Danger of a Single Story. The TED talk is about the detriment of only knowing one story about a person, a culture, and the stereotyping that can occur. Ria stated that “I showed it the first week of school because it is so powerful, and the kids wanted to watch it until the end.” Next, the class moved onto body image and watched more TED talks, mostly because the students “were really engaged. We talked about the effect of the reaction and I found that media is almost the key.” Ria spoke on how balanced or comprehensive literacy does not always look the same in each grade, especially once she realized the importance of critical media literacy: “Maybe the shared is in the watching of a video. Then, what does guided reading look like? I could slide in a story, or a read aloud, or a novel anytime. Whether the kids were analyzing media or producing it, they were hooked.” For example, after discussing the TED talks, Ria further integrated the Identity theme by using Wonder (Palacio, 2012) as a read aloud before presenting the identity- focused novels, Black and White (Walters, 2009), Alexandria of Africa (Walters, 2008), Firegirl (Abbott, 2008), Speak (Anderson, 1999), and Freak the Mighty (Philbrick, 1993), for the students to discuss and analyze. Critical literacy was demonstrated in a number of ways by the teachers and continued to be a focus in many of their discussions connecting literacy with digital technologies.
Literacy is meaning making.

Understanding literacy as meaning making was an important aspect of the teachers’ perceptions regarding literacy. Daphne said that literacy is “making sense and meaning of content in various contexts, and what you do with that knowledge… The new literacies out there are not just words on a page. It’s communication, text, audio, hyperlinks, visuals, and the interaction between the different aspects. It’s a media explosion of how we’re taking information and making sense of it.” Similarly, Roxanne shared how, “literacy is making meaning through words and bringing your experiences and sharing it. Literacy is meaning, making meaning with words, and bringing them to life… And, teaching different strategies about making meaning.”

Many of the teachers described the importance of understanding and relating the meanings in various experiences with text. Dona found that “it's not so much teaching them how to read but how to interpret life. It's like interpreting what you read, it's interpreting what the meaning is. It's not the classic reading and writing anymore. What do you read online? It's how you interpret what you are bombarded with.” George further described literacy as the “new economy of the future, the ability to manage, read, and interpret meaningful information. Literacy flows into everything, always changing and mutating”. Roxanne emphasized that the students’ life experiences are one way into writing because “you can talk about it first, and it conjures images and experiences, and then we can start to write, and maybe relate it to our reading as well”.

George came to a point in his teaching where he asked himself, “I'm asking you to write but we have these powerful tools in front of us. If you bring in an iPad you should run with that. That's what you should be using instead of on a piece of paper. Why not use the technology to edit writing and create new modes of presenting your work?
Technology is a powerful tool, let's use it.” George has used writer’s workshop (Graves, 1994), where students write authentically and work through a process of writing, including sharing with peers and teachers until they write independently, “but they're also creating different things, like producing a movie trailer and editing a video.” But he taught “the skills you need to work on in this project to really break down those artificial barriers. And they all made something aided by technology.” George said that was “my bittersweet time of teaching where personally I felt I was on the cusp of really revolutionizing the way I was teaching literacy.”

“Literacy is the window into the world,” said Abbey. Through that window, these teachers found that amongst the language skills, relating literacy as more than reading and writing, as a tool of communication, a way to interpret media critically, and a means to connect with each other were important aspects of the literacy curriculum.

**Perceived Changes in the Field of Literacy**

The teachers discussed various changes in the field of literacy both from when they were young elementary school students and when they were teacher candidates or beginning professional teachers. Changes in teaching pedagogy, strategies, and expectations, as well as the integration of digital technologies, were described while the teachers sifted through their school memories and reflected on their present teaching practices.

**Shifts in teaching methods.**

“The dinosaur is dead,” said Cassidy. “Why are we doing dinosaur units when there are other things we could be talking about? Not that there’s not room for dinosaurs. But I don’t know if there needs to be an entire unit. There’s more to living in today’s world.” Cassidy stated how so much has changed in the world even since she began
teaching 6 years ago: “When you look at technology for instance, half the jobs we have today didn’t even exist 20 years ago. So teaching about dinosaurs can be a little bit dated… especially if you are using books from 1987.” Cassidy said she gets frustrated when she finds teachers not utilizing culturally relevant material, or at least resources from this century. George agreed: “Gone are the days where we bring out the dinosaur model and do it again. How is that preparing your kids for their future? I think we're living in pretty amazing times right now. If you have the drive, if you have the imagination, you can head out into the brave new world and explore. That's a total shift in thinking for a lot of people.”

The teachers shared how shifts occurred in curriculum delivery throughout their school careers. Changes included feedback and opportunities to learn, a wider range of texts for reading and writing, increase of critical literacy and curriculum integration, and a social constructivist view of teaching.

**Feedback and opportunities to learn.**

Many of the teachers shared similar experiences from their years in elementary and secondary schools. Sally, Leela, Claire, George, and Daphne recalled reading a text and answering low-level comprehension questions while completing worksheets on spelling and grammar. Another common school memory was being taught through sequential reading programs. Claire and Ria remembered the SRA (SRA Reading Laboratory Kit, Science Research Associates Inc.) cards and books, a reading program where you would progress through levels identified through colour. Claire said, “I don’t remember it well, and I don’t remember if it was ever marked, or if you had feedback, but you just completed them. But I remember the colours - I’m on green, now I’m on… go go go. You just moved on, and you were marked or not.” Ria, an avid reader as a
child, recalls that reading “was a drag growing up. We had to summarize everything; book reports based on questions, Basal readers with low level comprehensive questions. That’s what I remember. And I always loved to read!” Ria found that she really did not “understood the books at school. I just got through them. I don’t think literacy was real for me.” Ria said she was determined to make literacy real for her students and make their literacy experiences meaningful.

All of the teachers discussed how they now try and teach differently from what they remembered. Dona discussed the shifts in how curriculum was delivered throughout her school career: “There was still that classic reading and writing and tests, that sort of thing. Whereas now it's not so much memorizing, it's interpreting. We don't memorized grammar as much as we used to because we have the tools to help us. And we have to teach the kids to use the tools that are available.” Abbey stated, “Now we expect students to infer and analyze, synthesize, evaluate all those things. They can access a thesaurus, dictionaries, all those sorts of language skills we're teaching, right from their electronics.”

Claire, Ria, and Daphne found that the way writing is now taught is vastly different from their school experiences. Claire shared that “now the thrust is multiple opportunities to nail it and then let me tell you how to fix it, let me give you some guidelines.” Arthur found that utilizing computers, even for word processing and publishing tools, “facilitates more participation” between students and their work. Being able to print off their writing, and have it edited by another teacher or student, “reduces the resistance and the anxiety, particularly with someone with fine motor problems, when it comes to revising.” Daphne said that when she was a student “there was no moving forward, only maybe you would do better on the next piece. The learning gaps just
became bigger. Whereas now we give many opportunities for dialogue and taking risks, to reflect upon and build upon the feedback, and that there’s value in applying the feedback.” Daphne found that teaching writing now incorporates a safer space to share work because of the small group instruction, many opportunities for students to reflect on their work, and for teachers to provide constructive descriptive feedback.

**Wider range of texts for writing and reading.**

The teachers described the wider range of texts they now use for writing and reading in their classrooms. Ted realized that “there is a focus on different types of text, different digital texts, with different types of responses.” Sheba stated that there is “more emphasis on media and oral communication, and different forms of reading and writing.” Sheba found that including non-fiction and a variety of reading genres, including the short stories she remembered as a student, was “more realistic of what you need to learn and focus on in life.” Sheba pointed out: “I love when adults say they never read, but they must read all the time. They mean they don't read novels, but they're still reading.” Ria also shared that she integrated more picture books, poetry, short stories, and current news articles into her literacy program. “We look at current events quite a bit. It's interesting for the kids to see the effects and the causes of history and connect it to what is happening today.” Rosie remembered reading mostly fiction, perhaps with “the odd piece of non-fiction, about an animal on those big information cards.” As Rosie discovered, there are so many choices that teachers can incorporate into their classrooms because “not everybody wants to read the fiction stories, so I think we're doing a better job of having different materials. At least we realize now that kids should read all sorts of material. Kids get to read what they want, and on the device of their choice. They're
bringing in Kobos because it doesn't matter what they're reading or how they're reading it, it's just that they're reading.”

Gwen and Claire found providing more opportunities to dialogue about classroom texts created more discussions about reading and writing than they remembered in their schooling. Gwen discussed how, “as the year progressed the conversations around the texts we read have become so much richer and deeper.” Gwen found that by introducing a variety of higher order thinking questions when discussing texts, students were able to make deeper personal connections. She found that her students became better at expressing “their opinions about topics and texts they read.” Gwen said that “the questions they ask about related topics are phenomenal and that snowballs into further research and looking for new books that connect to the book we're reading.” Claire stated that students are now taught a wider range of writing styles, such as genre, procedural, and persuasive writing, than she remembers tackling as a student. She found, while talking with colleagues, that some teachers teach forms of writing and others “are really regimented about doing this form, and then that form.” Claire decided that students “should have a chance to write what they want to write about. I don’t care if you’ve got them writing a comic or writing a grocery list, they’re still writing.”

Ted found that teachers are now “getting more savvy with the digital components.” Using technology to entice his grade 6/7 students into studying Carroll’s *Alice in Wonderland*, Arthur set up a discussion board on Edmodo. He created QR codes (Quick Response codes are bar codes with information on them, or print-based hypertext links) on the class set of iPads to answer questions on the text. Next Arthur created a wiki on *Wikispaces* to organize all the students’ ideas and answers: “I can target it to students based on their abilities because you can either do it by group or by individual. We
explored all sorts of ideas just to get them hooked on the book and get them to be excited about it.” Students could then access the wiki at school or at home. Arthur organized the wiki so students could upload pictures they drew, summaries and ideas based on the chapters, advertisement posters created in Publisher, and video contributions linked from the *Puppet Pals* app on their iPads. “We ended up with contributions from everyone, and the whole time we continued to discuss and relate the underlying meaning of the book.”

Arthur used technology for literacy “because using the technology in the way that we did, the students feel they can be successful with texts.”

Daphne and Leela run a wiki on Wikispaces for a variety of subjects throughout the school year. By integrating literacy, social studies, and science on their wiki, students were given opportunities to write, read, share ideas, provide feedback and receive feedback, and had a space to collect their group’s work on a particular topic. Daphne found that providing different entry points on their wiki space allowed students “to see examples of other students’ work, share their ideas, and contribute too. Everyone had something to say.” Leela found that “the various tools helped them do a voice recording instead of writing, or a digital picture and connect it to the big idea or question.”

Similarly, George organized his classroom on a Moodle platform where information for parents could be linked, and students had virtual space to dialogue about different topics. Students also had the opportunity to complete ongoing projects and publish their work on the platform.

**Critical literacy and social justice.**

Ria said that the texts teachers use now are more inclusive and exciting, plus there is more of an emphasis on being critical about what you read. Ted agrees that there are more critical thinking skills being taught with an emphasis on higher order thinking
skills. Ted discussed a critical thinking literacy lesson he planned with his high school improvisation team and his grade 8 students. As the improv team performed different personalities his “students then had to decide whether or not certain people would be good for a jury on a murder trial. It was critical thinking in that sense, in that they were in simulation environments as an attorney, and so on.”

Ria connected critical literacy with fiction and non-fiction texts. She co-created an activity on book trailers that took the traditional book report to a digital level by incorporating pictures with text related to the books the students were studying. One of Ria’s teaching partners used Selznick’s (2011) *The Invention of Hugo Cabret* with his class, while Ria’s students chose a variety of texts on different issues. One group looked at picture books about the Holocaust and connected them to the ‘Arab Spring’: “In one of the books a man in the Warsaw Ghetto took pictures of what was around him and that was the connection. So they used pictures from Egypt. The girls made the connection that today people are still scared to take pictures but they do it.” Ria’s class also created book trailers about the Underground Railroad and the Tsunami in Thailand by starting with the picture books, “using real life footage, and then back to the picture book, and adding music. We focused on the social justice connections.”

Cassidy now plans her curriculum around social justice themes. Cassidy reflected that she “always liked social justice themes, and was always passionate” about incorporating social justice themes into her curriculum. She remembered doing a project on Harriet Tubman in grade 8, and reading *The Eternal Spring of Mr. Ito* in grade 6 “about the Japanese internment camps and Mr. Edo had a bonsai tree he had to take care of when he was interned in a camp in BC.” Cassidy continues to use social justice themed texts with her students because “you really get an opportunity to challenge those
preconceived notions.” Cassidy planned an inference lesson with a picture book called *Goal* (Javaherbin, 2012), set in South Africa. Cassidy said, “It was really interesting to bring up these topics” as her students discussed whether the action was set in Africa or America, who was poor, and what was going to happen next. The book is about bullying and involves a group of children protecting their new World Cup soccer ball from the bullies. After one day of discussion and an activity, Cassidy re-visited the book the following day, and created further inferring activities for the students. Cassidy thought the lessons were very successful because not only did she “see the transition from one day to the next” but the students became more critical of their own inferences and the conversations became deeper.

**Curriculum integration.**

Another aspect of how these educators perceived changes in teaching was in how teachers integrated curriculum. Claire and Sally agreed that integration of subjects is essential in today’s classrooms. For example, Sally said she integrated her social studies with her literacy programs so she had “enough time to meet the expectations.” Abbey found that by integrating math and science curriculums she could also focus on the literacy requirements within the two subjects, and cover a multitude of curriculum expectations.

Leela did not remember integrating cross-curricular at the beginning of her career, but now finds it a necessity. She referred to her method of cross-curricular teaching as “moving and folding subjects all in throughout the day.” Leela and Daphne said they don’t have a separate literacy block “because literacy is happening throughout the day.” As different subjects get moved around where needed, Leela and Daphne have found that they have “more time open up for literacy to actually happen.” Now they
cluster their ideas, focus the expectations, and integrate them through the subjects, such as in their units on local and global issues. Daphne found that they “cluster and then re-visit. We found after two years that re-visiting things helped, especially with teaching proofreading and revision. Sometimes things would come up when we thought we had dealt with them, so we re-visited how we taught. By reflecting on things before they came up again helped minimize a lot of issues.” Leela and Daphne often provided occasions for students to jigsaw about their knowledge, where expert groups are often re-arranged for further information sharing and reflection opportunities. Daphne also found that “the constant opportunities for the students to go back and forth about their work to build and mold it made it their own.” Leela said that by re-thinking how to organize their curriculum into “programs in literacy there's more longevity to them, so there's a sense of ownership to the project. There's a sense of value to the project because there's so much being invested in this one thing.”

Social Constructivist view of learning.

How literacy learning is constructed is an integral part of how the teachers consider and construct their classrooms. Creating space for a multitude of learning experiences is essential for the teachers, whether it is recognizing students as experts, providing collaborative and individual opportunities for discovery, or planning activities where digital tools are utilized for meaning making. Claire, for example, said that good teaching practice today “is done through problem solving to experience learning at whatever level you are at that moment.” Turning to technology again, Arthur found that technology helped differentiate projects for his students. Utilizing multi-media, whether it is designing a poster or brochure in Publisher or creating a Puppet Pals video, allows
students to “express and communicate their knowledge in a persuasive way, and in alternative ways.”

Daphne described her memories of reading and writing in school as “being alone on your own island” and she constructed her classroom to counter that affect. Daphne and Leela developed a community of learners where students were reading and writing with meaningful connections between texts, as well as between their peers and teachers. Leela and Daphne found that the students often facilitated much of their own learning. For example, Leela said, “we threw up some math questions on the blog, Padlet or Voicethread, and the students talked. We didn't introduce everything all at once. When something made sense to introduce it because there were connections in the classroom that's what we did.” Daphne revealed that “by the end of the year our kids knew six or seven online tools really well and they could talk about them to anyone.”

George said, “You can teach students to use the tools critically.” This is one reason why George constructed a class website: “If you think something's important put it in a place where students can access it.” George discussed a phrase he heard on a podcast: “transformative technology. Think about all the tools we are using right now. Why are we re-creating 20th century learning? We should be moving forward and doing something brand new with these amazing powerful tools. It's a "brave new world" that we're in right now.” This brave new world includes co-teaching and having teachers facilitate student learning collaboratively. As Rosie said, “The kids are still learning and we’re still learning too.”

**Teachers Supporting Learning through Digital Technologies**

“Technology is very fluid,” shared Rosie, while discussing how she utilizes digital technology daily in her classroom. Engaging with digital technology daily in the
classroom is something all these teachers strive to accomplish. Arthur, in fact, was amazed at how much he did integrate technology and literacy throughout all the subjects: “That’s interesting because you were asking about my path to using technology with literacy and all this came out!” As Gwen stated, “we’re using it because we’re interested and the technology is there. It’s just not for enjoyment, but computers and technology are also supposed to be used for purposes.” This section focuses on the question: How do teachers utilize digital technologies to support teaching and learning through multimodal methods? In order to ascertain, as George stated, in what ways “technology has changed the way we think about teaching and the ways that we teach,” how these educators support their teaching through online planning, digital resources, and collaboration with students will be described.

**Curriculum Planning using Digital Technology**

The teachers in this study often planned their curriculum by using technological tools and websites. The teachers organized what topics they wanted to teach, and then uncovered the digital technologies they needed. While curriculum expectations from the Ontario Ministry of Education do not change annually, Dona found that “trends change quickly” and therefore, in order to stay current and relevant, topics and themes have to change focus, often through technology.

George had some advice for integrating current technology into the curriculum: “Start with what you want to do and then explore technology that will support that idea. Rather than, here’s a cool program so let’s see what we can do.” As he figured out what he was going to teach each year, George utilized digital sites to “search into the resources that would support how I wanted to teach.” He found that there was support for learning new programs and digital tools, especially through YouTube videos. For example, a
fellow teacher was exploring Weebly for education (a free website where students can create their own websites), “so we went to YouTube and found tons of instructional videos to help her with setting up accounts and pointers about creating websites.”

Likewise, George wanted to enhance his Poetry Café by recording and saving it digitally. That was when he found the recording program Audacity where the students could record their voices and extra sounds. George said, “it started with the idea that this is what I want, not, here’s a great program what can I do with it. It helped my integration of technology into my teaching.”

Sally stated that “the more planning you do, it just runs itself.” Sally found that she was “getting more efficient” with planning when she was using technology to plan her curriculum. Roxanne also found that when she “became familiar with using technology the set up was easier, and steps like photocopying and finding chart paper were eliminated. It also saved time running around preparing components, because I had already prepared them online.” For example, Roxanne realized that using a tool such as PowerPoint allowed her to easily complete unit planning because “all the slides went progressively one to the next,” allowing her to visualize the unit’s progression and to share her ideas with colleagues.

Sally created her all her curriculum units, with “expectations and all the lessons mapped out,” online. Sally often searched the Ontario Education Resource Bank (OERB), an online resource created by the Ontario Ministry of Education and available through Ontario school boards. It contains “units, expectations, content, assignments, and has interactive learning as well. It could be embedded videos or interactive activities or quizzes.” Sally said, “The planning still takes time because you have to research what
works and what kinds of resources work best for your class. You can pull certain activities that you find interesting or meets expectations.”

Creating curriculum around media was a common element of the teachers’ planning strategies. One of Sally’s favourite projects was a cross-curricular media literacy unit. Sally originally saw the Pepsi Kickstart product on the Lang and O’Leary Report. The commentators were being critical about a pop drink for breakfast which is how Sally came up with the idea of doing a holiday gift campaign via media. She was also able to cover many of the Language Arts expectations in one project as this assignment covered reading, writing, oral, and media strands. Sally used the product’s launch as an example of critical media. Sally said her students “asked those deep questions about how trends emerge, advertising, audiences, peer pressure, and who is being targeted.” Her students also learned about a massive corporation: “There’s three massive giant corporations that own everything and the kids had no idea. But, until you start asking those questions, why would they know?” It was because of the opportunities for students to explore those deep questions that Sally found this unit to be particularly relevant and powerful as students inquired “about media and why we have to be critical consumers.”

Ria found that, just as media was often her students’ entry point, searching media through the Internet was also her first stop in creating curriculum. Ria said, “I realized that I go to media first to plan. I follow educators on Twitter. I started a board on Pinterest for my Visual Arts program. I create on Prezi. I go to the Internet and YouTube.” Ria found that “media just brings learning to life. That’s what I feel technology does, it brings learning to life.” Ria spoke about a planning her visual arts program around a school event at the Art Gallery of Ontario (AGO) where her students’
artwork was on display and archived digitally and publically. One of her students said to her, “You know our art might be gone in two weeks but we’ll forever be in the history books of the AGO.” Ria also described how an organization called The Director’s Cut would come into schools, bring their own “technology kits”, and create media productions with teachers and students. “The Director’s Cut was started by a teacher who saw the need in this media strand of Language Arts.” All on the issue of body image, the three intermediate classes in Ria’s school learned how to make documentaries, silent movies, and Claymation episodes with The Director’s Cut. Ria said that “there were people from the industry there and the kids could give their opinions about the topic. We used media to discuss body image. And now I can share what I learned!”

**Supporting Teaching with Digital Resources**

Arthur learned that “sometimes when you get too much technology and when you have to choose what to focus on you use whatever technology is sitting there. I would use certain tools, like Smartboard and Clickers, before I integrated the Moodle. Maybe it’s time to switch over to something else again.” Cassidy and Gwen thought likewise about learning different resources and changing tools as they became more proficient. Cassidy believed this was similar to getting “better at teaching literacy when you eventually come up with your own ideas.” Gwen described utilizing the *Comprehension Toolkit* (Harvey & Goudvis, 2008) during her first year of teaching and then realized that she “could do even better and use it for some things but not everything.”

**In-class software programs.**

While teaching continued to rely on print materials and resources, technology became more and more the focus for the teachers’ planning and teaching. The Ontario Ministry of Education *Guides to Effective Instruction* for math and literacy were often
cited as ‘go-to’ resources, especially for beginning teachers and teaching grades and programs for the first time. Primary teachers utilized assessment resources, such as Nelson’s CASI (Comprehension Attitude Strategies Interests) program and the Fountas & Pinnell BAS (Benchmark Assessment System). Rosie and Cassidy also incorporated Reading with Meaning (Miller, 2012). Rosie and Abbey’s school had recently purchased the Scholastic Language Arts and Social Studies resource Literacy Place, which is “appealing with all the different text features. It has great photography, great graphic text, and cards that go with it. But it should have 3 to 4 pieces on the same topic, giving the same information, but doing it in different reading levels.” Rosie and Abbey found that their resources were moving away from the balanced and comprehensive literacy focus prevalent in their school board, and so they often turned to Internet resources for more differentiated materials. The teachers also described how they utilized software programs, such as Microsoft Word and Publisher, math programs like the Cool Math Games site, and SmartExchange lesson plans and ideas.

**Online sites and digital tools for the classroom.**

All the school boards contained print, multi-media, and digital tools and resources that the teachers could access. Abbey, Rosie, Claire, Sally, and Roxanne mentioned how their respective school boards had posted resource sites that connected with the local and provincial curriculum expectations. Claire also found her school board’s MediaNet site particularly helpful for finding digital video resources. Many of the school board had their own Moodle where teachers can set up virtual classroom space so students can submit assignments, access them at home, and also respond to each other. Abbey found the Moodle “immediately engaging.”
Interactive educational websites, such as Starfall, were common sites the teachers used to plan their curriculum. Sheba found activity and project ideas on the Teachers Pay Teachers and the Scholastic sites. Claire and Sheba both used curriculum ideas on Pinterest. While there are a multitude of educational charts and activity ideas posted on Pinterest, Claire said that you have to remember “to teach to it, you can’t just say I found this nice chart on adjectives and stick it up on a wall.” Claire shared that “technology is so readily available you might as well use it as a resource!”

Often teachers used the data projectors, or document cameras (such as ELMOs), for textbooks. Ria, Roxanne, Abbey, and Rosie stated how they could pull up virtual textbooks through the data projector, for which their boards had licenses, and share examples with the whole class or have students practice and show the class. While Ria claimed that this type was “low-level use of tech”, Rosie found that this “allows you, when you're brainstorming, to replace the chart paper and markers. You can 'write' up your ideas right there using the wireless keyboard.”

In terms of digital tools, the teachers were constantly searching for learning tools appropriate for what they wanted to teach. Sheba discovered BrainPop, an app with videos on any subject. Sheba used BrainPop when she was teaching her students about the Underground Railroad and “realized that they didn’t have a lot of background knowledge in grade 3. So, I looked to BrainPop and found a video that put them back on track.” In order to by-pass the random Internet connection problems, Sheba would use the Tagdisk app to download videos onto her computer. Abbey discussed why her school board was banning the use of Prezi. Abbey said it was “apparently not appropriate for school-aged children, but I’m not so sure about that reason.” But, she said she still used Prezi, along with the digital poster site, Glogster, with her grade 6 students. Sally taught
her students how to use Prezi and Bitstrips to introduce “new and different ways to present in front of the class.”

To fully utilize their digital platforms, such as Wikispaces, Moodle, and Edmodo, teachers integrated a number of digital tools. Arthur used Dropbox, Glogster (a digital poster), and an app called Puppet Pals where students can incorporate their own pictures to create puppet videos. Ted used Clickers until he found a similar student response system called Socrative. Daphne and Leela described the tool Kidsblog that they incorporated into their wiki for their students “to dialogue, share and offer feedback.”

Voicethread was another tool used for student “to have a digital conversation on anything.” Voicethread contains a Voki, an avatar, to recite recorded voices in this “conversation web for audio, video, and text.” They also used Google Docs and Padlet. Leela used Padlet to “post a question to be ready for the next day.” Another site that “allows you to embed links, pictures and videos, and then embed them into their Kidsblog” is Timetoast, an online timeline where the creator is the hyperlinker. Dona also utilized Timetoast to show her students Internet responsibility because “you are leading your audience on a trail, so you have to think why you’re taking them there.”

Rewards of Learning with Technology

The teachers view digital technologies as engaging tools and resources for motivating their students. The rewards of using digital technologies in the classroom range from positive self-esteem to community building and classroom collaborations.

Daphne and George noted that the term ‘digital native’ does not fully describe the students in their classrooms. Daphne believes becoming more proficient with technology “has to do more with exploration.” George was also sceptical about using the term and used a metaphor of the light bulb to explain his thoughts: “I’ve grown up with the light
bulb, am I am electrical native? I know it’s there and how to basically use it but I’m not an expert. I’m not really engaged in the light bulb. I think just because kids have grown up with technology doesn’t really mean that they know how to use it perfectly.”

**Engagement of technology with teaching and learning.**

The teachers found technology often motivated their students to participate in the classroom, while engaging them in their own learning. The teachers saw this involvement in a number of ways, through tactile manipulation with digital devices and by sharing ideas and building self-esteem. This motivation was achieved, according to the teachers, through differentiated instruction and integrating current events. But, as Daphne found, “for the student who doesn’t want to do the work, technology is not a magic tool. It’s not going to make every kid want to be engaged. What do you do to engage the learner? Get to know them and their needs. But, technology is not going away in the classroom.”

Cassidy agreed that “bringing in your technology does do something when kids lack motivation sometimes. I had this student who wouldn’t do any work. So, I went out of my way to do different things. I had my iPad and he’s an iPad guru, so that’s the connection. I’m just tapping into his interests.” Ria saw one of her reluctant learners shine in their *Director’s Cut* project. Ria said, “working with the *Director’s Cut* crew you can tell that this kid will be on the behind-the-scenes crews in high school. He knew everything about the cameras, and he was focused. I’ve never seen him more engaged than that whole day. He’s the tech guy for us.”

While all the teachers found technology engaging, Rosie was concerned about “the novelty of using it wearing off.” Excited about using technology, Rosie has found that “what we have at school is always behind what the students have at home because you are constantly upgrading home technologies.” Rosie said it is important
to find things that are interesting to your students and that you find interesting too. Sometimes it involves technology, sometimes it doesn’t. In all my years of teaching I’ve had a data projector for two of them, and different technologies for maybe five. But I’d like to say that my kids were equally as motivated in what I had to teach 20 years ago as they are now. I thought about how I can engage them, a hook, whether it be a book or something else, like manipulatives.

Rosie remembered using books-on-tape and how her students “could hold the book and then turn the page when you hear the beep. Those books-on-tape are like a step back in technology and that is engaging too.” Abbey added how pulling out technology, such as filmstrips, “might be just as exciting as putting a book up on the ELMO. It’s new again.” Rosie agreed, “Sometimes old technology is new again because it’s different. It’s like watching It’s the Great Pumpkin, Charlie Brown on tape, which I cherish.” Rosie and Abbey also found music to be engaging. They had the same music teacher for decades at their school and she taught all the students the Provinces Song. Rosie said, “You have never met a prouder Canadian than her so we all knew the song and the actions. And that’s what kids remember. No one remembers the curriculum expectations, they remember the experiences.” Abbey added, “You’re in school for a long time. So all those extra things you do inside the classroom matter.”

Technology tools as tactile motivators.

Finding resources to motivate and engage students was another challenge for the teachers. They often turned to tactile and motivating technology and digital resources to aid in their curriculum planning. As Rosie said, “technology is engaging too. Since we use it so often, teachers are far more relaxed about it. When we first brought in the data projector you really wouldn’t let the students touch it and manipulate it, but now it’s so part of our day that students are far more involved with running the technology.” George, Abbey, and Ria found that their students were more motivated by being able to play with
the technology, especially with the wireless mouse and keyboard. Cassidy realized that even “sitting down reading a story off the iPad is fascinating to them.” Sometimes, at the end of day, Cassidy would play the app *4 Pics 1 Word* with her students as they gather around her and her iPad: “We try and figure out the word clues to each puzzle. They’re always asking if we can play.” Sheba said that her students are part of the “visual generation. Anything they can do on the computer or the iPad totally engages them.”

Sally stated, “Now I see what a difference it makes to teach using technology. The engagement is just so much more from the students.” Arthur also found that “technology facilitated learning for a lot of the children.” Leela and Daphne discovered that their students were very conscientious about the opportunities they had with the technology in the classroom. Leela said, “When you have lots of kids rushing into the classroom to get to a computer to get on the wiki and do research, that sort of commitment can’t be faked. Even during free time they’re on computers. It’s a tool that has many purposes.”

**Using technology to share work and improve self-esteem.**

The teachers observed that when their students shared their work digitally they were often more collaborative, engaged, and willing to share ideas and opinions. Leela and Daphne noted how learning is not done in isolation. Daphne shared that “learning and teaching in isolation never works.” Rosie found that providing time to share is essential to learning. Rosie said, “There’s a push to give students a forum to share with each other. I think if the students have written something, or read something and acquired some knowledge, the opportunity to share is very important. So incorporating that time to share in your lessons is important.” Leela and Dona discovered that their students were
also more willing to share through *Kidsblog*, while Dona also found that her students would make “beautiful presentations that made them feel better about their abilities.”

Cassidy found that by sharing her own work students often responded by mimicking the behaviour. When reading an e-book on her iPad, Cassidy would tell them what part in the story she was reading. This often prompted the students to share parts in their books. Cassidy said, “That’s what we do when we’re lost in a book. I tell them what I’m thinking. I try and write, too, and share those stories with the kids. And they want to share their stories too, because you are doing it. They’re interested in sharing their ideas because you are sharing.”

Arthur said, he “used the technology to facilitate for the children who couldn’t speak or write very well. Then, by putting in relevant pictures or videos, or making comments, the children, through various creative ways, could demonstrate what they knew. It made the children confident in themselves because they knew they could do it.”

Gwen saw “how excited the children were to share their work. During math conferences, kids would literally bring up their work and put it up on the ELMO so everyone could see so they could explain their ideas.” Gwen noted that this type of whole class sharing allowed her students to “clearly show their thinking, the method they took, and the strategies they used. Then together we could compare and contrast ideas.” Not only could Gwen assess their thinking skills and knowledge concurrently, students would also respond to their peers in positive ways. Gwen realized that “that is what is rewarding in my classroom because I can see how proud they are of their own work.”

*Current and differentiated connections.*

Leela and Daphne discovered that planning current and relevant activities were important for connecting with students. Ria found that technology helps “making
learning real. It’s bringing the world into the classroom.” For example, Rosie discussed how she taught probability during the annual Tim Horton’s *Roll Up the Rim to Win* Contest. Rosie shared:

> We would talk about how many days I had won something, and how many more days I have to win something else. I would ask my students, ‘What are your chances of winning?’ And they would answer with ‘chances in winning are 1 in 10’! And, on the EQAO test there was a probability question and I heard kids say ‘Roll Up the Rim’! They remembered those lessons. Real world examples are important. Your students knowing you as a person is better than anything.

Dona shared that staying current and relevant was why she created the food truck activity. Dona said that her students “all made frequent trips into the main city and saw the food trucks. And, it’s about food, and anytime I talked about food they were hanging on to every word. So, I spent a lot of time talking about food!”

While all the teachers integrated differentiated learning and choice in activities, Roxanne, George, Leela, and Daphne discussed how technology and differentiated learning played a major role in their curriculum planning. Roxanne found that because her students were learning a second language, “differentiated instruction is important because there’s varying levels and you have to utilize all their modalities. And this is done with technology. It reduces all the negative behaviour. It’s rewarding to see them engaged, to see them learn.” George spoke about the importance of choice in his reading and writing program. George said, “They could write what they wanted as long as they were practicing whatever focus we had that week. For reading, we would uncover what is a text. Bringing in devices presents the whole world for them.” Leela hoped that “the introduction of different tools throughout the school year provides each of her students with an entry point into what they are trying to do. Each new project is a new chance.” Daphne described how she had a student who just could not start projects, particularly
writing activities. She said, “He could look at people’s work and be excited about the project, but it didn’t help him start. Then, the moment he started playing with the site bubble.us he dropped in a bunch of bubbles and filled them in. He made his writing linear, mechanical, but at least he could start. Choice of tools is important.”

Classroom collaboration and community building.

Collaborative classroom communities allowed for the teachers and their students to work together on creating positive learning environments and implementing digital technologies. As the teachers discussed their teaching partners, as discussed earlier, they also spoke about their students as digital experts and co-teachers in the classroom.

By building community, the teachers were able to establish collaborative learning opportunities in their classrooms. Rosie and Abbey spoke about making connections with their students to build community by sharing stories about their families. Abbey made sure she knew more about her students than “if they can read or if they’re struggling in math.” Rosie realized the excitement of life outside of school: “I tell them to bring in pictures and tell us about your adventures. That’s building community.” Cassidy and Gwen spoke about creating community in their classrooms and how that has helped with student collaboration in the classroom. Gwen stated that they create a “community from the beginning of the year, making children know that this is the place where everyone is welcome and wanted no matter what.” Cassidy said she believes they “create a warm, inviting environment. We all make mistakes. We’re all here to learn together. We’re all part of this community.”

Supporting student construction and collaboration.

The teachers discovered various ways to support their students in constructing their own learning and collaborating with their peers. Abbey found that “you have to
develop rapport, and make them feel secure. Then they’re willing to take risks in the curriculum with you.”

By creating a literature circle discussion board on his Moodle, Ted wanted to encourage more discussion, in- and out-of-school, between his students. One year he had set up the student groups “in these little islands discussing their books” but now he wanted to “bridge the discussion more between groups.” To add another element to the discussion board, Ted also decided that he “wanted the parents to pipe in, some of them read the books, and some of them did participate.” Incorporating roles (Daniels, 2002) for each student within every group, each group also had to post a general question for all the groups to answer. “For example, one group posted: Have you ever felt uncomfortable in a religious situation? It was based on a moment in one of their book. And, the class responded to one other group's question a week.” Ted was amazed at how “the kids got into it more and most of them were commenting more than one a week.” Next, Ted added an online math journal to his literacy-based Moodle platform and found that his students were “communicating about all of these great examples about a math topic.” Much to his surprise, he realized his students “recognized that not all of us are at the same place in our learning but we’re all building new understandings.”

Over a two month period, Gwen investigated environmental issues with her students and together they created commercials based on their research. Gwen said, “They focussed on an issue. One group focussed on how we should use rechargeable batteries, and another chose showering and how many litres of water that would take.” Wondering how she could enhance student learning with digital technology, Gwen discovered that the local Apple store “offered workshops for any class that wanted to apply.” Gwen applied and her class was accepted. Describing the process, Gwen said,
“we took our videos in and the staff taught us how to create actual commercials with titles and captions. It was amazing! And now we have these professional products.” Utilizing the larger community, Gwen, like Ted, was able to provide a supportive environment for her students to collaborate and share their knowledge.

**Providing space for collaboration and learning among students.**

When Ted and George both witnessed the positive impact a discussion board had with literacy topics they decided to add daily online math journals. As someone who “values community work and collaboration,” Ted linked a class math journal to his *Moodle* platform. Ted found that having a space to discuss and collaborate “was a way for his students to recognize amazing work.” Ted used “the leverage of technology” for his students to share their ideas and found that “it was a way for them to do more and it had a huge impact, with just a slight shift in format. Students could choose their own math journal topic, comment on someone else’s like in *Twitter*, and see what other people have done.”

Because he realized that his technology usage was mainly with literacy and, “because he saw the benefits for collaboration, authorship, gaining knowledge and skills,” George decided to enhance his math program through the *Moodle*. George found that the online math journal “became more multimodal than a typical math journal.” He realized that “more of a community conversation” needed to happen in order to share ideas and work together. “Up to that point the students really did not communicate very well in math. They were doing math in isolation in their work book and I was the only one who saw their work.” George created a blog where everyone could communicate and “build ideas off each other.” While he had some peers who wondered if students were only going to look at the answers, George wanted his students “to see what other people
were thinking.” George planned the math journal portfolio with different journal topics and
tweet-inspired comments where students could comment on each other’s ideas.
Through working with technology with his students, George discovered that “sometimes
they need to be shown how to go deeper, they need to be taught how to work together,
and they need to know that it’s okay to not automatically know what to do.” He wanted
“everyone to be engaged in best thinking to build new understandings. And using the
leverage of technology we could share ideas within our community.”

Ria shared that the best community moments were when the students were the
ones supporting each other: “Three kids were pouring over iMovie and trying to figure
out how to fade out a song. They were using Audacity on non-Mac products. We couldn’t
figure it out right then, but the kids went home, figured it out, and came in and showed us
how to do it. I run my classroom like that. That’s community in the classroom.”

*Creating a culture of expert problem-solvers in the classrooms.*

Many of the teachers discussed students as experts in the classroom. As Ria
demonstrated above, her students “became the experts.” She found that getting students
to be the experts in class is like teaching math. Ria said she would tell her students:

What I’m showing you is just one way of getting to the answer, and your way
might be different, but we arrive at the same answer. A numeracy coach once told
me that if there’s only way to do a math problem then your problem is not rich. If
there’s only one way to show what you know, go find another problem. It’s like
reading. There’s just not one inference that we’re all going to make about the
same text. And if there is, then maybe it’s not a very rich text.

Ria and George demonstrated how rich tasks and texts could be encouraged. George, for
one, was tired of the "sage on the stage" idea and wondered about the "guide on the side."
George found “that people respect each other in different ways in technology. You don’t
have to be the loudest person in the room. If you can show your ideas in a different way, that’s great! You might be really quiet but you can show your ideas in the Moodle and now you’re the go-to person about a topic.” And, as George noted, “just because kids have grown up with technology doesn't necessarily mean they know how to use it all.” But, there is always an expert on some aspect. George realized that teachers “do not have to be the expert on everything” and recommends “just working with the students, using the software, using the technology, and working together.”

Sally learned that planning for on-call teachers coming in to teach her class was often a problem. Sally said, “If I know I have a teacher coming in who is tech-savvy I can email my lessons. But often you don’t know who is coming in for you and I’m not comfortable leaving a lesson that involves the projector and interactive things for the students to do. It’s not reality yet that someone can come in and use all the technology in my room.” In order to counter this problem, Sally said that she’s “learned to depend on the students. The student who sits beside the projector cord knows how to plug it into one of the classroom computers. If I leave the passwords for the supply teacher then the kids can get in and run it for them.”

Sally found that some of the best teaching moments were when her students acted “as trouble-shooters. They would help me too and tell me if I had too many items opened or something.” Gwen said when she has trouble figuring out something she asked the kids “why we don’t we do this as a whole class because the more brains we have working together the easier it is to figure it out. And we did. But they saw my frustration and I think you have to be honest about it.” Rosie said that “when I first got my technology I was unsure of what to do. So I called one of Abbey’s kids in and they figured it all out and showed. He thought it was so easy! And, now that it’s so routine I
can’t believe I ever didn’t know!” Abbey reported that “in grade 6 they have it all figured out for me! The kids aren’t scared to try new things.” When Leela was attempting to embed the timeline site, *Timetoast*, into her class blog in *Kidsblog*, it was one of her students who uncovered the solution. Leela was “helping another group and I asked some students to figure it out and then share their knowledge with the rest of the class.” The student figured out how to embed the link, “then taught two students, and they taught two more. It multiplied without me having to do a whole class lesson.”

Similar to Leela’s experience, in order to deal with all the technical issues that tend to arise when most of your classroom is running with technology, George worked with students to create an in-class solution. Since a variety of devices and platforms were available in his classroom, George also relied on his students for technical support: “I had to set up a culture of problem solving because whatever the technical issue, if it’s all coming through me then everything gets bogged down. We valued working together and we valued the people to go to. Where’s our IT genius for this problem? This person will hook you up. These types of things just became common day knowledge.” George found that he could not do “conferences and interventions if I was always solving technical issues.” He explained to his students that during certain times of each day it was his job to work with certain students. George said he would tell his students: “I will help you if I can but this is the most important thing for me right now to work with these people. If you can’t solve it, or find someone to help you, I will try and help soon.” George also stated that this is one of the reasons why some teachers shy away from technology. Repudiating these assumptions, the teachers in this study found that one way around being the technology expert in the room was to create a culture of problem solving together.
Supportive Environments Address Teaching Challenges

The environments that helped support the teachers’ strengths and passions are important aspects of how the educators were able to take risks in their teaching practices and collaborate with peers. This final section describes the types of environments that support the participating teachers in addressing the challenges and solutions they uncovered in their curriculum planning and implementation of digital technologies. The final research question will be explored: What types of environments support teachers to address the challenges of teaching with multimodal practices? The first section describes each of the primary, junior, and intermediate school environments, followed by sections detailing shared technology, digital resources and tools, and collaboration to support teachers. The final section describes how supportive teachers were able to take risks with their teaching planning and implementation, often with digital technologies, in order to find ways to support learning in their classrooms and address the challenges of teaching with multimodal methods.

School Environments Supporting Digital Technology Integration

This section describes the school environments as explained by the teachers. Whether teaching in urban, suburban, or rural schools, some with diverse school populations, all the teachers discussed the supportive natures of their teaching environments. Support came mainly from administrations, but also from parents. Positive, caring environments generally categorize these schools.

Primary schools: Supportive school environments to explore digital technology opportunities.

Rosie, Cassidy, Gwen, and Claire all described their school communities as medium-sized schools serving diverse communities with varying socio-economic status:
middle class with small populations of children from lower socio-economic status (SES).

While Rosie taught in a suburban centre, Cassidy and Gwen taught at the same school in an urban area. Rosie, Cassidy, and Gwen reported that there are many new immigrant families in their school communities, creating a need for more English Language Learners (ELL) teachers and resources.

In contrast, Sheba and Roxanne described their neighbourhoods as not very culturally and linguistically diverse. Sheba teaches in a small school, middle class, mostly rural area, with a small suburban community. Roxanne teaches in a large school in an affluent urban community.

All the primary teachers found their schools’ administration and staff to be very supportive of their teaching styles, particularly in terms of using digital technologies in their classrooms. The teachers felt that they had the freedom to explore different teaching techniques and strategies, but observed that not all of their colleagues had taken the opportunities to explore their pedagogical options. Cassidy said that she “is frustrated sometimes that the teaching practices in our school are a little bit dated” and that this is an issue “when you are a forward thinker.” Gwen spoke further about feeling isolated in her use of technology: “Although we're trying to make a change, there's a lot of resistance. I don't think that it's the perfect fit, but it's the fit for now. I think there's a lot of things that need to happen for it to ideally be the school for me.” Cassidy and Gwen agreed that their focus on using culturally relevant material and taking a social justice perspective required the use of new teaching tools made available through digital technologies.
Junior schools: Diverse student populations with supportive administrators and parents.

All the junior teachers worked at medium-sized schools within what they described as caring, diverse communities. Sally and Abbey described their communities as suburban centres that have seen a change in population. While Sally’s school is in a lower-middle class socio-economic area with a small, transient population, Abbey’s school has become more ethnically diverse and middle-class. Leela and Daphne (who taught in the same school) and George worked in urban centres, with community populations of middle to lower socio-economic status, with highly diverse and multicultural communities, many of whom are first and second generation Canadians.

Just like the primary teachers, all the junior teachers were supported by their schools and administrators. Abbey commented on how many of the teachers on staff at her school work well together and, particularly, how much she loves team teaching. Leela and Daphne would definitely agree!

Leela and Daphne were particularly grateful for the support given by the parents of their students, saying: “The administration team has changed three times over the last eleven years so you really have to learn how to function with each other and parents.” Leela further explained, “the parents have been very supportive of us and what we want to do to try new things. This has allowed us to grow.” Leela and Daphne often bring their 60 students together, teach them together, and go on field trips as one group. They are always trying new teaching strategies and learning tools, and are excited to “see where the kids are going to run with it.” Daphne and Leela felt that parental support arose from the attention they paid to communication with parents, students, and administration: “We're not saying that our way is a better way than anybody else's, but as long as the
parents have a head's up and they're not caught off guard, it seems to help. Regular communication, via our blog, is our main communication point.” Most importantly, Daphne stated that they were “not using their kids as guinea pigs, but that our work with technology stems from a belief that people who take risks and initiate new learning become better learners.” Together, over the last eleven years, Daphne and Leela have created classrooms where both their students and they have taken risks in their learning.

George said, “I was really lucky to have a principal who believed in what I could do and supported me on my journey. He saw me as a leader and let me run with my crazy initiatives and, if they crashed and failed it was fine, and if they didn't that was great. That gave me a little bit of leverage within the school and with the board as well.”

George believed that his principal recognized leadership potential and encouraged those individuals: “He wanted to transform the way we look at learning and teaching.” For example, in George’s school board, there was a laptop initiative (ILP) where teachers received new laptops and tech support by participating in digital technology courses, such as Sally, who chose to participate in the initiative. But in order to get the laptop, the first wave of participants in the program had to give up their desktop computer and a classroom computer. In George’s school many of the teachers would not give up the technology they had in the classroom. So, his principal bought them all classroom computers if they signed up for the laptop program. Then, the teachers “would have a laptop, fully supported by the board, and technology would not be taken away from the kids. [The principal] found the money, he had the support, and this is what he did.”

George counted himself lucky to have someone who recognized what his staff could bring to the school in terms of technology and new teaching techniques. Now in a position where he works in a variety of schools, he thinks that some “administrative
personnel are afraid of technology and just don't see how powerful it is. They don't have an eye to the future world, and that makes them uncomfortable.” In one of the schools where he works as a literacy coach, he has helped the administration focus on technology for the year. George’s favourite phrase this year is positive pressure: “There's a lot of positive pressure, and this infusion of technology is going to happen, so get your head around it, and I will help you every step of the way.”

Intermediate schools: Caring school environments and professional support systems.

All the intermediate teachers spoke about the positive and caring environments of their school communities. Arthur, Dona, and Ted all worked in small schools with minimum cultural diversity. Arthur worked in a small middle to upper-class dense, urban area. Dona and Ted taught in a rural, middle-class area, although Ted thought it was not as rural as at his previous school where “kids missed time for school during hunting season and such.” Dona and Ted taught in a grade 7-12 school where the grade 7 and 8 classes were in a separate wing from the high school. Dona stated: “Overall the kids are really nice, everyone gets along, there's little issues but not big city issues. It's a caring environment and the principal has a lot to do with that. He lets us do pretty much what's good for the kids.”

Ria worked at a larger inner-city school that has been deemed a model school by the local school board. “It's more of a positive description for this set of schools,” said Ria, “I'm not really sure of the equation, but we're fairly low-income, low socio-economic. Culturally it's probably the most diverse school I've taught in. In my class I have kids whose families are from the Caribbean, from India, Pakistan, Guatemala, Sri Lanka, and the Philippines.” As model schools have access to more resources from the
school board, Ria’s school has been renovated to accommodate technology, as well as the growing school-aged population. Ria described the grade 8 pod: “My classroom is almost all glass, so you can see kids in the hallway, and the hallway becomes a learning commons. There are computers, tables and whiteboards in the hallway. It's a new thing in our family of schools. So the hallway doesn't just become a line-up area, it's a learning space!”

All the intermediate teachers also had exceptional school support and, as Ted stated, their principals “let them be professionals.” As Ted indicated, “In my role as DI coach, my job description allows me to foster creative thinking. Most of the time I get to try new things. There's a DI coach in every school in our board, like a Special Education teacher, but more for technology. It's successful in some schools and not in others, but here I think most people would say it works very well.” Dona agreed that their school community was very supportive, and not just with technology: “It was my principal who said anytime you see our students on the road when you’re coming to school, just pick them up and bring them. There’s this girl I pick up on the way to school sometimes. There are some kids who live far from the school and if they miss the bus they might not get here. We all make sure our kids get here.”

The principal at Ria’s school was also supportive. She provided evidence of the high level of administrative support by explaining the school’s process in adding the grade 8 cohort that year. Administrators allowed the teachers “to mold what grade 8 would look like. So, for me, what does visual arts and drama actually mean? Our principal and vice-principal let us figure it out. And when it didn't work exactly how we wanted, we sat down and figured it out some more.” The result of these consultations was an open learning space for the intermediate classes. Ria discussed how the space fits
her style of teaching: “I think looking at space is so interesting. There are huge windows and the light from the hallway comes into our classroom, and the light from our classroom spills into the hallway. We use chairs with wheels and huge tables where they can work. And, you know, they don't abuse it. They use them to swivel and turn to each other to work.” When Ria thought she wanted desks her principal persuaded her to keep the tables. Ria said that she realized “I do like them working in groups. So my principal convinced me to keep the tables and even that was perfect. It's great for visual arts. It really fits my style because it's open and fluid.” Fluidity in teaching and learning is a key characteristic of these teachers.

**Digital Technologies in the Classrooms and Schools.**

The learning environments in each of the teachers’ classrooms and schools consisted of a variety of digital tools designed for facilitating teaching and learning. In order to properly utilize and maintain the technology in the classrooms, the teachers themselves were often the primary technology support for both themselves and their teaching peers. Concerns about BYOD (Bring Your Own Devices) were discussed at great length, with teachers discussing both sides of the personal device divide.

**Classroom-based and shared digital technologies.**

There was a range of digital technologies available to the teachers in their schools and classrooms. Claire found that her “classroom is set up for the technology to be used and seen effectively.” Primary teachers began utilizing classroom computers and laptops, data projectors and personal iPads to further expand teaching opportunities. The number of technology devices continued to grow as the junior teachers shared their experiences with technology; while even more digital tools were utilized and housed by the intermediate teachers. Ria, like all the teachers, referred to “filling my cart with
technology stuff, my laptop, the projector, CDs, cameras, my iPhone, iPods, and just using it all!”

All the teachers had access to WIFI, data projectors on carts, laptops, interactive whiteboards, tablets, and 1-3 classrooms computers. Teaching in an older school, Leela, Daphne, Roxanne, Dona and Ted all had WIFI hubs in their classrooms. While some of the teachers, particularly the intermediate teachers, had individual Smartboards, most interactive whiteboards were shared between classrooms. Many of the interactive whiteboards were Smartboard technology. Roxanne had a Smartboard but was concerned about finding a way to organize all the cords and cables around the classroom whereas Abbey solved the cord issue by using a wireless keyboard and mouse with the digital data projector, or ELMO. Ted had a set of 6 iPads displayed “over there on my bookshelf, which is sort of funny.” All the intermediate teachers, plus Daphne and Leela, had access to digital cameras. While Daphne and Leela, for example, housed a variety of digital tools in their classrooms, Leela said that “it looks like we have a lot of technology, but it has taken 10 years to get to where we are right now. We don’t have a computer for every student but there are enough for 2 to 3 students per computer or laptop station.” Daphne added, “To get the kind of technology that we need to run the programs that we want, such as Web 2.0 for communicating beyond the classroom, you have to make it work if you want to expose the students to these initiatives.”

Students on IEPs (Individual Education Plans) often had access to their own technology that was usually kept in the classroom or with the Resource or Special Education Teacher. Sheba had “two students on IEPs for writing so they have assigned computers that are available anytime they want.” Dona had a laptop for a student on an IEP for occupational therapy “because he finds writing really hard, but he is a little
reluctant to use it. But he sits near it so he can grab it if he needs it.” Dona also had one of her students “sit near the data projector and work it for me, because that helps keep him focused.”

All the teachers often shared digital tools and resources with fellow teachers. Ria’s school invested in school-wide whiteboards and interactive whiteboard technology called Mimeos, which are similar to Smartboard technology but “is a bar that you attach to any whiteboard to makes the board smart.” The teachers in Claire’s school also shared the data projector and document camera. Claire said, she “actually was in a bit of withdrawal because one of the other teachers took it into her room for a few days. When it’s in the room you just use it and I use it a lot. If students don’t understand something you just project it up on the screen and do it together.” There were concerns about sharing technology. Claire was concerned with the continuous charging of the laptops: “What happens when I need it for period 4 and the laptops have been used for periods 1, 2, and 3? Will they be charged and ready for me?” Abbey and Rosie had the same concern about charged laptops, but they were even more concerned about scheduling: “It’s not equally divided amongst our school. It’s a first come, first serve system. It used to be divided equally and it was better because you knew when it was your computer period each week and you planned accordingly. Now you might not get into the lab for three weeks because there’s no monitoring of the sign-up book.”

Spontaneous use of the technology, if it was available daily in their classroom, was common to the teachers. Gwen kept the ELMO document camera and data projector in her room, even though they were shared between the two grade 4 classrooms, because the other teachers did not use them as much as she did. Gwen revealed that she used the technology in her room on a daily basis and therefore had more technology in her
classroom than the other teachers in her school. Cassidy shared a data projector and
ELMO with the primary teachers and found that this was a problem because “it’s not set
up in the classroom and a lot of my lessons are spontaneous.” Cassidy found that when
she needed the technology she just used her own personal iPad with her students gathered
around her, but that “it’s just not an intricate part of my classroom yet.” Roxanne and
Claire also utilized their personal laptops, often to hook them up to the data projectors, in
order to have daily access to technology.

Resource centres and school libraries often housed most of the digital technology.
At Ria’s school, data projectors, such as ELMOS and Ladybugs, were housed in the
library, along with a cart for 20 laptops. In Ted and Dona’s school, a cart of 20 laptops
and 15 iPads could be signed out by teachers for the intermediate classes. The library at
Arthur’s school had two laptop carts with 20 computers each. Abbey was very excited
about a new digital addition in her school’s library. Sent out by the school board, 6
Kobos and one iPad were available to be shared. Abbey said that “the great thing with
the set of Kobos is that you have your own little reading group with all the same books. It
encourages those reluctant readers more because it’s something different. It’s technology
rather than hard copies of the books.” Abbey hoped that more Kobos would be added to
the library in the near future. Establishing classrooms that integrate digital technologies
are, according to Sally, “more of a learning environment.”

**Initiating technology programs and proposals.**

Discovering ways to bring digital technologies into classrooms and schools was
another aspect of teaching with multimodal practices. Leela and Daphne obtained 15
Notebook laptops on a cart to share with the junior division in their school through “a
proposal that we initiated for 2.0 tools.” George and Arthur managed to obtain donated
laptops for their classrooms. Gwen’s in-class set of 5 MacBooks was part of a Computer Mobile strategy for the grade 6s at her school board. Gwen said, “The grade 6 teachers did not want them because they did not feel comfortable with the technology. So I took it on and use the laptops all the time.” Through her teacher federation, Sheba was granted money to buy technology. Like other teachers in her school, Sheba bought an iPad and soon discovered that she used her iPad all the time: “Once I started learning how to use it, all the kids were just fascinated. I had the iPad and I saw all the things I could do with it. Then I shared my ideas with my students.”

Sally was the only teacher to have a school board-issued laptop in her classroom. She obtained one through the board-sponsored Independent Laptop Program (ILP) and daily used both the laptop and the digital resources that came with completing the program. While laptop programs were established in some school boards, not everyone fully participated. Claire knew a few teachers who began the ILP but did not complete all the requirements because they would have to trade their classroom computers in for one laptop. Also, Claire said she can “access all the board’s resources and do report cards” on her personal computer without going through the program. Rosie and Abbey had participated in the ILP program and were planning on finishing the final courses in the near future.

Arthur discussed how he was constantly submitting technology proposals, or surfing through the Computers for Schools or Trading Post sites, to obtain more technology for his school. So far, Arthur, with help from administration, has managed to purchase Smartboards, an iPad for every classroom, the computer lab, and laptops. He shared how “teachers had have four computers in the classroom and no lab, but with the lab and two computers in the classroom it's more functional for everyone. I try to do
everything for all of us, not just for myself, so we all benefit and build capacity.” Arthur said that their computer lab was still used, even with the laptops. He said, “We didn't have a lab until the last principal, parent council, and other teachers got on board and we slowly bought enough computers. And then when we had enough computers I made a proposal to put the lab in.” Arthur also noted that while “at first, everyone was really excited but scared to use the laptop carts, now they’re being used non-stop.” Arthur also managed to obtain one computer and one iPad with sturdy cases for each of his 8 students: “I've been using my funding over the years and get donations to get refurbished computers to have enough for every student in the class.” Arthur stated that “it's important to have people on board but if you don't take initiative it just doesn't happen.”

**Computer labs to technology carts.**

George noticed that “in a lot of schools, the computer labs are being pulled out and being replaced by laptop carts.” This change was noticeable in all the teachers’ schools, where everyone was in the midst of having their computer labs dismantled in place of laptop carts. George said the teachers in his school still wanted a dedicated lab, it currently had 28 computers, and it did “become an initiative of the school because we had steadily been losing and gaining computers. But, it’s changing too.” Roxanne shared that her vice-principal, “who is pushing technology, wants to get rid of that lab completely. He says we need a meeting room more because our school is challenged with space.”

In the computer lab at Sally’s school, which is also part of the library, booking times was an issue. Sally said, “I also don’t think it’s practical. It’s not part of your regular day, and that’s nice to do something different, but consistency is important for classroom management.” In the junior computer lab at Claire’s school, she found that she
would only get one 30-minute period a week in the lab, where previously she had two periods a week, one being “a literacy-based period and the other was numeracy-based.” Roxanne’s class visited the computer lab housed in the library once a week while Abbey and Rosie had to sign-up for computer times. All of these labs were scheduled to be disassembled.

As more and more computer labs are being dismantled in the teachers’ schools, laptop carts have become the portable technology lab. This change created some problematic issues among the teachers. Abbey and Rosie’s school had obtained a set of 19 Netbooks, but they replaced 48 stand-alone computers: “There will definitely be some growing pains, but it might be better.” At Claire’s school, the primary lab was disassembled and a mobile lab was established with two carts of 15 laptops on each. Roxanne’s vice-principal brought in a class set of 30 iPads on a travelling cart for the school. There were 30 Netbooks in a cart in the upstairs wing of the school Gwen and Cassidy shared with other primary teachers. Sheba’s school had 6 iPads, shared projectors for each division, and a cart of 30 laptops which she said were “hard to get because everybody wants them.” Sally’s school had two portable Smartboards and two carts with 10 laptops on each for the upstairs and downstairs classrooms. She said, “It’s not a lot, but it is a start. The plan is to double the number every year.” At Ria’s school, the computer lab was dismantled and the computers were spread throughout the classrooms. A unique school with an open learning commons between the intermediate classrooms, computers were also put out into the large hallways.

**Teachers are the technical support.**

Technical support was also a shared commodity in each school. Gwen said she “felt a bit spoiled because I do get a lot of technology because I’m the Tech Girl.”
Cassidy called Gwen “the holy grail of all things technology!” Roxanne believed she was “the computer crew and the tech support. I just figure it out and set everything up.” Sally found how-to videos on YouTube that aided her in understanding the technology in her classroom. Abbey said she could sometimes trouble-shoot while “looking at some form of technology” with Rosie or one of her students. Leela and Daphne commented on how “we are our own support. And when we do find something new, we share it.” Leela said, “Last year Daphne tried one program and I tried another, and then we switched this year.”

Dona, like all of the intermediate teachers, stated, “I just figure it out.” In George’s school, he was “the technology guy.” Arthur was also the technology support for the whole school. Ted is the Differentiated Instructor at his school so he is in charge of sharing technology knowledge. But, as Ted said, “I’m the DI guy, but not an IT guy.” Dona shared that with some technologies, like Smartboards, “you just have to learn and practice, and you don’t learn by watching someone else do the work.”

Sheba noticed that everyone in her school helped each other when it comes to technology. Rosie found that “you just seek out staff, someone who knows that little bit more than you, or who can answer your question.” Rosie stated that “everybody is somewhere on that technology spectrum. The teacher-librarian, Abbey and I, or someone else. There’s always an expert on something.” Abbey stated that there were different people on staff who could trouble-shoot technology problems. Claire claimed that her principal was “quite tech savvy” and, luckily, there was a “go-to-guru” at her school. Claire said, “He’s a teacher in the school. If I’m stuck on something, like my webpage, I go to him. Otherwise you put in a help ticket to the tech people at the board and you might be waiting two weeks.” Sally often found the librarian particularly helpful with technology. As part of the same school board, Sally and George discussed the ILP that
their board supported. Sally said, “There’s a help or trouble-shooting program on our laptops. It’s called the little green guy. There’s online support too. The technology support from the board was really helpful recently when I lost some of my work.” George had actually taught some of the ILP courses. He shared that the board is “exploring, now that people have the laptops, how they can bring the teachers back for more professional development. How can they continue to support their journey?”

Technology training was another aspect of the primary teachers’ professional development. Gwen commented on how “technology is put in the children’s hands but the teachers aren’t always taught how to use it.” To counter this issue, the staff at Sheba’s school ran their own informal in-service workshops to figure out how to use their new iPads and other digital tools while Rosie and Abbey often ran their own workshops. Dona said that Ted shares his knowledge all the time, either by coming into different classrooms or organizing Professional Development days on technology. Roxanne said that each time her school received new technologies, the vice-principal would organize workshops for the staff, and he had the “initiative to get more.” Roxanne went to one workshop on Smartboard technology and then taught herself everything else. Roxanne shared that “you just have to dive in and then you find fun stuff. Sometimes you have to do it on your own, but it’s so worth it” for both students and teachers.

To BYOD or not to BYOD.

Incorporating students’ use of personal technologies at school, or Bring Your Own Devices (BYOD) affordances, are a contentious issue among teachers and schools. Between board policies and classroom management issues, most teachers struggle with this issue of allowing their students to bring in personal devices. Student access to technologies at home also adds to whether or not it is appropriate to invite students to
bring home devices to school. 11 of the 15 teachers allowed devices to come into their classrooms. But the reasons for and against were equally as compelling.

Limited access to BYOD.

Discussions against the use of BYOD in classrooms centred on school board and school policies concerning not bringing personal digital devices into schools. Some of the teachers agreed with the policies for equality reasons, while some, such as Sheba for example, managed to circumvent the rule. Most of the primary teachers did not have their students bring in their own devices both for management issues and sometimes because the younger students did not have access to digital devices, unless they were shared within their families. Claire believed that the policy was to try and ensure inclusivity for everyone. But, Claire said, “it’s nice to have something that students can keep working on at home too if they wanted.” Abbey noted how “it’s a challenge” when many students have access to personal devices, “but even the board is becoming more progressive in what students should have access to and what is no longer restricted.”

Cassidy and Gwen discussed how technology is an issue of equity, and particularly inequity at their school site. Cassidy said, “We have so many kids who do not have access to the Internet at home, many don’t even have cable. They might be able to use their parent’s smartphone when they get home, but definitely not at school.” Gwen also followed the school’s ‘no home technology’ policy but would recommend websites to parents when she knew they had Internet access at home. Cassidy and Gwen could not assume that all their students had technology access, and did not always have school access to technology either.
**Importance of BYOD.**

Junior and intermediate teachers particularly encouraged the use of personal devices in the classroom. Leela believed that “BYOD to school is the smartest thing to do because we cannot keep up with the technology. I would have every school outfitted with wireless and BYOD, and have some available for those who can’t bring things in. Then, at least, you could move things along.” Daphne found that her students had “access to all the online tools we’re using in the classrooms anyway. They can be making contributions in class, or looking up something quickly and sharing. More than half my class has them sitting in their back pockets. They are growing up with these tools around them.” Ria utilized many digital devices daily and needed her intermediate students to bring in their own devices. Ria said, “most of them have something. And I always made sure I had something for everyone.” While Sally and Arthur had their students using devices for a variety of educational uses, they also saw the focusing potential for students to listen to music on their iPods while doing individual work. George found that by bringing in their own devices “it became a culture of trust and collaboration while working together. We're bringing in devices and we're authentically using them to work together, access information, and present information. I am really proud of our work.” The next step, according to Daphne, is “just a matter of when is it an appropriate time to tap into that knowledge, and how do we communicate with the parents that the kids are tapping into this access authentically.”

**Using BYOD devices to learn and teach.**

From daily integration to bonus time at the end of a school day, teachers found ways to incorporate BYOD into their daily practices. Ria stated that her students “are good about using their devices only for educational purposes. We use the technology for
everything, like calculators, dictionaries, thesaurus, and cameras. We did have to set
ground rules first. They just let me know when, what, and why they are using it for.”

Students use their personal devices for daily silent reading time in Abbey’s and Dona’s
classes. The lone primary teacher described in this section, Sheba, created ‘bonus times’
each week where students could play videogames on their personal devices. Sheba stated
that “all the boys, and some of the girls, play Minecraft, and there’s nothing wrong with
that. You can tell stories with it!” The teachers also found that their students were, as
Dona shared, “good about sharing” with students who did not have personal devices in
school. George found that between students BYOD, using the devices in his classroom,
and farming out to find other technology, he was able to have everyone on a device.

George said that this meant “they were elaborating, working together, sharing ideas,
exploring information, and becoming together, rather than re-creating worksheets.”

Ted and Dona, for example, described how they integrated personal devices daily
into their curriculum activities. Ted stated that

my students can bring everything in! I try and integrate their devices somehow. We created documentaries and many of the kids put pieces on their phones. I like them to try new things. They do podcasting on their phones and then submit them to me. At the beginning of the year we did a scavenger hunt where people had to text back in. It was a way to harness the technology.

Just as many of the teachers were concerned about using devices as educational tools,
Dona said, “I tell them that I don’t mind them using their devices as long as I can see
what they’re doing. I don’t think you can keep their personal devices out of the room.
They’re great informational and creative tools!” Dona found her students were using
their devices daily: “It's great if they're working on some writing and they need to look
up a word or spelling. That happens all the time. Or, I'm talking with the class and I'm
not sure how something works and then five minutes later a kid will put up their hand
after finding out the answer on the iPad.” While doing a media project, a student in Dona’s grade 8 class wanted a specific picture but was not able to draw it properly. Dona said, “So she found an appropriate picture on the internet, put it through the Elmo and put her piece of paper on top and traced it. It was great. She asked if it was cheating and I said that it's actually pretty creative thinking. Why would we limit their access to information?” Finally, George stated, “devices are everywhere. They're in your pocket. Why are you shutting off and powering down just because you go into a classroom? You should be engaging with it!”

**Collaboration: Essential for Multimodal Teaching and Learning**

Collaboration was a recurrent theme throughout the interviews with all the teachers. Within this section the teachers discuss the importance of collaborating, or team teaching, in order to deliver engaging literacy curriculum infused with digital technology. George revealed that he did not appreciate the importance of collaboration with teachers until he left the classroom for his new role as literacy coach. He said, “it’s very powerful the things we were doing. This thing I took for granted, the collaboration, the working and idea sharing, and the community when we came together, was huge!”

**Teacher collaboration.**

Team teaching across grades, divisions, and schools was a common practice among the teachers. All of the 15 teachers repeatedly shared how they had teaching partners and had collaborated with peers and/or team taught on numerous occasions throughout their daily teaching practice. Indeed, eight teachers referred to themselves as teaching partners. Six of the teachers asked to be interviewed together because they did all their planning, and often taught, together. It did not matter to these teachers whether they taught the same grade or in a different division. Rosie, who taught grade 3, and
Abbey, in grade 6, taught at the same school and often collaborated about their teaching practices, particularly with implementing digital technology. Abbey found that in their school “we have so many teachers who work well together.” Cassidy and Gwen, also at the same school, taught grades 3 and 4 respectfully. Leela, in grade 5/6, and Daphne, in grade 6, are the epitome of teaching partners, teaching and learning new strategies together. Dona and Ted, both grade 8 teachers in a rural school, combine their teaching talents to team teach. Dona and Ted were the only two teaching teams who had separate interviews although they still managed to join each other’s interviews when they were finished teaching and coaching. Arthur, the Autism Resource teacher at his school, explained that he had a unique team teaching experience because he collaborated with various teachers so that his students could complete projects and/or meet different expectations in order to be successful in their learning.

**Benefits of teacher collaboration.**

Benefits of collaborating among teachers include planning, co-teaching, learning, and supporting each other. Ted shared that, in his DI role, if teachers “let you into their classrooms you have to show them the benefits of using technology in their classroom.” Sheba and Roxanne found that their peers are all at different levels of incorporating technology and everyone’s goals varied. Therefore, opportunities to bounce ideas around with a peer, often in each other’s classrooms, was another benefit to collaborating. Ria and Roxanne found that teach teaching allowed each teacher to share their specialties in each other’s classroom. Therefore, Roxanne said, “we play to our strengths and share our knowledge.” Claire found that her “school, particularly her grade, is very team oriented, and collaborate on everything” and noticed that this way of teaching benefits everyone in the school.
Team planning and co-teaching were practices woven into the stories these teachers shared. Abbey and Roxanne both stated how much they “love team teaching!” Sheba stated that over her 25 year career, teaching every grade, she has always taught in teams. Dona and Ted explained that, as teaching partners, “we teach and we plan together. We come with things all the time. Some of the stuff we do use technology, some we just create something.” Daphne and Leela have been team teaching for 11 years together. Sometimes teaching combined grades and sometimes teaching single grade 5 and 6 classes, they also taught their 60 students together. During our interview they even finished each other’s sentences!

Collaboration had further benefits for the teachers. Cassidy and Gwen often attended courses and professional development programs together, sharing their new knowledge with some of their peers when they returned. While they were completing their Masters in Education degrees Leela and Daphne even decided to take different courses so they could broaden their knowledge base as far as possible. Leela and Daphne believe this partnership has meant a stronger learning experience for their students, as well as for themselves. All their work together, whether obtaining technology or attending professional development classes, has helped them realize their dreams of putting digital technology in the hands of every student and teaching them how to use it.

Supporting each other and building up their confidence were important facets of many of the teachers, particularly in regards to digital technology. Most of the teaching teams collaborate to teach with technology, often with different grades, curriculum expectations, or on different literacy projects. Rosie and Abbey have both been teaching for over 20 years each and even though they teach in different divisions they rely on each other when teaching with digital technology. Sheba’s teaching partner was figuring out
some math apps on the new iPads so she could share with her grade team. While Dona and Ted also plan their grade 8 curriculum together, they use different platforms for their classrooms. Dona uses Edmodo while Ted prefers Wikispaces to virtually organize his classroom. Dona shared her thoughts on why they make a great teaching team: “Ted makes me more confident with the technology. He does teach me a lot of technology and then I use it. We come up with the ideas together and then he shows me how we can integrate technology. Or we'll find something on SmartExchange and we'll get an idea.”

Roxanne also discussed how her teaching team utilized digital technologies to expand their repertoire of teaching tools. Roxanne and her colleague attended a professional development day on using interactive Smartboard technology. Roxanne said, “Then we went home and did some lessons ourselves. Next, we swapped lessons while it was fresh in our minds.” When Roxanne and her teaching partner discovered that a document camera was just sitting in a cupboard not being used they “figured it out, used it, and now take care of it.” Roxanne and her teaching colleague are constantly searching for appropriate French apps to use with the students: “We are open to it and do want to use them.”

**Collaborative projects.**

Designing projects and activities with peers was an important element of how the teachers constructed their curriculum. Rosie co-constructed a Father’s Day project with the school librarian using the digital word cloud generating sites Wordl and Tagxedo. While the librarian made sure the sites were on all the computers in the library/computer lab, Rosie and her students created lists of adjectives related to the men in the students’ lives. For example, “you can place your words into a shape. If your dad is a coffee lover all his words can be in a mug.” Since the word clouds are about word frequency, “the
more frequent the word, the bigger it is in the picture,” they were able to “play with the words” and be creative.

Ria has been co-teaching and co-planning for all of her teaching career as a teacher-librarian, literacy coach and a homeroom teacher. She also co-planned with the three other grade 7/8 teachers in her school “pod” and has had pre-service teacher candidates teach with her in her classroom. One teacher candidate was a Visual Arts major and they created a geography project together using circular mirrors and various places around their school. Ria shared how a geography teacher she knew believed that “if space/place is at the core of your program you are going to touch on all the expectations in geography.” Using digital photography as the medium, together they considered the big question: “What’s your sense of place in the community and in the world?” The teacher candidate gave all the students small mirrors and cameras with which they took pictures of whatever the mirror reflected. The physical and social geography focus questions Ria and her teacher candidate created for the students were: “What is where? Why is it there? Why care about this place?” Next, “with each picture they wrote an artist statement. They were playing around with it. Technology is everywhere - with arts, drama, pictures, and geography. The pictures were very purposeful.”

Facilitating collaboration.

Place and space continued to be a theme when Ria spoke about facilitating collaboration within a school. Ria’s school has a learning commons (also known as the hallway) with white boards, computers, tables, chairs, and glass walls. Ria said she believed this is perfect for teaching collaboratively. “The space fits my style because it’s so open and fluid.” Leela and Daphne also utilized the hallway between their two rooms
as a learning space. As they teach their 60 students together Leela and Daphne have had to discover how to best use the space they have, including the hallway between their classrooms. The hallway or learning commons then becomes a learning space where students and teachers can meet and share, and teach and learn together.

Sharing knowledge with peers through digital literacy workshops was also discussed by many of the teachers. In order to encourage more of their peers in their school to integrate technology, Daphne and Leela hold small group sessions based on what people want to try and their needs. “We’re not hiding anything,” said Leela, “Come into our classrooms and check out what we’re doing.” Rosie and Abbey often held impromptu workshops to discuss digital technology in their classrooms. Sally, encouraged by her administration, regularly facilitated lunchtime workshops to share new apps and sites. Cassidy shared how a fellow teacher always shared ideas about the technology and apps she was using in her classroom. “And she’s been teaching for over 20 years, so it’s not an age thing. It has more to do with your will.” After the teachers in her school bought iPads through a teacher federation funded program, Sheba found that not only did the teachers use these iPads, but they started utilizing the school-shared iPads as well. “Now we do some informal in-service where we hang out and share ideas. I learned simple things like putting apps into folders.” But, Gwen said, “my principal asked me to do little workshops on my lunch hour, but when I do them hardly anyone comes! If anyone came up and asked me I would be more than willing to help out, that’s what we do for each other.” Dona found that most of the teachers in the intermediate division in her school worked together to share ideas because they “communicate very well.” While there was one teacher in her division who did not communicate and did not
use technology in her classroom, it made Dona and her teaching partners who were “using technology in their classroom see that it's working in their classrooms.”

George discussed the responsibility of school boards and teachers on organizing collaborative learning sessions for teachers in order “to mobilize greatness in teaching.” George would like school boards to be more proactive in bringing “together interesting ideas and collaborations with people.” George said, he “finds out who uses technology and I bounce ideas off them. When I talk about using technology I get more excited.” But he wonders how everyone can be “more supportive about making it better for everyone.” At the time of our interview, Arthur was part of a school board initiative with Web 2.0 tools. He said, “We meet as a group and show each other what we’re doing. They’re teachers. We support each other and there are great ideas.” Leela and Daphne were vocal proponents of technology support from the school boards and were not only demonstration classrooms for the school board, but constantly invited the instructional coaches into their classrooms in order “to tap into that knowledge.”

Arthur found that teachers in his school were using Web 2.0 technology for projects, assessments, and communication “to provide differentiated instruction and learning to support their children in their classrooms.” But, he has also established that “you have to have a staff that’s on-board” with technology usage. Arthur said, “If you just buy it and put it in people’s laps you will get resistance. I have a lot of staff here that have the technology and use it, but I have a lot of staff that want the technology but are so nervous. There’s a balance of pushing the technology and getting teachers to want it.” Early in the year, Arthur facilitated migrating teachers to an online school bulletin and resource board. To be additional support, Arthur remembered “literally driving to people’s homes to put the report templates on their computers.” Arthur said, “If you can
facilitate enough the people will come. The problem is that people don’t know where to start and they’re nervous. There are barriers you face. So, working together is great.”

George provided two examples of what he deemed “inspiring teachers”. One was a fellow teacher who decided to participate in the laptop program through their school board, even though he was retiring at the end of the following year. George shared that, “he was really resistant about participating all year and then he realized that technology is not going away. He’s teaching rotary next year, with over 100 students, so he realized he needed help. A year away from retiring and he’s committed. That push, the support network, and the supportive environment, is needed.” Another teacher George knows organized a TED talk: “She required all the students to talk about something that was important to them. Those kids were inspired by their participation. She essentially said to those kids, I value your voice and I want you to talk in front of everybody and people are going to listen.” While other teachers he spoke to were skeptical because “they wondered about completing the curriculum,” George wondered “why aren’t more teachers doing this. Why aren’t we providing more opportunities for teachers to create these projects in their classrooms?”

George realized that when the school administration acknowledged using digital technology in new ways “as good practice” other teachers would find a way to integrate ideas into their classrooms. George wants “to work together collaboratively. It becomes more of a back and forth, sharing, changing and doing something differently, or meeting in the middle.” For instance, George believes there should be “a wide open window into” his classroom so he implemented a Moodle platform where students and parents could access and participate: “Here’s what we’re doing, and if you want to really engage with your kids and yourself, here are things you can do. That being said, my teaching partner
said that this could be a challenge for him to implement but that he’ll give it a try. We’ll help each other and it will be successful.” Abbey revealed that as a staff they discuss technologies at every staff meeting and every PD day. Rosie said that discussing technology is not forced, but done in an encouraging way so “if you have a good idea, share it.” Roxanne and her teaching partner often “help other teachers with technology. My team teacher and I are say come on in and we'll help you fiddle with this. Some teachers are still really reluctant but some are more open to learning. That way they'll learn something and then pass it on. We're not about closing the door, it's about opening the door. Teaching has to be about that.”

**Taking Chances with Digital Pedagogy**

Taking chances and choosing which path to explore were important characteristics of the teachers in this study. Arthur included a quote from Carroll’s (1915) *Alice’s Adventures in Wonderland* which he believes describes not only his classroom teaching, but his approach to curriculum planning:

> “Would you tell me, please, which way I ought to walk from here?”
> “That depends a good deal on where you want to get to,” said the Cat.
> “I don’t much care where,” said Alice.
> “Then it doesn’t matter which way you walk,” said the Cat. (p.63)

Arthur stated that he discussed the act of choosing with his students and explained “that you need to move forward with an idea of what you are doing.” Arthur said, “I choose my path and it led me close to where I thought I wanted to go.” Arthur’s path was to implement digital technology throughout his curriculum, and to explore new ways of teaching and learning with technology, such as utilizing Wikispaces. But, taking risks constructing curriculum and introducing new digital tools and resources into the classroom came with further challenges. This section focuses on how the teachers
address the challenges of teaching through multimodal methods, such as managing
digital citizenship, the access and constraints of integrating digital technologies, and the
affordances of technology.

**Taking Risks in the Beginning.**

The teachers began integrating digital technologies into their classrooms by
taking risks. Rosie referred to ‘good teaching’ as that “ability to go outside your comfort
zone and take a risk.” Cassidy said that “the ability as a teacher to allow yourself to make
mistakes is crucial. Give everything a try because there is no perfect way to do anything.
I reflect on how I use technology, and then push it a little more next time.” Gwen said
that while she “fell into” her role as “tech girl,” she did have a history with computer
teaching and was “comfortable with learning new technology.” The rest of the teachers
found words and phrases such as *self-learning* and *evolved* best described their initial
experiences with technology.

**Promoting self-learning among teachers.**

Roxanne found that “the only way you will learn something new is if you take the
initiative and try it yourself.” Cassidy found that she could “pull on those experiences,
especially when I make a mistake or a lesson doesn’t work the way I wanted it to. There
are great teachable moments too.” Claire began using the ELMO in her room through
“trial and error”. She also realized that she could “do all the same things through the data
projector just by going into *SmartIdeas* and pulling up lessons.” Sally said she had access
to a Smartboard so she decided to “give it a go” and used Smart Notebook and Smart
Exchange in her curriculum planning. Next, Sally heard about the ILP courses from other
teachers and when she “saw the kinds of things they could do I was a lot more interested
in getting it myself.” While integrating technology daily in her classroom, Sally claimed,
“I’m not really a tech person, I never started out like this.” Ted said that using technology “was a way to organize myself originally.” He would organize his lessons and would always be able to easily go back to what he created digitally.

George, through his “mission of embracing more technology”, was also a self-learner. George said, “I needed to engage myself.” So he began exploring iTunes and educational podcasts and then became involved with Twitter and a network of educational leaders. While George took risks in his teaching approach, he encouraged his students to be risk-takers as well: “So often we underestimate what students can do. Sometimes you can give kids something and they run with it. It’s good to question things, to take risks.” George established sandbox time, an idea he heard about on a podcast, to spend time learning new programs or digital tools. He said, together, “we play around with it, share ideas, and see what different people are doing with the technology. A fellow teacher uses her sandbox time to have her students do the opposite of what they’re supposed to be doing. They make terrible prezis or business cards, for example, and then create a baseline of what they really want.” Eventually, through his research and sandbox time, George became the “tech guy” in his classroom and school and constantly adds to his interactive collection of digital technologies.

Evolving integration of teachers’ use of digital technologies into the classroom.

Abbey and Rosie laughed when they first thought about their use of technology over their 20 years of teaching. They had witnessed, first-hand, the evolution of technology integration into classrooms. Rosie said, “We’ve gone from overheads to something far more interactive. And it’s so instantaneous that you use it more.” Rosie and Abbey discussed how before data projectors, laptops, the Internet, and YouTube, teachers would have to order videos from the school board media center: “If you ordered
a video to encourage learning it was based on availability not only of the video, but the TV and VCR in the school. Plus you were lucky if the remote had batteries, or you could figure out the cords!” Abbey stated how “now we plan to use technology in lessons, but most of the time somebody asks a question and you can just google the answer, or find another method for showing a concept.”

Dona and Ted also discussed how their teaching had evolved, particularly in terms of using digital technologies in their classrooms. While Ted integrated every digital device he could move into his classroom, Dona found that her curriculum planning evolved as new social trends emerged, such as the food trucks and the opportunity to teach about spreadsheets.

Daphne and Leela agreed that their use of technology “was an evolution.” Leela was using photography and personal devices with her students when Daphne began searching for ways to incorporate more Web 2.0 tools into the classroom. Daphne said that most teachers were scared of the unknown of teaching with technology but “it’s taking what you can and moving forward. You need a backup plan just like you would for anything else. Being prepared, adaptable, and flexible are key.” Daphne and Leela found also found that by working with small groups of students “it was easier to facilitate any mini crisis with some form of technology.” Leela shared that by “investing in establishing routines in September the year tends to run smoothly. It’s that flexibility and adaptability that makes our classrooms go!”

**Supporting Students to Develop Digital Technology Skills.**

While teachers often found that exploring new technological tools is essential to understanding the intricacies of digital learning, they also found that explicit teaching supported students to develop digital technology skills. To provide opportunities for their
students to learn to communicate effectively, teachers modeled and taught typing and technical skills, as well as how to use various digital technologies.

Explicit teaching of technical skills.

Dona and Sally shared how they modeled how to use digital tools, particularly with the daily use of the data projector and related tools. The range of technical skills, particularly typing and basic computer skills, varied by grade and school, but all the teachers discussed how teaching skills was necessary at some point. As George noted, most students “don’t come to class knowing how to use digital technology actually.”

Sally found that her students were fairly good at typing, and she recommended typing programs for the students who struggled. While Roxanne’s principal did not believe teaching typing skills was worthwhile, Roxanne would teach typing at the beginning of the school year because it is “a tool you need to learn. So we use the Dancemat program.” George discussed word processing and how he taught his students to “deal with the red lines” when they indicated spelling or grammar errors. George said, “It’s a total shift in the spelling program.” Cassidy also taught basic typing skills, and explained “that this is what an author does to emphasize words. Then we they practice in their own work it takes on a totally new meaning.”

George revealed that he still has “to teach them how to save, how to open a document, how to navigate around a webpage. There are students who have more experience and can navigate their way around. But the beginning of the year is a really huge learning curve for a lot of people. We build routines.” Sally also found that her students struggled with some basic computer skills, such as remembering to save their work on the network home drive, instead of on the laptop they used. Sally said her students “really have not figured out that connection yet, even though there were constant
reminders.” Roxanne used the digital projector to demonstrate how to use the technology in her classroom. Roxanne said, “I could show them where things are on a projected image of a desktop and in our classroom folders. All those types of computer skills I would teach through the projector first before we practiced in the lab. I showed them websites and how to access links. We cut and pasted images for their projects, for example.” Claire structured her technology lessons so they could study different forms of media and read certain websites. Cassidy said that too many of the teachers in her school would use their ‘computer time’ for online games “they already played at home. This is ineffective. We should be teaching them meaningful skills, like typing or searching the web effectively.” Sheba said her students “were fascinated” when she began a pen-pal program to help her students with their word processing skills. Sheba said her students “became proficient with the laptops.”

Explicit teaching of digital technologies.

Sally, Cassidy, Claire, and George shared how they could always google anything they wanted to learn. Sally commented on how, through social networking, both students and teachers can figure out “how to compensate to get what they need through technology.” Sheba, for example, completed a “What’s real and what’s not on the Internet” unit with her grade 3 class. She said

It was very interesting. Before we did this unit they thought everything on the Internet was real! So, we looked at the Pacific Northwest Tree Octopus and I gave them questions to answer. They found all sorts of ‘facts’ about the octopus. Until, one boy typed in ‘fictional or not’ and found out it was not real. They were fascinated by that discovery.

George particularly enjoys “building the Moodle with my students. I teach them how to navigate devices and we create the Moodle together. We practice and add on as the year goes on. We’re a busy classroom.” George has found his classroom Moodle has
not only provided a space for students to share their work, but also became a place to explore new digital tools. When George realized that Moodle does not have its own spell-check function, together they discovered that Google Chrome and Firefox have their own spell-checkers built into their browsers. George said, “I can still teach how to use the right words and how to pay attention to what you say. They learn to communicate effectively with an audience. It’s authentic.”

Dona and Ted taught their students “how to use the technology.” For example, when Dona discovered that many of her students did not know how to use the Excel spreadsheet program she decided to teach them. Even when teaching students how to use PowerPoint, Dona said “even if some of the students have used it before, there are always little things to show them still.” Ted found that the iPads were “a little awkward for word processing anyway, but they are awesome for film editing and recording. We spend a lot of time figuring the tools out and using them. I feel that’s the way of the future for education. I’m fundamentally trying to teach these tools to our students; that is literacy. That’s the goal. We do a lot of digital literacy.”

**Managing Technology through Digital Citizenship.**

In order to safely use and allow personal devices into the classrooms, many of the teachers devised ways to manage their use and care. These methods included everything from management programs, such as digital citizenship programs, to placing devices in locked drawers. Roxanne shared that incorporating technology into classrooms “depends on the comfort level of the teacher with the technology. Some of them put the devices in a basket until the end of the day and others incorporate them.” Following are examples of how participating teachers managed technological devices in their classrooms.
Rosie stated that “as a teacher, that management piece is hard. I’ve had students lose or misplace their devices. So, I have them place them in a locked drawer.” Sally allowed personal devices during classroom time, but when the devices were not being used for educational purposes she had “a drawer where I put everything in and locked it. While if they’re old enough to bring in devices they’re old enough to take care of it, most parents would like me to be responsible.” Sally said she started taking SD (secure digital) cards when a group of her students were texting each other in class. Sally said, “One of the students thought about it when I asked them for some solutions. Their plan was to gather up the SD cards and put them in a box in my desk. It worked. They could still use their devices for school work but couldn’t text each other.”

Digital Citizenship programs and signed waivers were also common avenues for managing personal devices in the classroom, particularly for the junior and intermediate teachers. These programs extended to school and classroom technology as well. All the students in the teachers’ classrooms signed Internet waivers at the beginning of the year. Abbey spoke about how the intermediate students participated in a digital citizenship program at the beginning of the school year where they “talked and talked about responsibility with technology.” Abbey also noted how teachers “have to be very aware of social media. Sometimes kids do not understand that once something is out there it’s out there forever.” Rosie agreed, “You can’t have blinders on. You are stepping outside of that classroom curriculum role frequently to educate students on social media and what to say and how to say it. It’s almost character education.” George stated that all the “what ifs” cannot “stop us from taking full advantage of technology. Establishing responsible routines, locking the door, not walking away from your technology, are all part of digital citizenship.” George found that taking care of their digital technology
became a struggle when technology in his classroom became “commonplace. We always had technology around so we would sometimes leave it outside in the hallway. We had to remind ourselves of its value. And, not just because it’s expensive, but the inconvenience of if it’s taken and how that would hinder our learning.”

Rosie shared how integrating technology into the classroom “is a double-edged sword. It’s wonderful to have all that technology in the classroom but it comes with a totally different level of responsibility.”

**Access and Constraints of Digital Technologies in Classrooms.**

While the teachers, at various degrees of integration, wanted to encompass a variety of digital resources into their curriculum and digital tools into their classroom, there were challenges to implementation. Issues of access and constraints as experienced by the teachers, as well as the affordances created by utilizing digital tools, are described in this section. The solutions to these challenges of access and constraints, though, demonstrate how persistent the teachers were with digital technologies.

**Challenges with access to digital technologies in the classroom and alternative strategies.**

Access to digital technologies was an issue for many of the teachers. Cassidy said, “I could definitely use and learn a little bit more if I had technology in my classroom. Access is the issue.” Cassidy wished she had “even three laptops or computers for a centre. It’s so simple but it’s frustrating that I don’t have enough.” As many of the teachers shared data projectors on carts, spontaneous teaching could be difficult. As Cassidy said, “by the time I go over to get the data projector and hook it up, the moment has passed. Why ruin a lesson with interruptions?” Claire also found limited access to computers a challenge. Wanting to teach practical programs, she said it was
difficult to get the computer or mobile labs for more than one period a week. Claire taught her students Wordl and Tagxedo “because they are quick to learn.” Claire said, “If I could have access for chunks of time, I would love to teach something like Moviemaker. But, I would need a whole day, or dedicated chunks of time each day, and I don’t think I could get the technology for that long. I’m lucky to get anything for a period.” But, Sally found that by the end of the year her students had a considerable amount of access to technology and “it’s really my job to give them the websites and links and let them explore, while I work with one or two individually.”

Roxanne found restrictions on certain sites a challenge and a frustration. She said, “Our board is conscientious in having things restricted. So you get this great idea that you find at home and then in the classroom it’s web-restricted, or there are only so many licences. That’s frustrating.” Roxanne also felt that there was not consistent access but that it was getting better at her school. In Abbey’s school they used to ban YouTube but now they have a license to use it in the classroom. Sally mentioned that even with restricted sites her students could “get around restrictions and have access to sites. Sneaky, but clever.”

Arthur said that “you have to create the access to technology first. There are teachers who so want to use it! Get them trained and have access to the technology.” George said that “if you really believe that technology is important, do whatever you can to get what you want. Leverage your community.”

*Persistence with technology functionality in the classroom.*

Functionality of the classroom hardware and software was a concern for all the teachers. Ted was sure that everyone would say “access is a problem. The money, the number of computers, the Wi-Fi not working, are all issues.” But Ted said, “I work
around it. A good part of what I do is harness the technology in the classroom.” But, according to Claire, “technology is great until it doesn’t work.” From data projectors not connecting to laptops to WIFI hubs not functioning for Internet access, all the teachers realized that having a ‘Plan B’ was an important part of utilizing technology in their classrooms.

Utilizing technology inevitably includes frustrations. Waiting for technology to work or load resources was an issue for many of the teachers. Gwen and Ria found that sometimes just connecting the data projector to the laptop, and then waiting for the WIFI to connect could be frustrating. WIFI was a constant problem in all the schools, even when the teachers, such as Leela, Daphne, Dona, and Ted, had their own WIFI hubs in their classrooms. All the teachers related how frustrating it was when students forgot their password, or the logins were not working properly. Sheba shared how often her students told everyone their information, including their password. Sally’s favourite was when her students made “their password the entire keyboard.” Rosie found that accessing the school’s network is “not very user-friendly, a little bit archaic, because there are 5 or 6 steps just access the desktop. This makes it difficult if you only have so much time to teach your lesson.” According to Dona, network outages were another issue as “the problem was rarely one computer going down, but the whole system shutting everyone out.” The real problem was often the amount of wasted time, according to Gwen.

Having a ‘Plan B’ for curriculum planning was critical when utilizing digital technology. Cassidy revealed that “one of the limitations was it’s hard to plan a whole solid lesson with technology. You cannot always rely on the technology.” Gwen agreed, “The technology can be finicky. You cannot plan a lesson solely on technology because
it’s not guaranteed.” And, sometimes, according to Claire, “Plan B is not as effective or efficient as what you had planned with technology.”

But, there were also solutions, or ways to work around the technical problems. Sally and Gwen knew that if their Smartboard was not working the one in the library was available. Sally also shared how a student in her class who did not have a home computer was given one through a donation program at the school. Sheba discovered that she could save videos to Tagdisk, or another external disk storage app or device, and then, not only was she guaranteed to have the video ready to use, but they were not waiting for anything to load. Ria and Sally shared how you do have to preview everything you show to students, just like you would with the print books you have in the classroom. Ria said, “You always have to watch the whole video or read the whole book to the end, in order to make sure everything is appropriate.” Ria also found that bringing in her own speakers for her iPod and laptop was helpful. Ria found that sometimes it is “the little things, like all those supplementary materials, that bring all the challenges. But having all the great links, how-to videos, social media connections, and ideas are worth the trouble.”

**Subverting the inequity of access to technology.**

The teachers often found alternative solutions to the inequity they discovered with access to digital technologies. Cassidy referred to how she feels it is her job to “even out the playing field” when it comes to technology and her students. She feels that the students in her school community “are already at a disadvantage” from students in other schools because not only do few of the students have access at home, but very few teachers used technology in their classrooms. Cassidy said, for her school area, “Unfortunately, in terms of technology it’s an inequity issue. If kids start being exposed
to things earlier, it doesn't become such a fascination. It becomes an integral part of who they are in the school.”

Rosie and Abbey found that their school staff tended to talk more about what students can do at home on technology. In their newsletters Rosie and Abbey suggest sites such as Starfall for primary students or various math game sites. Whereas, Cassidy and Gwen shared that they cannot assume everyone has access and that whatever they send home has to be accessible to everyone. Cassidy shared that in her school, “some kids can go home and bring back pages of research, while some kids have to use the school or local library, or limited classroom computers.” Although, Gwen does provide a list of useful websites for some students, such as for one of her students who was struggling with English since it was his second language. Gwen defined the list not as an expectation but to be “used as a home connection.” Ted also realized that not all students have access at home. Ted said “you have to think about that” and provide access at school.

In Roxanne’s school not every classroom has a Smartboard, but the grades 3 and 6s have access to all the available technology. Roxanne realizes that this “is very political. The principal would like to see the EQAO results go up so those grades get all the resources. Everyone knows and it has caused some negative issues. When I moved to grade 3 I was given everything I asked for, and access to more.” Abbey also noted that access to technology was not equal among schools. Abbey said, “Our data projectors were bought by our fundraising funds. But there are schools in our boards, even priority schools that have low EQAO scores, which cannot raise the funds and then don’t have access to all the technology. It’s not equitable.” Abbey also shared that because they were able to raise funds for some technology her school was able to buy digital cameras
out of their resource budget. Rosie commented on how “at some of the higher socio-economic schools have far more and make our digital inventory look meager.”

Cassidy discussed how she applied to various groups to enhance her classroom with technologies. She found out that “unless you have access to technology already, in order to show that you have used it, it’s really difficult to apply further. I was applying for an edu-grant when I realized that I didn’t have any technology lessons to pull from.” Cassidy was frustrated because she was trying to obtain technology “to do more innovative teaching and learning but realized that there was a barrier because I didn’t have certain things in place already.” Then, Cassidy’s new principal “got the ball rolling for technology. Now we have new digital tools and laptops and resources. We have to share, but maybe we’ll each get our own items too.” And, as a model or priority school, Cassidy and Gwen’s school will be receiving funds for technology. Now Cassidy is getting ready to apply for technology grants.

George also had to find ways to challenge the technology power he saw in schools and classrooms. He uncovered a number of solutions for his classroom. George encourages his students to bring in their own devices because it freed up the devices he had in his classroom. He said, regarding schoolyard talk about who has the most recent device or which digital tool is better, “they’re going to talk regardless if it’s in the classroom or the schoolyard. We just have to be supportive and nurturing and work together. It doesn’t matter what you have to work with.” Because of all the different “digital cultures, such as you’re an Apple person, or Google, or a Samsung supporter” George found it “forced him to come up with ideas about programs that everyone could access. That moved me away from Microsoft Word, which was on our school-based computers, but was not on everyone’s devices.” So, George found that his Moodle had
word processing capabilities and discovered an online planning site called Mind42 because SmartIdeas could not be accessed on all platforms. George was excited that exploring new digital options “forced me into a different way of thinking.”

**Affordances of Technology: Writing Outcomes**

With the affordances of technologies, the act of teaching writing has shifted. All the curriculum planning and classroom activities that the teachers shared were writing based. Claire shared two examples of teaching writing based on digital technologies. To teach procedural writing to her grade 3 class Claire utilized ideas found on *Pinterest*. Her introduction featured making popcorn in her classroom and, together, writing out the instructions. Claire “scribed what they said, had a little discussion and made a list.” While the event had many starts and stops because the students kept remembering to add different steps, Claire found the exercise to be “such a visual for procedure. The point being that you have to be specific about what you are writing down. So, we fixed up our note, adding things in different colours, made the popcorn, and passed it out to share.” After collaborating on this writing activity, Claire had her class do their own procedural writing project on blowing bubble gum. Inspired by ideas on her *Pinterest* board, the activity consisted of designed a face, blowing up a pink balloon and sticking it to the mouth, and then writing down the procedure of blowing a bubble. Together, these activities discovered through an online educational resource, provided opportunities for student writing. In order to teach how to use quotation marks properly, Claire used the pigeon stories by Mo Willems to illustrate incorporating dialogue and integrated a digital comic-creator tool by teaching her students how to construct comics through *Bitstrips*. Based on this previous knowledge, Claire’s students then created their own funny comic
strips complete with speech bubbles for the quotations. Claire said, “It was highly engaging. They told their story, disguised as a comic strip.”

Roxanne demonstrated the typical, yet relevant way of writing that is incorporated into classroom curriculum. Roxanne discussed the importance of supporting students during the writing process. She always integrated conferencing throughout the writing process because “their writing levels are so varied I have to be able to grab a group and work on any challenges.” Roxanne described her integrated Social Studies and Language Arts unit on First Nations’ peoples’ lives, history, and legends, which took two months of class time to build. Roxanne modelled reading while using the Smartboard to project the First Nations’ legends she was sharing. Then they created an anchor chart together about the components of a legend. After reading, modelling, and sharing legends, then, “we could work at writing our own legends. You have to really build it up before the writing piece because if you just pull it out of a hat it won't work. And then we did pre-writing activities, graphic organizers, pictures, some on the computers.” Roxanne incorporated writing conferences and guided writing with legends in groups. Roxanne said, “They go through the process writing, all the drafts, and then they illustrate it. Then we share our writing with our reading buddies.” Roxanne found that all the curriculum planning, going through the writing process, and integrating digital technology where needed, provided multiple opportunities for her students to become aware of themselves as writers.

George described how teaching writing while exploring digital technology can provide students with new challenges and ways of demonstrating knowledge. George found that using what students do outside of school as springboards to learning are engaging and important to students. For instance, George discussed how some young
gamers use how-to videos (such as PSAs, or public announcements for gamers, and instructional tutorials) to get further along in their virtual games. Since these instructional videos are created by gamers for gamers, it is an example of how people share their knowledge. George believes that “maybe it is their responsibility to share their knowledge, rather than just play the game. It’s an interesting conversation. That's how transformative our technology is that we can do that. I love that idea that anyone can contribute.” George added that “there’s research, critical thinking, and writing involved and these are important skills to learn.” George wondered why any teacher would have their students write about something that was not interesting to them. Providing writing opportunities about engaging and interesting topics was another way to encourage students to be authors.

Daphne and Leela discussed how they knew what they were doing in their classrooms was actually working. Daphne said, “They are better writers! Based on our students’ work and what the students say in their end of the year survey. They felt they had more opportunities to practice writing, and, therefore, that they were better writers. And, you can really see it with the students we’ve had with us for two years.” Daphne also shared that their students write purposefully everyday “on things that mean something to them” and are exposed to a wide variety of writing examples. Leela discussed how one of their students described himself “as a writer”. She said, “He likes it when people ask him about his writing and computer work. It’s a big deal to him. And we can see the progression of what and how he has written online overtime. He writes with confidence and he’s okay with others reading what he’s written.” Daphne “found the more opportunities the students have for writing, the more they’re being aware of themselves as a writer.”
Conclusion

The teachers depicted in this chapter can be described as digital explorers who incorporate digital and multimodal practices into their curriculum. The teachers have actively searched and explored digital sites, technologies, resources and devices to use in their curriculum planning and in their classrooms. In discussion with George, he said he wanted to continue to explore amazing and unique ways to produce information with his students. George said, “Am I going to get you to sit down with a piece of paper and write a re-count, or am I going to get you to take out your iPad and find a digital photo, immerse yourself into music, and create a whole movie that re-counts your adventure? Let’s do that now.” Through exploring their passions, collaborating with fellow teachers, and taking chances with their pedagogy, the teachers in this study continue to search for ways to expand their own learning with literacy and multimodal teaching and engage their students through digital technologies.
CHAPTER FIVE:  
DISCUSSION AND IMPLICATIONS  

Introduction  

This study investigated what encompasses being an educator who utilizes multimodal practices and what types of environments support these teachers. This research studied 15 elementary teachers as they planned how and what to teach in order to present engaging learning opportunities in their classrooms. The teachers collaboratively planned their literacy curriculum and described the pedagogical designs and multimodal resources used in their everyday practice. As reflective educators they are also risk takers who experienced and overcame challenges while teaching and learning with digital technologies.

This chapter explores the implications of the teachers’ collaborations with digital technologies. How these teachers perceive their teaching strengths and understand literacy, utilize digital technologies in the classroom, and address the challenges and supporting environments of integrating digital technologies are further discussed.

Perceptions of Teaching Strengths and Understandings of Literacy  

The teachers in this study are committed to their students and their school communities. They are also compelled to planning multimodal curriculum and encouraging positive learning opportunities. These teachers are risk takers who seek new ways of integrating digital technologies into their classrooms.

Teachers’ Strengths  

Being a teacher who follows the principles of multimodal teaching, as perceived by the teachers participating in this study, means having the ability to take risks, exploring technologies for their classrooms, being able to make mistakes, and reflecting
on curriculum planning and good teaching practices. The teachers also perceived their strengths to be their dedication to making positive connections with their students, strong curriculum expertise, and the willingness to explore the possibilities of digital technologies in their classrooms.

Demonstrating strong curriculum expertise and the willingness to explore the possibilities of digital technologies were strengths of all the teachers. Related characteristics also emerged, such as incorporating differentiated learning, strong classroom management, and flexibility. These strengths of the teachers allowed for more pedagogical risk taking. Like Janks’ (2010) description of “a literacy teacher as someone who works with others to make meaning with or from texts” (p.5), these educators utilized a variety of teaching strategies to facilitate their students’ learning around various texts. Sometimes teachers found they needed to explicitly teach elements, such as the basics of using a computer or creating work in a digital movie tool. Other times, choice of activity was paramount in how the curriculum was designed, from what digital tools to use to which products would be explored, described, and produced.

The teachers felt that they were effective in making connections with students in their in-school teaching, where they created spaces for the school community to collaborate, explore, and create, with their out-of-school activities. Helping to organize co-curricular activities, such as sports and clubs, was an important aspect of being an educator for all 15 teachers. Incorporating community connections was essential, such as Ria’s class being offered space at the AGO to feature their artwork, or Gwen’s class having the opportunity to work on their digital storytelling project at the Apple Store. Connecting home experiences with classroom activities provides opportunities for teachers and students to integrate their funds of knowledge (Moll et al, 2005) in
classroom spaces, such as collaborating and sharing expert roles as studied by Hull and Schultz (2002). Like teachers in previous research literature (e.g. Journell et al. 2014, Kist et al. 2010), the teachers in this study made in-and-out of school connections, often using social communication tools, like Twitter, for in-class literacy activities. Social media is used widely outside classrooms (Steeves, 2012) and provides another learning platform for teachers and students to collaborate on projects, teach writing skills, network with experts, and produce multimodal artefacts.

Passion for incorporating digital technologies resources and tools into their classrooms was evident in the goals the teachers had for future teaching. All the teachers described their journeys with digital technologies as constantly evolving and involve self-learning. The teachers wanted to find and use effective digital tools for delivering their curriculum and enhancing students’ literacy learning. Similar to the teachers in research by McClay and Peterson (2013), educators in this study were always searching for ways to learn more about digital technologies and, therefore, displayed “passion about the importance of formal and informal collaboration and professional development in communities of their choice” (p.50). Often the teachers wondered how they could encourage their peers to take risks with technology in the classroom.

Lapp, Moss and Roswell (2012) detailed some of the roles of new literacies teachers who understand the shifts in teaching and learning literacy: interrogators, resource managers, co-constructors of knowledge, and design consultants. While the teachers undertook roles such as collaborators, risk takers, curriculum designers, and digital explorers, they also often moved between the roles determined by Lapp et al. Many of the teachers, such as Cassidy and Dona, were constantly re-thinking what literacy might mean in their classrooms, and how interrogating texts and digital
technologies would benefit both teaching and learning. All of the teachers found themselves as resource managers, exploring new digital tools and sharing their knowledge with peers. For instance, as the Differentiated Instructor, Ted explored all the new digital technologies arriving in his school and shared them with his teaching partner, Dona, along with the teachers in his school. Being co-constructors of learning was evident throughout discussions as teachers teamed up with peers to navigate new texts and resources, both print-based and digital. As design consultants, all teachers co-created learning opportunities, often focused on current, out-of-school interests, such as documentaries, to connect students’ lives with curriculum expectations.

**Understandings of Literacy**

In our interviews, the teachers often discussed aspects of skills, such as teaching decoding and inference detection. When Ria was describing her understanding of literacy, her definition, found in the Education For All (EFA) Report (UNESCO, 2006), did not match her teaching practices. While she discussed the autonomous, skilled based functionality of language in her definition, her many examples of multimodal, interactive, and technology-based literacy activities, such as the geography and art project about place, illustrated the “layers of literacy” that she believed her students needed to communicate. In a background paper commissioned for the EFA Global Monitoring report, *Literacy for Life*, Brian Street (2005) makes a distinction between the autonomous model of technical literacy skills and an alternative, ideological model where literacy is viewed as a social practice. Different literacy contexts describe “the ways in which people address reading and writing are themselves rooted in conceptions of knowledge, identity and being” (Street, 2005, p.13). Therefore, Street posits, literacy programs need to address the following questions: “What is the power relation between
the participants? What are the resources? Where are people going if they take on one literacy rather than another literacy? How do recipients challenge the dominant conceptions of literacy?” (Street, p.14). These are the questions missing from the final UNESCO report. In contrast to what she said was her understanding of literacy, these are the very questions Ria, and many of the other teachers, struggles with in their everyday teaching. Some of the teachers discussed the tensions that they experienced when they had to follow the official understandings of literacy described by the Ontario Ministry of Education or their school board, while at the same time enacting more complex understandings in their teaching. While many of the teachers described the importance of needing literacy skills to be successful in school, they all integrated the functionality of literacy with the construction of meaning into their teaching, often through inquiry-based projects. Ria not only questions the power relationships in her classroom, but encourages her students to be critical consumers and communicators, as demonstrated through the video project on bullying she planned. Indeed, Ria understands literacy as it used in everyday life and where school and community intersect. In this way Ria perceives literacy as situated practices involving meaning making, often through engaging digital technologies, in social spaces (Street, 1995, 2012).

These teachers often alluded to the active practices of literacy learning and talked about how they continually negotiated literacy purposes. Scaffolding their teaching with digital tools, the teachers allowed time for their students to be reflective on their meaning-making and then apply their knowledge critically and multimodally. While Arthur, for instance, connected reading and writing with “synthesizing information”, he perceived literacy as “the critical thinking and understanding of media literacy”, important elements of social practices. These educators also referred to the social aspects
and elements of power embedded in literacy as a social practice. As *designers of meaning*, teachers decide how and what to teach, while students make representational decisions about their knowledge (New London Group, 2009). Understanding literacy for a few of the teachers meant referring to the *new literacies* and *meaning making*. New literacies were referred to not just as “words on a page” but also as “communication, text, audio, hyperlinks, visuals, and the interactions between the different aspects” (Daphne). Indeed, Daphne referred to these aspects of literacy as “a media explosion” teachers can facilitate and integrate in meaningful ways into the classroom. Connections to literacy as making meaning through experiences and then sharing those understandings were made. Interpreting visuals, online visuals, and the evolving nature of literacies were part of their teaching practices. Ria, for example, designed her entire grade 7/8 curriculum “through the lens of media”. Like studies conducted by Kress (1997), literacy, literacies, and language, as perceived by these teachers, continue to evolve through social practices to communicate meaning making through a variety of modes. The teachers believed that students’ communication of meanings was a key element of all literacy curriculum strands: reading, writing, oral communication, and media literacy. Providing opportunities for their students to communicate their ideas was paramount when designing literacy curriculum.

**Summary**

The teachers demonstrate how they found ways to create space for meaning making by teaching and learning with multiple modes, utilized digital technologies as tools and resources, provided choice in multimodal projects, and integrated texts from students’ lives. Being reflective educators, they utilized digital technologies regularly and incorporated multimodal production and texts in their classrooms. The teachers were also
encouraged to share their pedagogical knowledge regarding digital technologies with their peers. And all of the teachers in this study planned engaging, digitally-inspired, literacy curriculum. While most of the teachers did not share which theoretical perspectives they ascribed to, the evidence in their perceptions and throughout their designed activities suggest that they implement new literacies and multimodal perspectives into their pedagogy. As George described his “bittersweet time of teaching” where he was exploring digital technologies and new ways of facilitating literacy learning he truly was “on the cusp of really revolutionizing” how he, along with many of the teachers, was changing the way he was teaching literacy. I now have a deeper understanding of what makes teachers utilizing multimodal practices and integrating Web 2.0 technologies be collaborative risk takers in the classroom.

Facilitating learning was another important characteristic of the teachers. They all attempted to share their knowledge and digital resources with other teachers. Roxanne said, “Some teachers are still really reluctant but some are more open to learning. That way they'll learn something and then pass it on.” But, as many of the teachers acknowledged, this shift in thinking is a difficult one for many of their peers. Still, passing on knowledge and collaborating with colleagues and students was part of the reason Roxanne, along with all the teachers, utilized technology effectively in the classroom. Roxanne said, “We're not about closing the door, it's about opening the door. Teaching has to be about that.”

**Use of Digital Technologies in the Classroom**

Teachers in this study utilized digital technologies as resources and tools to support their teaching and learning. This section discusses Merchant’s (2008) spectrum
of pedagogy with digital technologies and the teachers’ movement along the continuum. How the teachers have supported new literacies in their classrooms is also discussed.

**Types of Teaching Practices**

My discussion is framed by Merchant’s (2008) continuum of pedagogical perspectives. Included are the teachers’ types of practices and their future goals for teaching with digital technologies. At one end of Merchant’s spectrum, where teachers sequentially introduce digital technologies, educators use existing pedagogical approaches and have regular access to technologies. While all the teachers had moved beyond this end of the spectrum, irregular access to technologies and complete administrative support continued to hold some of the educators from moving to the far end of the spectrum.

In the middle part of the spectrum, teachers utilize digital tools to teach specific methods and also had more access to technologies. The teachers often introduced digital writing activities and used digital technologies when teaching media literacy. Integrating and scaffolding digital tools into the classroom was evident in all the teachers’ classrooms. For guided and independent reading, e-readers were utilized in many of their classrooms. Like Larson (2009, 2010), teachers in this study found that utilizing e-readers had many benefits, such as providing opportunities for collaborating and communicating among students through guided reading or literature circles. Similar to Hutchinson et al. (2012), these teachers found that explicit instruction enhanced their students’ learning opportunities. Similarities could also be found in Mills’ (2010) research as teachers would scaffold digital learning and communicate multimodally in order to provide a space for students to authentically share their work.
At the far end of the spectrum teachers integrate new digital pedagogical approaches into all aspects of the curricula with constant access to technologies. These educators, particularly the intermediate teachers with greater access to technologies in their classrooms, engaged in practices at the far end of the spectrum. Having constant access to digital technologies throughout their everyday practice, they were also constantly exploring new digital tools to use as resources. Many of the teachers utilized iPads in their classrooms to read an e-book, collectively play an educational game, or record and edit a video, features common to how the teachers in Hutchinson et al.’s (2012) study integrated iPads into their daily activities. With the increase of Web 2.0 tools in the classroom, and similar to the teachers in Ertmer et al.’s (2012) study, teachers in my study were incorporating digital tools in their daily activities. The teachers were either already using virtual learning environments (VLEs), learning how to incorporate them into their classroom, searching for new ways to integrate more digital tools into their virtual classrooms, or had included them as part of their future goals. With these tools, teachers incorporated digital technologies throughout their practice, including when planning curriculum and contemplating how digital tools could support what they wanted to teach.

**Supporting new literacies in the Classroom**

The 15 teachers incorporated multimodal materials into their curriculum, often through Web 2.0 applications, to assist students create meaning through diverse representations of literacies and text forms. These teachers followed the four assumptions of a New Literacies perspective (Coiro et al., 2008): digital technologies present new opportunities for literacy teaching and learning; in order to participate globally with
digital technologies equitable teaching is required; opportunities for change are needed in technology and literacy; and, literacies are multimodal.

The goals of the teachers included continually searching out new digital tools to support their teaching goals. Many of these educators discovered new possibilities that digital technologies contributed to literacy tasks. The teachers explored teaching literacy through inquiry-based movie production, using Web 2.0 tools to learn about the intricacies of writing, and by communicating through their classroom wikis. Web 2.0 tools are complex, for users and creators, and the teachers found ways of utilizing these tools to differentiate instruction. Like Knobel and Lankshear (2007), these teachers found that Web 2.0 tools and resources were an important way to encourage student participation in collaborative literacy activities.

Equity was often discussed in terms of teaching and learning about digital technologies and unequal access to technology across schools. Occasionally, the teachers found that explicitly teaching digital tools was essential to student success because sometimes students did not have opportunities to learn these skills outside their classroom. In order to level the playing field, many of the teachers often uncovered new ways to obtain or utilize technologies for their students, such as applying for technology grants. Creating a culture of expert students was essential to the running of the digital technology classroom. Many of the teachers found that students would help with technology set-up in the classroom and often became the technology experts. Like the teachers in Mills’ (2010) and Ware’s (2006) studies, these educators did not always have to scaffold as acutely with some digital tools when their students were already experts. Creating a community of learners in their classrooms also encouraged students to share their talents, even, according to George and Ria, if they originally needed to be shown
how to dig deeper into inquiries or how to work collaboratively. The teachers found that their students enjoyed sharing their technology talents with their peers and teachers, hence creating a more collaborative learning environment.

Exploring the possibilities of teaching with digital technologies, these teachers were constantly discovering new ways of integrating digital tools in order to differentiate learning opportunities in multimodal ways. They found that designing curriculum and integrating engaging material and teaching tools enhanced student engagement. Incorporating digital technologies, through digital storytelling for example, engaged students who often disengaged from classroom activities. These observations mirror previous research findings (Cummins, 2009, 2011; Gambrell, 2011; Sylvester & Greenidge, 2009) showing that technology helped to activate students’ experiences and facilitated students’ success.

**Summary**

Merchant’s (2008) spectrum of pedagogical perspectives has been helpful in understanding these teachers’ perceived strengths and weaknesses in terms of digital technologies. This has allowed me to highlight participants’ tenacity, collaborative natures, and ability to take risks with their teaching and learning; marks of good practice and beneficial to their students, but also potentially motivating for their peers. Most notable are the goals the teachers set up for themselves for integrating more Web 2.0 technologies to create space for authentic learning, collaboration, and sharing of literacy work in the classroom.

The teachers identified changes in perceptions about literacies and the evolution of digital technologies in classrooms that have created space for a variety of methods for delivering curriculum. As Ted referred to utilizing Wikispaces in his classroom as an
adventure, he noted how this little change in the configuration of his classroom aided in providing more opportunities for student/teacher interactions and new ways into teaching and learning. Indeed, as many of the teachers, such as Dona, discussed, focusing on Web 2.0 tools and becoming knowledgeable and discerning users led to further opportunities for curriculum integration. The teachers have taken up critical literacy and curriculum integration practices to provide opportunities for deeper conversations and to encourage students to be critical consumers and producers of media and digital texts. As Sally shared, teachers should provide opportunities for students to understand what questions need asking, and then to have forums for students to ask the deep questions and explore the solutions. Many of the teachers integrated critical literacy with media literacy and social justice issues. Ria, for example, designed a program on digital book trailers and picture books about the Holocaust and the Underground Railroad, using non-fiction images, music and text alongside aspects of picture books. Cassidy was a strong proponent for teaching with social justice themes as it provides “an opportunity to challenge those preconceived notions” and encourages deeper, more critical, conversations. The teachers view themselves, and their students, as active participants in meaningful inquiry-based literacy activities, reflecting a social constructivist view of learning (Bruner, 1960/2003, 1986; Vygotsky, 1978, 1986).

Addressing Challenges and Environments Supporting Teachers

This section discusses types of environments that support educators to address the challenges of teaching through multimodal methods. While access and constraints of technology continued to be issues for the teachers, supportive and caring school environments provided opportunities for them to explore digital technologies and innovative teaching. Established professional development practices and the affordances
of technology also facilitated teaching and learning with digital resources and tools, collaboration both in and out of the classroom, and the ability to take risks with teaching and learning with technologies.

**School Environment Support**

Like teachers in studies conducted by An & Reigeluth (2011) and Borokhovski et al. (2011), these teachers discussed how their school administrations were supportive of exploring digital technologies, often granting opportunities to find more digital technologies to bring into their schools. Many of the teachers in this study also noted how important parent support was for their innovative way of teaching digitally. They often experimented with different online classroom platforms to facilitate parent support. The teachers often initiated technology programs by submitting funding proposals to school boards, parent councils, and corporations, and were constantly fundraising for technology funds and equipment. This mirrors findings in McClay and Peterson (2013) where funding practices are “tasks that are relatively new expectations for teachers but seemingly essential for those teachers who wish to work in innovative ways and new literacies practices” (p.45).

While most of the teachers found supportive teaching environments, a few of them noted how not all the teachers in their schools supported their use of technology and were resistant to the digital initiatives they brought into their school environments. But, the teachers persevered and hoped that their use of technology would eventually take root in the classrooms of the other teachers in the schools.

Teachers in this study often sought professional development with the technological tools available in their classrooms and schools. Many of them participated in school-based professional learning communities, such as team teaching and providing
in-school workshops, in order to support multimodal literacies pedagogies, much like the teachers in studies by Edward-Groves (2012) and Lotherington et al (2013). One goal that was shared by all the teachers was the continuing need for further professional development for digital tools and resources in literacy pedagogy.

According to the teachers, collaboration is essential in establishing a teaching and learning community of educators who integrate digital technologies. They talked about participating in teacher-led workshops, established professional development programs and activities, and peer in-the-moment assistance. Establishing a network of people to help integrate technology effectively, the teachers discussed experiences where they engaged in team teaching and collaborating with other teachers in their schools. Like the teachers in Picard’s (2005) research, the teachers in my study found that their conversations and collaborations with peers informed their teaching practices. Collaborations, particularly teaching partnerships, were found to be helpful when the teachers wanted to integrate digital technologies into their curriculum.

**Challenges to Integrating Digital Technologies**

The access issues and constraints of digital technologies in schools, as identified in previous research (Ertmer et al., 2012; Hutchinson & Woodward, 2014; Merchant, 2008), continue to be a challenging hurdle for the teachers in this study. All the teachers discussed various challenges with integrating digital technologies, from lack of daily access to hardware issues and to lack of technology support. As discussed in Hutchinson and Woodward’s (2014) study “it is important for teachers to consider possible constraints before implementing technology to ensure that the constraints do not overpower the instructional goal” (p.462). The teachers described always having a Plan B when using digital technologies. Due to constraints with technology, such as outages
within the classroom or limitations to access of technologies at school, they would have a back-up plan for activities. Teachers shared that the back-up plans were often not as effective as the digital curriculum they had originally planned, however this was often why many of the teachers turned to VLEs as an online access hub, and for posting links, videos, discussion forums, and spaces for collaborations. All the teachers also described the steep learning curves they encountered or were encountering in terms of learning and teaching with digital technologies. Their experiences mirrored the experiences of teachers in McClay, Peterson and Portier’s (2014) study. Like the participants in Ertmer et al.’s (2012) study, the teachers in my research commented on a lack of digital access but “often found ways to work around them, thus reducing the overall impact on their practices” (p.428).

These teachers subverted the inequity of technology access by allowing students to bring in their own devices, fundraising for more technology, and constantly searching for new ways to understand technologies and how they can best work in their classrooms. While most of the teachers also described themselves as the technology experts in their schools, some, like the teachers in An & Reigeluth (2011)’s study on technology-enhanced classrooms, were not entirely confident in their abilities to resolve every technical issue and often searched out help from experts, including their students. Some of the teachers were often surprised by how easily they could find access to technologies once they were known as the technology expert. But, as a few of the teachers noted, if the digital tools needed to be shared amongst the whole school, there were limited opportunities to obtain technology on a daily basis. Exploring new digital options made many of the teachers constantly re-think how they planned their curriculum.
Summary

Integrating literacy curriculum with daily digital technologies was the main goal of all the teachers. These teachers found that digital technologies created spaces for further learning and opportunities to explore authentic ways of producing and presenting for their students. Even teachers who had daily access to technologies continued to search out new digital tools and resources to utilize in their classrooms and share with their peers. By investigating new learning and teaching opportunities, especially to teach writing, teachers found new ways (through class VLEs, for example) to encourage and engage their students to explore literacy multimodally. While challenges remained, particularly with issues of daily access to technologies, digital integration was initiated. Although, sometimes teachers maneuvered around the access hurdles by bringing in their own devices or having a BYOD policy in their classrooms. By designing engaging curriculum, particularly in terms of the use of Web 2.0 affordances, these teachers created classrooms of co-learners and continued to find ways to collaborate with their peers.

The importance of professional development was most notable in terms of utilizing digital technologies effectively. Supportive school environments were important for sustaining in-house and board-sponsored workshops on digital technologies as well as obtaining and maintaining technologies for their schools. This drive for including digital technologies in their schools was most effectively maintained when teams of teachers undertook this challenge. Considering that many of the teachers team taught, an important finding is that collaborating is of high importance in delivering literacy curriculum with digital technologies. The teachers believed that with daily access to
digital tools, in addition to finding ways to collaborate with colleagues, more teachers would take risks and implement technology more thoroughly in their curricula.

**Implications for Research and Practice**

Implications on research and practice are discussed in the following sections. My research themes (e.g. teachers as risk-takers, collaboration in teaching, and integrating multimodal and digital technologies into literacy curriculum), create the framework for my discussion of implications for future research and teaching practices.

**Teachers Integrating Multimodal Practices and Digital Technologies**

The teachers in this study are passionate, reflective, and collaborative digital explorers in the classroom. The teachers often found balancing explicit teaching and inquiry-based, exploration activities a challenge. Providing mentorship and opportunities to share ideas on how to balance these important elements of teaching practice would be beneficial to many teachers. Many of the teachers, for example, found that digital technologies can provide new ways to demonstrate knowledge and provide more paths to practice writing (as also found in Edwards-Groves, C., 2012, & Hutchinson, A. et al., 2012). Research on how to provide this mentorship is needed.

Furthermore, these teachers continued to uncover new ways of utilizing digital tools and resources in their literacy classrooms. As technology is constantly changing and evolving, research on digital tools and resources are always required in order to find tools and resources to meet the teachers’ planning expectations and their students’ learning needs. And, while some teachers continued with formal education through graduate programs and were exposed to a variety of research and theories on the topic of digital literacies and technologies for education, the push for sharing resources and knowledge must be at the school and board levels. More programs, such as the
Independent Laptop initiative, need to be expanded into other school boards. Further research should follow in order to expand on ways of effectively sharing and gaining knowledge with digital technologies. Continuing to research teachers’ multimodal practices in their classrooms has the potential to help other teachers more fully integrate digital technologies in their literacy classrooms.

These teachers’ experiences and challenges with digital technologies in their classrooms could be identified in Merchant’s (2008) spectrum of pedagogical perspectives. While features of good practice, such as collaborating about Web 2.0 tools between teachers and taking pedagogical risks, were emphasized, the experiences and perspectives of a small group of teachers might not be representative experiences of all educators who utilize multimodal practices. Future research with a larger teacher sample that includes more teachers in all areas of Merchant’s (2008) continuum is needed.

As scholars of New Literacies (Coiro et al., 2008) and multiliteracies (New London Group, 2000) have called for a re-thinking of literacy and literacy pedagogy, many of the teachers in this study continually re-style their curriculum designs and rework their pedagogy to find new ways into teaching and learning. With the theoretical underpinnings of New Literacies being explored throughout this study, teachers met their four assumptions. These postulations include: digital technologies present new possibilities to literacy tasks, equity to digital technologies can require explicit teaching, change is essential to technologies and literacies, and new literacies are multimodal. By utilizing social networking sites, such as Facebook and Twitter, designing media projects with video applications, using media to springboard into critical media projects, and integrating virtual learning environments daily into the classroom, the activities and planning of the teachers add to the discussion of new literacies in classrooms. But,
questions remain. More research is required to understand why some of the teachers are stuck in an autonomous understanding of literacy when their everyday pedagogical practices are brimming with elements of New Literacies. Where is the balance between official expectations and understandings about literacies and the activities occurring inside the classrooms of these teachers? Further research could explore how teachers could be encouraged to continue with learning about literacy practices in order to understand which theoretical perspectives they actively follow and integrate into their everyday practices.

**Teachers as risk-takers.**

The participating teachers in my study are pedagogical risk-takers. An important aspect of being a risk-taker is the willingness to make mistakes. Many of the teachers described how making mistakes, and asking for help, when it came to using digital technologies in their classrooms, was a difficult task. But, as George found, it was a necessary step in uncovering new ways of teaching literacy, such as using virtual learning environments to encourage authentic writing opportunities. Sharing with fellow educators on where these teachers began their integration of digital technologies into their classrooms and curriculum would benefit those teachers looking for a way to start their own journey with classroom-based technology.

While there have a multitude of published studies on digital tools and resources for the classroom (one only has to look at the *View from the Chalkboard* section in a recent issue of the International Literacy Association’s *The Reading Teacher* to find ideas for implementing digital technologies into classrooms) there continues to be a need for research studying teachers and their experiences with technologies. While all of the teachers described barriers to incorporating digital technologies daily in the classroom,
further research would enhance these findings. For example, creating space for expert-problem solvers in the classroom was a risk the teachers undertook when many of them realized that their classroom would run smoothly by encouraging their students to share their technical talents. With this shift in teaching, teachers become facilitators in the classroom and everyone relied on each other for technical and learning support. While implementing a BYOD policy in classrooms and schools does not fully solve the problem of unequal access of digital technologies throughout school communities, it can, when supplemented with school or classroom-procured devices, aid teachers in providing equipment for most of the students. Studying how educators deal with the digital barrier issue in classrooms and schools would expand the findings of this study.

Being effective users of technology, with both the technology already in the classroom or school or the digital tools hoping to be acquired, also means understanding how to obtain equal opportunities for daily access. For example, further research is required in the shift from in-school technology labs to portable technology carts and how the technology is managed. Many of the teachers were disgruntled with the lack of daily access to needed digital tools and resources. The teachers also described how they often partnered with another class to have better access to technology, while some of the teachers found ways to obtain digital tools for their own classrooms. Petitioning parent and community groups, writing grants, and entering contests were just some of the ways teachers subverted their lack of daily access to technology. Best practices on how to share technologies in schools would be beneficial to school administrations organizing their own technology hubs.
Collaboration in teaching.

Joining collaborative professional learning communities was important to the teachers in order to support each other. Building learning communities to share knowledge and digital classroom resources has been studied (i.e. An & Reigeluth, 2011) but further research would complement the work already explored. While many of the teachers attempted to provide workshops on what they were doing with digital technologies and literacy in their classrooms, only a few of the teachers were fully supported by their peers to attend occasional workshops. The teachers who were successful with this type of outreach already had support from their administration (i.e. as a differentiated instructor or had literacy coach experience). Further research would include how teachers could be further encouraged and supported to conduct on-site workshops on digital tools and resources for the classroom.

While many of these teachers found that their school administrators provided support for their learning and teaching with digital technologies, they felt that more support was needed for their colleagues as well. Opportunities for professional development should also utilize the teachers already incorporating technologies daily to share their knowledge and skills. For instance, digital citizenship as a means of technology management, as well as grant writing for digital devices, have also been discussed in recent studies (Ertmer et al., 2012; McClay & Peterson, 2013). These topics have the potential to be further expanded into larger studies to provide information to benefit more educators on the possibilities of obtaining and maintaining digital technologies in the classroom. While there are many constraints upon time and money in schools, establishing positive work spaces where sharing ideas is nurtured and encouraged would be beneficial for everyone in school. Team teaching with digital
technologies and establishing lunch-and-learn workshops throughout the year are two examples of working around some constraints. Additionally, sharing resources and working together to obtain digital tools and resources might encourage non-risk-taking teachers to explore more technologies in their classrooms.

Online blog forums for teachers and other online educational sites assisted these teachers with their learning and teaching using digital technologies. Online sites can be helpful for new and seasoned teachers using digital technologies, as many digital tools and resources continue to change rapidly. Providing a network for online collaboration and development of multiliteracies skills for teachers and students was why Hibbert (2010; 2014) created the Salty Chip: A Canadian Multiliteracies Collaborative site and the Salty Chip Blog. The sites are designed to support teachers, and students, both as a collaborative teaching and learning site as well as a platform to show and share their planning and practice through ‘chips’. The Salty Chip site began in 2010 as a collaborative website for teachers to “do what all teachers do naturally – think of an idea (or be inspired by an existing one), try it out, modify it, share it, update it, use it in our particular context” (n.p.). The Salty Chip Blog is a hub for blogs and online sites dedicated to helping teachers, both those unfamiliar with classroom-based digital technologies and experts, “engage in new literacies’ practices… [and] integrate them into their curriculum in meaningful and purposeful ways” (n.p.). As Hibbert (2014) has found, having an online network space “is one of the strengths that working collaboratively offers the educational community” (n.p.). Encouraging teachers to explore teacher blogs, even starting one collectively as a school or division, as well as online resources would provide opportunities for collaboration, sharing, and learning. Perhaps a future research project will include supporting and following a group of
teachers as they begin to blog about their journey with digital technologies and share their experiences with peers in workshop settings.

This study focused on teachers and their understandings of multimodal literacy teaching. Students’ perspectives were not sought for this particular study. Future research could explore students’ perspectives regarding digital technologies in the classroom. To complement this study, it would be important to collect stories of student engagement with multimodal literacy activities as told in the words of the students. Therefore, expanding the sections on engagement with digital technologies from the planning stages into the implementation and production phases would provide further areas of study.

Contributions to Practice

During the process of this research and through the interactions with the 15 teachers notable contributions to teaching practice were shared. The teachers in my study continued to uncover new ways of using digital technologies in their classrooms, and wanted to share their latest discoveries. Continued support from peers and administration would only encourage more collaboration and collegial learning among other groups of educators. In order to encourage pedagogical risk-taking and sound decision-making, there is a need for further professional development, both at the school board and in each school, to incorporate and encourage the use of new digital tools and resources in the classroom. Furthermore, encouraging experts in the classroom not only provides opportunities for students, and other teachers, to become leaders and to share their expertise with digital technologies, but also builds a community of learners and thinkers for a new millennia.

This research study contributes to repositioning, redefining, what it means to be a teacher in the classroom. Teachers in the 21st century require many qualities to utilize
multimodal and digital tools and resources authentically in the classroom. Perhaps the most important quality is for teachers to be unequivocally passionate about teaching and learning. Likewise, to design engaging curriculum it is of the upmost importance to get to know the students sharing the classroom - their dreams, passions, and future goals. The importance of cross-curricular curriculum planning among teachers is to not only incorporate a variety of those interests throughout the year, but to provide time and opportunities to integrate a variety of digital technologies across subjects. Finally, teachers of the 21st century should endeavour to try new digital tools and resources, multimodal teaching methods and learning opportunities, and ascertain ways to integrate community-based experiences into the classroom. This research study, and the teachers involved in its creation, contribute to describing what it means to be a good teacher in an every-changing world.

**Implications for My Pedagogy**

In order to expand on what these teachers are doing in their literacy classrooms, I too am providing workshops for teachers to encourage the integration of more digital technologies in elementary classrooms. By providing workshops on web-based writing tools, such as Storybird and blogging sites, and by sharing digital resources in workshops, teachers can then practice with the resources and tools. I also work with teachers in their classrooms, providing insight to see what is working in the classrooms and what continues to engage students to see themselves as authors.

Based on findings in this study, I have also started a classroom wiki on Wikispaces. I started the wiki this year for my pre-service teacher candidates to have a space to grow as a community and discuss topics around literacy. While I have used the wiki as a place for students to contribute and collect educational resources, it is also a
place for them to be accountable for their learning, often through shared assignments and
discussion blogs. I have also encountered some constraints (Hutchinson & Woodward,
2014) with my class wiki page. For instance, allowing adequate time for exploration of
our wiki as a class was difficult at the beginning of the year and only being able to edit a
page one at a time has proven challenging with a large group of co-authors vying to
include their ideas in an ongoing discussion page. Not only are the pre-service students
co-learners in our Language Arts program, but they are often experts on various literacy-
based topics, resources, and tools. I am constantly searching for new knowledge and new
ways of teaching, particularly with digital technologies. Collaborating with peers and
students has provided a new space for sharing and learning.

**Conclusion**

There is only one thing for it then — to learn. Learn why the world wags and
what wags it. That is the only thing which the mind can never exhaust, never
alienate, never be tortured by, never fear or distrust, and never dream of
regretting. Learning is the only thing for you. Look what a lot of things there are
to learn. (T.H. White, 1958, *The Once and Future King*)

The teachers in this research study are risk takers, digital explorers, teaching
collaborators, and, most importantly, life-long learners. Constantly seeking out new ways
to integrate digital technologies, tools and resources, while embracing the challenges of
teaching with technologies, these teachers are role models of good practice. There are
many elements to consider regarding effectively merging digital technologies in
classrooms and this study is one part of understanding the challenges of teaching literacy
with digital technologies.
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Appendices A: Recruitment Script

Dear Teacher,

Hello, my name is Carol Doyle-Jones. I am a Ph.D. candidate at OISE/UT and am conducting a research project about teachers’ experiences with curriculum planning and digital technology. This study is part of my dissertation research where I seek to understand how teachers plan their literacy curriculum and create learning opportunities through multimodal resources and digital technology tools in their classrooms. I am particularly interested in the curriculum resources that teachers use in their everyday practice, the teaching strategies and activities with a digital technology focus, and the challenges and triumphs that occur through multimodal teaching.

I invite you to participate in this study. I am seeking 10-15 literacy teachers, such as yourself, to participate in two interviews. The questions are related to your literacy teaching and digital technology experiences. I will ask participating teachers to provide a literacy unit or activity that is based in digital technology, as well as any other curriculum resources that are used in everyday teaching. Each interview will take approximately one hour. Interviews will be scheduled at a time and location that is convenient for you. The interviews will be audio-recorded and transcribed to ensure accuracy.

Involvement in the project is completely voluntary. Participants are free to withdraw from the research project at any time without having to give a reason and you may decline to answer any specific questions. Confidentiality will be maintained at all times. Pseudonyms will be used in place of participants’ actual names in any written work, oral presentations, or publications to protect participants from identification. Participants will not be identified in any way. The data will remain confidential and secure. No one other than myself, and my doctoral supervisor, will have access to the data.

I will write a report of this study and submit it to OISE/UT to complete the requirements of my doctoral dissertation. I will also use the data collected for this study for scholarly publications, conference presentations, and future research and writing projects. I invite you to take part in this study and would like to treat you to a coffee or tea as a way to say thank you for your time. If you are interested in finding out more about this project and your potential participation, please let me know at your earliest convenience.

Thank you in advance.

Carol Doyle-Jones
Ph.D. Candidate, OISE/University of Toronto
carol.doyle.jones@mail.utoronto.ca
Appendices B: Letter of Participation and Consent

Letter of Information

Dear ________________,

As you know, I am a Ph.D. candidate at OISE/UT and am conducting a research project about teachers’ experiences with curriculum planning and digital technology. This study is part of my dissertation research where I seek to understand how teachers plan their literacy curriculum and create learning opportunities through multimodal resources and digital technology tools in their classrooms. I am particularly interested in the curriculum resources teachers use in their everyday practice, the teaching strategies and activities with a digital technology focus, and the challenges and triumphs that occur through multimodal teaching. Participating teachers will have an opportunity to talk about their pedagogy, and share their teaching resources, with an appreciative audience.

I invite you to participate in this study. I am seeking 10-15 literacy teachers, such as yourself, to participate in two interviews. The questions are related to your literacy teaching and digital technology experiences. I will ask you to share a short educator biography to describe yourself and your teaching experience and practice. I will also ask participating teachers to provide a literacy unit or activity that is based in digital technology, as well as any other curriculum resources that are used in everyday teaching. Each interview will take approximately one hour. Interviews will be scheduled at a time and location that is convenient for each participant.

As part of the interviews, participating teachers will be asked the following sets of questions:

**Literacy: Understanding and Activities:**
14. How would you describe literacy?
15. Please describe a successful literacy lesson or activity that you used this year.

**Planning Multimodally with Digital Technology:**
16. Please describe how you came to use digital technology in your classroom.
17. During a typical week, how do you use digital technology and media in your classroom?
18. Please describe a successful lesson or activity where you used digital technology. (You can use the curriculum unit or activity that you believe relates to multimodal resources and teaching and digital technology that you brought with you.)

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19. How did you develop that particular activity/lesson plan?  
20. What other digital technologies do you use in your literacy teaching?  
21. Are there certain teacher-related resources that you like to use? What types of resources do you find you need?  
22. Do you have access to technology in your own classroom? If not, where do you go? If yes, how is your classroom designed to accommodate the technology?  
23. Do you have a support network (i.e. at school or at home) to help you with technology in the classroom? Please describe how you are supported.

**Challenges/Triumphs of Everyday Practice:**

24. Please describe a challenge that you encountered while incorporating digital technology in your classroom.  
25. Please describe another curriculum activity, not necessarily one using digital technology, where your students demonstrate particular talents (i.e. artistic abilities, musical talents, drama skills).

**Student Connections:**

26. If applicable, how do you incorporate your students’ use of personal technologies (such as IPods, IPHones, e-books, tablets) at school?  
27. How do you support your students to develop their digital technology skills?  
28. Please talk about students who are difficult to motivate to participate in literacy activities. How do you engage them in literacy?

**Where to go from here?:**  
29. What are your future plans for teaching with digital technology in your classroom?

The interviews will be audio-recorded and transcribed to ensure accuracy. After the interviews participating teachers will have the opportunity to check transcripts for any inaccuracies. The data will remain confidential and secure. The data will be stored in a locked cabinet and electronic data will be kept on a secure server at all times. No one will have access to the data other than my doctoral supervisor and myself. The raw data will be kept for three years after completion of the study and then paper transcripts will be shredded and audio tapes will be destroyed. The rights of privacy, confidentiality, and anonymity of all participants will be respected for all participants. Pseudonyms will be used. There is no conflict of interest for the researchers involved in this study. I would be happy to provide you with copies of publications resulting from this study. (Please indicate your interest to receive the report on the consent form).

Involvement in the project is completely voluntary. Participants are free to withdraw from the research project at any time without having to give a reason and you may decline to answer any specific questions. Confidentiality will be maintained at all times. Pseudonyms will be used in place of participants’ actual names in any written work, oral presentations, or publications to protect participants from identification. Participants will not be identified in any way. The data will remain confidential and secure. No one other than myself, and my doctoral supervisor, will have access to the data.
I will write a report of this study and submit it to OISE/UT to complete the requirements of my doctoral dissertation. I will also use the data collected for this study for scholarly publications, conference presentations, and future research and writing projects. When completed, this research will be available in the form of an electronic Ph.D. thesis, accessible to the public.

If you consent to participation in this research, please sign and return one copy of the attached consent form, and keep a copy of this letter and the consent form for your records. Thank you for your time. I would be happy to answer any questions or concerns you may have, please contact Carol Doyle-Jones at carol.doyle.jones@mail.utoronto.ca or (905) 447-3464. You may also contact my doctoral supervisor Shelley Stagg Peterson at shelleystagg.peterson@utoronto.ca or (416) 978-0329. You may also contact the University of Toronto Office of Research Ethics at ethics.review@utoronto.ca or by telephone at 416-978-2798.

Sincerely yours,

Carol Doyle-Jones
Ph.D. Candidate, OISE/University of Toronto
carol.doyle.jones@mail.utoronto.ca

Doctoral Supervisor contact information:

Shelley Stagg Peterson, Professor
shelleystagg.peterson@utoronto.ca
(416) 978-0329
Informed Consent Form

CONSENT FOR PARTICIPATION IN EDUCATIONAL RESEARCH

I have read the attached letter and agree to participate in Carol Doyle-Jones’ research study. I agree to let her use the data I have provided for the purposes of research and to quote from the data. I also agree to let her refer to the research data gathered in this project for future work on digital technology, multimodal resources and teaching, and literacy education. I have had the opportunity to get additional information regarding this study from the researcher. My questions have been answered and I know I can ask more questions about the research later.

I understand that I will participate in two individual interviews. I understand that each interview is expected to be approximately one hour long. I understand that all interviews will be audio-recorded and later transcribed for purposes of analysis. I understand I will also be asked to share curriculum resources.

I understand that all data collected during the study will be kept in a locked file cabinet and electronic data will be kept in a secure server environment at all times. I understand that this data will only be accessed by Carol Doyle-Jones and her supervisor. I understand that my identity will be protected through a pseudonym. I understand that this will also be done for any publications or presentations made using the data collected, including direct quotations of participants.

I understand that my participation in this study is voluntary. I understand that I may decline to answer any interview questions. I understand that I may withdraw from the study without facing negative consequences. I understand that if I do withdraw, all data collected from/about me will be destroyed. I understand that I may contact the University of Toronto Ethics Review with any questions about my rights as a participant.

I understand that, when the research is complete, data from it will available in the form of an electronic Ph.D. thesis that will be accessible to the public. I understand that the data from this study will be kept for a period of three years after the completion of this research study after which time all raw data will be destroyed.

I understand that if I have further questions or concerns, I can contact Carol Doyle-Jones at carol.doyle.jones@mail.utoronto.ca, or the Office of Research Ethics at the University of Toronto at 416-946-3273 or ethics.review@utoronto.ca
Finally, I say that I have read and fully understand the consent form. I sign it freely and voluntarily.

Date: _____________________

My Name (please print): _____________________________________________

__________________________________________

______________
Signature

I wish to have the results sent to me       Yes    No

Email address and/or postal address (if you would like to receive results of the study and/or transcripts of your interview)

____________________________________________________________________

Phone number: ____________________________
Appendices C: Interview Protocol

Date: 
Place: 
Pseudonym: 

Script for Interview #1:

Thank you for agreeing to speak with me. I appreciate your time. **Can we sign the informed consent form now? Have you picked a pseudonym?** There are two interview sessions. This interview will take approximately one hour, but you may ask to stop the interview at any point.

I would like to remind you that you are free to withdraw from the research project at any time without having to give a reason and you may decline to answer any specific questions. Pseudonyms will be used in place of your actual name in any written work, oral presentations, or publications to protect you from identification. Identifiable information will remain confidential to the research team.

I would like to ask for your permission to record our conversation. This will help me to give you my full attention now and return to our conversation later. If you would like to stop recording at any time please let me know. Do you have any questions before we start?

Before the interview questions begin, I would like to get to know you as an educator. Re-creating a teacher biography will help me develop your story as a teacher who uses digital technology in the classroom.

A) How many years have you been teaching and what grades have you taught (and are currently teaching)?

B) What did you do your undergrad degree in? Have you taken other courses (such as AQ or MEd courses)?

C) How many years have you been at this school?

D) How would you describe the student population of the school?

E) What do you believe are your teaching strengths?

F) Overall, is this school a good ‘fit’ with your approach to teaching?

My interview questions are based on five themes (Literacy: Understanding and Activities; Planning Multimodally with Digital Technology; Challenges/Triumphs of Everyday Practice with Digital Technology; Student Connections; Where do you go from...
here?). We will cover two of the sets of questions today and the final three during the next interview.

**Literacy: Understanding and Activities:**

1. Literacy is a very broad field. Please talk about your understanding of literacy as a grade ___ teacher.
2. Do you think the field of literacy has changed since you were a student?
3. Please describe a successful literacy lesson or activity that you used this year.

**Planning Multimodally with Digital Technology:**

4. To what extent do you use digital technology in your classroom? (How many computers do you have in your classroom? Do you have access to a lab? Do you have a Smartboard? Do you have access to iPads, or other digital tools?)
5. Please describe how you came to use digital technology in your classroom.
6. During a typical week, how do you use digital technology and media in your classroom?
7. Please describe a successful lesson or activity where you used digital technology. (You can use the curriculum unit or activity that you believe relates to multimodal resources and teaching and digital technology that you brought with you.)
8. How did you develop that particular activity/lesson plan?
9. What other digital technologies do you use in your literacy teaching?
10. Are there certain teacher-related resources that you like to use? (Personal resources, on-line resources, classroom teacher resource books?) What types of resources do you find you need? Why?
11. Do you have access to technology in your own classroom? If not, where do you go? If yes, how is your classroom designed to accommodate the technology?
12. What kind of support have you had in using digital technology in your classroom? Have you taken any courses or workshops on using digital technology? Do you have a support network (i.e. at school or at home) to help you with technology in the classroom? (Is there board support? i.e. as in an ILP – instructional laptop program (DDSB)?)
13. To what extent are there other teachers in your school using digital technology to the extent that you do? Would you describe your school as one that is fairly focused and committed to using digital technology?
Wrap Up:

Is there anything else you would like to tell me about your experiences with digital technology?

Thank you very much for giving me your time and for sharing your experiences with me. I really appreciate your willingness to participate. I will be in touch with you over the next few days to arrange a time for us to conduct your next interview.

Script for Interview #2:

Before we begin, I would like to remind you that you are free to withdraw from the research project at any time without having to give a reason and you may decline to answer any specific questions. Pseudonyms will be used in place of your actual name in any written work, oral presentations, or publications to protect you from identification. Identifiable information will remain confidential to the research team. If you would like to stop recording at any time please let me know. This interview will be approximately one hour. Do you have any questions before we start?

In our last interview you gave me some background to your use of digital technology in your classroom and now I would like to build on those experiences.

Challenges/Triumphs of Everyday Practice:

Using digital technology in teaching can be rewarding for both you and the students but it can also pose some challenges. Let’s start with the rewarding aspects.

14. Please describe why you think that using digital technology is rewarding for you and your students? Do you have a practical example?

15. Now let’s look at the flip side. Please describe a challenge that you encountered while incorporating digital technology in your classroom.

16. Digital technology is only one aspect of a rich literacy curriculum. Please describe another curriculum activity, not necessarily one using digital technology, where your students demonstrate particular talents (i.e. artistic abilities, musical talents, drama skills). Given your grade level and the curriculum, to what extent can you have students demonstrate their learning in non-traditional writing forms?

Student Connections:

17. We know that many students have rich technology-related lives outside of school. If applicable, how do you incorporate your students’ use of personal technologies (such as iPods, iPhones, e-books, tablets) at school?

18. How do you support your students to develop their digital technology skills?
19. Regardless of your program, we know that some students are difficult to motivate to participate in literacy activities. I am sure that you have encountered some. How do you engage them in literacy?

Where to go from here?:

20. What are your future plans for teaching with digital technology in your classroom?

Wrap-up:

Is there anything else you would like to tell me about your experiences?

I have questions regarding our conversation from the first interview session, could we discuss them?

I will contact you shortly with the interview transcripts so you can check them for accuracy.

Thank you very much for giving me your time and for sharing your experiences with me. I really appreciate your willingness to participate.